The Falcon Heavy rocket launched early Tuesday—two cores made it back safely

reader comments

259 with 84 posters participating

Share this story

- That’s the center core of the Falcon Heavy rocket just missing the drone ship.
  SpaceX webcast
- SpaceX prepared its Falcon Heavy rocket for launch from Florida on Monday.
  Trevor Mahlmann
- This will be the third time the Falcon heavy rocket has launched.
  Trevor Mahlmann
- This booster re-uses two side cores flown on a previous Falcon Heavy mission in April.
  Trevor Mahlmann
- This is the first time the Falcon Heavy rocket has flown an Air Force payload.
  Trevor Mahlmann
- Skies were clear in Florida, but there were a few concerns about weather Monday night.
- The Falcon Heavy rocket is seen in its hangar in Florida before rollout to the launch pad.
- The 3,700kg Integrated Payload Stack for STP-2 is shown here.

U.S. Air Force
- Monday’s flight will involve the lighting of 27 Merlin engines.

2:50am ET Tuesday Update: SpaceX’s Falcon Heavy rocket launched at 2:30am ET on Tuesday morning, sending its payload of 24 satellites into space. Less than three minutes after the launch, the rocket’s two side-mounted boosters separated from the first stage’s center core, and returned to make a safe landing near Kennedy Space Center in Florida.

At 3 minutes and 30 seconds into the flight, the rocket’s upper stage separated from the center core and flew on into the first of several orbits. The center core then attempted to make the “hottest” landing of a Falcon rocket today, more than 1,200km down range. SpaceX founder Elon Musk had warned earlier that it only had about a 50 percent chance of landing on the drone ship and it didn’t quite make it, making a visible explosion as it hit the water nearby.

Meanwhile the Falcon Heavy’s upper stage still had much work to do. Over the next 3 hours and 30 minutes, it was slated to drop off 24 satellites into three different orbits.

9:20pm ET Update: Due to an unspecified issue with the ground systems for Monday night’s launch, SpaceX has pushed the T-0 for the Space Test Program-2 flight to 2:30am ET Tuesday (06:30 UTC). This is three hours into a four-hour launch window. Weather remains good, and the rocket is healthy.

Original post: SpaceX’s Falcon Heavy rocket will attempt its most technically demanding mission yet on Monday night, with a rideshare flight organized by the US Air Force. Company founder Elon Musk has characterized the mission as “[o]ur most difficult launch ever.”

During this Space Test Program-2 flight, the world’s most powerful operational rocket will attempt to deliver 24 different payloads into three different orbits, resulting in

multiple re-lights of the Merlin 1D engine powering the rocket's second stage.

It is a critical mission for SpaceX and its Falcon Heavy rocket for a few reasons. First of all, this is the first time the Air Force has flown payloads on a Falcon Heavy rocket. And while this mission will not be carrying anything critical to national security—such as large satellites valued at $1 billion or more used for observation, communication, or other purposes to advance the national interest—Air Force officials will be watching closely.

The US military is in the middle of determining which providers among SpaceX, United Launch Alliance, Blue Origin, and Northrop Grumman will win lucrative launch contracts from 2022 to 2026. The Air Force is only expected to pick two winners, and SpaceX has said its Falcon Heavy rocket can meet all nine of the Air Force's "reference orbits," which means sending heavy payloads to some exotic orbits that require a lot of energy to reach.

The unique profile of Monday night's mission will help demonstrate that the Falcon Heavy rocket's second stage does indeed have the capability to reach all of these orbits. After the rocket launches and its second stage separates, it will perform four separate upper-stage engine burns, and then, almost like a school bus, drop off satellites at three different locations. These maneuvers will require precise performance by the upper stage over the course of six hours.

Testing reuse

Monday night's mission also marks the first time the US Air Force has allowed any of its payloads to fly on previously used rockets. The two side-mounted Falcon 9 cores for Monday's mission previously flew on the Arabsat-6A Falcon Heavy launch in April. The center core for Monday's Air Force flight is new. The two side-mounted cores will attempt to return to a

landing site along the Florida coast shortly after launch, and the center core will attempt to land on a drone ship more than 1,200km down range.

The rocket will carry some interesting payloads for several government agencies, including NOAA, NASA, Department of Defense research laboratories, and university research projects. The Air Force's "Space Test Program" organizes launches that "directly enhance the space capabilities of the US and its allies and partners." One of the more intriguing satellites for this launch is a solar sail for The Planetary Society that will seek to demonstrate capabilities first popularized by Carl Sagan.

Liftoff is scheduled for 11:30pm ET Monday night (03:30 UTC Tuesday) from Launch Complex 39A at the Kennedy Space Center in Florida, with a four-hour launch window. The forecast calls for a 70 percent chance of favorable launch conditions. The webcast below should begin about 15 minutes before launch.

[embedded content]
STP-2 launch.
Listing image by SpaceX webcast

https://arstechnica.com/?p=1525453