

JOINT SHIPBOARD HELICOPTER INTEGRATION PROCESS (JSHIP)



Joint Test and Evaluation Program

Authorized Manning (Mil/Gov/Civ)	8/2/36
Total JT&E Budget:	\$22.5M
Charter Date:	4QFY98
Completion Date:	4QFY03

Lead Service

Navy

Sponsor

Naval Air Warfare Center
Aircraft Division, Patuxent River, MD

JT&E DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Joint Shipboard Helicopter Integration Process (JSHIP) Joint Task Force was chartered to develop and evaluate a standard process for the integration of multi-Service rotorcraft, aircrews, and embarked units aboard air-capable U.S. Navy ships. The JSHIP Joint Task Force conducts flight tests, critical measurements, engineering analyses, and simulations to provide recommended changes to Joint tactics, techniques, and procedures; training syllabi; and rotorcraft/ship designs that will enhance safe, rotorcraft/ship interoperability. Only Special Operations Forces (SOF) and Army helicopters will be scheduled for use during these tests. Expected products from the JSHIP program include expanded launch and recovery flight envelopes for 12 helicopter/ship combinations and ship certification for 12 specific helicopter/ship pairs. The JSHIP program supports the *Joint Vision 2020* operational requirement of *dominant maneuver* for Joint Task Force operations.

BACKGROUND INFORMATION

The JSHIP Joint Test and Evaluation (JT&E) program was chartered by OSD on July 22, 1998, following the completion and acceptance of a Joint Feasibility Study initiated in June 1997. All Services and Unified Commands are designated as participants, with the Navy as the lead service and executive agent for the program. A General Officers Steering Committee was established to provide the Joint Test Director a forum for senior-level counsel and advice. The JSHIP program has completed an Analysis Plan for Assessment, a Program Test Plan, and individual Detailed Test Activity Plans for each of the Dedicated At Sea Tests conducted during FY00. DOT&E and DD(DT&E), S&TS provided co-signature approval of the Program Test Plan on September 30, 1999.

The program hosted warfighter conferences with multi-Service representation to identify test assets and more closely identify current issues as viewed by the operational forces. The program also sent test team members to observe Navy/Marine Corps at sea exercises as the initial effort to baseline the “standard operations and practices” currently in existence.

TEST & EVALUATION ACTIVITY

The program continues to coordinate with personnel from the NASA Ames Vertical Motion Simulator (VMS) group to develop and integrate the JSHIP Dynamic Interface Modeling and Simulation System (DIMSS) software with the VMS software to create a high fidelity, dynamic cockpit trainer for UH-60A/LHA training simulations. DIMSS will also provide the full tool set for air-wake modeling and wind-over-the-deck analyses. The DIMSS Validation, Verification, and Accreditation Plan has been prepared for review and approval by the Naval Air Warfare Center.

Five Dedicated At Sea Tests (DASTs) were initially planned for FY00. Two tests were cancelled due to higher priority tasking of intended test articles. These tests are being rescheduled in FY01. Each test evolution includes land-based Electromagnetic Interference, Compatibility, Vulnerability (EMI/EMC/EMV) testing of the helicopter, pre-sail conferences, and the DAST dynamic interface testing of a fully instrumented helicopter aboard ship. DAST-1 was conducted from November 1-4, 1999, with an instrumented Army UH-60A and a non-instrumented Army CH-47D aboard USS Saipan LHA 2. DAST-1 was focused on data measurement/collection for the UH-60A to support the DIMSS development/integration effort. DAST-2 was conducted in March/April 2000. A fully instrumented SOF AMH-6 and a non-instrumented Army MH-60K were tested aboard USS Essex LHD 2. DAST-3 involved a fully instrumented Army UH-60L and a non-instrumented Navy SH-60F aboard CV-64, the Constellation. The Navy SH-60F was a last minute substitution due to scheduling difficulties. This test occurred in May 2000, and included launch and recovery operations from the Number-3 elevator. Ship air-wake at sea testing was conducted in September 2000 to collect additional air-wake data for the UH-60A aboard USS Peleliu LHA 5. This additional data was necessary to support the DIMSS/VMS integration effort.

TEST & EVALUATION ASSESSMENT

DOT&E supports the JSHIP plan of action for joint test and evaluation and the proposed approach to use the integrated DIMSS software package and VMS assets to support pilot training and helicopter/ship dynamic interface analyses. The DAST-1 Final Report, the Dynamic Interface Test Report for the UH-60A Aircraft Aboard USS Saipan LHA 2, and the UH-60 & SD-2 Spotting Dolly Preliminary Static Compatibility Assessment Report were released for distribution in mid-September 2000. Final Reports for subsequent FY00 DAST evolutions have not been released.

The two reports outlined several areas of concern. The single tail wheel design, common to the UH-60A/L/Q, EH-60A/L, MH-60K/L, HH-60G and future Navy CH-60S, has the characteristic of the wheel axle plane not remaining parallel to the deck when the wheel caster is either left or right of the aircraft longitudinal axis. The SD-2 Spotting Dolly tail wheel lifting arms are designed for tail wheel axles that remain parallel to the deck. Dolly maneuvers require tail wheel caster angular rotation that could adversely impact the structural integrity of the landing gear and airframe. The dolly is in common use aboard large decked ships, both on the flight deck and on the hangar deck. A “General Use Naval Aviation Hazard Report” was filed in June 2000 to all concerned Services and recommendations made to conduct a thorough evaluation of the system to clearly define limits of the dolly maneuvers.

Additional deck handling problems and adverse weather rotor tie down problems were identified for the CH-47D.

The test tempo has provided heavy volumes of data and proven to be a major task for the JSHIP program to process, analyze, prepare individual final test reports, and adhere to the anticipated schedule. An internal review of program objectives and schedules identified the need to extend the program for an additional year. Authorization to extend the program through FY03 was granted on June 10, 2000. DOT&E concurs with the JSHIP program effort to test and document helicopter/ship pair interoperability to support future safe, joint Service operations.

