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ABN: 65 078 301 505  
Level 2, 6 Thelma Street  
West Perth WA 6005  
PO Box 1264 West Perth WA 6872  
Tel: +61 8 9227 3240  
Fax: +61 8 9227 3211  
[www.norwestenergy.com.au](http://www.norwestenergy.com.au)

## **OIL RECOVERED TO SURFACE CONFIRMS XANADU DISCOVERY**

### **HIGHLIGHTS**

- Wireline logs over a 330m section confirm reservoir quality sand intervals throughout the Irwin River Coal Measures (IRCM) with porosities ranging 15% to 16%
- Three discrete sand intervals (A, B, C) at top of IRCM have log-derived hydrocarbon saturations between 41-66% with 4.6m of net pay in sand "A"
- Fluorescence in rock cuttings observed while drilling and log-derived hydrocarbon saturations persist for 120m in sands below these upper zones
- Further analysis of oil samples obtained from Xanadu-1 expected to substantiate Cliff Head analogue with oil assay results expected by end of week
- Plans underway for up-dip side-track appraisal well from Xanadu-1 casing shoe with potential to be completed as commercial producer
- Norwest Energy to lodge Xanadu Oil Field Discovery Notice with Minister of Mines, Industry, Regulation and Safety

Norwest Energy NL (Norwest), the Operator of Permit TP/15 provides the following update on the Xanadu-1 exploration well.

### **BACKGROUND**

Xanadu-1 is a conventional oil well located in TP/15, an offshore permit located in state waters, approximately 1.3km from the coastline. Xanadu-1 is a deviated well, drilled from an onshore surface location to an offshore target. The Xanadu-1 well is situated approximately 40km south of the township of Dongara, Western Australia.

The Xanadu-1 well was spudded on 4<sup>th</sup> September 2017, and reached a total depth of 2035 mMDRT on Sunday 17<sup>th</sup> September, when it was confirmed that the Xanadu-1 well had intersected hydrocarbon bearing intervals as demonstrated by elevated gas readings, oil shows, fluorescence and cut-fluorescence whilst drilling.

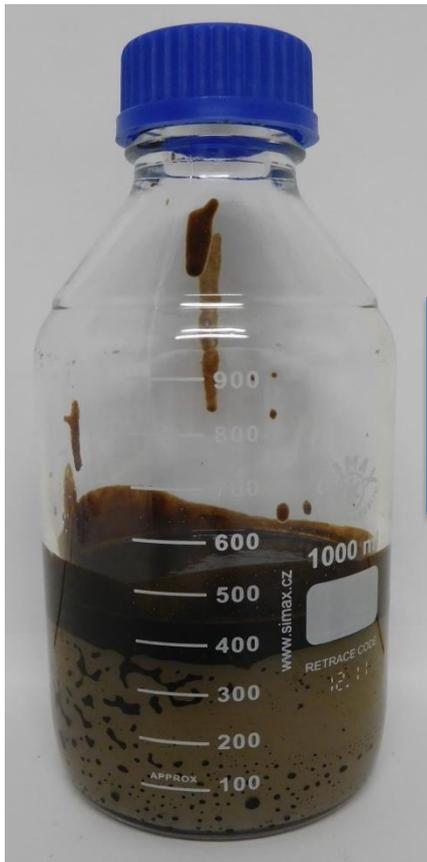
## PROGRESS

Since the last report, a suite of wireline logs over a 330m section of the well have now been acquired by service provider Schlumberger. The logging suite included:

- Magnetic resonance logging in combination with MDT pressure and fluid sampling
- Porosity logs
- Full hole diameter 3D radial pressure and fluid sampling via the Schlumberger Saturn Probe tool

This comprehensive logging suite was run due to the highly encouraging results encountered while drilling.

This additional logging has delineated net and gross reservoir sections within the well, and to provide greater understanding on reservoir characteristics and yielded quality oil samples.



*Xanadu-1 oil and oil-cut mud recovered from 1576.9 mMDRT in the Irwin River Coal Measures "A" sand with the Schlumberger Saturn Probe wireline tool. Further oil samples from this zone have been sent for analysis in Perth.*

## RESULTS

The reservoir of interest is the top section of the Irwin River Coal Measures (IRCM). The Dongara Sandstone was not encountered at this well location, with the IRCM found directly below the base of the Kockatea Shale at 854mTVDSS. Reservoir quality sand intervals were encountered throughout the IRCM with porosities generally ranging from 15% to 16%.

Three discrete sand intervals (“A”, “B” and “C”) at the top of the IRCM have log-derived hydrocarbon saturations in excess of 40%. Fluorescence in rock cuttings observed while drilling and log-derived hydrocarbon saturations persist for 120m in sands below these upper zones but the lower intervals are water-bearing. MDT pressure sampling has established a high confidence water gradient and water was flowed and sampled via a wireline tool from the “B” sand despite the high oil saturation.

| Reservoir Unit | Gross True Vertical Thickness (m) | Net Sand True Vertical Thickness (m) | Oil Saturation | Porosity | Net Pay (m) |
|----------------|-----------------------------------|--------------------------------------|----------------|----------|-------------|
| “A”            | 7.7                               | 4.6                                  | 66%            | 15%      | 4.6         |
| “B”            | 6.0                               | 2.8                                  | 46%            | 16%      | -           |
| “C”            | 4.3                               | 2.7                                  | 41%            | 17%      | -           |

Oil was pumped through from the “A” sand utilising the Schlumberger Saturn pressure and fluid sampling tool and three downhole samples collected. Based on the wireline log data, pressure points and recovered fluid samples a lowest known oil depth of 871.8mTVDSS and a highest known water depth of 880.2mTVDSS have been established for the Xanadu Field.

Seismic data indicate that it is possible to drill an up-dip location which could allow the higher quality sand units deeper in the section to be penetrated above the inferred oil-water contact. Erosion of the upper, poorer quality, sands on a structural high similar to observed at the Cliff Head Oil Field would further increase the chance of intersecting the oil column in better quality reservoir.

Excellent reservoir quality was also encountered in the High Cliff and Kingia Sandstone sections, although oil shows were not encountered in this interval. This does provide future exploration upside, with evidence that oil has passed through this system. These are the same reservoir units that host the Waitsia Gas Field operated by AWE Limited.

Results at Xanadu-1 indicate that the assumption of the producing Cliff Head Oil Field being the primary analogue are correct. Cliff Head Oil Field has now produced over 15MMbbls. Analysis of the oil samples obtained from Xanadu-1 is expected to substantiate this with oil assay results expected by the end of the week.

## FORWARD PLAN

The Cliff Head Oil Field discovery well Cliff Head-1 identified a gross 4.8m oil column at the top of the IRCM below the Kockatea Shale – the same stratigraphy encountered at Xanadu-1. Cliff Head-1 was immediately side-tracked to a more favourable up-dip location where a 36m gross oil column was intersected.

Xanadu-1 was not initially designed to be completed as a producing well, and now with a better understanding of the stratigraphy, a side-track well similar to Cliff Head-1 is considered an excellent option, with the top section down to 971mMDRT already cased and cemented in place (approximately 250m vertically above the zone of interest).

After carefully considering the opportunity to drill Xanadu-2 immediately as an up-dip side-track well while the rig was still on location, the Joint Venture decided that by gathering more data, allowing the

drilling team more time to plan and gather materials and tools, and by studying well completion and production options, a much more financially and technically robust outcome was likely.

The rig is currently in the process of suspending the well. Based on results, and armed with much greater knowledge, the Joint Venture is currently planning to drill an up-dip side-track appraisal well from the casing shoe, with the potential to be completed as a commercially producing well. The opportunity to also drill a horizontal production well from this location will be studied, with results depending on a final determination of reservoir and oil properties feeding into a production model and cash-flow forecast.

As part of the Xanadu-2 well planning process the Joint Venture is investigating acquiring more seismic data over the Xanadu Field via a number of short infill lines as a mini-survey. Additionally, a better understanding of the oil trap at Xanadu will now allow the Joint Venture to re-examine its inventory of undrilled prospects. The proof of oil charge to Xanadu and the geochemical studies of the oil collected at Xanadu-1 will allow for a clearer understanding of the oil migration pathways within the permit and a better estimate of pre-drill risk for the undrilled prospects.

Norwest Energy is in the process of lodging a Discovery Notice with the Minister for Mines, Industry, Regulation and Safety. This is a requirement under the Guidelines to Petroleum and Geothermal Energy Resources and Petroleum (Submerged Lands) Regulations 2015.

The Xanadu-1 well result is a great outcome for Norwest Energy. Based on the current understanding of the structure, there is an excellent chance of finding a significantly thicker column in an up-dip location which can be reached from the current drilling pad.

Norwest looks forward to working with the TP/15 Joint Venture to fast-track this exciting opportunity as rapidly as possible.

## WELL DETAILS

|                             |  |
|-----------------------------|--|
| <b>Permit</b>               | TP/15                                  |
| <b>Well Name</b>            | Xanadu-1                               |
| <b>Well Location</b>        | GDA 94: 29°33'29.117"S114°58'42.074"E  |
| <b>Type of Well</b>         | Deviated                               |
| <b>NWE Working Interest</b> | 25%                                    |
| <b>Geology</b>              | Interbedded sequence of shale and sand |

## TP/15 JOINT VENTURE

| JV Participant                                | ASX Code       | Percentage Interest |
|---|----------------|---------------------|
| Norwest (via subsidiary) (Operator)           | <b>ASX:NWE</b> | 25%                 |
| Triangle (Global) Energy Ltd (via subsidiary) | <b>ASX:TEG</b> | 30%                 |
| Whitebark Energy Ltd (via subsidiary)         | <b>ASX:WBE</b> | 15%                 |
| 3C Group IC Limited (via subsidiaries)        |                | 30%                 |

MAP SHOWING XANADU LOCATION

