Briefing Modules

- Shuttle, Mission, CAIB
- Technical Cause
- Organizational Cause
- A Look Ahead
- Recommendations & Observations
- Lessons Affirmed
- Why a Supplement?
- Meeting the Media
- Conducting a Board
- Telecommuting Tidbits

COLOR KEY:

Full Brief

Partial Brief

Not Covered

Opening caveats:

- **NASA excellence (*vs. Shuttle Program 1 Feb 03*)**
- **IG inspection versus CAIB comparison**


Complacency

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Briefing Overview

- Shuttle, Mission, CAIB
- Mishap Causes
  - Technical
    - Launch and Ascent Debris Strike
    - Re-Entry Sequence
    - Debris Reconstruction and Analysis
    - Areas Not a Factor
  - Organizational
    - History
    - Decision Making at NASA
    - Organization Structure and Culture
    - System Effects
- Lessons Affirmed

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"Shuttle 101": Solid Rocket Boosters & External Tank

Solid Rocket Boosters (SRBs)

- 149.2' tall x 12.2' in diameter
- 6.6 million pounds of thrust—same as 32 Boeing 747s at full thrust
- Provide 85% of launch power
- 0 to 3,500 mph in 124 seconds

External Tank (ET)

- 154' tall x 27.6' in diameter—taller than the Statue of Liberty, weighs 3 times as much
- Completely covered with insulating foam
- Supplies 1,035 gallons/second to Orbiter's Main Engines
- Holds 535,000 gallons of liquid oxygen and liquid hydrogen in 2 internal tanks

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"Shuttle 101": Orbiter Vehicle

Design life:

100 flights

10 years

- Program approved 5 Jan 72
- 78' wing span, 122' long, 56' tall—approximately the size of a DC-9
- Normally carries a crew of 7 for missions up to 30 days

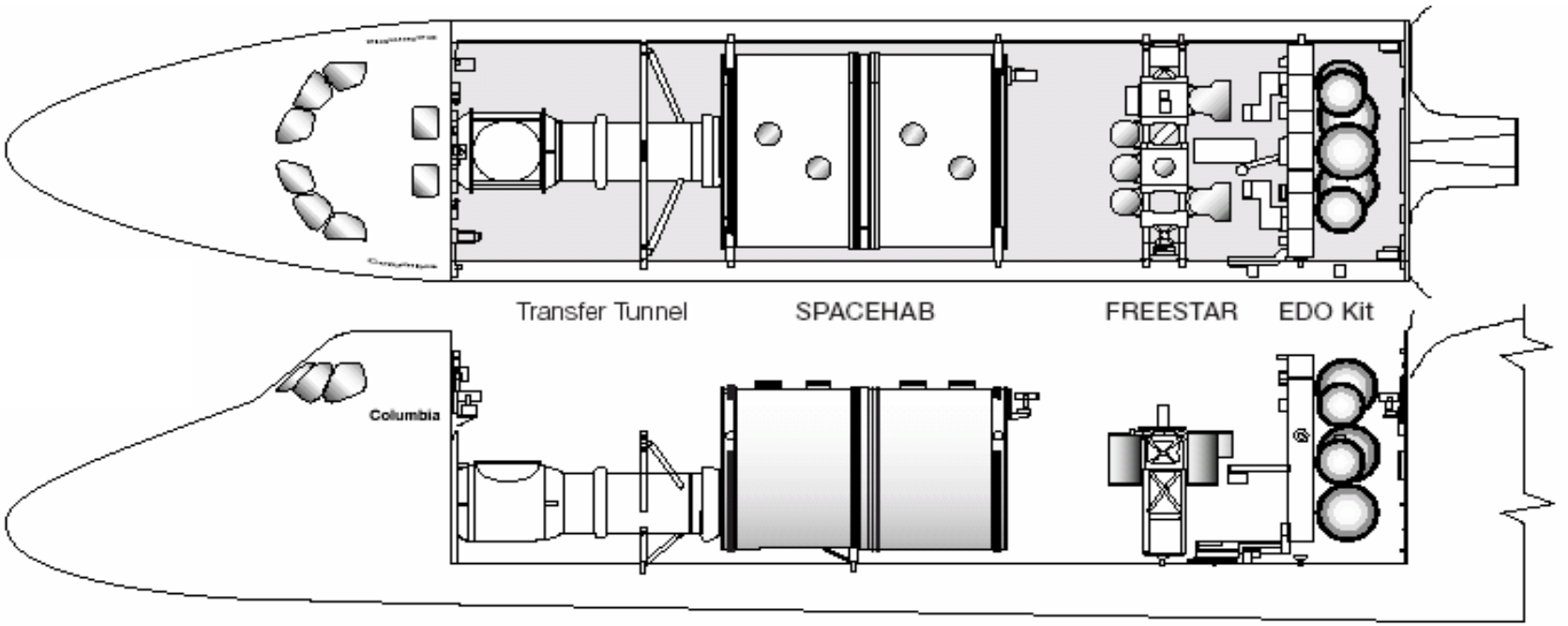
- Payload up to 56,300 pounds
- Price: $2.1B; ~$500M per mission
- 16,000 people involved in each launch

STS-107 Mission Summary

- STS-107 was the 113th mission in the Space Shuttle program and *Columbia*'s 28th trip into space
- STS-107 was launched from Kennedy Space Center, Florida, on 16 January 2003, for a 16-day science research mission

Mission Summary

- STS-107 was a science research mission
  - 80+ experiments on micro-gravity research
  - Dedicated to research in physical, life, and space sciences
- Payload Configuration
  - SPACEHAB Double Research Module
  - Fast Reaction Enabling Science, Technology, and Research (FREESTAR)



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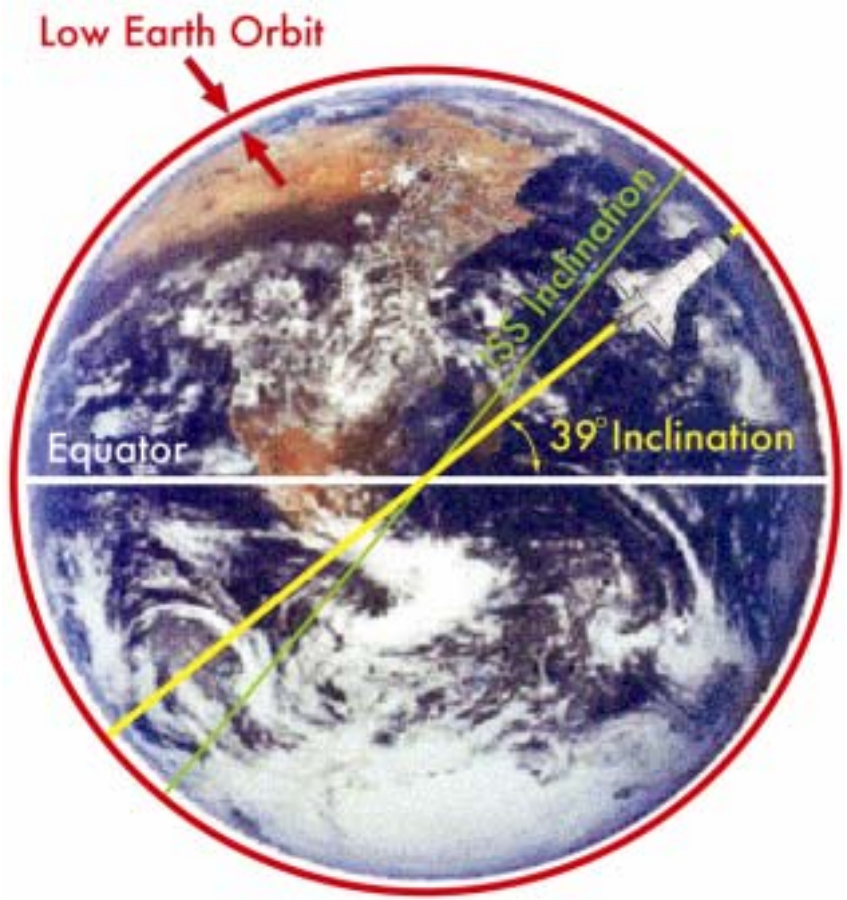
"Orbital Mechanics 101"

- The Shuttle travels in Low Earth Orbit (LEO), 115 to 250 miles* above Earth's surface; *Columbia*'s orbit was at **173** miles
- The International Space Station (ISS) has an average altitude of **250** miles above Earth's surface
- *Columbia* had a **39°** orbital inclination for STS-107
- The ISS has a **51°** orbital inclination
- It takes approximately 90 minutes for the Shuttle for each orbit at a speed of approximately 17,500 mph



* All miles in statute miles

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STS-107 Crew Members

Rick Husband
Colonel, USAF
Commander

William McCool
Commander, USN
Pilot

Kalpana Chawla, Ph.D.
Flight Engineer

Laurel Clark
Commander, MC, USN
Mission Specialist

David Brown
Captain, MC, USN
Mission Specialist

Mike Anderson
Lieutenant Colonel, USAF
Payload Commander

Ilan Ramon
Colonel, Israeli Air Force
Payload Specialist