

GAO Highlights

Highlights of [GAO-18-476](#), a report to congressional committees

Why GAO Did This Study

In 2014, NASA awarded two firm-fixed-price contracts to Boeing and SpaceX, worth a combined total of up to \$6.8 billion, to develop crew transportation systems and conduct initial missions to the ISS. In February 2017, GAO found that both contractors had made progress, but their schedules were under mounting pressure. The contractors were originally required to provide NASA all the evidence it needed to certify that their systems met its requirements by 2017.

A House report accompanying H.R. 5393 included a provision for GAO to review the progress of NASA's human exploration programs. This report examines the Commercial Crew Program, including (1) the extent to which the contractors have made progress towards certification and (2) how NASA's certification process addresses safety of the contractors' crew transportation systems. GAO analyzed contracts, schedules, and other documentation and spoke with officials from NASA, the Commercial Crew Program, Boeing, SpaceX, and two of NASA's independent review bodies that provide oversight.

What GAO Recommends

GAO is making five recommendations, including that NASA develop a contingency plan for ensuring a U.S. presence on the ISS and clarify how it will determine its risk tolerance for loss of crew. NASA concurred with three recommendations; partially concurred on the recommendation related to loss of crew; and non-concurred with a recommendation to report its schedule analysis to Congress. GAO believes these recommendations remain valid, as discussed in the report.

View [GAO-18-476](#). For more information, contact Cristina T. Chaplain at (202) 512-4841 or chaplainc@gao.gov.

July 2018

NASA COMMERCIAL CREW PROGRAM

Plan Needed to Ensure Uninterrupted Access to the International Space Station

What GAO Found

Both of the Commercial Crew Program's contractors, Boeing and Space Exploration Technologies Corporation (SpaceX), are making progress finalizing designs and building hardware for their crew transportation systems, but both contractors continue to delay their certification milestone (see figure). Certification is the process that the National Aeronautics and Space Administration (NASA) will use to ensure that each contractor's system meets its requirements for human spaceflight for the Commercial Crew Program.

Commercial Crew Program: SpaceX and Boeing's Certification Delays as of First Quarter Calendar Year 2018



Source: GAO analysis of National Aeronautics and Space Administration contracts and documents. | GAO-18-476

Further delays are likely as the Commercial Crew Program's schedule risk analysis shows that the certification milestone is likely to slip. The analysis identifies a range for each contractor, with an earliest and latest possible completion date, as well as an average. The average certification date was December 2019 for Boeing and January 2020 for SpaceX, according to the program's April 2018 analysis. Since the Space Shuttle was retired in 2011, the United States has been relying on Russia to carry astronauts to and from the International Space Station (ISS). Additional delays could result in a gap in U.S. access to the space station as NASA has contracted for seats on the Russian Soyuz spacecraft only through November 2019. NASA is considering potential options, but it does not have a contingency plan for ensuring uninterrupted U.S. access.

NASA's certification process addresses the safety of the contractors' crew transportation systems through several mechanisms, but there are factors that complicate the process. One of these factors is the loss of crew metric that was put in place to capture the probability of death or permanent disability to an astronaut. NASA has not identified a consistent approach for how to assess loss of crew. As a result, officials across NASA have multiple ways of assessing the metric that may yield different results. Consequently, the risk tolerance level that NASA is accepting with loss of crew varies based upon which entity is presenting the results of its assessment. Federal internal controls state that management should define risk tolerances so they are clear and measurable. Without a consistent approach for assessing the metric, the agency as a whole may not clearly capture or document its risk tolerance with respect to loss of crew.