Moorings - Interpretation of Inspection Data to Establish Mooring Condition,

Fitness for Purpose and Future Mooring Management Strategy

Moorings are safety critical components, inherently protecting the vulnerable subsea architecture (risers, umbilicals, hoses etc), together with hydrocarbon production. Mooring failure is regarded as a Class 1 Hazard, the highest rating by the UK Health & Safety Executive.

Welaptega (www.welaptega.com) work with BPP-TECH (www.bpp-tech.com) to interpret results from mooring inspection campaigns, converting the measured mooring leg data to valuable knowledge. This allows present day mooring operational status to be established leading to reduced risks and improved future management of the mooring system.

Mooring inspection focuses on the vulnerable components of the mooring legs including terminations to reveal manufacturing, installation and operational defects (weld misalignments, notches, damage etc.) together with component degradation from corrosion and wear. These compromise the future mooring integrity leading to premature mooring leg failure.

Using industry standard analysis and software tools BPP-TECH's experienced naval architects and mechanical engineers interpret the inspection results together with metocean data, design and operational reports provided by the mooring operator. The deliverables from the work include:

- Identification of most probable mooring failure mode(s).
- Quantification of degraded capacity of mooring components using Finite Element Analysis (FEA) and other assessments.
- Fatigue assessment for aged mooring components based on environmental load cycles experienced and/or metocean predictions and component degradation resulting from corrosion, wear and other measured defects.
- Present day operational status of mooring in terms of Fitness for Purpose for both maximum operational (tanker attached) and maximum survival (no tanker) conditions accounting for all available data.
- Mooring system design reassessment based on API, IACS member classification society standards, or specific client requirements using present day mooring condition as input.
- Assessment of remaining life of mooring system.
- Recommendations for future mooring management together with feedback into the Mooring Integrity Management System allowing appropriate future inspection, maintenance, monitoring and replacement programs to be established.

These deliverables are typical. Precise services depend on customer requirements, mooring configuration, inspection data, together with metocean, design and survey reports available etc.