



---

The Space Congress® Proceedings

2018 (45th) The Next Great Steps

---

Feb 27th, 1:30 PM

## International Space Station Providers

Benjamin "Benji" Reed

*Director of Commercial Crew Mission Management, SpaceX*

Follow this and additional works at: <https://commons.erau.edu/space-congress-proceedings>

---

### Scholarly Commons Citation

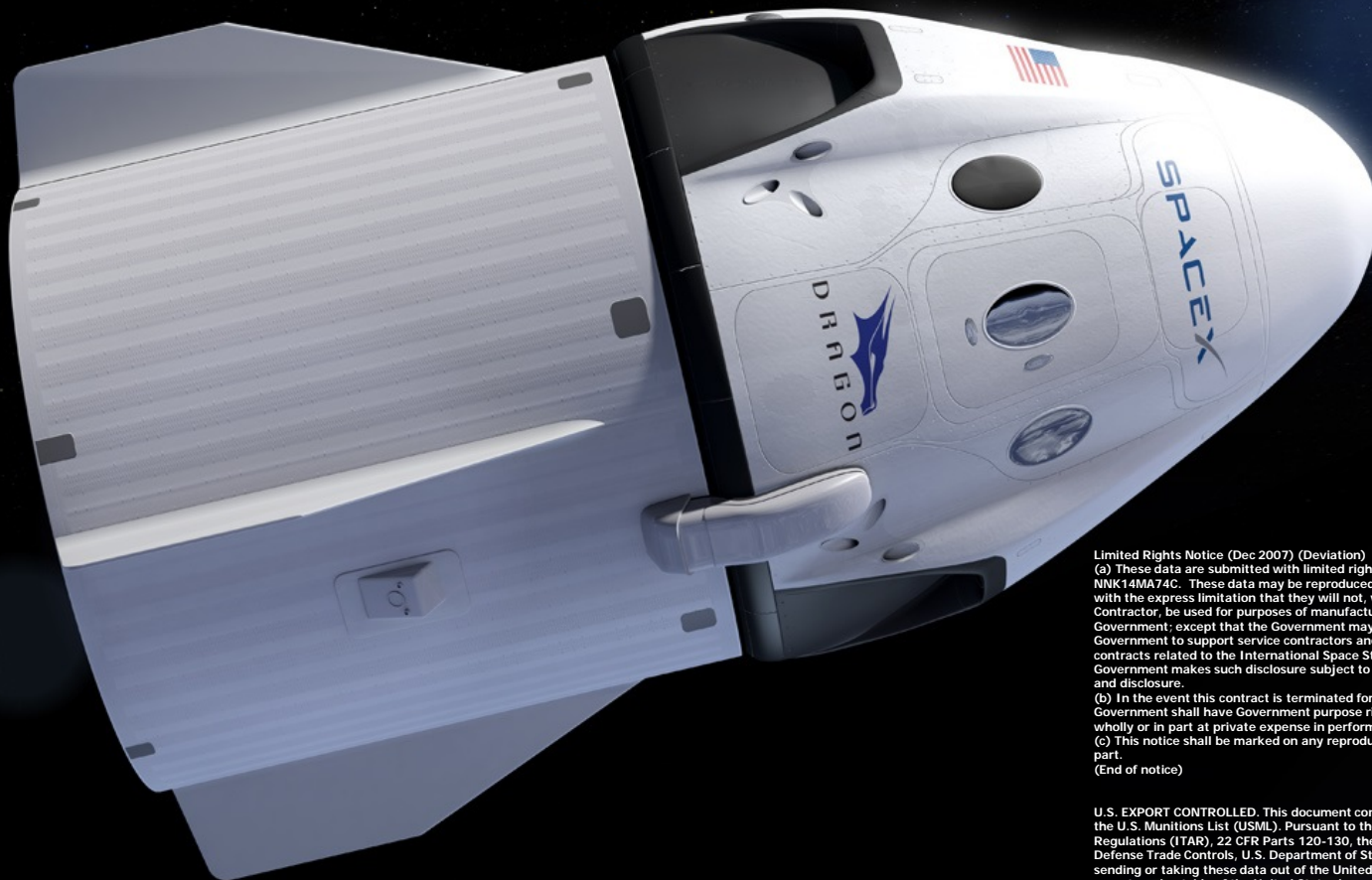
Reed, Benjamin "Benji", "International Space Station Providers" (2018). *The Space Congress® Proceedings*. 9.

<https://commons.erau.edu/space-congress-proceedings/proceedings-2018-45th/presentations/9>

This Event is brought to you for free and open access by the Conferences at Scholarly Commons. It has been accepted for inclusion in The Space Congress® Proceedings by an authorized administrator of Scholarly Commons. For more information, please contact [commons@erau.edu](mailto:commons@erau.edu).

**EMBRY-RIDDLE**  
Aeronautical University™  
SCHOLARLY COMMONS

# SPACEX



Limited Rights Notice (Dec 2007) (Deviation)  
(a) These data are submitted with limited rights under Government Contract No. NNK14MA74C. These data may be reproduced and used by the Government with the express limitation that they will not, without written permission of the Contractor, be used for purposes of manufacture nor disclosed outside the Government; except that the Government may disclose these data outside the Government to support service contractors and/or pursuant to agreements and contracts related to the International Space Station; provided that the Government makes such disclosure subject to prohibition against further use and disclosure.  
(b) In the event this contract is terminated for Contractor default, the Government shall have Government purpose rights in all data first produced wholly or in part at private expense in performance of this contract.  
(c) This notice shall be marked on any reproduction of these data, in whole or in part.  
(End of notice)

U.S. EXPORT CONTROLLED. This document contains technical data covered by the U.S. Munitions List (USML). Pursuant to the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120-130, the approval of the Directorate of Defense Trade Controls, U.S. Department of State, must be obtained prior to: (i) sending or taking these data out of the United States in any manner, except by mere travel outside of the United States by a persons whose personal knowledge includes these data; (ii) disclosing (including oral or visual disclosure) or transferring in the United States these data to an embassy, any agency or subdivision of a foreign government; or (iii) disclosing (including oral or visual disclosure) or transferring these data to a foreign person, whether in the United States or abroad.

## International Space Station Providers

February 27, 2018 | Benjamin Reed, Director of Crew Mission Management

# Crew Program Overview

- SpaceX is developing a safe, reliable and complete Crew Transportation System certified to fly humans
- All key elements will be certified for crew, including Dragon, Falcon 9, ground systems, and all operations (Ground, Launch, Mission, Crew, and Recovery)
- Crew Dragon system includes SuperDraco thrusters for safety aborts
- Upcoming Crew Missions:
  - ✓ Demonstration 1 to International Space Station (ISS) without crew
  - ✓ In-Flight Abort Test
  - ✓ Demonstration 2 to ISS with crew
  - ✓ Multiple ongoing operational missions



# Crew/Cargo System Architecture

- Spacecraft Segment (Dragon)
  - Crew Module, Service Section and Trunk
  - Launch Abort System (internally integrated into Dragon)
- Launch Segment (F9)
  - Merlin engines
  - LOX & RP-1 propellants
  - Landing legs (stowed in ascent)
- Ground and Operation Segment
  - Ground Systems
    - Launch Pad (LC-39A), Launch Pad facility, Ground software, ground communications & Launch Control Center
  - Operations System
    - Mission Control Center, Crew Operations, Training & Simulations, & Recovery



Falcon 9



Crew Dragon Vehicle



Mission Control in Hawthorne, CA



Launch Control in Cape Canaveral, FL

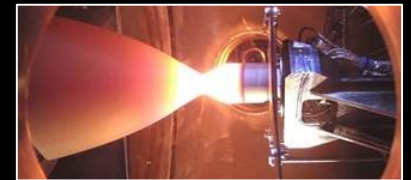


LC-39A at Kennedy Space Center, FL



# Recent

- Demo-1 and Demo-2 Capsule Production and Integration
- Rescue Trainer Exercises
- LC-39A Pad Launches and Crew Preparations
  - Falcon Heavy!
- Crew-in-the-Loop Testing
- Parachute Testing

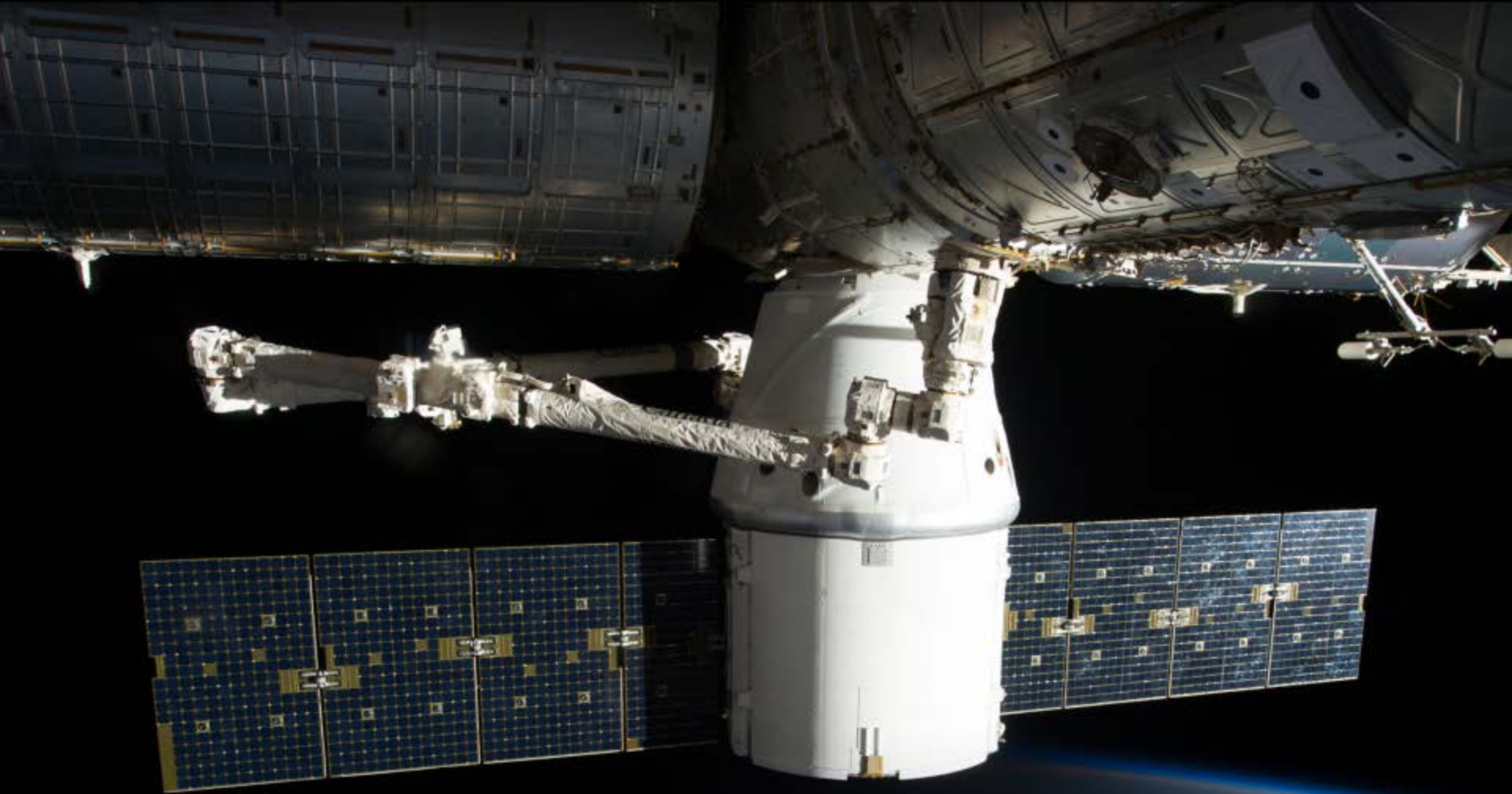


# Upcoming Highlights

- Ship Demo-1 capsule
- Complete Demo-2 integration and ship
- Begin Post-Certification Mission Integration
- Complete Merlin Engine Qualification
- Complete Qualification Testing of Spacesuits
- Complete Dragon Propulsion System Testing
- Missions: Demo-1, In-Flight Abort, Demo-2







Thank You!