

Title: *Simulation and Testing of the Range of Motion of a Six Degree of Freedom Docking System*

Abstract: The soft capture system of the DSS docking system is a mechanism with six degrees of freedom (DOF). Although the nominal motion of the system is simple and large in a single degree of freedom, complex movement is permissible within the requirements for docking. As such, it is critical in the design, test, and verification of the docking system to fully understand the range of possible movement of the mechanism. This range of motion (ROM) must be large enough to accommodate all permitted docking sequences without internal collisions. This paper will discuss the methods used to perform these analyses for the DSS. Additionally, the testing sequences derived from this analysis will be presented as illustrated in Figure 1. Finally, lessons learned from the analysis and test program will be discussed.

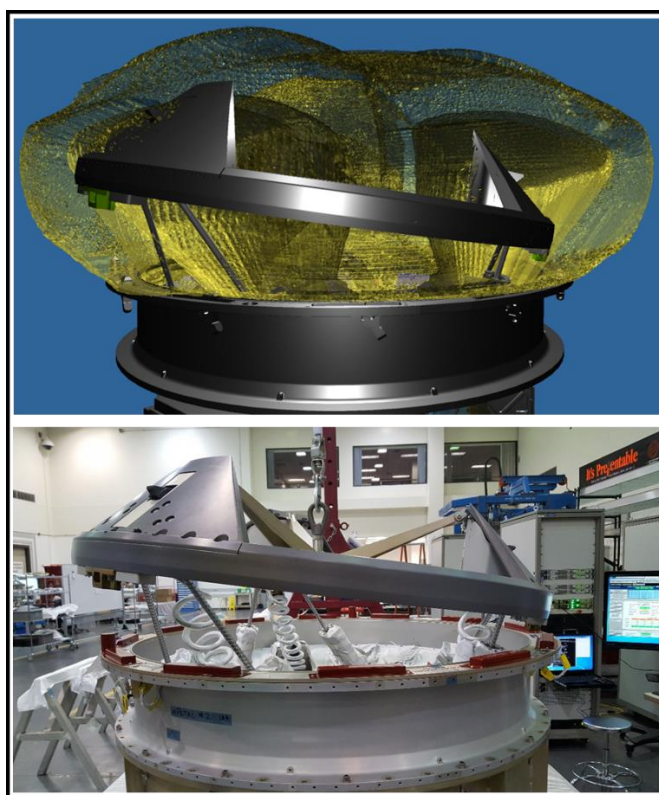


Figure 1. ROM Simulation and Test Comparison

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