

ORAL PRESENTATION

Xanadu Oil Discovery, northern Perth Basin, Western Australia

Shelley Robertson¹

¹Norwest Energy NL, Australia

shelley.robertson@norwestenergy.com.au

The Xanadu Prospect is located in state waters in exploration permit TP/15, situated approximately 300 km north of Perth, Western Australia. The Xanadu Prospect targets Permo-Triassic sands from a depth of approximately 800 m, located in very shallow water immediately adjacent to the coast. Structuring took place during the Early Cretaceous, creating a very prominent horst, fault-bounded on all four sides.

The seismic lines in the vicinity of the Xanadu Prospect have been acquired over the past 50 years with greatly varying orientations due to the restrictions imposed by the shallow water and the many reefs in the area. A Full Tensor Gravity survey confirmed the presence of a strong positive gravity anomaly coincident with the seismically mapped structural high.

The Xanadu-1 exploration well spudded in September 2017 to test the hydrocarbon potential of the Xanadu Prospect.

The well was technically challenging, drilled as a deviated s-shaped well from an onshore surface location to an offshore target. Xanadu-1 was declared a discovery in late September 2017, when it intersected hydrocarbon-bearing reservoirs, evidenced by elevated gas readings, oil shows and fluorescence while drilling. Wireline logging including pressure testing and fluid sampling validated these results. Xanadu is the first oil discovery in the Perth Basin for over 15 years.

Subsequent integration of the petrophysical analysis, MDT data, fluid recoveries and seismic interpretation now indicate that Xanadu-1 did not intersect the crest of the culmination, and that the structural high is likely to be located to the north, beyond the northernmost 2D seismic line currently available.

The logical next step in this program is the acquisition of 3D seismic, and a 40 km² survey is currently planned. Assuming this seismic validates the assumption that the structure rises to the north, the plan is to re-enter the suspended Xanadu-1 well and drill a side-track to a northern up-dip location.

With positive results from this side-track well, the development could be fast-tracked, given the proximity of the Arrowsmith oil production facility supporting the Cliff Head oil field.

Permian sands beneath the Kockatea Shale regional seal have provided the reservoir for four oilfield discoveries in the vicinity since 2001, namely Cliff Head, Jingemia, Hovea and Eremia.