

Astronauts on Mars? *Nuclear thermal propulsion could help*

SUBMITTED BY BWX TECHNOLOGIES, INC.

When people think about nuclear energy, they probably think about power plants that generate electricity for homes and businesses. But in the future, they may also think about nuclear energy as a means of getting astronauts to Mars.

BWX Technologies, Inc., one of the partners of Savannah River Remediation, has been awarded a contract from NASA to begin developing conceptual designs for a nuclear thermal propulsion reactor in support of a possible future mission to Mars.

The reactor would be part of a rocket engine that works by using the reactor to heat hydrogen gas to very high temperatures. That gas is then exhausted through a nozzle, which creates thrust and moves the spacecraft forward.

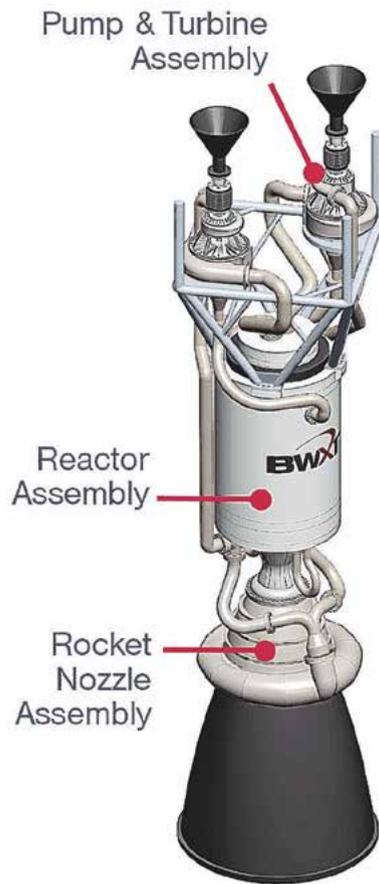
BWXT's reactor design is based on the use of low-enriched uranium fuel.

Nuclear thermal power for spaceflight has a number of advantages over chemical-based designs. In particular, it provides higher efficiency and more power for much less weight than chemical rocket engines. This would result in 30 percent shorter travel times to and from Mars, and thus lower exposure to cosmic radiation for astronauts.

The scope of BWXT's contract includes initial reactor conceptual design, initial fuel and core fabrication development, licensing support for initial ground testing, and engine test program development.

"BWXT is extremely pleased to be working with NASA on this exciting nuclear space program in support of the Mars mission," said Rex D. Geveden, BWXT's President and Chief Executive Officer. "We are uniquely qualified to design, develop and manufacture the reactor and fuel for a nuclear-powered spacecraft. This is an opportune time to pivot our capabilities into the space market where we see long-term growth opportunities in nuclear propulsion and nuclear surface power."

This new NASA contract adds another potential product line to BWXT's diverse nuclear portfolio. The company is the sole



SUBMITTED PHOTO

Nuclear Thermal Propulsion Engine

manufacturer of naval nuclear reactors for submarines and aircraft carriers. BWXT joint ventures also provide management and operations at more than a dozen U.S. Department of Energy and two NASA facilities. With approximately 6,000 employees, BWXT has nine major operating sites in the U.S. and Canada.

"Our team is extremely pleased to be working on this project, said BWXT Project Director John Helmey. "It's energizing for us, and it's great to think about what this could mean for the future of men and women setting foot on a different planet for the first time."

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