NASA vows to battle 'organizational silence' as problems arise amid Artemis delays

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NASA was riding a high after the overall success of Artemis I when the uncrewed rocket made a test run to the moon and back in 2022, so the message remained full steam ahead to push for a crewed Artemis II

flight in 2024 and the return of humans to the moon in 2025.

But under the surface were issues, and the sheen of success hit reality, prompting NASA to delay Artemis' first human spaceflight until no earlier than September 2025, and then pushing the moon landing until at least one year later.

A big driver of that delay was a NASA-driven, lessons-learned initiative that is closely examining the things that worked well with Artemis I and those that needed fixing across not just NASA departments and other government agencies, but also with commercial partners like Boeing and Lockheed Martin.

Leading the lessons learned program since Artemis I for NASA has been Janet Karika, principal adviser for space transportation and a former NASA chief of staff, who led a discussion on the efforts during a panel held Jan. 31 at the SpaceCom conference at the Orange County Convention Center.

She said the key issue is a continued effort by NASA to battle a culture of organizational silence—the notion that workers and managers feel the pressure to ignore warning signs in favor of budgets and deadlines—which was a leading factor in both the space shuttle Challenger and Columbia disasters that led to the deaths of 14 astronauts.

"It happens. And we all know it happens," she said. "So we will talk about organizational silence, but how many of us still see it in our organizations? 'I'm not going to say anything,' 'Is anybody else saying anything?' 'I'm not raising my hand,' is still around."

The specter of those tragedies gets hammered home each year because of the anniversary time frame among both shuttle disasters and the

Apollo I fire that killed three astronauts in 1967 that NASA pays deference to each year, as all three happened between Jan. 27 and Feb. 2.

"During this Week of Remembrance, I'm telling you, call it out. If you have to tell somebody, 'You're not creating a tremendously open environment right now.' That is important because it's a real thing that lives and breathes at NASA," Karika said.

She credited panelist Zudayyah Taylor-Dunn, chief knowledge officer within both NASA's space operations and exploration systems directorates, as leading an organization within NASA to make sure all of the players across 10 space centers and five mission directorates are talking with one another.

So as the engineers and scientists solve problems, the organization is designed to make sure safety outweighs the pursuit of success.

'Creating a safe space to fail'

It's a message that has to come from the top down, she said.

"Creating a safe space to fail. That is so pivotal to foster that environment," Taylor-Dunn said. "If you don't do that, then we're not communicating our best. So there's something that could be left unsaid, and then we have a failure. So you need to be able to create that safe space and protect that safe space."

One of the biggest lessons learned among all the players was a lack of communication. Because of that, for Artemis II and beyond, NASA created last year the new moon to Mars Program Office, which as one of its biggest requirements has each team buy into one shared schedule.

Lorna Kenna, vice president and program manager with Jacobs Space Operations Group, which is the primary contractor with Exploration Ground Systems based at Kennedy Space Center, said a lack of schedule sharing led to some of the biggest headaches as the EGS teams tried to juggle for the first time a new launch system.

"Artemis I didn't go as originally planned, and what you see within a program is individual stakeholders will make risk trades based on what may be an overly optimistic schedule," she said. "And so at Kennedy, for instance, when we saw where we made decisions about not replacing critical ground support equipment, because we were just this close to launch … What we found was we limped along with hardware that should have been replaced early in the program."

So now EGS along with the Space Launch System rocket prime contractor Boeing and the Orion spacecraft prime contractor Lockheed Martin are in lockstep with how they are running up against deadlines.

For Artemis III and beyond, that list of partners grows with spacesuits built by Axiom Space, human landing systems provided by SpaceX and Blue Origin and the contractors working with the planned lunar space station called Gateway.

"Schedule realism, I will tell you right now is a huge part of some of our lessons learned," Karika said. "Everybody's coming together, and we're talking all … the frenemies … We've got just everybody in the room, and we're all talking about how to get this mission done."

Those discussions led to what is now at least a 10-month delay for Artemis II, and now gives more breathing room for the complicated facets of Artemis III to hit the target.

Jacobs, for instance, gets more time to put a working mobile launch

tower in place, and one that won't sustain as much damage as it did from the first launch.

"8.8 million pounds of thrust leaving the launch pad tends to leave a mark," Kenna said, noting the designs for the tower were based on suppositions of just what might happen when what became the world's most powerful orbital rocket to launch actually came to fruition.

Another issue as the rocket prepped for liftoff at Kennedy Space Center was the lack of access to parts of the fully stacked 312-foot-tall SLS topped with Orion while it was at on the launch pad. In 2022, some of those issues forced teams to have to roll it back to the Vehicle Assembly Building just so they could get to the problematic parts of the rocket.

"There's a lot of wear and tear on the whole system to take all of the umbilicals off, to get configured to bring the crawler underneath and roll it back," said panelist John Shannon, Boeing Exploration Systems' mission area vice president. "So really having that late hardware access to the pad I think is going to be a requirement for future missions."

Shannon did say some of the lessons learned leading up to the first launch will translate to a better flow for the future. That included supply chain issues related to not just the pandemic, but also because of a lack of vendors that became limited after the space shuttle program shut down.

And despite SLS taking nearly a decade since the program was announced to actually taking flight, he had confidence because of the robust testing of the engine parts.

"Even though there was a lot of schedule pressure, especially in the last couple of years, NASA never backed off on the requirement to do full testing on the vehicle," he said. "It takes an effort of will to do that. It's

easy to skip testing as you get into the crunch time … But NASA realized that this is really the one chance you have to collect a lot of data to understand the performance of this vehicle."

And while NASA and its three main contract partners that put up Artemis I have had a decade working together leading to a certain level of comfort, future missions are going to need even more communication as new players join the team.

"It's trust building, but I'm not sure we have 10 or 15 years to do that, as we're adding the new folks," said Paul Anderson, Lockheed Martin Space's deputy program manager for Orion. "We've got to get leaders on the Artemis program to continue this where we can enable this spirit of cooperation."

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