

BROWNFIELD DEVELOPMENT ALONGSIDE INSTALLATION OF NEW PLATFORM, PROVIDES NEW WELLS, LIFE EXTENSION AND INCREASED FIELD PRODUCTION.

CLIENT:
PICO

PRODUCT:
SEA SWIFT, OFFSHORE STRUCTURES

Pico International Petroleum Services approached us in 2015 to engineer, design and fabricate a Sea Swift solution as the new Amal-C platform located in the Gulf of Suez, Egypt. The scope of work included additional upgrades to the existing Amal-B platform, an unmanned facility.

The new platform was needed to provide service and facilities for Amal-B, which had previously supplied by a SEWOP vessel. It was also required to produce from new wells and commingle all well fluids for onward transmission via a newly installed pipeline.



BACKGROUND The Amal-B platform was served by three risers, initially intended to export gross production via the 8" line and import water and gas via 2 off 4" lines. However, at the point when Aquaterra Energy were involved, all three lines were running at capacity, exporting gross production chemistry. No further development of wells could therefore be brought online and with the increased water production, as is typical in later field life, production efficiency needed to be optimised.

The brownfield development of Amal-B involved increasing the well count from three single string and two dual string production wells, to include an additional two off new dual string wells. The existing arrangement was not suitable to accommodate this additional capacity or provide the necessary connections to the adjoining platform.

Initial surveys indicated that the structural integrity of this asset was challenged and that this had been identified previously, due to structural strengthening campaigns being conducted. At the time of project award, the platform had been in service for 13 years. Additionally, the platform motions relative to the new platform, were considerable; whilst it had been a "stand-alone" platform this was of less concern, but the interaction between the existing and new platforms required careful consideration and design.



SOLUTION The design, layout and routings of the new piping systems were conducted to be as economical as possible, whilst maintaining the required functionality and ergonomic requirements and ensuring the allowable stress limits of the piping systems were kept within code parameters. Differing material selections and options were also evaluated which could further reduce the weight while providing cost / time benefits to the delivery of the project.

In order to achieve the personnel access envelopes required and also minimise the attachments to the existing structure, an additional structural support framework was also designed. Within all the structural and piping elements consideration was given to the offshore installation methodology, as this would need to be conducted within a small working envelope alongside the production wells. All tie-ins were given additional attention and sufficiently well-defined and flexible to eliminate re-works while component sizes were selected to maximise transportation but could still be handled during the offshore installation phase.

All procurement was conducted in the UK to ensure quality, compliance and expedited to meet the project schedule. All goods being received, warehoused and onward shipped into country where the fabrication was conducted by a sub-contractor under the management and control of experienced Aquaterra Energy.

RESULTS For Amal-B, the innovative design resulted in significantly more pipework being installed onto the Topsides, enabling the client to realise their increased productivity rates, whilst retaining the original platform footprint within the overall weight restrictions. The Amal-C platform was designed, fabricated and installed within 21 months. By replacing the SEWOP vessel serving Amal-B platform, with the additional Sea Swift platform, an estimated \$2-3 million capex saving was achieved plus OpEx savings in the estimated region of \$5-10 million a year.