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Ares I-X, Our Shot at One NASA

Ares I-X is the first new launch vehicle NASA has designed since the Space Shuttle and was the first major flight test of the Constellation Program. It had significant involvement by 5 NASA centers crossing the boundaries between Centers stereotypically known as “research centers” and “spaceflight centers.” The test flight was formally initiated in August, 2006 and a flight (estimated) of Oct, 2009 in order to provide engineers with early data for use prior to project level CDRs. This extremely aggressive schedule required a hybrid management approach somewhere between a “Skunks works” and standard program management structure.

This PM Challenge discussion will discuss a chronology of the management structure used for I-X from its inception to launch. The roles and responsibilities of the key organizations will be described along with the Centers that supported them. This discussion will be from the perspective of the Manager of I-X and concentrate on the process, people, and paradigm differences between NASA centers and the impacts on management and systems engineering efficiencies throughout the short project life cycle.

Within this presentation will be a highlight of key strategic decisions and how they actually played out during the course of the project. Some lessons learned will be explored especially those that relate to future test flights within the human spaceflight community. Additional presentations will follow from team members describing their challenges at the implementation level.

Robert Ess

Ares I-X Manager

NASA Johnson Space Center

Mr. Ess is the Manager of the Ares I-X Test Flight for the Constellation Program. In this capacity, he was responsible for cost, schedule, and technical authority for all aspects of the Ares I-X flight test. Over the 3 years of the project, Mr. Ess moved from JSC to LaRC and then to KSC in order to better manage the project and have a first hand understanding of 2 of the other key Centers.

Prior to this position, he was Chief of Flight Testing for the Constellation Program where the overall flight test strategy was developed.

Before that, Mr. Ess was held increasingly responsible positions in Space Shuttle SE&I office culminating as acting deputy for the Systems Engineering and Integration Office.

Stephan R. Davis

Ares I-X Deputy Mission Manager

NASA Marshall Space Flight Center

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Stephan "Steve" Davis was named Deputy Manager of the Ares I-X Mission Management Office in 2006. In this role, Mr. Davis supports the Mission Manager, Bob Ess, in every aspect of managing the mission. In addition, Mr. Davis has special oversight responsibilities for the design, development and integration of the test flight vehicle's first stage, avionics, and roll control systems at the Marshall Space Flight Center.

Before his current assignment supporting Ares I-X, Mr. Davis was deeply involved in the 2005 Exploration Systems Architecture Study (ESAS) at NASA Headquarters, which established the basic configurations for the Ares launch vehicles being built today. That work led directly to developing a flight test program, which eventually included the Ares I-X flight.

Prior to working on Ares, Mr. Davis supported the Orbital Space Plane (OSP) as Deputy Manager for the Project and Engineering Office starting in 2002, where he led the OSP's contract change activities, lead the Cost Credibility Team, and led key trade studies for the program.

Mr. Davis also supported the Space Launch Initiative Program 2001-2002, where he managed the Crew Transfer Vehicle (CTV) conceptual development in each of the three SLI Prime Contract Teams. The work included leading the Crew Transport and Return (Rescue) Vehicle (CTRV) Study which led to the agency decision to combine the ISS transport and ISS rescue requirements into a single development. This led directly to the OSP Program.

In his role as Assistant to the MSFC Microgravity Program Manager in 2001, Mr. Davis performed programmatic and technical evaluations of microgravity projects, which included complete technical reviews, cost reviews, schedule risk reviews, and summary reports.

Mr. Davis has had wide and diverse engineering experience across a variety of aerospace projects, including the Strategic Defense Initiative, Gravity Probe B Satellite Mission, scientific instruments for the Mir space station, and the International Space Station propulsion module. He is a Senior Member of AIAA and author of numerous papers on the Orbital Space Plane and Ares I-X Mission. He has spoken on behalf of the agency on a regular basis as part of NASA's Public Speaker's Bureau.

Mr. Davis has a Bachelor's degree in Mathematics from Siena College in Loudonville, New York; a Master's degree in Engineering Science from University of Tennessee; and a Master's degree in Business Administration from Alabama A&M University in Normal, Ala. He, his wife Bonnie, and their three children live in Madison, AL.

Bruce R. Askins

Ares I-X Project Integration Manager
NASA Marshall Space Flight Center

Bruce Askins was named the Project Integration Manager for the Ares I-X test flight project in 2008. With this assignment, Mr. Askins assists in the overall management and development of the Ares I-X mission that is scheduled for launch in 2009. His work includes technical leadership

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of the multi-disciplinary team performing project integration and responsibility for the integrated mission products. Some of these functions include developing and maintaining the integrated master mission schedule, managing risk –including risk assessment and mitigation planning, and configuration and data management for system level documentation, data, hardware, and software.

Previously, Mr. Askins served in the Ares Flight & Integrated Test Office (FITO) as the Deputy Lead of the Structures, Environmental, and Vibration Test (SE&VT) area at Marshall Space Flight Center. In this position he focused on the successful development of test objectives, and negotiated test article hardware agreements. Mr. Askins helped develop work packages, the work breakdown structure, Task Plan, Implementation Plan, and Test Plan in support of the Integrated Vehicle Ground Vibration Test (IVGVT), a task under SE&VT. Mr. Askins also led the FITO and Ares I-X data management and export review team, which was primarily tasked as gatekeepers for graphics and information related to the Ares I-X mission and managing data for FITO in the Constellation Program's data storage system, Windchill.

Prior to his work as a Deputy Lead, Mr. Askins served on a detail as IVGVT Assistant Lead & Ares I-X support in the FITO from 2006 to 2007. In this role, Mr. Askins worked with project management to assess issues and concerns for Ares I-X and Ares I testing. He helped coordinate the Ares I-X Systems Requirements Review and assisted the project with management of risk, requirements, cost, schedule, resources, technical interchange meetings, test article configuration and baselined IVGVT plans. During his detail, Mr. Askins also worked Ares I-X task that supported the Ares I-X Authority to Proceed, the Basis of Estimate definition, manpower, schedule, task definition/negotiation, mission planning and cost.

From 2005 to 2007, Mr. Askins served as a test engineer in the Structural Strength & Environmental Test Branch. Mr. Askins worked closely with the test engineers and test customers on implementation and test equipment design to meet specific test requirements. He served on the NASA Architecture team representing Test Lab, which was a study of options for NASA's missions returning to the moon and travel beyond. He also served as a procurement liaison and division export control officer, reviewing technical papers and presentations as well as arranging foreign national visits to Marshall Space Flight Center.

From 1987 to 2005 Mr. Askins worked as a Mechanical Engineer in Marshall's Special Test Equipment (STE) Design Branch. He was responsible for conceptualizing, developing, analyzing, coordinating and executing unique and complex design projects as well as developing state-of-the-art design techniques to facilitate mission critical programs. Mr. Askins was also responsible for flight test hardware development supporting Shuttle, the International Spaces Station, the Hubble telescope and the Chandra observatory. He has specialized experience in cryogenic fluid system design, vacuum system design, propellant delivery systems and flight hardware simulation for crew training in a neutrally buoyant environment where he also worked as a NASA safety & utility diver from 1988 to 2000.

From 1981 to 1987 Mr. Askins worked at the Marshall Center as an Engineering Co-op Student in the STD Design Branch and a Welding Technician in the Test Lab. Here he designed,

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analyzed and drew in an engineering drawing CAD system in support of tests for many NASA programs and projects. As a Welding Technician, his responsibilities included support of the tests performing welding of pipe and structural included in the 6.4 % Shuttle testing and drop tube testing.

Mr. Askins' work at NASA has earned him numerous commendations for outstanding performance and various achievement recognition awards from NASA, including Marshall Space Flight Center Director's Commendation, several Special Service Awards and the NASA Silver Snoopy award.

Mr. Askins earned a bachelor's degree in 1987 in Mechanical Engineering from the University of Alabama in Huntsville.

Mr. Askins, a native of Fort Rucker, Ala. is married to Lisa Askins, of Huntsville, Ala. They live in Madison, Ala. with their daughter, Lauren. Mr. Askins is also a BSA Eagle Scout with all three palms.