Profile of Shuttle Mission

Each Shuttle orbiter can fly a minimum of 100 missions and carry as much as 29,484 kg (65,000 pounds) of cargo and up to 7 crew members and passenger/specialists into orbit. It can return 14,515 kg (32,000 pounds) of cargo to earth.

**SHUTTLE CHARACTERISTICS**

(values are approximate)

- **LENGTH**
  - SYSTEM: 56.14 m (184.2 feet)
  - ORBITER: 37.24 m (122.2 feet)
- **HEIGHT**
  - SYSTEM: 23.34 m (76.6 feet)
  - ORBITER: 17.27 m (56.67 feet)
- **WINGSPAN**
  - ORBITER: 23.79 m (78.06 feet)
- **WEIGHT**
  - GROSS LIFT-OFF: 2,041,200 kg (4.5 million pounds)
  - ORBITER LANDING: 96,163 kg (212 thousand pounds)
- **THRUST**
  - SOLID-ROCKET BOOSTERS (2): 12,899,200 newtons (2.9 million pounds) of thrust each at sea level
  - ORBITER MAIN ENGINES (3): 1,668,000 newtons (375 thousand pounds) of thrust each at sea level
- **CARGO BAY**
  - DIMENSIONS: 18.28 m (60 feet) long, 4.57 m (15 feet) in diameter
  - ACCOMMODATIONS: Unmanned spacecraft to fully equipped scientific labs

**ATMOSPHERIC ENTRY**

- VELOCITY: 28,092 km/hr (17,450 mph)
- CROSS RANGE: ± 2037 km (± 1100 nautical miles) from entry path

**ORBITAL OPERATIONS**

- DURATION: 7-30 days
- VELOCITY: 184 to 196 knots (213 to 238 mph)

**SPACE SHUTTLE ASSOCIATE CONTRACTORS**

- **EXTERNAL TANK**
  - Martin Marietta
- **SOLID-ROCKET BOOSTERS**
  - Integration, Final Assembly
  - Marshall Space Flight Center
  - Structure
  - McDonnell Douglas
  - Motors
  - Thiokol
- **ORBITER**
  - Rockwell International
  - North American Space Operations
  - Space Transportation and Systems Group
- **MAIN ENGINES**
  - Rockwell International
  - Rocketdyne Division

Rockwell International is NASA's prime contractor for development and building of the Space Shuttle orbiters and main engines and for integration of the entire Shuttle system. Rockwell is also responsible for Shuttle orbiter turnaround operations and for Shuttle launch operations support.
SPACE SHUTTLE
Orbiter subcontractors include the following:

- A. J. Bell and Bell Rocketdyne
- A. R. G. M. Technologies
- Aerodyne Controls
- Aeronautical Controls
- Aeronautical Dynamics
- Aircraft Instruments
- Aircraft Instruments Co.
- Aircraft Instruments Co. Ltd.
- Aircraft Industries
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- Aircraft Instruments
- Aircraft Instruments Co.
- Aircraft Industries
SPACE SHUTTLE SYSTEM
COLOR SCHEME AND MARKINGS

**ORBITER**

1. NonGloss Light Gray-Green Coated Reinforced Carbon-Carbon (RCC)
2. SemGloss Black-Gray Coated High-Temperature Reusable Surface Insulation (HRSI)
3. NonGloss Off-White (Gray-Ivory) Coated Low-Temperature Reusable Surface Insulation (HRSI)
4. SemGloss Off-White (Gray-Ivory) Coated Felt Reusable Surface Insulation (FRSI)
5. Glossy Light Blue (Simulated Windows)
6. SemGloss Gray Metal Main Engines, Orbital Maneuvering Subsystem Engine Nozzles Only, Elevon Hinge Doors, and Rudder Hinge Seal
7. NonGloss Black Reaction Control Subsystem Engine Nozzle Interiors
8. Mirror-Reflective Finish (Bright Silver) On Inside Surfaces Of Payload Bay Doors
9. SemGloss White Teflon-Coated Fabric Payload Bay Liner

**EXTERNAL TANK AND SOLID ROCKET BOOSTERS**

11. NonGloss Light Sienna-Ochre (Autumn Gold) LO₂ - LH₂ External Tank Insulation
12. SemGloss White Painted Solid Rocket Boosters (SRB's)