Orano and Perpetual Atomics Sign Agreement for Sourcing Americium-241 from Spent Nuclear Fuel Recycling to Create Space-based Power Systems

Americium-241 from Orano's spent nuclear fuel recycling process will create steady, long-lasting energy in Perpetual Atomics' radioisotope power systems for scientific, commercial, and exploration space missions.

Washington, D.C., December 19, 2025 – Orano and Perpetual Atomics announced an agreement to develop a supply of americium-241 (Am-241) sourced from Orano's La Hague spent nuclear fuel reprocessing site in France.

Perpetual Atomics, a leader in radioisotope and space nuclear power technologies, is excited to announce that via this partnership, the processing of americium into sealed sources for use in its portfolio radioisotope power systems will expand. This expansion will support a broadening customer base across commercial space sector entities as well as space agencies. Perpetual Atomics is focused on establishing sustainable and resilient radioisotope power solutions for space and terrestrial applications fueled by Am-241, which can serve as a steady energy source for hundreds of years.

The Orano group is a recognized leading operator in nuclear fuel cycle materials production and management. Orano will rely on its proven industrial treatment and recycling capabilities, which can extract radionuclides, including Americium-241, from spent nuclear fuel.

"Our work with Perpetual Atomics demonstrates one of the significant values of recycling spent nuclear fuel," said Corinne Spilios, Senior Executive Vice President of Orano's Recycling Business Unit. "By recovering americium-241, we can gain value from remnant material by retrieving and using one of the isotopes for an advanced application such as space power systems. This agreement once again demonstrates the value of recycling recoverable nuclear materials, which allows for energy production while conserving natural resources."

"We are pleased to support Perpetual Atomics by providing americium-241 for their innovative development of long-lasting, space-bound energy systems," said Jean-Luc Palayer, CEO of Orano USA. "This agreement helps launch space enterprises with the right mindset using a sustainable fuel source solution made from recycling an abundant material once viewed as waste. Now, and even more so in the future, spent nuclear fuel is a valuable resource that we are only beginning to mine for its beneficial isotopes."

Professor Richard Ambrosi, CSO, founder, and Director of Perpetual Atomics, said, "This collaboration, bridging the capabilities of Perpetual Atomics and Orano, will offer unique and credible technology solutions for some of the most challenging global space and exploration objectives. With this secure fuel supply and our continued achievement of targeted test results and performance milestones, we are on track to quickly make our technology available to power the next missions to the Moon, Mars, and beyond."

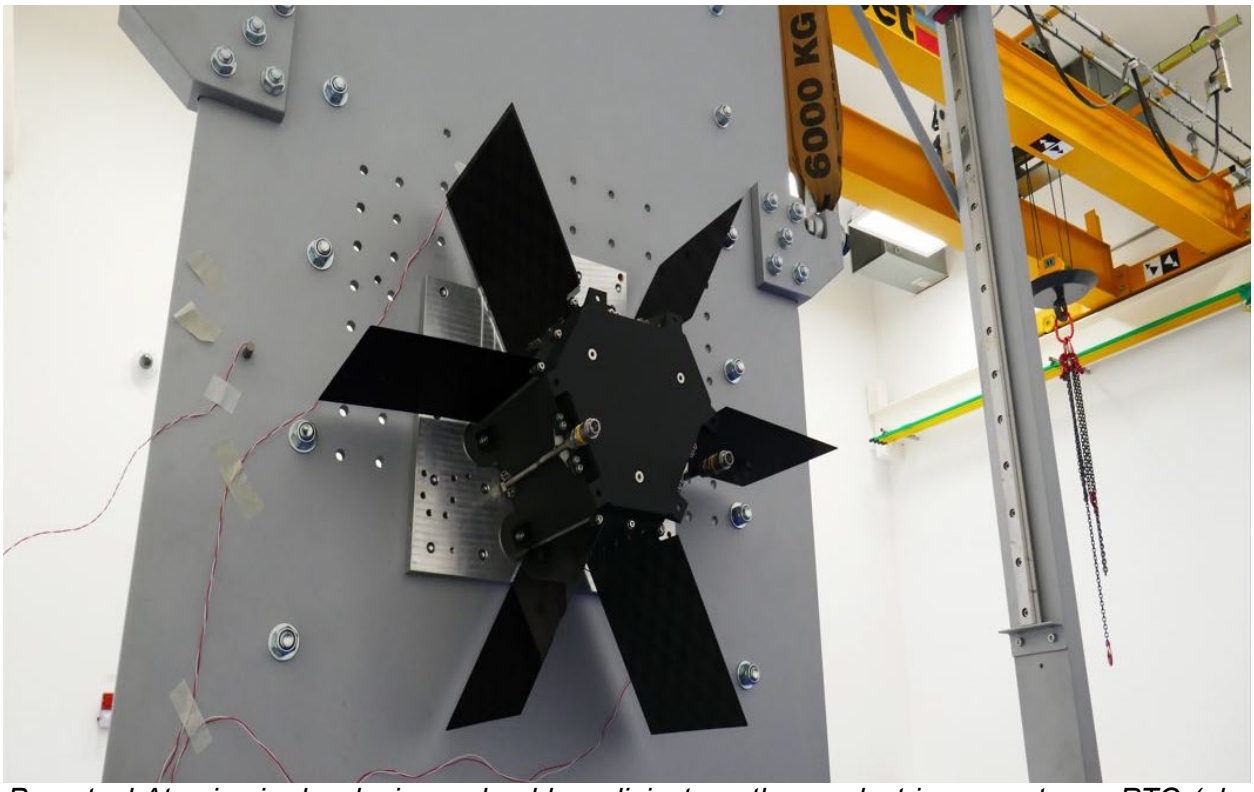
Built on the re-use and recycling of americium-241 and the sustainable use of advanced nuclear fuels, Perpetual Atomics is developing Radioisotope Power Systems to provide stable power outputs to spacecraft for many decades. These power systems use heat generated from the decay of radioisotopes, such as americium-241, to keep spacecraft operationally warm or to convert into electricity to power key subsystems. Power systems that use americium perform better in cold environments which make them suitable for missions targeting icy moons or shadowed regions of planetary surfaces.

A spinout from the University of Leicester, Perpetual Atomics leverages more than 20 years of expertise in space nuclear power systems, space science, and space exploration. The company provides innovative solutions to space mission power challenges, ensuring sustainability and reliability in extreme environments, including the capabilities to "survive the lunar night" as well as operate in challenging environments on planetary surfaces and in deep space.

Perpetual Atomics spans the whole vertical from the americium fuel form to power systems, missions and applications. Its portfolio includes radioisotope heater units (RHUs), radioisotope thermoelectric generators (RTGs) and radioisotope Stirling generators (SRGs) developed via rapid and iterative innovation cycles. This americium supply agreement will support the entire product portfolio.

VIDEO: See how americium-241 can be recycled from used nuclear fuel to power Perpetual Atomics' space batteries: https://youtu.be/JyoQWrPWbnU.

Professor Richard Ambrosi, Perpetual Atomics Chief Scientific Officer, and Charles Brachon, Orano Recycling Strategic Development Manager – Radioisotope-Based Activities, concluded the americium-241 supply agreement at the World Nuclear Exposition in Paris.



Perpetual Atomics is developing a durable radioisotope thermoelectric generator or RTG (also sometimes referred to as a 'space battery') which converts 200 watts of thermal power from the natural decay of an americium source into 10 watts of electrical power. This system is scalable to 50 watts with an operational lifetime greater than 50 years.

Rendering of a lunar rover powered by an americium-fueled nuclear battery.

About Perpetual Atomics

Perpetual Atomics was built with more than six decades of space sector expertise and heritage at the University of Leicester in Leicester, England, and almost two decades of radioisotope and space nuclear power technology development as part of a European Space Agency-funded technology program. Perpetual Atomics is focused on establishing a global earth and space nuclear power capability spanning the entire value chain underpinned by advanced technology solutions and systems powered by americium-241. To learn more, visit: perpetualatomics.com. For further information and interview requests, please contact info@perpetualatomics.com

About Orano

As a recognized international leading operator in the field of nuclear materials, Orano delivers solutions to address present and future global energy and health challenges. Its expertise and mastery of cutting-edge technologies enable Orano to offer its customers high value-added products and services throughout the entire nuclear fuel cycle. Every day, the Orano group's 18,000 employees draw on their skills, unwavering dedication to safety, and constant quest for innovation, with the commitment to develop know-how in the transformation and control of nuclear materials, for the climate and for a healthy and resource-efficient world, now and tomorrow. Learn more about Orano's recycling operation: https://www.orano.group/en/nuclear-expertise/from-

exploration-to-recycling/world-leader-in-recycling-used-nuclear-fuels. For further information and interview requests, please contact curtis.roberts@orano.group.