ARGOS Satellite Serves as Platform for Leading-Edge Technology and Research

A Boeing-built satellite that will serve as an on-orbit platform for leading-edge technology is set for a January launch aboard a Boeing Delta II rocket at Vandenberg Air Force Base, Calif. The 6,000 pound P91-1 Advanced Research and Global Observation Satellite (ARGOS) was built and integrated at the Boeing facility in Seal Beach, and is the largest and most sophisticated research and development satellite that Boeing has ever developed for the U.S. Air Force.

"The ARGOS satellite symbolizes the broad nature and sophistication of our integration capabilities at Boeing," said Jim Albaugh, president of Boeing Space and Communications. "We have successfully assembled, integrated and tested a very complex experimental satellite -- and we will launch it aboard one of our Delta II rockets. The ARGOS could be referred to as the "Swiss army knife" of spacecraft, with an array of nine high technology experiments, that will demonstrate next-generation satellite technology and conduct exploration across a wide spectrum. I am extremely proud of our teams that worked together so skillfully to bring all the integration elements together."

The ARGOS satellite will operate in a sun-synchronous orbit of 450 nautical miles at 98.7 degrees inclination. Its on-board system is capable of generating 2,200 watts of electrical power from solar panels and can downlink up to five megabits of data per second - more than twice the capacity of current satellite systems.

"Our team did a magnificent job in the assembly, integration and testing phases of the vehicle, and in the final preparation for flight," said Bob Glaysher, vice president and general manager, Boeing Satellites and Ground Control Systems. "I would like to emphasize that the integration of the nine on-board experiment payloads on the satellite bus exemplifies a real satellite turnkey system that we have at Boeing. The ARGOS on-board experiments represent a potential for significant scientific advances in autonomous satellite navigation, superconductivity devices and future propulsion systems."

The ARGOS satellite bus was designed to carry heavy, high-power space experiments to conduct upper atmospheric observations and technology demonstrations. The nine payload experiments will address more than 30 research objectives, including sensor technology for the International Space Station, as well as three high priority ultraviolet imaging experiments and an X-ray sensor.

The High Temperature Super Conducting Experiment II (HTSSE II) payload developed by the Naval Research Laboratory will space qualify superconducting digital subsystems that could offer factors of 100 to 1000 in power reduction - more than ten times higher speed and similar weight reduction, than today's silicon or gallium arsenide (GaAs) based electronics. Spacecraft designers will evaluate the benefits for future systems.

The feasibility of autonomous satellite navigation using X-ray pulsars in place of Global Positioning System (GPS) timing and navigation signals will be demonstrated by the Unconventional Stellar Aspect (USA) experiment, sponsored by the Naval Research Laboratory, Space Science Division. This experiment will allow ARGOS to be one of the first research satellites to fly an embedded GPS receiver, while determining if distant astronomical X-ray sources could be used as autonomous position, attitude and time-keeping references for military space systems.

An important aspect of current and future spacecraft operations is the ability to achieve orbit transfer, circularization and altitude variations cost-effectively. The Electric Propulsion Space Experiment (ESEX), managed by the Air Force Research Laboratory, will demonstrate reliable arc-jet thruster operation in space. Electric propulsion is expected to double the payload-to-orbit capability of current space propulsion systems.

The Naval Research Laboratory, U.S. Army Space and Strategic Defense Command, and Air Force Research Laboratory all provided payloads for Boeing to integrate on ARGOS. This unique multi-agency mission is being managed by the Tri-Service Spacecraft Division, Space Test Program, Kirtland Air Force Base, New Mexico.

Boeing will continue to work with the Air Force and the various research facilities to assist with the vast amount of experiment payload data expected during the three-year design life of ARGOS.

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