U.S. Automated Rendezvous and Capture Capabilities Review
Introduction to General Dynamics Presentations

Abstract Title: An Overview of Autonomous Rendezvous and Docking System Technology Development at General Dynamics

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Overview Summary:

This short overview should preceed the General Dynamics briefings chosen for presentation. It will last about 15 minutes, use several pictures and eliminate the need for the following General Dynamics presentors to cover the same historical aspects of their programs.

Historical Background:

The Centaur avionics suite is undergoing a dramatic modernization for the commercial, DoD Atlas and Titan programs. The system has been upgraded to the current state-of-the-art in ring laser gyro inertial sensors and Mil-Std-1750A processor technology. The Cruise Missile avionic system has similarly been evolving for many years. Integration of GPS into both systems has been underway for over five years with a follow-on cruise missile system currently in flight test. Rendezvous and Docking related studies have been conducted for over five years in support of OMV, CTV, and Advanced Upper Stages, as well as several other internal IR&Ds. The avionics system and AR&D simulator demonstrated to the SATWG in November of 1990 has been upgraded considerably under two IR&D programs in 1991.

Test Experience:

The Centaur modern avionics system is being flown in block upgrades which started in July of 1990. The Inertial Navigation Unit will fly in November of 1991. The Cruise Missile avionics systems have been fully tested and operationally validated in combat. The integrated AR&D system for space vehicle applications has been under development and testing since 1990. A Joint NASA / GD ARD&L System Test Program is currently being planned to validate several aspects of system performance in three different NASA test facilities in 1992.

Sponsorship and Funding:

Currently, the development of the integrated rendezvous and docking system is being pursued on IR&D funding from the Space Systems, Convair and Electronics divisions. General Dynamics is working with Johnson Space Center, Marshall Space Flight Center, and Langley Research Center in a cooperative test and demonstration effort. This multi-center program combines the expertise and testing capabilities to establish and validate a performance baseline for autonomous rendezvous, docking and landing systems.