Management of integrity on ageing North Sea platforms

ABB’s Asset Life Study (ALS) helps ensure continued operation of ageing platform.

A major oil & gas company needed to assess the potential for continued extraction from an established oil and gas field in the North Sea. This included considering extensions to, and possible rejuvenation of, a number of their offshore platforms. The company had conducted a preliminary internal review to identify potential asset life actions and an estimate of their associated costs. However, they wished to pursue an independent, external, risk-based assessment of the expenditure necessary for confident operation of their topsides assets until their license period ended.

The purpose of this independent review was two-fold: to provide input into OPEX and CAPEX budgets and to assess current vulnerability of topsides.

ABB were asked to carry out an ALS.

Benefits
- Coherent view of the future including vulnerability and risks
- What is needed to maintain equipment integrity into the future
- Optimum blend of maintenance / replacement spend
- Accurate cash flow forecasting due to knowing what is needed to maintain equipment integrity into the future

“ABB was selected to undertake this work because they demonstrated willingness to work flexibly on an extremely tight timescale against a challenging set of objectives.”

Asset Life Cycle Planning

Issues
- Business disruption
- Unplanned downtime
- Unbudgeted spend

Solutions
- Understand expected asset lives and maintenance needs
- Estimate whole life time / replace costs

Delivers
- Optimum blend of maintenance / replacement spend
- Focused overhaul and resource planning
- Accurate cash flow forecasting

Delivers
Solution

We were chosen to carry out this study because of our:
- In-depth technical expertise
- Wide professional and operational experience
- Reputation for seeing the bigger picture, working effectively in a team, defining problems and delivering solutions
- Ability to define key objectives for the study

We conducted an Asset Life Study (ALS) using our own, well-developed methodology. This considers the impact of equipment sustainability on operations. Issues are addressed by considering how reliable, supportable, maintainable and close to obsolescence an item is.

ALS has been developed to rapidly assess the key issues which affect asset life extension. It is an overview process by which the construction, history and mode of operation of a large number of items of plant equipment are examined. It also considers the ethos and practices of the organisation(s) responsible for equipment management.

The approach lends itself to studies of due diligence and other factors required as inputs to strategic decision making. For instance, when the business management team need to gain confidence in the state of the assets.

Study scope

The scope of this study included vessels, tanks, piping, valves, machines and structures, instrumentation/electrical equipment and infrastructure, utilities and fire detection/protection systems. We conducted a visual inspection overview of the platforms and held detailed discussions with offshore and onshore personnel. These covered their approach to the operation of the plant within design parameters, and the potential for excursions (transients).

The study concentrated on the ‘critical few’ items of equipment that could have a significant impact on future expenditure. These established the current condition and credible deterioration mechanisms. They also enabled assessment to be made about extension of service life and maintenance needs. We used their specially developed asset life database to gather data into a rapidly accessible format throughout the process.

Findings

The study identified a range of actions aimed at extending the life of the topside assets, it included the technical argument and cost estimates. The main conclusion from the study confirmed that a number of key issues needed attention in the near future. This resulted in a significant peak of investment in the next five years (as shown above), on such issues as:

- **Corrosion protection** - Evidence of historically reactive approach to ‘Fabric Maintenance’. This study provided evidence for a more proactive approach to asset preservation. It took into account age, condition and operating environment

- **Condition of pipework** - We found that the utility piping carbon steel corrosion allowance had been consumed. We also established that hydrocarbon piping replacement in alloys are more corrosion-resistant because of microbiologically induced corrosion

- **Non equipment issues** - We found a number of issues relating to people and systems, such as age profiles, training, management of change, knowledge management, documentation and integration with 3rd party suppliers.

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