

Ball Aerospace Small Satellite for NASA's Green Propellant Mission Ready for Launch

Ball Aerospace is a mission partner for NASA's Green Propellant Infusion Mission

BOULDER, Colo., June 21, 2019 /PRNewswire/ -- A Ball Aerospace satellite used for NASA's Green Propellant Infusion Mission (GPIM) is ready for launch, scheduled for no earlier than June 24 on board a SpaceX Falcon Heavy rocket. Ball built the small satellite, which contains NASA's first opportunity to demonstrate a new "green" propellant and propulsion system in orbit – an alternative to conventional chemical propulsion systems.

"GPIM has the potential to inspire new ideas and new missions, which could mean smaller spacecraft, faster and easier ground processing, longer design lives and more," said Dr. Makenzie Lystrup, vice president and general manager, Civil Space, Ball Aerospace. "Ball is also developing small satellites for two other NASA missions -- the Imaging X-Ray Polarimetry Explorer (IXPE) and the Spectro Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer (SPHEREx) missions."

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. The spacecraft bus is the smallest of the Ball Configurable Platform (BCP) satellites, which is about the size of a mini refrigerator, and was assembled in just 46 days. The BCP 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.

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. The mission will demonstrate the practical capabilities of AF-M315E, a Hydroxyl Ammonium Nitrate fuel and oxidizer monopropellant developed by the Air Force Research Laboratory.

In addition to STMD and Ball Aerospace, the GPIM team includes: Aerojet Rocketdyne; U.S. Air Force Research Laboratory at Edwards Air Force Base; the Air Force Space and Missile Systems Center at Kirtland Air Force Base, New Mexico; and three NASA field centers -- NASA's Glenn Research Center in Ohio, NASA's Kennedy Space Center in Florida, and NASA's Goddard Space Flight Center in Maryland.

GPIM is one of several payloads launching as part of the Department of Defense STP-2 mission managed by the U.S. Air Force Space and Missile Systems Center. Another payload, the Constellation Observing System for Meteorology, Ionosphere, and Climate-2 (COSMIC-2) satellite, carries five [Ion Velocity Meters](#) built by Ball and designed by the University of Texas at Dallas (UTD) that will measure one parameter of the space weather environment as part of a successful technology transfer program. COSMIC-2 is a joint mission including the National Oceanic and Atmospheric Administration, U.S. Air Force, Taiwan's National Space



Organization and the University Corporation for Atmospheric Research.

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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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