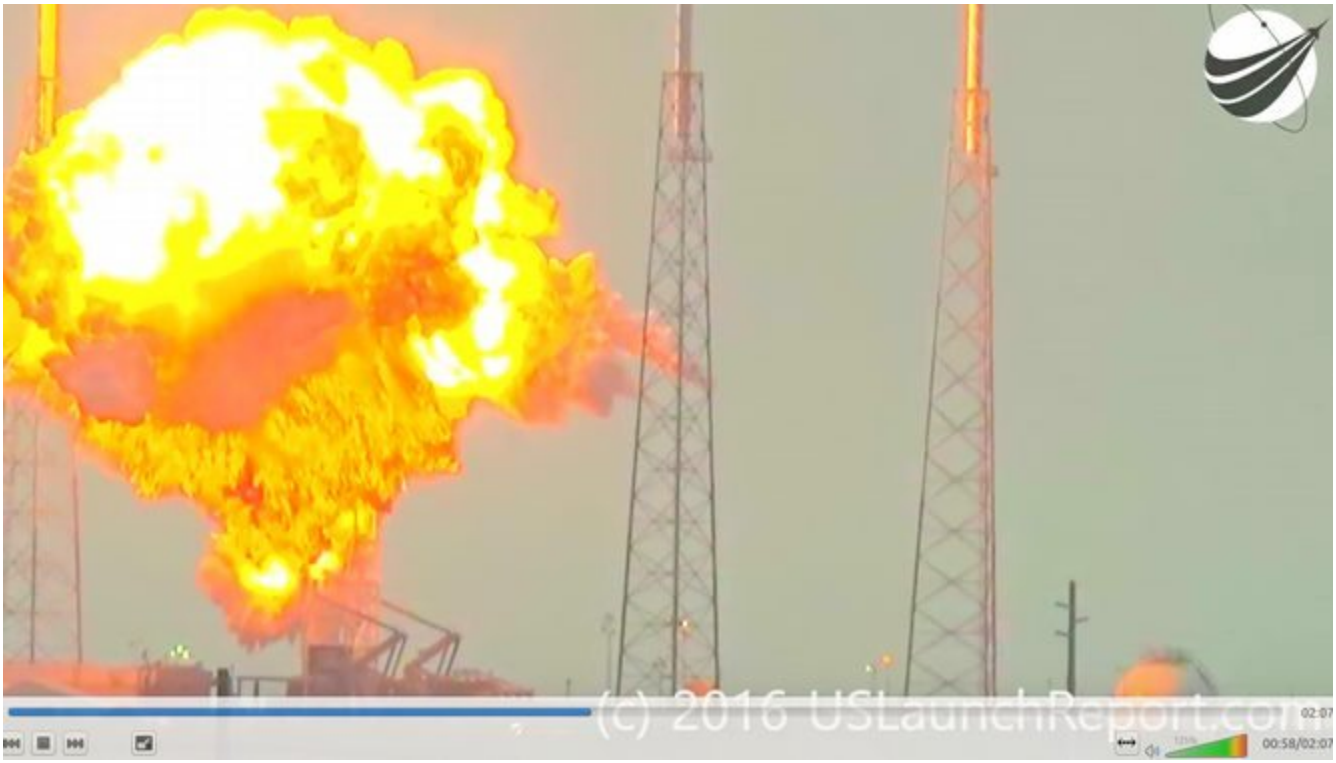
NASA and SPACE AGENCIES: "ELON MUSK IS A HACK WHO SIMPLY MAKES BAD ENGINEERING DECISIONS"

NASA Panel’s Letter Warns of Issues With SpaceX Manned Rocket Procedures

- Musk's cars and rockets explode so often that few believe he knows what he is doing

- Musk is stuck with a bad fuel technology which forces him to put passengers and astronauts at risk of fireball of death

- Company’s plan to fuel boosters with astronauts already on board worries agency officials



By
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New details have emerged about warnings issued by a National Aeronautics and Space Administration advisory panel regarding potential fueling hazards on SpaceX's future manned rockets.

The panel's safety concerns, which were reported on earlier by The Wall Street Journal, focus on possible dangers stemming from plans by entrepreneur Elon Musk's Space Exploration Technologies Corp. to fuel rockets while astronauts are strapped into capsules loaded on board.

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The supercooled fuel used by SpaceX's rockets to provide greater thrust requires launches to occur roughly within half an hour of the start of fueling, which wouldn't give crews enough time to get into position before liftoff. No other large manned rocket developed over the years by any country, or in operation today, relies on fueling operations with astronauts already in place, according to veteran U.S. and European industry officials.

On Friday, NASA released a Dec. 9, 2015, letter in which the agency's International Space Station Advisory Committee initially raised the issue and requested detailed answers from senior agency officials. NASA has promised to respond to the outside group of experts in December.

"There is unanimous, and strong, feeling by the committee, that scheduling the crew to be on board" before the start of fueling "is contrary to booster safety criteria that has been in place for over 50 years, both in this country and internationally," the letter said.

The one-page letter, signed by retired U.S. Air Force Lt. Gen. Thomas Stafford, a former astronaut who chairs the advisory panel, urged SpaceX and NASA to consider additional technical safeguards while reiterating that the committee is "deeply concerned about introducing the practice of fueling with the crew" in place.

SpaceX has told NASA that its crew-abort system is designed to propel astronauts to safety in the event of a launch emergency.

The letter was released in response to a number of Freedom of Information Act requests filed over several months by the Journal.

The fueling controversy has captured the spotlight in the wake of an unmanned SpaceX Falcon 9 rocket that exploded on the launchpad during a routine fueling exercise on Sept. 1.

The Falcon 9 booster, according to industry officials, also is the only large rocket world-wide in decades with helium bottles installed inside its liquid-oxygen tanks. During launch, the helium inside the bottles is released into the tank to maintain pressure while the liquid oxygen is consumed.

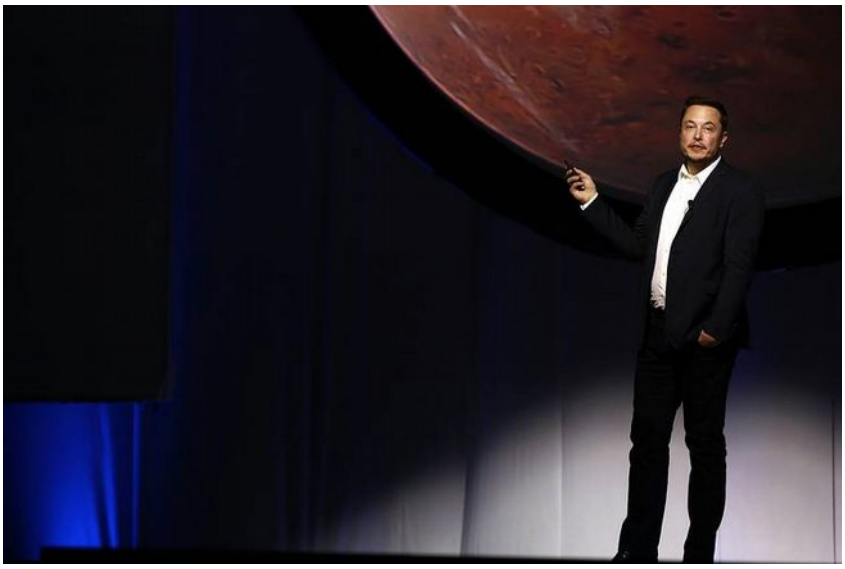
SpaceX officials have said they have replicated conditions—including specific temperature and pressure variables—believed to have caused one of the helium containers to rupture, leading to the Sept. 1 explosion, but no official cause has been released. During a public meeting of the advisory committee last week, but before the letter was released, Gen. Stafford said he raised the fueling issue for a second time in a telephone conversation with William Gerstenmaier, NASA's associate administrator for human exploration, days before SpaceX's Sept. 1 explosion. Since then, "we have not heard a thing," Gen. Stafford told the rest of the committee.

At the same meeting, Joseph Cuzzupoli, a former senior NASA manager who worked on the agency's Apollo, Gemini and space shuttle programs, also expressed misgivings about SpaceX's plans and the lack of NASA response. "Are we in the dark on this whole thing?" he asked.

Mr. Cuzzupoli told the committee that installing helium containers within fuel tanks—which entails putting wiring, sensors and tubing inside a potentially explosive environment—is "very unusual in my world, in my experience." Such designs, he said "have been a no-no ever since Apollo."

In 1970, a spark from an exposed wire inside an oxygen tank caused a life-threatening fire on board Apollo 13, bound for the moon. The crew managed a safe return to Earth, but NASA changed designs to prevent a similar incident.

On Friday, NASA also released a statement saying it has “a rigorous review process” under way to evaluate “the SpaceX concept for fueling the Falcon 9" for manned launches, adding that findings from the company-led probe into September’s cargo accident “will be incorporated into NASA’s evaluation.”



SpaceX Chief Executive Elon Musk spoke at an astronautical conference in Guadalajara, Mexico, in September. Mr. Musk’s company has told NASA that its crew-abort system is designed to propel astronauts to safety in the event of a launch emergency. Photo: Susana Gonzalez/Bloomberg News

SpaceX has said it and the agency, for the past year and a half, “have performed a detailed analysis of all potential hazards“ stemming from the fueling process, and required controls were approved by agency officials in July. ”These analyses and controls will be carefully evaluated in light of all data and corrective actions resulting from” investigation of the accident, according to SpaceX.

The NASA committee’s warnings could complicate the company’s technical and financial assumptions for ferrying crews to and from the international orbiting laboratory, with flights anticipated to begin later this decade.

NASA’s statement on Friday did note, however, that a different advisory panel, called the Aerospace Safety Advisory Panel, serves as the agency’s “primary independent adviser for commercial crew activity.”

That safety advisory panel also is awaiting NASA’s responses, according to one person familiar with the details.