

SUCCESSFUL GP III FPSO MOORING CHAIN INSPECTION WITHOUT INTERRUPTION OF PRODUCTION

ACTEON



MOORINGS AND ANCHORS

PROJECT OVERVIEW

In September 2021, InterMoor, the lead brand within Acteon's Moorings and Anchors segment, completed the mooring chain inspection campaign for the Global Producer III (GP3) Floating Production Storage and Offloading vessel (FPSO), on behalf of NEO Energy. The GP3 mooring system consists of ten mooring lines composed of 108mm chain and is located on the Dumbarton field in UKCS Block 15/20 in a water depth of approximately 145m.

THE CHALLENGE

- Short timeline for development of all engineering and procedural documentation
- Identify suitable vessel to suit client-owned equipment
- Perform close proximity work to the FPSO without affecting the FPSO production
- Handle and inspect mooring lines with significant amount of marine growth
- Inspect upper chain sections with limited payout from the FPSO
- Replace chain sections to ensure system integrity was maintained

OUR SOLUTION AND ITS COMMERCIAL BENEFITS

Market-leading services and integrated solutions

InterMoor provided an integrated package of services, from engineering and survey to project management to sourcing of the Anchor Handling Vessel (AHV), equipment provision and offshore work. The main phases of the project were as follows:

- As-found surveys
- Recovery of 3 x mooring lines to deck, cleaning with Ultra High Pressure (UHP) and detailed inspection including Magnetic Particle Inspection (MPI) and dimensional measurements.
- Removal and replacement of any required sections
- Re-instatement of the mooring system to match its original position

The inspection campaign was performed in accordance with DNV rules and criteria, and involved the recovery of three of the ten lines to deck for cleaning and detailed inspection, whilst the remaining lines were visually inspected subsea.

Work at scale with a proven track record for delivery

This campaign follows previous chain inspection campaigns for the GP3 that were performed by InterMoor in 2016 and 2011 for its previous owners and adds to InterMoor's extensive track record in inspection, repair and maintenance (IRM), and life extension activities for FPSOs and other floating assets around the world.

With its extensive track record in chain inspection and replacement activities, along with previous experience with the GP3 FPSO, InterMoor was in a strong position to develop the required analyses and operational procedures for this work scope in a short period of time. All detailed documents were developed in accordance

with agreed schedules that met the proposed mobilisation date, ensuring that offshore activities were performed in a window that did not impact any other FPSO activities.

Optimise the project to increase the commercial value

InterMoor was able to use its knowledge of the vessel market, along with good relations with brokers, to identify a suitable vessel that would interface with the client-owned equipment and meet all the project needs. The Havila Venus AHV was contracted with a WROV to complete the work.

Detailed planning and clear communications were put in place to allow for close proximity work with the FPSO and to ensure that the FPSO could work on appropriate headings to allow for the AHV to work on the required mooring lines and that all close proximity work was completed safely without any disruption to the production activities. Clear communications, safety measures and permits were in place with the FPSO throughout, ensuring that all close proximity work was completed safely without any disruption to the production activities on the FPSO.

Throughout the operation, a high level of hard marine growth was encountered on the mooring lines. To overcome this, the line recovery was performed using a grapnel to allow for the additional growth and two UHP cleaning units were mobilised along with trained personnel to remove the marine growth on deck. Consequently, the chain was safely recovered and cleaned to a sufficient level for the chain inspection to be performed by our qualified inspectors.

With limited available chain payout from the FPSO, as much of the top chain was inspected on the AHV where the operation was more efficient, before passing back the unrecoverable length to the FPSO for remaining inspection by InterMoor's inspectors on board.

Following detailed inspection, chain replacement activities were performed. Our offshore engineers calculated specific positions and lengths of replacement chains to limit the number of Long-Term Mooring (LTM) connectors added to the mooring catenary, minimise any additional connectors in the system, and ensure that non-LTM connectors were positioned within the FPSO chain lockers out of the load path.



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Overall, the successful completion of this project complements the wealth of experience that InterMoor has in IRM and life extension work for all types of floating assets. It also shows the benefits of a good working relationship with clients to achieve safe and successful results in a short timeframe.

The work scope was completed successfully without any incidents, ensuring that the FPSO production was maintained throughout.

PRODUCTS USED

- Project management for the mooring line inspection scope including development of all engineering analyses and marine procedures to support the offshore campaign
- Onshore storage and pre-inspection of spare mooring chains prior to mobilising for the offshore campaign
- Sourcing, hire and management of the AHV for the offshore work scope
- Procurement / rental of all installation rigging
- Mobilisation of spare chains and project equipment onto the vessel from InterMoor's base at the quayside in Montrose, UK.
- Offshore manning and supervision for the mooring inspection activities offshore, both on the AHV and FPSO
- Provision of vessel survey and positioning systems on all vessels involved

Detailed planning and clear communications were put in place to ensure that all close proximity work was completed safely without any disruption to the production activities.

