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## **FOR IMMEDIATE RELEASE**

### **RocketStar Announces Successful Demonstration of Fusion-Enhanced Pulsed Plasma Electric Propulsion**

*Innovator of in-space propulsion and digital signal processing creates the world's first electric propulsion device enhanced with nuclear fusion*

NEW YORK CITY, NY – RocketStar Inc. has successfully demonstrated the FireStar Drive, a groundbreaking electric propulsion unit for spacecraft that uses nuclear fusion-enhanced pulsed plasma. This innovative device significantly boosts the performance of RocketStar's base water-fueled pulsed plasma thruster by utilizing a unique form of aneutronic nuclear fusion. The base thruster generates high-speed protons through the ionization of water vapor. When these protons collide with the nucleus of a boron atom, the atom undergoes fusion, transforming into a high-energy form of carbon that rapidly decays into three alpha particles. By introducing boron into the thruster's exhaust, the FireStar Drive enables this fusion process. Similar to the way an afterburner enhances thrust in a jet engine by introducing fuel into the exhaust, the fusion occurring in the thruster's exhaust significantly improves its performance.

#### **Discovery**

The fusion discovery was first made during an SBIR Phase 1 for AFWERX where boronated water was introduced into the pulsed plasma thruster's exhaust plume. This created alpha particles and gamma rays, clear indications of nuclear fusion. It was further validated during the subsequent SBIR Phase 2, where at Georgia Tech's High Power Electric Propulsion Laboratory (HPEPL) in Atlanta, Georgia it not only created the ionizing radiation but also improved the base propulsion unit's thrust by 50%.

"RocketStar has not just incrementally improved a propulsion system, but taken a leap forward by applying a novel concept, creating a fusion-fission reaction in the exhaust," said Adam Hecht, Professor of Nuclear Engineering and the University of New Mexico. "This is an exciting time in technology development, and I am looking forward to their future innovations."

"We are thrilled at the results of our initial testing on an idea that our team has been exploring for some time," said Chris Craddock, CEO of RocketStar. "On a napkin at a conference in Florida, I sketched this idea out and described it to Wes Faler, the founder of Miles Space. He was quite clever in developing both the base thruster and the fusion enhancement. We acquired Miles Space and Faler is now our CTO. So now I'm excited to take our already stellar thruster and make it fusion-enhanced with remarkable improvements in performance. Thanks to AFWERX and the USSF for believing it was possible!"

#### **Next Steps**

RocketStar's current thruster is now available for delivery to customers. It's called the M1.5 and will be demonstrated in space as a hosted payload on D-Orbit's proprietary OTV ION Satellite Carrier which will go on two SpaceX Transporter missions scheduled for July and October of this year.

“We are very happy to have the opportunity to work alongside RocketStar and contribute to the demonstration of the M1.5,” said Matteo Lorenzoni, Head of Sales at D-Orbit. “We just integrated the thruster onto the ION Satellite Carrier, and look forward to witnessing its performance in orbit.”

Plans to test the FireStar Drive include further ground testing this year with an in-space demonstration scheduled for February 2025 as a hosted payload on Rogue Space System’s Barry-2 spacecraft. “We are very excited to test FireStar for RocketStar,” said Brent Abbott, CRO at Rogue Space Systems. “We look forward to considering it for future Rogue missions.”

#### **About RocketStar**

RocketStar is focused on providing revolutionary spacecraft engine technologies including aerospike rocket engines and fusion-enhanced electric propulsion. The company also has developed a suite of digital signal processing (DSP) technologies that enable deep space communications, low probability of intercepts/detection communications, passive radar, and alternative PNT among other capabilities. For more information, visit: [rocketstar.nyc](https://rocketstar.nyc)

#### **About AFRL**

The Air Force Research Laboratory is the primary scientific research and development center for the Department of the Air Force. AFRL plays an integral role in leading the discovery, development, and integration of affordable warfighting technologies for our air, space and cyberspace force. With a workforce of more than 12,500 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: [afresearchlab.com/](https://afresearchlab.com/)

#### **About AFWERX**

As the innovation arm of the DAF and a directorate within the Air Force Research Laboratory, AFWERX brings cutting-edge American ingenuity from small businesses and start-ups to address the most pressing challenges of the DAF. AFWERX employs approximately 325 military, civilian and contractor personnel at six hubs and sites executing an annual \$1.4 billion budget. Since 2019, AFWERX has executed 4,697 contracts worth more than \$2.6 billion to strengthen the U.S. defense industrial base and drive faster technology transition to operational capability. For more information, visit: [afwerx.com](https://afwerx.com)

#### **About D-Orbit**

Founded in 2011, D-Orbit is the first company addressing the logistics needs of the space market. The company’s roadmap includes becoming a relevant player in the in-orbit servicing market, which is forecasted to become one of the largest, growing markets within the space sector. D-Orbit has offices in Italy, Portugal, the UK, and the US; its commitment to pursuing business models that are profitable, friendly for the environment, and socially beneficial, led D-Orbit S.p.A. to become the first certified B-Corp space company in the world. For more information, visit: [dorbit.space](https://dorbit.space)

#### **About Rogue Space Systems Corporation**

Rogue Space Systems Corporation is a Gilford, New Hampshire-based company that designs satellite vehicles and subsystems to provide on-orbit services to satellite operators. Founded in 2020, the Rogue team is building a fleet of Orbital Robots (Orbots™) that will perform a variety of services for orbital assets in LEO, MEO, and GEO including inspection, maintenance, repair, transport and more. The fleet is supported by a first of its kind AI-enabled sensory observation platform. For more information, visit: [www.rogue.space](https://www.rogue.space).

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