Subsea Blowout Preventers Risk Model

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Abstract

Industries that deal with elevated levels of risk and consequent regulatory scrutiny can make use of decision support tools that provide a reliable, objective method of assessing risk situations and recommending appropriate responses. The BOP risk model addresses the important and sometimes costly decision of when to pull a subsea Blowout Preventer (BOP) to the surface for repair and maintenance. The aim is to achieve sustained confidence in safe operations and compliance with applicable rules and regulations while avoiding unnecessary costs attendant to non-productive time.

While in operation a subsea BOP sits on the seafloor and functions with limited visibility, or telemetry data available to operators, to assess its condition. The system is complex and it is very difficult for a person to evaluate the level of risk accurately; especially under the stress of sometimes differing opinions and motivations and limited time. Operators often find themselves pressured between safety concerns and economic pressures as they try to make optimum decisions about situations that could have severe effects on life, property and environment.

The BOP Risk Model has been developed to assist in this critical decision making process. Based on technology first applied in the nuclear industry, the model automates risk assessment of the BOP based on available component condition information, with results that are objective, consistent and transparent using a process that has been approved by relevant regulatory authorities.

Local regulations, operating procedures, P&IDs, Logic Block Diagrams and Fault Tree Analysis are applied in calculating a risk level for modelled BOP component failure, and expressed by colour-coding for easy reference. The risk level is associated with a general recommendation for course of action. Notification of high risk situations can be sent directly to regulators.