



News & Highlights

Falcon Heavy

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In these pages [1], the successful 2016 recovery of the first stage booster of a Falcon 9 rocket on a drone ship in the Atlantic Ocean was recounted. The goal was to recover the booster for reuse, to reduce cost for subsequent launches, and it was only the second time a Falcon 9 booster was successfully recovered. Video of the booster landing on the ship was striking and demonstrated that recovery was possible at convenient points other than the launch site where the first recovery was achieved. In the same article, it was noted that SpaceX, the commercial company responsible for development of the rocket, planned to build the Falcon Heavy, a huge rocket consisting of two Falcon 9 nine-engine boosters strapped on a Falcon 9 central core, providing a total of 27 identical Merlin engines with a combined thrust of more than 5×10^6 lb (22 819 kN) [2]. On February 6, 2018 [2], the Falcon Heavy had its initial flight test. Its whimsical payload was a red Tesla Roadster owned by Elon Musk, the founder of SpaceX. As part of the test, the two side boosters returned to Cape Canaveral, as shown in Fig. 1, in a scene reminiscent of a synchronized ballet. Both boosters had flown prior to this flight and SpaceX has now accomplished 23 successful recoveries. The central booster was expected to land on a drone ship, but two of three [3] engines failed to fire because of insufficient ignition fuel, the only disappointment in an otherwise spectacularly success flight test.

In a demonstration of its capabilities, the upper stage of the rocket carrying the Tesla Roadster fired two more times after separation from the boosters. The upper stage was put in a six-hour coast in the Earth's Van Allen belts, regions of extremely high radiation, after the first burn, as a test to demonstrate a special maneuver for the US Air Force. A second burn sent the upper stage into orbit around the Sun [4].

The Falcon Heavy is presently the most powerful rocket in the world by a factor of two [5], with a payload capacity of 141 000 lb (nearly 64 000 kg)—only the Saturn V mothballed in 1973 had more thrust. The Falcon Heavy is presently scheduled to launch a large Saudi Arabian communications satellite called Arabsat-6A in the first half of 2018, a test payload for the US Air Force in June



Fig. 1. The Falcon Heavy's two side boosters landing at Cape Canaveral, Florida, after its first successful flight test on February 6, 2018. Credit: SpaceX.

or later in the year and two additional communications satellites for Inmarsat and Viasat [4].

References

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