One Falcon Heavy rocket launched, three Falcon cores landed [Updated]

Enlarge / The Falcon Heavy rocket, at sunset along the Florida coast.
Trevor Mahlmann for Ars Technica

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7pm ET Update: Well, that was exhilarating. SpaceX's Falcon Heavy rocket launched at the top of its window on Thursday evening from Florida, and soared into space under clear skies. First, the two side boosters separated. And then the center core detached from the second stage, which carried its satellite payload on toward geostationary orbit.

Then, the fun began. In something of a space ballet, the two side boosters reentered Earth's atmosphere, and then made controlled burns to land within meters of one another at sites along the Florida coast. A few minutes later the center core, burning its engines hard, landed on a drone ship in the Atlantic Ocean.

Original post: On Wednesday evening, SpaceX ended its first attempt to fly the Falcon Heavy rocket and its Arabsat-6A payload in the middle of a two-hour launch window. The upper-level wind shear was unacceptable, and with a poor forecast, it just didn't make sense to load kerosene and oxygen on the rocket.

Now, the rocket is back on the launch pad for another attempt Thursday, with a similar launch window, opening at 6:35pm ET (10:35 UTC) and closing at 8:31pm ET (00:31 UTC). The upper-level wind forecast for this evening is considerably better.

This will be the Falcon Heavy rocket's second flight, following a successful first launch in February 2018, during which the company famously flung Elon Musk's cherry red Tesla Roadster into deep space. Starman is still out there, by the way, in an elliptical orbit around the Sun. Earth-based telescopes may be able to see him in the early 2020s, certainly no later than 2047.

Although the Falcon Heavy has proven itself flight-worthy, this is still just the second launch of a rocket with a staggering 27 engines, so there is definitely some uncertainty. Although SpaceX has made "many good design improvements" from the rocket that launched 14 months ago, Musk said there is a 5 to 10 percent chance of failure with this mission.

Ahead of Thursday's launch attempt, the company said the rocket—composed of three Falcon 9, Block 5 cores—remains in good condition. Each of the three cores is new, and SpaceX is counting on re-using the two side boosters for another Falcon Heavy mission as early as June—the launch of the US Air Force's Space Test Program-2 mission carrying several military and scientific research satellites.

To facilitate this, the two side boosters will attempt to land back at SpaceX's Landing Zones 1 and 2 at Cape Canaveral Air Force Station, while the center core will attempt to land on the *Of Course I Still Love You* drone ship in the Atlantic Ocean. During the rocket's first launch in 2018, the side boosters made it, but the center core missed its drone ship landing.

The webcast should begin about 20 minutes before the rocket's

anticipated liftoff. It will include coverage of the landing attempts and satellite deploy.

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Falcon Heavy Arabsat-6A mission.
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