



National Aeronautics and
Space Administration

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Committee on Science, Space, and Technology Subcommittee on Space and Aeronautics

U.S. House of Representatives

Statement by:

Kenneth Bowersox, Associate Administrator, Space Operations Mission Directorate,
National Aeronautics and Space Administration

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**Statement of
Kenneth Bowersox
Associate Administrator for Space Operations
National Aeronautics and Space Administration**

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Chairman Babin, Ranking Member Sorensen, and distinguished Members of the Subcommittee, thank you for the opportunity to appear today to discuss NASA's human spaceflight activities in Low Earth Orbit (LEO). Since 1998, NASA and our international and commercial partners have used the International Space Station (ISS) to expand scientific research, technology development, and economic activities into the unique microgravity environment beyond Earth. We have looked back at our home planet, increasing our knowledge of the atmosphere, oceans, and land as we work to understand the impacts of climate change. We have increased our knowledge of the effects of space on the human body, helping us to better understand disease and develop new treatments to lengthen and improve lives on Earth. Through the ISS, we are learning critical lessons that will enable humanity's next steps into deep space through the Artemis campaign, deepening and broadening international partnerships, as well as promoting the development of a sustainable commercial market in LEO.

Over the last 25 years, the ISS has grown into an outpost housing seven crew for long-duration missions, increasing research time significantly. ISS astronauts have worked with many highly skilled researchers on the ground to conduct scientific experiments in areas such as medicine, plant and animal biology, biotechnology, fundamental physics, crystal growth, combustion science, and fluid physics. NASA's Human Research Program has contributed to the reduction of both in-mission and long-duration human spaceflight risk across multiple discipline areas. Instruments on the ISS gather Earth Science and other critical measurements that help scientists understand our changing planet and monitor cosmic rays to increase our understanding of the universe, including antimatter and dark matter. Because of this, we have dubbed the third decade of ISS the "decade of results."

Beyond its importance as a research facility, ISS serves as a hub for the U.S. commercial transportation of crews and cargo, providing a foundation for services available to other customers. Development of domestic launch vehicles for these spacecraft has resulted in the reemergence of the United States as the global leader in space launch services. SpaceX's Dragon and Northrop Grumman's Cygnus cargo ships regularly supply research experiments and consumables to the station. They will be joined this year by Sierra Space's Dream Chaser.

SpaceX's Crew Dragon has flown seven contracted missions to ISS since its crewed demonstration flight in May 2020, and SpaceX and its partner Axiom have flown three Private Astronaut Missions (PAMs) to ISS aboard Crew Dragon. Boeing's CST-100 Starliner is slated to undertake its crewed demonstration flight test this spring. After a successful flight, Starliner will be ready to provide regular crew transportation.

While the last several years have seen enormous progress, we did suffer a setback in May 2023, when Typhoon Mawar caused significant damage to a NASA ground station located on the island of Guam, resulting in a loss of our ability to have continuous communication to the ISS. NASA and our ISS partners continue to conduct operations in a manner that ensures crew safety as work to repair the significant damage to the ground station continues.

At the conclusion of the ISS Program, scheduled for the end of 2030, the station must be deorbited in a controlled manner to ensure avoidance of populated areas on Earth. The station's safe deorbit is the shared responsibility of the five space agencies — NASA, CSA (Canadian Space Agency), ESA (European Space Agency), JAXA (Japan Aerospace Exploration Agency), and the Russian State Space Corporation Roscosmos — that have operated it since 1998. NASA and our ISS partner agencies have studied options to safely deorbit the space station, and a new or modified spacecraft is necessary to provide high-confidence deorbit capabilities. NASA has engaged with U.S. industry and is proceeding with plans to procure a spacecraft (U.S. Deorbit Vehicle) that will perform the final, safe deorbit maneuver of the space station.

The Administration has included requests for both NASA Guam recovery and the U.S. Deorbit Vehicle for the ISS in the pending domestic emergency supplemental appropriations request. NASA continues to believe that funding for Guam and the U.S. Deorbit Vehicle is a pressing requirement.

After the retirement of ISS, NASA will continue its scientific research and technology work in LEO by transitioning to services provided by one or more Commercial LEO Destinations (CLDs). It is NASA's goal to be one of many customers in a robust commercial marketplace in LEO where in-orbit destinations, as well as cargo and crew transportation, are available as services to the Agency. Last September, NASA received the first-ever National Academies Decadal Survey on Biological and Physical Sciences Research in Space. In December, as part of the National Space Council meeting, NASA released a strategy to develop a collaborative post-ISS LEO ecosystem that helps chart the path forward for foundational, groundbreaking science.

In order to maintain an uninterrupted human presence in LEO, NASA is striving to have at least one operational CLD on orbit before ISS is deorbited. We have partnered with industry teams to begin development of CLDs, including: Axiom Hab (Axiom Space); Orbital Reef (Blue Origin, Sierra Space); and Starlab (Nanoracks, Voyager Space, Airbus, Northrop Grumman). In addition, in June 2023, the Agency awarded seven unfunded Space Act Agreements under the Collaboration for Commercial Space Capabilities-2 (CCSC-2) effort to support the development of capabilities relevant to the Agency's exploration strategy. NASA plans to award at least one contract for CLD services in FY 2026, which will provide for the first time a firm schedule that the Agency can use to track progress toward making a seamless transition from ISS to CLD services at the end of the decade. Besides supporting the Artemis campaign, the future of human

deep space exploration, and NASA science objectives, these commercial capabilities will support the goal of maintaining U.S. human presence in LEO while also conducting key research and operational tasks for other customers.

Working with its international and commercial partners, NASA is poised to continue groundbreaking research and development on ISS, foster the development of commercial capabilities enabling continuity of U.S. human presence in LEO, and safely retire the ISS at the end of operations as we usher in a new era of commercial space development that will transform LEO into an arena of vibrant economic activity.

Thank you once again for inviting me to appear before you today. I would be pleased to respond to any questions the Members of the Subcommittee may have.