NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
Office of Corporate Communications
nga.mil | 571-557-5450 | mediarelations@nga.mil | FB: NatlGEOINTAgency | @NGA_GEOINT

FOR IMMEDIATE RELEASE **No. 2026-01**

March 29, 2026

Contact
Carling Uhler
Public Affairs Officer
Phone: 301-467-1728
Email: mediarelations@nga.mil

NGA's MagQuest Advances with Upcoming CubeSat Launch

VANDENBERG SPACE FORCE BASE, Calif. – The National Geospatial-Intelligence Agency (NGA) is sponsoring the launch of three small satellites this spring to revolutionize how we measure Earth's magnetic field. Developed through MagQuest, a 6-year, multimillion-dollar global competition, the satellites will launch aboard the Transporter-16 rideshare mission from Vandenberg Space Force Base, California, planned for March 30.

"We are on the verge of proving that small, affordable satellites can deliver the high-quality magnetic data our nation depends on," said Mike Paniccia, NGA's program manager for the World Magnetic Model. "These teams have spent the past few years pushing the boundaries of what's possible with CubeSat technology, and this launch is the moment where all of that ingenuity meets the ultimate test."

This mission represents the first-ever effort to collect reliable geomagnetic data using CubeSat technology. Once in orbit, the three CubeSats, equipped with novel solutions for precisely measuring Earth's magnetic field, will provide data to update the World Magnetic Model — a critical infrastructure that underpins navigation for military operations, commercial aviation, and everyday mobile devices worldwide.

A new model for cost-effective innovation

The current World Magnetic Model, WMM2025, is maintained using data from the European Space Agency's Swarm mission, launched in 2013. NGA launched the MagQuest competition in 2019, seeking new, more resilient ways to collect geomagnetic data.

The CubeSat solutions developed through MagQuest can be built, launched, and operated for a fraction of the cost of the current system. MagQuest also demonstrates the effectiveness of open innovation and interagency collaboration in tackling a vital national security challenge. Testing facilities and experts at NASA's Goddard Space Flight Center in Greenbelt, Maryland, supported technology evaluations and analysis; NASA's Center of Excellence for Collaborative Innovation administered the challenge; and the National Oceanic and Atmospheric Administration's National Centers for Environmental Information provided technical support.

Three teams, three paths to orbit

MagQuest's open innovation approach intentionally attracted novel solutions from a unique group of innovators. Each team has developed a distinct CubeSat solution for collecting high-quality geomagnetic data from low-Earth orbit:

- **Compact Spaceborne Magnetic Observatory CubeSat, University of Colorado Boulder.** A CubeSat specifically designed and tested for magnetic cleanliness and accurate data from a compact form factor. A compact scalar-vector magnetometer designed specifically for CubeSats enables high-quality collection of magnetic field data.
- **Diamond-Powered Geomagnetic Data Collection from LEO, Spire Global and SBQuantum.** A diamond quantum magnetometer system deployed on a CubeSat, combining SBQuantum's novel magnetometer technology and sensor expertise with Spire Global's vertically integrated satellite infrastructure, ground stations, and data processing.
- **Io-1, Iota Technology.** A CubeSat featuring a deployable helical boom, vector fluxgate magnetometer, and atomic scalar magnetometer. Iota Technology is working alongside industry-leading partners, combining expertise in sensor technology, deployable structures, and mission design.

The teams delivered their completed satellites to Exolaunch for final integration for launch. Following a successful launch and satellite deployment, each team will begin geomagnetic data collection and compare their findings to WMM2025.

An expert review panel will evaluate each team's data across key milestones. The results of MagQuest will inform NGA's acquisition strategy for a WMM global magnetic field data collection capability, to support production of the next global update, WMM2030.

To view the launch live, visit: https://www.spacex.com/launches/transporter-16.

###

About MagQuest

MagQuest is a multimillion-dollar, multiphase open innovation competition led by the National Geospatial-Intelligence Agency to advance how we measure Earth's magnetic field. Since 2019, the competition has attracted and accelerated novel approaches to geomagnetic data collection for the World Magnetic Model from small businesses, academic institutions, labs, startups, and other organizations. The first three phases awarded over $2 million in cash prizes. Phase 4 provides three winning teams with monetary and technical support as they build, integrate, test, and launch their solutions. MagQuest is managed by Luminary Labs through a contract with the NASA Tournament Lab.

About the World Magnetic Model

The World Magnetic Model is a joint product of NGA and the United Kingdom's Defence Geographic Centre. It is produced by NOAA's National Centers for Environmental Information and the British Geological Survey at five-year intervals to account for the evolution of Earth's magnetic field structure. The WMM ensures the accuracy of navigation by correcting for differences in magnetic forces at a user's location and is used by thousands of systems for mobile navigation apps. It is critical for military and commercial uses around the world. The current model, WMM2025, relies on data from an aging satellite constellation; MagQuest aims to develop resilient, cost-effective alternatives to support production of WMM2030.

To learn more about the competition and meet the teams, visit MagQuest.com.

About NGA

NGA delivers world-class geospatial intelligence that provides a decisive advantage to policymakers, warfighters, intelligence professionals and first responders.

NGA is a unique combination of intelligence agency and combat support agency. It is the world leader in timely, relevant, accurate and actionable geospatial intelligence. NGA enables the U.S. intelligence

community and the Department of Defense to fulfill the president's national security priorities to protect the nation.

During federally-declared emergencies, NGA is authorized under Title 50, Section 3045 authorities to conduct domestic operations when requested by the organization leading the response.

For more information about NGA, visit us online at www.nga.mil, on Instagram, LinkedIn, Facebook and X.