# New Multinational Inspection Spacecraft to Demonstrate Space Station Remote Sensing/Servicing Technologies

Daimler-Benz Aerospace (DASA), together with its partners, RSC Energia and The Boeing Company, today announced their selection by NASA's Johnson Space Center, Houston, to demonstrate space-based remote sensing and servicing technologies using ISS-Inspector, a free-flying spacecraft that will inspect external systems on the International Space Station (ISS), reducing ISS operating costs and increasing crew safety.

ISS-Inspector will build upon experience from Mir-Inspector, a similar but less sophisticated inspection system delivered to the Mir space station October 8 aboard a Russian Progress M-36 spacecraft. Mir-Inspector will validate operating methods and procedures for video navigation, remote crew command and control functions, viewing capability and proximity operations. Results of the Mir-Inspector demonstration mission, scheduled for mid- December 1997, will influence the design and operation analysis of ISS-Inspector, which is planned for launch aboard the Space Shuttle in late 2001 to support demonstration flights in 2002.

ISS-Inspector will be capable of site illumination, as well as collecting video and infrared imaging data on any portion of the ISS exterior. ISS crews will be able to evaluate external crew and Space Station Remote Manipulator System (SSRMS) work sites in advance and will have access to locations that neither spacewalking astronauts nor the SSRMS can reach. The infrared camera will perform thermal analyses of the ISS surface and detect heat leaks. ISS-Inspector visual images will also assist station crews in recognizing and evaluating ISS problems, such as structural damage, mechanical malfunctions and structural dynamics. Development of operational techniques for visiting vehicles, such as autonomous transfer vehicles, will also be enhanced.

The baseline ISS-Inspector system consists of three elements: the free-flying spacecraft itself, a monitoring and control station (MCS) and a parking port. When not in use, the spacecraft will be attached to the ISS at the parking port, where ISS-Inspector can be replenished and its health monitored. The system is fully reusable and can be returned to Earth for refurbishment, if necessary.

ISS-Inspector is one of 10 projects (and one of three international projects) selected by NASA from among 145 proposals submitted for its ISS Engineering Center and Advanced Engineering and Technology Demonstration competitions.

DASA, Bremen, Germany, will serve as the project lead for the spacecraft, monitoring and control station software and training tools. RSC Energia, Korolev, Russia, will provide spacecraft parking port, mating and integration hardware. NASA JSC and Boeing, Downey, Calif., will collaborate to provide launch services, as well as program, systems and operations integration.

Dr. Stefan Graul, DASA vice president for Orbital Systems and Utilization, said the ISS-Inspector system will significantly reduce International Space Station extravehicular activity (EVA) requirements.

"Inital ISS-Inspector missions will be as a remote observing and scientific sensing platform on inherently safe trajectories around the International Space Station," he said. "As confidence in the ISS-Inspector system is gained through flight experience, close-in trajectories will be flown to perform dedicated local inspection tasks. ISS-Inspector will perform a wide variety of unscheduled and contingency inspection tasks, reducing crew EVA requirements. Eventually, derivatives of ISS-Inspector may perform more complex EVA support tasks, such as transporting tools and orbital replacement units, to further reduce ISS EVA requirements," he said.

RSC Energia Deputy General Designer George Degtyarenko, who headed the recent Mir accident investigation, said such a device would have been extremely useful at the time of the incident. "If we had had such a vehicle active onboard the Mir station that could have fulfilled the visual inspection task, our task for maintenance and repair (of the Mir station) would have been much easier," he said.

Boeing Reusable Space Systems Vice President and General Manager Russ Turner said ISS-Inspector will serve as a valuable resource for early ISS applications.

"ISS-Inspector will significantly reduce near-term ISS external crew task requirements. In addition, we are confident that spinoffs of this initial system will have tremendous potential for future commercialization, such as broadcasting real-time Inspector video camera images on the Internet to bring daily space news to the general public and stimulate interest and understanding of space activities" he said.

Safe maneuvering of ISS-Inspector is facilitated by redundancy in cold gas thrusters; guidance, navigation and control systems; and on-board computers. Operations will be coordinated with ISS movements to avoid collisions.

The largest scientific cooperative program in history, the International Space Station draws upon the resources and scientific expertise of 15 nations: U.S., Canada, Italy, Belgium, Netherlands, Denmark, Norway, France, Spain, Germany, The United Kingdom, Sweden, Switzerland, Japan and Russia.

Launch of the first element, the FGB, is scheduled for June 1998. The first element to be launched aboard the Space Shuttle, in July 1998, is the U.S. node and two pressurized mating adapters. That hardware has been delivered to NASA's Kennedy Space Center, Fla., for launch processing.

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