Title	Development of integrity methodologies for the topsides of offshore production facilities
Publisher/Author	MSL
Publication Date	2004
Executive Summary	The objectives of this study were to develop an engineering methodology for topsides structures, plant and piping integrity management and to integrate the survey/inspection process with existing defect assessment procedures. The work included the collation of pertinent codes, guidance documents, databases and literature worldwide and a number of interviews with the Gulf of Mexico (GOM) offshore industry. This permitted the identification of regulation and code requirements and industry practice. The Code of Federal Regulations (CFR) prescribes topsides structure inspections in accordance with API RP2A Section 14. However, the CFR coverage of topsides facilities inspection is minimal, the only areas to be specifically noted are cranes, pollution prevention, drilling operations, well completions and safety systems. Few other national or international codes address topsides facilities. Generally, GOM industry practice for topsides inspection is limited to the CFR requirements. Two relevant topsides related studies have been carried out. They are, the Belmar study that considered risk factors contributing to fires and explosions and the SAMS study that considered operability aspects. However, little work was found which looked specifically at risk based inspection or integrity management of topsides facilities. A review of topsides facilities anomaly reporting showed two main findings. Firstly, many anomalies are attributable to external corrosion that can be detected by visual inspection, although only a small percentage of these led to failures. Secondly, a high proportion of internal corrosion anomalies led to failure. This leads to the conclusion that visual inspection will detect a high proportion of typical anomalies, but that this alone will not eliminate the anomalies that lead to a significant percentage of the reported failures. Presented in Section 8 is a suggested alternative methodology for an improved topsides inspection regime, which uses a risk-based approach. The method prioritizes the inspection according to potential risk. This is likely to lead to more inspection of high-risk areas, whilst at the same time reducing inspection from the present requirements where it can be demonstrated that the risk is sufficiently low. An important aspect of the proposed methodology is the utilization of the results of previous inspections in the risk assessment. It is recommended that a workgroup be formed to take forward the findings from this study in order to develop a practical and usable risk-based approach to topsides integrity management and inspection.
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