

**Title:** Transocean’s HIL Experience and Opportunities for Improvement

**Authors:** Emanuele La Bella, Shane McClaugherty, Trent Martin, *Transocean*

**Abstract**

The focus of this paper is to share some of Transocean’s recent Hardware-in-the-Loop (HIL) testing experiences and results with the DP community. HIL testing is an effective means of black box system verification tasks during system design, development and system integration.

Our latest experience has demonstrated that with proper planning, execution and the right team, HIL can identify software issues prior to system integration, as well as identifying issues not normally found during Factory Acceptance Test (FAT) or during commissioning. HIL testing is a software-centric effort that involves time and resources. This paper will highlight our findings and provide recommendations on methods of improving the alignment between the HIL software test harness and the software running on the vessel.

We will identify the marine systems tested and those systems associated with the vessel’s industrial mission, which have undergone HIL testing, and discuss recommended practices for the vessel owner on tracking findings and ensuring the changes to the software are correctly managed. This paper will also discuss methods of maintaining the consistency between HIL teams particularly when categorizing HIL findings and MOC processes and provide recommendations for improved HIL testing practices from the perspective of the vessel owner.

HIL is a verification tool with high potential, however, we still see opportunities for improvement. As an industry, we can better leverage this technique.