

Session – Design/Operations

Title: Independent Performance Validation for Robust and Resilient DP Systems

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Abstract

A concept called the three pegs has been adapted to guide the development of robust and resilient DP systems. The three pegs are Intent & objective, basis-of-confidence and defense-in-depth. The intent and objective is the development of a DP system capable of performing incident free DP Operations. The basis for confidence is all activities carried out to provide confidence the objective will be achieved. Defense-in-depth refers to the process of defending all the barriers developed and identified when establishing the basis-for confidence. Independent Performance Validation (IPV) is an element of both basis of confidence and defense-in-depth. IPV a data centric concept applied to the design, validation and verification of DP systems which provides a high degree of confidence that the DP system is intact and in good working order. It is a 'Principle' based approach that is objective and outcome driven. The concept of IPV is agnostic to the system design, and its provider, and can be used in many different applications. It is based on a sensor ecosystem and high-speed data logging infrastructure which enables automatic and semi-automatic test functions which detect the onset of deterioration or malfunction in active and dormant elements of the DP system. This approach reduces the need for intrusive maintenance and out-of-service time to conduct tests and trials. This paper discusses its application to 7th generation drilling units with examples of how the concept has been applied in the power and propulsion systems. The extension of this concept to other elements of the DP Control system is also discussed.