AEROSPACE AMERICA

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YEAR-IN-REVIEW Researchers, industry persevere through the pandemic.

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AIAA SHAPING THE FUTURE OF AEROSPACE

A year of turmoil and success in aerospace

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The **Society and Aerospace Technology Outreach Committee** promotes the transfer and use of aerospace technology for the benefit of society.

This year saw a series of notable challenges for the aerospace industry. The covid-19 pandemic led to slower demand in commercial aviation with fewer travelers and a need for fewer workers. With customers deferring new aircraft deliveries, less maintenance work was also required, leading to lower demand for spare parts. Many aircraft manufacturers saw short-term concerns, including cash flow and liquidity. Contrary, on the defense side, the pandemic effects were not as severe due to resources allocated prior to the disease outbreak and the ongoing mission of supporting critical national defense objectives. Despite the uncertainty, there were many success stories.

In May, **NASA astronauts Doug Hurley and Bob Behnken** arrived at the International Space Station aboard SpaceX's Crew Dragon capsule as part of the Demo-2 test flight mission. The spacecraft launched from NASA's Kennedy Space Center in Florida. The mission marked the first time NASA astronauts reached and entered the ISS from a commercial spacecraft. Demo-2 was SpaceX's final test flight to validate the spacecraft, launch vehicle, spacesuits and other components of its crew transportation system, clearing the way for November's Crew-1 launch.

In October, **Blue Origin** launched its single-stage **New Shepard** suborbital rocket to the edge of space. A hydrogen-fueled BE-3 engine powers the rocket. The experimental flight was part of NASA's Artemis program to put humans on the moon and then later on to Mars. Blue Origin tested its precision lunar landing technology. The flight was New Shepard's 13th since 2015 and the seventh of Blue Origin's latest reusable New Shepard booster.

In August, **Amazon** received FAA's **Part 135 certification**, giving the company federal approval to operate its fleet of **drones for package delivery**. Wing Aviation and UPS Inc. received approval in 2019 and conducted limited deliveries in 2020. Part 135 certification allows an organization's small drones to carry the property of another for compensation beyond visual line of sight.

NASA's Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer, or **OSIRIS-REx**, briefly touched asteroid Bennu in October, collecting a sample from the surface. Preliminary images of the sample collector head indicated it to be full of asteroid particles, even though some of the particles seemed to be escaping through the collector's lid. With a mission objective of collecting a sample of at least 60 grams (2.12 ounces) from a carbonaceous near-Earth asteroid and returning it to Earth for a detailed analysis, Bennu proved to be ideal. Scientists chose Bennu because of the asteroid's proximity to Earth, its chemical composition and its size, among other criteria. ★

▼ **NASA astronauts** Bob Behnken, left, and Doug Hurley aboard SpaceX's Crew Dragon.
NASA