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Advanced Reactor Plan Gets Off The Ground In Texas

BY GEORGE LOBSENZ

The University of Texas, General Atomics and a company pursuing thorium-based fuels for reactors Wednesday announced a teaming agreement on a "preconceptual design" program for a test reactor that would be located in Andrews County, Texas, and based on the high-temperature helium-cooled reactor developed by General Atomics.

The project, which is expected to take six months to complete and cost \$3 million, will include studies on where the reactor would be located, how large it would be and proposed budget and operational plans, according to the participants.

Following completion of the studies, project participants would decide on whether to seek additional funding for design, engineering, licensing and construction of the so-called High-Temperature

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Teaching and Test Reactor, or HT3R, which has an estimated price tag of more than \$400 million.

In addition to the reactor, the project envisions development of a so-called "Brayton Cycle" laboratory for development of new methods to produce electricity with increased efficiencies and a high-temperature process and materials laboratory.

Among the key goals for the reactor is the production of high-temperature process heat suitable for use in future applications such as hydrogen generation or coal liquefaction.

Other parties in the teaming arrangement are the University of Texas of the Permian Basin; University of Texas-Austin; University of Texas-Arlington; University of Texas-Dallas; University of Texas-El Paso; the city of Andrews, Texas; Midland Development Corp.; Odessa Development Corp.; and Novastar Resources Ltd., which has recently entered into a merger agreement with Thorium Power Inc., a McLean, Va.-based firm that has been working with Russian researchers on thorium fuels said to offer major non-proliferation advantages over conventional reactor fuel.

The HT3R project is being spearheaded by officials at the University of Texas of the Permian Basin—the proposed host institution for the project—along with local development agencies, which say the reactor would fit well with the growing nuclear industry in the region. Other key regional projects include a low-level nuclear waste facility being developed by Waste Control Specialists in Andrews County and Louisiana Energy Services' proposed uranium enrichment facility just over the Texas border in eastern New Mexico.

Key financial backers of the preconceptual design phase for the reactor are Thorium Power, which contributed \$1.25 million, the Odessa and Midland economic development groups, which provided \$500,000, and the city of Andrews and Andrews County, which each provided \$250,000.

General Atomics officials said they saw the HT3R project as complementary to the Energy Department's

Next Generation Nuclear Plant (NGNP) demonstration project at Idaho National Laboratory, which is also aimed at developing a high-temperature, gas-cooled reactor capable of generating hydrogen in addition to electricity. San Diego-based General Atomics also has offered its reactor design for use in the NGNP project.

The University of Texas Board of Regents agreed to participate in the preconceptual design phase of the reactor project earlier this month, with officials citing the impressive regional participation.

Officials with Thorium Power said they were excited about the HT3R project because it provided the opportunity to test its thorium-based fuels in an advanced reactor.

"Until now, Thorium Power has been focusing its research and development efforts on proliferation-resistant thorium-based nuclear fuels for existing light water reactors around the world," Thorium Power President Seth Grae said in a statement. "Our participation in the HT3R reactor project gives us a great opportunity to explore a modified version of our proliferation-resistant thorium-based fuels for use in next generation of reactors."

Thorium Power, which says it has been collaborating on thorium-based fuels with nuclear scientists and engineers at Russia's Kurchatov Institute since 1994, recently announced a merger with Novastar Resources Ltd., a publicly traded company within the commercial mining sector that produces thorium.

Thorium Power's research has focused on developing a thorium-based fuel for use in Russia's existing VVER-1000 commercial reactors that would allow accelerated burn-up and disposition of Russia's weapons-grade plutonium. The company says its fuel would be a far more cost-effective alternative than plutonium-uranium, or mixed oxide, fuel for disposition of that plutonium.

Thorium Power also is developing a uranium-thorium fuel for western pressurized water reactors that it says would greatly reduce the generation of plutonium inside spent fuel at those reactors.
