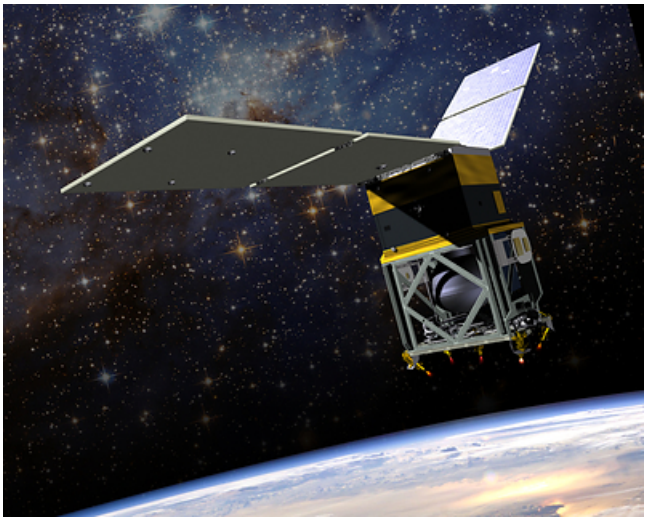
# Ball Aerospace Successfully Commissions Small Satellite, Begins On-Orbit Testing of Green Fuel

**Ball Aerospace is the primary contractor for NASA's Green Propellant Infusion Mission**

BOULDER, Colo., July 5, 2019 /PRNewswire/ -- Ball Aerospace has officially commissioned NASA's Green Propellant Infusion Mission (GPIM) and begun on-orbit testing of a non-toxic, high-performance propellant. GPIM launched on June 25, 2019 at 2:30 a.m. EDT on board a SpaceX Falcon Heavy rocket.



"We are excited for the opportunity to advance in-space propulsion for the entire user community, which has the potential to propel space industry mission planning into a new era," said Dr. Makenzie Lystrup, vice president and general manager, Civil Space, Ball Aerospace. "This mission has been an excellent example of an industry-led team involving multiple NASA centers, the Air Force and industry partners to test this new high-performance fuel using a Ball small satellite."

Ball designed and built the small satellite, which contains NASA's first opportunity to demonstrate the practical capabilities of a "green" propellant and propulsion system in orbit – an alternative to conventional chemical propulsion systems. The propellant, called AF-M315E, is a Hydroxyl Ammonium Nitrate fuel and oxidizer monopropellant developed by the Air Force Research Laboratory.

GPIM is part of NASA's Technology Demonstration Missions program within the Space Technology Mission Directorate (STMD), and Christopher McLean of Ball Aerospace serves as the principal investigator. Aerojet Rocketdyne designed and built the thrusters for GPIM that provide propulsion for the spacecraft.

"The successful commissioning of our thrusters and propulsion system is a positive step toward fully qualifying our green propulsion system in space," said Joe Cassady, executive director of space at Aerojet Rocketdyne. "This technology will enable propulsive capabilities for a new generation of small satellites, including new mission capabilities."

Over the next thirteen months, Ball Aerospace and its partners will test the thruster capabilities by verifying the propulsion subsystem, propellant performance, thruster performance and spacecraft attitude control performance. The primary mission of testing the thrusters and fuel will be complete within three months followed by testing of the secondary science payloads.

As the prime contractor for GPIM, Ball Aerospace is responsible for system engineering; flight thruster performance verification; ground and flight data review; spacecraft bus; assembly, integration and test; and launch and flight support. GPIM uses the Ball Configurable Platform (BCP) small satellite, which is about the size of a mini refrigerator and was built in just 46 days. The BCP small satellite provides standard payload interfaces and streamlined procedures, allowing rapid and affordable access to space with flight-proven performance. There are currently two BCP small satellites performing on orbit: STPSat-2, which launched in November 2010, and STPSat-3, which launched in November 2013. The two STP satellites were built for the U.S. Air Force Space Test Program's Standard Interface Vehicle (STP-SIV) project.

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**About Ball Corporation**

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**Forward-Looking Statements**

This release contains "forward-looking" statements concerning future events and financial performance. Words such as "expects," "anticipates," "estimates," "believes," "targets," "likely," "positions" and similar expressions typically identify forward-looking statements, which are generally any statements other than statements of historical fact. Such statements are based on current expectations or views of the future and are subject to risks and uncertainties, which could cause actual results or events to differ materially from those expressed or implied. You should therefore not place undue reliance upon any forward-looking statements and any such statements should be read in conjunction with, and, qualified in their entirety by, the cautionary statements referenced below. The company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Key factors, risks and uncertainties that could cause actual outcomes and results to be different are summarized in filings with the Securities and Exchange Commission, including Exhibit 99 in our Form 10-K, which are available on our website and at www.sec.gov. Additional factors that might affect: a) our packaging segments include product demand fluctuations; availability/cost of raw materials and logistics; competitive packaging, pricing and substitution; changes in climate and weather; footprint adjustments and other manufacturing changes; failure to achieve synergies, productivity improvements or cost reductions; mandatory deposit or other restrictive packaging laws; customer and supplier consolidation, power and supply chain influence; changes in major customer or supplier contracts or a loss of a major customer or supplier; political instability and sanctions; currency controls; changes in foreign exchange or tax rates; and tariffs, trade actions, or other governmental actions in any country affecting goods produced by us or in our supply chain, including imported raw materials, such as pursuant to section 232 of the U.S. Trade Expansion Act of 1962; b) our aerospace segment include funding, authorization, availability and returns of government and commercial contracts; and delays, extensions and technical uncertainties affecting segment contracts; c) the company as a whole include those listed plus: changes in senior management; regulatory action or issues including tax, environmental, health and workplace safety, including U.S. FDA and other actions or public concerns affecting products filled in our containers, or chemicals or substances used in raw materials or in the manufacturing process; technological developments and innovations; litigation; strikes; labor cost changes; rates of return on assets of the company's defined benefit retirement plans; pension changes; uncertainties surrounding geopolitical events and governmental policies both in the U.S. and in other countries, including the U.S. government elections, budget, sequestration and debt limit; reduced cash flow; interest rates affecting our debt; and successful or unsuccessful joint ventures, acquisitions and divestitures, including with respect to the Rexam PLC acquisition and its integration, or the associated divestiture; the effect of the acquisition or the divestiture on our business relationships, operating results and business generally.

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