SUBSEA & FPSO RELIABILITY, AVAILABILITY & MAINTAINABILITY (RAM) STUDIES

Subsea & FPSO RAM Analysis Studies

RAM analysis has been widely used by MES to enable operators to evolve production solutions which minimise impact on revenue and expenditure. RAM analysis provides a valuable design review technique to address the following:

- Quantifying the production availability of the onshore facilities;
- Identifying individual equipment contribution to production losses;
- Evaluating the effects of design changes on production availability;
- Comparing alternative design options;
- Optimising the spare parts holding; and
- Establishing performance targets.

RAM Modelling Tool (PLASMA)

MES has an in-house RAM simulation package called PLASMA. Key features of PLASMA include:

- Used within Oil & Gas industry for over 14 years;
- Evaluation of Production availability and performance parameters;
- Modelling complex systems using multiple layers of RBDs and PFDs;
- Deterministic and stochastic techniques;
- Series, Active Redundancy and Standby Redundancy;
- Criticality ranking;
- Maintenance modelling (Planned, Spare parts and Seasonal delays);
- Operating Policies (Flaring, Load Shedding and Line Packing);
- Lifecycle Scenarios (CAPEX, OPEX and Asset Optimisation); and
- Logistics (Tanker modelling including weather impact)

Recent Subsea & FPSO Studies

BP Block 18 (Angola)
Quantified the Production availability of both Northern and Southern Subsea Systems and identified the main contributors to the Subsea Production availability.

BP Block 18 (Angola)
Quantified the Probability of Failure on Demand (PFD) for over-pressure protection systems of the subsea Gas Export Regulating Manifold (GERM).

BP Gunashli (Azerbaijan)
RAM assessment investigating different intervention vessel options and optimising spare parts for the subsea water injection system.

Shell (Enterprise Oil) Bijupira & Salema (Brazil)
RAM analysis of the B&S development. Evaluated production availability for subsea production system and identified main contributors to unavailability.

Shell Draugen Gas Export Pipeline System (Norwegian Sea)
Implemented a Failure Mode, Effect and Criticality Analysis (FMECA) of DGEPS facilities.

Total CLOV FPSO (Angola)
RAM Study performed to determine production availability for FPSO systems to meet performance targets for oil production, gas export and water injection. A range of sensitivity studies were modelled to assess impact on production availabilities due to design modifications and operating policies.

For further information on MES' bespoke PLASMA software, please contact one of our specialists.