

1. Problem Statement

An alternative method for inspecting flexible hoses on the Gryphon Alpha Floating Production Storage and Offloading (FPSO) vessel's turret, which removes the need to use radiography was needed. Radiography cannot be carried out in the direction of the asset's nucleonic detectors as this will trip the high-integrity pressure protection system (HIPPS) and cause an unplanned production outage. The entire turret area needs to be shut off to personnel during scanning as it poses a significant health risk. This prevents routine operations from taking place in the vicinity. Radiography was carried out over nine months but this only achieved around 50 per cent of the required work.

2. Aim

To inspect flexible hoses in a more cost and time effective manner while reducing personnel exposure to ionising radiations and spurious plant upsets.

3. Method

- The Maersk Oil team engaged with innovative inspection specialist, Innospection, to investigate alternative techniques.
- Innospection was already using Saturation Low Frequency Eddy Current (SLOFEC), an electromagnetic technique, on subsea risers so the team worked to adapt this technique for the much smaller flexible hoses on Gryphon.
- A bespoke tool, small enough to work successfully with the flexible hoses, was developed and tested onshore.
- To test, an old section of flexible hose was intentionally damaged onshore to see if the tool picked up the discrepancy which it did.

4. Impact

- Developing the tool and validating the technique took around six months.
- It was then trialled offshore on the Gryphon Alpha FPSO where it scanned all of the six-inch flexible hoses, around 40 per cent of the turret system, in just two weeks, providing better coverage while delivering the required image quality.
- In the past, radiography was carried out over nine months of the year, but this only achieved around 50 per cent of the required work. The new tool has proven to be a much more efficient method.

Total hours saved

Significantly reduced. Only two fortnightly trips are now required.

Total savings anticipated

Over 80 per cent over the next five years