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for Universal Opportunities

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Commercial Crew: Launch America

Lisa Colloredo

NASA/KSC Associate Manager, Commercial Crew Program- Moderator/Participant,
lisa.m.colloredo@nasa.gov

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National Aeronautics and
Space Administration



LAUNCH AMERICA

Path to Flight
May 2016



COMMERCIAL CREW BENEFITS

Transforming Human Spaceflight for Future Generations

Cost-Effective

Developing safe, reliable crew transportation to the International Space Station that reduces reliance on foreign systems.

SPACE X CREW DRAGON & BOEING CST-100 STARLINER



\$58 MILLION
per seat



RUSSIAN SOYUZ
\$81 MILLION
per seat

COMMERCIAL CREW BENEFITS

Transforming Human Spaceflight for Future Generations

Focus on Science

2X

more time for research
aboard the National Lab



Working Off The Earth for Commercial Crew



Robotics

Permanent Multipurpose Module

Relocation from Unity to Tranquility

Spacewalks

800 feet of cable

4 antennas

3 laser reflectors

Common Communication

2 radios delivered, **1** activated

Preparing for IDA



Working On The Earth for Commercial Crew

- Working **shoulder-to-shoulder** with Boeing and SpaceX as they **design, develop, test** and **evaluate** their crew transportation systems.
- Through robust **insight** and **oversight**, **Commercial Crew** is ensuring NASA's safety and performance requirements are met.
- Ordering first guaranteed **post-certification missions** to account for mission delivery schedules.
- Building on NASA's **partnerships** with other government agencies, such as the **FAA, NTSB, Air Force** and **DOD**.
- Processing and testing the **International Docking Adapters** that will fly to station on **cargo resupply** missions and serve as connection points for **commercial crew** spacecraft visiting the orbiting laboratory.





Astronauts once again will launch to the International Space Station from
Florida's Space Coast

Boeing's **Starliner** will launch atop
ULA's **Atlas V** from SLC-41,
and SpaceX's **Crew Dragon** will launch atop
the **Falcon 9** from Launch Pad 39A

Working On The Earth for Commercial Crew

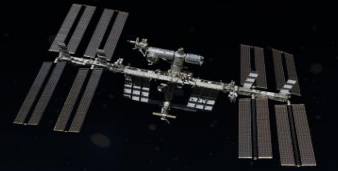


Boeing's **Starliner** Progress

- Crew Training for Flight Tests
- Crew Access Tower Construction
- Structural Test Article Join



Working On The Earth for Commercial Crew

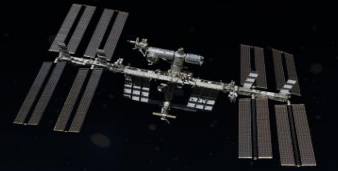


SpaceX's Crew Dragon Progress

- Crew Training for Flight Tests
- Pad and Hangar Construction
- Crew Dragon Interior Reveal



Working On The Earth for Commercial Crew

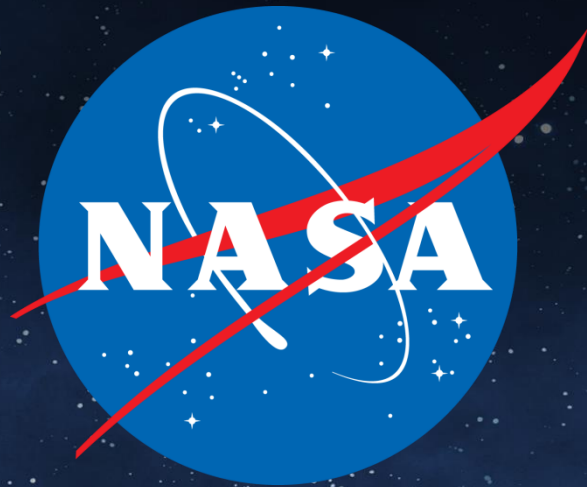


Moving forward on the **final development** and **certification** of **two** safe, reliable and cost-effective, **American-made** crew transportation systems.

Selecting the group of NASA **astronauts** who will train for **flight tests** to the International Space Station.

Ordered the first **three** of **four** **guaranteed** post-certification missions from Boeing and SpaceX





#LaunchAmerica