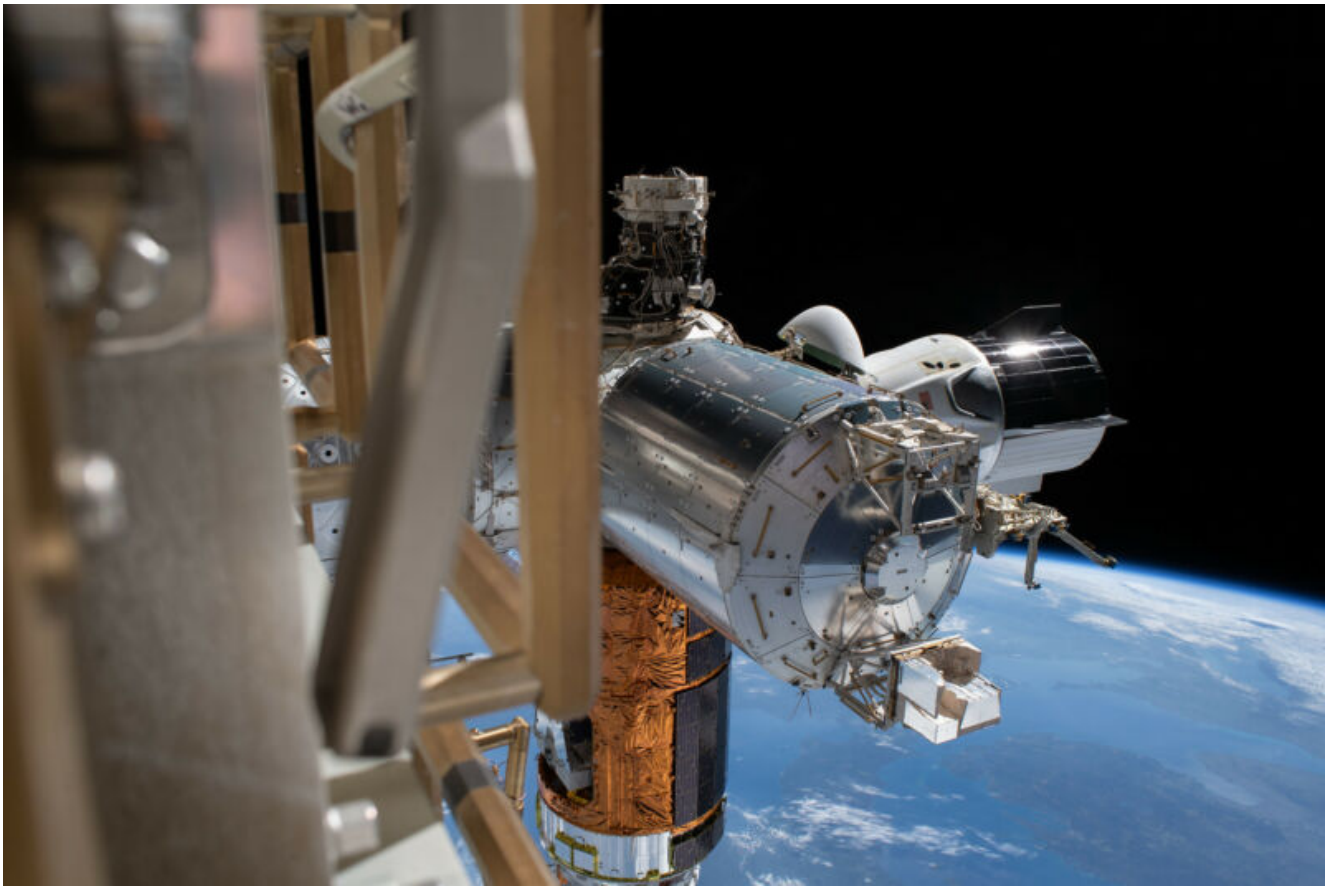
NASA, SpaceX preparing to bring Crew Dragon home this week



Enlarge / SpaceX’s Crew Dragon (center right), the Japanese HTV resupply ship (center bottom), and Europe’s Columbus laboratory module appear in this photo taken during a spacewalk conducted by Bob Behnken and Chris Cassidy.

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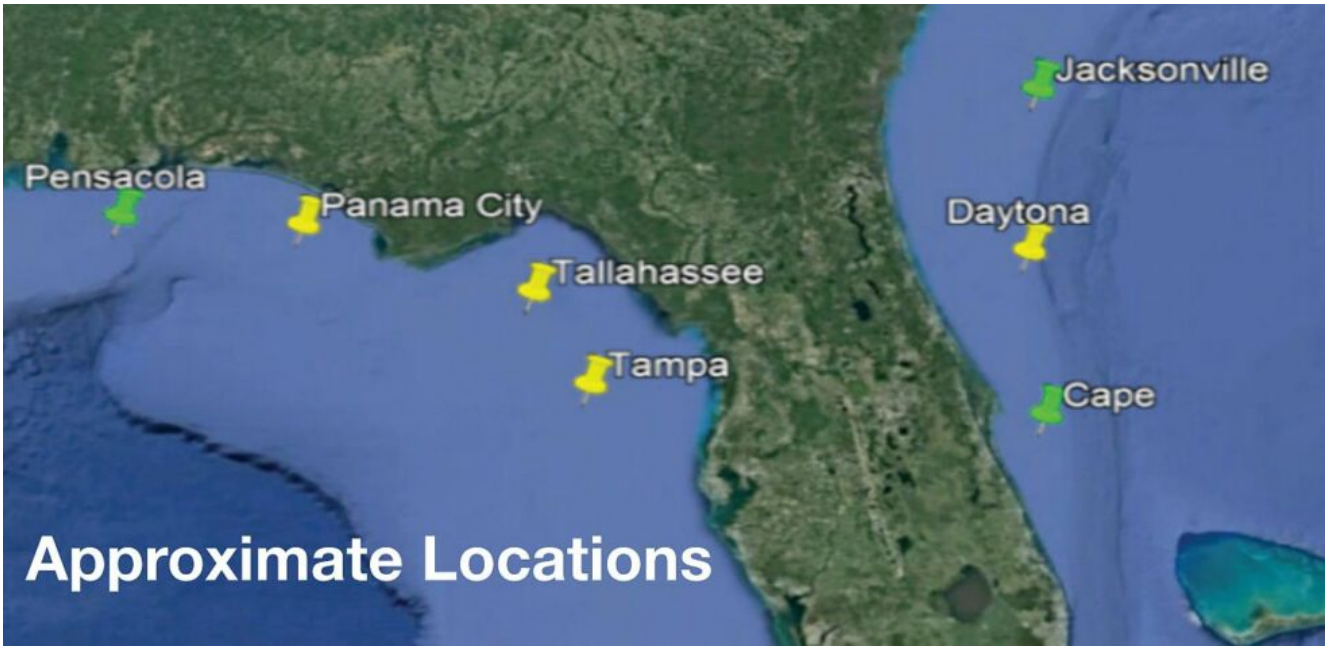
Nearly two months have passed since a Crew Dragon spacecraft carrying two astronauts blasted off the face of the Earth and delivered NASA astronauts Doug Hurley and Bob Behnken into orbit. Now, it’s time to come home.

So far, this test flight of the SpaceX-built crew spacecraft has gone nearly flawlessly since its May 30 launch. Named *Endeavour* by its crew, the spaceship flew smoothly on its way to the International Space Station, where it docked without incident. During the last two months, its solar panels have held up well. And while on orbit, Hurley and Behnken—who performed four spacewalks to help install new batteries outside the station—contributed to NASA's mission.

Now, NASA would like the crew to come home and complete the final, key objective of the test flight, splashing down safely in the ocean. Nominally, this is scheduled for the afternoon of Sunday, August 2.

A final target date and time will be selected on Wednesday, during a "Return Flight Readiness Review," which will consider both the health of the spacecraft and weather. There are seven potential splashdown zones for Dragon around the state of Florida, in both the Gulf of Mexico and Atlantic Ocean. Among the criteria for weather are winds less than 16.5km/hour, calm seas, and a low probability of rainfall.

A decision on where to splash down will come about six hours before undocking, but a final call on whether to actually undock may not be made until the final minutes before departure. Depending on the splashdown location chosen, it will take between six and 30 hours for the crew to return to Earth after undocking.



Enlarge / Approximate location of splashdown sites.

Crew Dragon will perform two very short burns to separate from the station, and then there will be four slightly longer burns to move *Endeavour* farther away and begin the journey home. During this time, NASA and SpaceX will continue to monitor weather in the splashdown location, and if conditions deteriorate a decision will be made to wait 24 to 48 hours for another landing attempt.

When a final decision is made to commit to a landing, the Dragon capsule will shed its trunk and perform a deorbit burn. During the reentry process Dragon will be subjected to temperatures as high as 1,950°C, relying on its forward heat shield to absorb these extreme conditions.

Once in the lower atmosphere, the capsule's drogue parachute will deploy at about 5.5km above the planet's surface, followed by the main parachutes at an altitude of about 2km. After splashing down, Hurley and Benhken will remain inside Dragon for 30 to 60 minutes, depending on sea states, before either the *Go Searcher* and the *Go Navigator* recovery ship hoists the spacecraft onto its main deck.

After an initial checkout on the ship, in most scenarios, the crew will board a helicopter to fly to Cape Canaveral. On

land, they will take a NASA plane that will bring them to Ellington Field, near their homes in Houston. And then, finally, they will be done flying for a while.

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