

## **Boeing-Led Team Wins Contract To Advance Nuclear Electric Power For Space**

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A team of government, industry and academia, under the leadership of The Boeing Company [NYSE: BA], has been awarded a NASA contract to meet the challenge of developing nuclear electric power for deep space exploration.

Responding to NASA Administrator Sean O'Keefe's call to move forward with a "nuclear propulsion initiative," Boeing and a team consisting of NASA's Jet Propulsion Laboratory and Glenn Research Center, Honeywell, Swales Aerospace, Auburn University and Texas A&M will develop power conversion technologies that enable future reactor electric propulsion missions.

"Our team's proposal was designed to meet the challenge NASA has made to further our exploration of the planets and deep space," said Terry Murphy, division director for Boeing Energy Systems at Boeing's Rocketdyne Propulsion & Power unit. "This reactor technology would give us a 100-fold increase in power and a 30-fold increase in propulsion efficiency compared to conventional, storable rocket propellants. This means that a mission would take a fraction of the travel time and provide years of scientific discovery."

The focus of the Boeing team's approach is on the Brayton Power Conversion System (BPCS) technology as the baseline concept solution. Critical features of the BPCS have been proven in jet aircraft and terrestrial power plants, and integrated system testing, on a reduced scale, has been performed under separate NASA programs.

"By leveraging proven technology and an established database, we will be able to avoid the more expensive and higher risk development program elements associated with other power conversion cycles," said Richard Rovang, Boeing program manager and leader of the BPCS team. "Using BPCS technology as a baseline concept will satisfy all design requirements and minimize cost, development time and risk to the program."

At the heart of the team are NASA's Glenn Research Center and its strengths in Brayton technology development, and the Jet Propulsion Laboratory, a center of excellence in system and mission design. The Boeing participants on the team come from Rocketdyne, with five decades of experience in rocket propulsion, space electric power and space reactor power applications. They join an industry and university team equally rich in experience in these crucial areas.

"Each member of the team provides extensive experience and leading edge facilities to make space reactor electric power a success," Rovang said.

The contract calls for an initial study to define a conceptual design and development plan. This will be followed by two one-year options. The result will be minimal development risk and high-yield technology advancement toward operational reactor electric power for space.

Rocketdyne Propulsion & Power, headquartered in Canoga Park, Calif., is a global leader in the design, development and manufacture of rocket propulsion and space and ground power systems. From developing the rocket engines that powered virtually every major U.S. space program to developing the only U.S. operational nuclear reactor to be placed in orbit (SNAP-10A) to providing the electrical power system for the International Space Station, Rocketdyne draws on more than 50 years of experience to meet current and future NASA challenges.

A unit of The Boeing Company, Boeing Integrated Defense Systems, is one of the world's largest space and defense businesses. Headquartered in St. Louis, Boeing Integrated Defense Systems is a \$23 billion business. It provides systems solutions to its global military, government and commercial customers. It is a leading provider of intelligence, surveillance and reconnaissance; the world's largest military aircraft manufacturer; the world's largest satellite manufacturer and a leading provider of space-based communications; the primary systems integrator for U.S. missile defense; NASA's largest contractor; and a global leader in launch services.

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