



# Virtual Learning

# Unmanned Flight Safety and Operations

**Space Shuttle Discovery**

**April 14, 2020**



# Unmanned Flight Safety and Operations

## Lesson: April 14, 2020

### **Objective/Learning Target:**

Students will learn about the history of one of the more famous/important space shuttles in U.S. history.



## **Bell Work:**

What do you think might have been one of the jobs of the space shuttle Discovery?



# Space Shuttle Discovery

**Let's Get Started:**

Watch Videos:

- [Adam Savage Examines the Space Shuttle Discovery!](#)
- [Inside Space Shuttle Discovery 360](#)



# Before You Begin

## Behind the Space Shuttle Mission Numbering System

### Example Mission Number - **STS-41B**

The “STS” stands for Space Transportation System. The first number, “4”, represents the fiscal year in which the Shuttle launched; in this case, 1984. The second number, “1,” designates from which location the Shuttle would launch. The number “1” stands for Kennedy Space Center. The letter represents the Shuttle’s launch sequence for that fiscal year – “B” denoting that it was the second planned launch for Fiscal Year 1984.

(Note: the United States fiscal year runs from October 1 to September 30.)

# Space Shuttle Discovery

The name "Discovery" came from some historic, Earth exploring ships of the past. One of these was the ship used in the early 1600s by Henry Hudson to explore Hudson Bay and search for a northwest passage from the Atlantic to the Pacific. Another of these ships was used by explorer James Cook in the 1770s during his voyages in the South Pacific. This ship was used in the discovery of the Hawaiian Islands. Two British Royal Geographical Society ships have also carried the name "Discovery" as they sailed on expeditions to the North Pole and the Antarctic.





# Space Shuttle Discovery

The space shuttle Discovery was NASA's third orbiter to join the fleet. It arrived at the Kennedy Space Center in Florida in November 1983. It was launched on Aug. 30, 1984, for its first mission, 41-D, to deploy three communications satellites. Since its first flight, Discovery has completed more than 30 successful missions, passing the number of flights made by any other orbiter in NASA's fleet. It has undergone some significant modifications over the years. This includes 99 upgrades and 88 special tests, including new changes to make it safer for flight.

# Space Shuttle Discovery



Space Shuttle Discovery carried the Hubble Space Telescope (pictured left) into space during mission STS-31 in April of 1990, and provided both the second and third Hubble servicing missions (STS-82 in February of 1997 and STS-103 in December of 1999). During its many successful trips to space, Discovery has carried satellites, modules and crew to the International Space Station (ISS), and provided the setting for countless scientific experiments.



# Space Shuttle Discovery

Discovery benefited from the lessons learned during the construction and testing of the space shuttles Enterprise, Columbia and Challenger. When it was first completed, its weight was 6,870 pounds less than Columbia.



# Space Shuttle Discovery

In the fall of 1995, Discovery underwent a nine-month Orbiter Maintenance Down Period (OMDP) in Palmdale California. It was outfitted with a 5th set of cryogenic tanks and an external airlock to support missions to the International Space Station (ISS). It returned to the Kennedy Space Center, piggy-backing on a modified Boeing 747, in June 1996. Following STS-105, Discovery became the first to undergo Orbiter Major Modification (OMM) at the Kennedy Space Center. Work began in September 2002, and along with the scheduled upgrades, additional safety modifications were added.



# Space Shuttle Discovery

Discovery is now in its permanent home, the James S. McDonnell Space Hangar at the Steven F. Udvar-Hazy Center.





# Space Shuttle Discovery Understanding

Research the missions that the Space Shuttle Discovery went on. Then create a timeline that includes at least 10 of the 39 missions. This timeline should include the dates, the mission ID numbers and what the mission was.