Ball Aerospace to Provide Critical Component for NASA Mission Studying Life Cycle of Stars in the Milky Way Galaxy

GUSTO Mission Will Measure Gas and Dust Between Stars From Near-Space

BOULDER, Colo., April 27, 2017 /PRNewswire/ -- Ball Aerospace will design and build a cryostat for NASA's Galactic/Extragalactic Ultralong Duration Balloon (ULDB) Spectroscopic Terahertz Observatory mission, or GUSTO. The mission is led by the University of Arizona. Ball's cryostat will provide a temperature-controlled environment for the detectors and is a critical element in the success and longevity of the GUSTO mission.

"Starting with the Gemini and Apollo missions in the 1960s to the more recent Spitzer Space Telescope, which played a role in the recent discovery of the seven exoplanets in the Trappist-1 system, Ball Aerospace's cryostats have enabled our customers to successfully meet their mission objectives," said Jim Oschmann, Ball Aerospace vice president and general manager, civil space business unit. "We are pleased to continue our close working relationship with NASA and the University of Arizona on this important mission to better understand our galaxy."

GUSTO's science mission is to measure emissions from the interstellar medium, which will help scientists determine the life cycle of interstellar gas in the Milky Way galaxy, witness the formation and destruction of star-forming clouds, and understand the dynamics and gas flow in the vicinity of the center of the galaxy. Utilizing cutting-edge superconducting detectors, GUSTO will make precision measurements of the emission lines from carbon, oxygen and nitrogen in the interstellar medium in order to perform the first complete study of all phases of star formation and evolution.

NASA previously funded the Stratospheric Terahertz Observatory (STO), also with a Ball-provided cryostat, which served as a pathfinder for GUSTO and its scientific objectives. For GUSTO, Ball will redesign the STO cryostat to enable the much longer mission duration and maintain the detectors at their operating temperature of 4.2 Kelvin, or negative 452 degrees Fahrenheit. GUSTO will launch in December 2021 from McMurdo, Antarctica, on NASA's Ultralong Duration Balloon (ULDB), which will carry the payload to an altitude of approximately 110,000 feet for up to 170 days.

The GUSTO team consists of the University of Arizona which leads the overall effort as well as the instrument/telescope development, the Johns Hopkins University Applied Physics Laboratory (APL) is responsible for the payload gondola and overall project management, and Ball Aerospace will design and build the state-of-the-art cryogenic system. The Jet Propulsion Laboratory (JPL), Massachusetts Institute of Technology (MIT), Sandia National Laboratories and Netherlands Institute for Space Research (SRON) are also responsible for key elements of the detectors.

NASA selected both GUSTO and the Imaging X-Ray Polarimetry Explorer (IXPE) for flight under the 2014 Astrophysics Small Explorer (SMEX) and Mission of Opportunity (MO) competition. Ball is a partner on both the winning teams.

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