



## PRESS RELEASE

### Aquaterra Energy Pushes The Boundaries – Wellhead Support Structure

Aquaterra Energy Ltd, the offshore engineering solutions specialist, has been contracted to design and build a freestanding Wellhead Support Structure (WSS) for Oil Production operations offshore Peninsular Malaysia in the South China Sea.

The WSS will be the first of its kind to be installed in water depths of 65 metres in Asia and will be bridge linked to an adjacent Mobile Offshore Production Unit (MOPU), where the produced oil will be processed before returning back to the WSS for Export via a dedicated pipeline to a remote Floating Storage and Offloading vessel (FSO).

The WSS utilises the four outer environmental well conductors alone, with two subsea structures bracing the subsea span, to provide structural support to the topsides WSS platform. The WSS topside provides a cost effective solution to accommodate 28 well completions and accompanying Oil Production, Gas Lift and Water Injection flowlines, manifolds, instrumentation and Control and Safety Systems necessary to produce Oil Hydrocarbons from this marginal field.

Richard Miller, Operations Director of Aquaterra Energy said: “The project challenges the normal development concepts of traditional jacketed topside structure and subsea developments by utilising a minimal facilities platform. The minimal facilities platform allows the use of dry Xmas trees, and reduces the overall development costs and delivery timeframe, whilst employing proven drilling rig techniques to install the WSS. By maximising the onshore installation and pre-commissioning of the WSS facilities prior to load-out, the WSS reduces the offshore workscope and time needed to commission the WSS into operational service.”

Miller continued: “The WSS topsides, having a total installed mass of over 300 tonnes, is supported by four 36” x 2” leg conductors tied together by two subsea structures. The conductor legs continue to penetrate the subsea mudline by a further 65 metres to ensure good foundation is achieved. The two subsea structures provide the required strength and stability needed to ensure the performance of the WSS is maintained. However, these subsea structures create significant drag and it is therefore necessary to complete complex structural analysis to ensure that the WSS strength, stability and design fatigue life is achieved.

“The successful design must also be demonstrated to the satisfaction of 3<sup>rd</sup> party classification bodies. All structures are fabricated in strict compliance with industry standards including API regulations.”

Aquaterra Energy describe the most challenging aspects of the project as:

- development from conceptual design, bypassing traditional project phases such as Front End Engineering Design (FEED), direct into commissioning the platform within 12 months
- significant topside scope to support a complex drilling and completion programme
- water depth of 65 metres
- installation by the jack-up Drilling Rig during the drilling programme removing the requirement for specialist heavy lift vessels and resulting in using a relatively small subsea footprint of only 8 square metres
- consideration of ship impact and boat landing facilities
- use of complex Single, Dual and Triple splitter wellheads
- accommodating 28 flowlines, manifolds, instrumentation, control & safety systems, Oil Export and Pigging facilities along with personnel access to and from the nearby MOPU on a compact four deck 14 metre square topside structure
- the requirement for a minimum design fatigue life of 10 years.

Patrick Phelan, Managing Director of Aquaterra Energy, said: “The project continues to push at the boundaries of the initial design which followed from the design competition which saw Aquaterra Energy succeed over its competition. The WSS is, like most offshore structures, sensitive to topside weight and space. The flexibility of the WSS solution is proving to be a key success factor.”

The WSS project is now in the fabrication stage with Aquaterra Energy’s Malaysian fabrication partner and the company says that its proven project management skills, having been utilised on similar projects for West Africa, will ensure successful progress from the challenging design stage of the project into the load out onto the barge and into the installation phase.

Once completed, transportation of the two subsea structures and the WSS topsides will be by barge, and the installation of the WSS will be completed by a jack-up drilling rig which is currently in Singapore for minor servicing and modification before sailing to the oil field about 140km east of Peninsular Malaysia.

Aquaterra Energy has skilled personnel working with the drilling contractor in the shipyard to ensure temporary installation modifications are completed in Singapore prior to mobilisation. The installation will utilise standard drilling rig operations, modified to provide the installation of the WSS whilst drilling and completion of the drilling programme. Minimum additional drilling rig time is envisaged to complete the WSS installation over the completion of the drilling programme. The installation of the subsea structures will be completed during installation of the four leg conductors and the final installation of the WSS topsides will follow. The conductors will then be cut to the required height prior to landing out of the WSS topside structure onto these legs.

Phelan concludes: “Once the WSS topside is installed, the offshore workscope will be completed to provide connection to the nearby MOPU, where the necessary process facilities are located. The MOPU will provide power generation, process systems and the accommodation for the personnel to operate the processing plant onboard the MOPU and wellhead facilities on the WSS. After completion of

commissioning and tie back to the MOPU, the oil will flow from the 16 oil production wells, via the WSS, onto the MOPU and then return back to the WSS for connection via the Export pipeline to the remotely sited FSO some 14 kilometres away.

“We are proud to be able to deliver this leading edge project, from conceptual design into commissioning the platform, and look forward to seeing the innovative WSS in operation.”

## ENDS

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### About Aquaterra Energy Ltd

[www.aquaterraenergy.com](http://www.aquaterraenergy.com)

- Aquaterra Energy Ltd specialises in offshore engineering solutions for the international oil & gas industry, providing services to more than 100 customers in over 35 countries worldwide
- The company has offices in Aberdeen, Cairo, Cambridge, Houston, Kuala Lumpur and Norwich
- Aquaterra Energy’s services are provided via three business streams:
  - **Riser Systems:** Riser Analysis; Subsea Riser Systems; Surface Riser Systems; Connectors; Pipeline Risers; VIV Suppression Systems; Tieback Engineering; Centralisers
  - **Offshore Structures:** Sea Swift Platforms; Subsea Drilling Templates; Subsea Protective Structures; Tension Decks; MOPU Wellbay Modules; Conductor Slot Addition; Bespoke Offshore Structures
  - **Service and Rental:** SUREgrip Tension Ring; PROten Riser Tension System; Rig Floor Tension System; Conductor/Riser Tensioning Unit; Cement Top Up Systems; Aquascope Subsea Camera Systems; Disposable Camera Systems; Conductor Slot Recovery; Conductor Whipstocks; Rental Tools; SUREcut Cold Cutter; PDQ Drill String Connectors; Trash Caps; Heavy Lifting Equipment; Gyroscopes
- Aquaterra Energy received a Queen’s Award for International Trade in 2009.