

## Ball Aerospace Wins Aviation Week Program Excellence Award

BOULDER, Colo., Oct. 27, 2017 /PRNewswire/ -- Ball Aerospace has been awarded an Aviation Week Program Excellence Award for their work on NASA's James Webb Space Telescope cryogenic electronics system. The awards honor global aerospace and defense programs and projects, their leaders and their teams for going beyond meeting requirements to exemplify the best in value creation, leadership, adapting to complexity and executing with excellence. Ball is the principal subcontractor to Northrop Grumman for the optical technology and optical system design, including the cryogenic electronics system.

Allison Barto, Ball's Webb Telescope program manager was honored with the award at the Aviation Week Program Management Symposium and Awards Banquet, October 23, at the Ritz Carlton, McLean, VA. Barto leads the team responsible for both delivery of the optics and electronics for the 22-foot-wide Telescope, as well the overall optical design, verification, and on-orbit optical phasing and commissioning of the Observatory.

"Allison and her team confronted the challenge of designing a complex array of electronics to operate at frigid temperatures without releasing any heat that could interfere with the telescopes sensitive optics," said Jim Oschmann, vice president and general manager civil space, Ball Aerospace. "Their unique solution to significantly minimize cable count and identify commercially available parts capable of operating at these extreme temperatures to ensure optical performance is a true marvel of modern engineering."



The 22 one-of-a kind cryogenic electronic flight boxes are responsible for aligning the Webb Telescope's 18 hexagonal mirror segments to function as a single, monolithic mirror. This unique engineering challenge requires each box to operate between -405.6 degrees F° (30K) and room temperature to multiplex signals from the warm control electronics to one mirror actuator at a time.

"We are honored to celebrate the best of the best programs – programs that deliver results, but that also innovate new ways to bring technology to bear on some of society's toughest problems," said Greg Hamilton, president of Aviation Week Network. "This year's nominees hailed from every sector of the industry, and the winners truly set the standard for what leadership and performance are all about."

The Webb Telescope is the most powerful space telescope ever built and will provide images of the first galaxies formed and study planets around distant stars. It is a joint project between NASA, the European Space Agency and the Canadian Space Agency.

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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" 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 of 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](http://www.sec.gov). Additional factors that might affect: a) our packaging segments include product demand

fluctuations; availability/cost of raw materials; competitive packaging, pricing and substitution; changes in climate and weather; competitive activity; 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; and changes in foreign exchange or tax rates; 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; ability to achieve cost-out initiatives and synergies; interest rates affecting our debt; and successful or unsuccessful 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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