Growth Stimulates Innovation in DP Technology

Authors: Lew Weingarth, Terry Loftis *Transocean Offshore Deepwater Drilling, Inc.*

Abstract

The recent upswing in new-build, dynamically positioned drilling rigs has highlighted the need for proficient crews and subsequently, a means of evaluating that proficiency. The rising choice in training and assessment venues are virtual vessels and simulated environments and fault scenarios. Transocean's efforts to develop power management simulations for Operator training have highlighted some interesting parallels and potential segways with OPC-based servers and HIL-Test scenarios.

This paper explore developments which could closely couple and compliment these three data-based activities.

1. DP & Power Plant Simulator under development by Kongsberg Maritime and Transocean
    A. developed to train DPOs to handle complex failure modes, but with an eye towards improving rig performance
    B. interface between automations systems is the same as an operational rig
    C. potentially, any DP automation system could be interfaced to any vessel automation system
    D. development tool, if simulator model of vessel is accurate enough a new automation system (any brand name, either DP or VMS) can be "run against" a proven model, allowing preliminary tuning and identify problems or conflicts before shipyard.
2. HIL under development
    A. HIL could "sit between" the simulators
    B. advanced device models allow HIL to create more complex failure modes than the simple models used in a typical simulator, and much faster because HIL models will have more parameters to adjust.
    C. HIL could allow testing of new types of sensors (riser angle, inertial, NASNET) with a variety of DP and Automation systems more cheaply than modifying every simulator. Allows us do some validation of "blue sky" development, cheaply
3. OPC data logger
    A. creates a "High Definition" record of operational data
    B. connect in parallel with simulator and feed environmental data to DP, then record performance data, and "match up" simulator response to actual performance data. This would allow improvement of simulations.
    C. Once the simulations closely match actual performance data, insert the HIL and record data to verify the HIL closely models the machinery.
    D. with simulations and HIL aligned to real data, now you can use the simulators and HIL to substitute alternate equipment and produce realistic evaluation data, e.g. we can evaluate performance improvement of an existing design with more smaller generators, or fewer larger units, turbines, a new drilling package, or anything for which we can obtain an accurate HIL model.

Click below to:

Review the complete paper

Review the presentation

Return to the Session Directory