October 2024

Update

A free email newsletter of the Oklahoma Space Alliance

Oklahoma Space Alliance

A Chapter of The
National Space Society

Night View from ISS

Credit: Matthew Dominick/NASA

October 2024 OSA Meeting

Saturday, October 12, 2024

2:00 PM

Norman Computers

916 W Main St, Norman, OK 73069

405-863-6173

Program— Space News and Events

Website: http://osa.nss.org

Quote of the Month

I would have flown by myself or with a kangaroo, I just wanted to fly. All that stuff about crew psychological compatibility is crap. Almost anyone can put up with almost anyone else for a clearly defined period of time in pursuit of a mutual objective important to each. – Michael Collins

Table of Contents

Oklahoma Space Alliance
Update

October 12, 2024

Editor **Cliff McMurray**

Asst Editor **Claire McMurray**

cliffmcmurray@hotmail.com

405-863-6173 (C)

The *Oklahoma Space Alliance Update* is a bi-monthly newsletter of the Oklahoma Space Alliance a chapter of the National Space Society, a non-profit organization headquartered in Washington, D.C. The address of **OSA** is **102 W. Linn, #1, Norman, OK 73071**.

Unless otherwise noted, all contents of articles herein do not necessarily reflect the opinion of anyone but the writer. Reprint rights are granted to recognized chapters of **NSS,** provided credit is given.

Articles may be submitted by U.S. mail or electronically. Articles may be sent to the Editor at 121 South Creekdale Drive, Norman, OK 73072 or to david.sheely51@gmail.com. Each submission should include the author's name and either e-mail address or phone number (for verification only). A text or Microsoft Word file is preferred. Please contact the Editor by phone, e-mail or texting before mailing your information.

1,111 Days

Credit: Roscosmos/Oleg Kononeko

Oleg Kononenko and Nikolai Chub returned to earth on Russia's Soyuz MS-25 spacecraft on September 23. The pair of cosmonauts set a new record for a single stay aboard ISS, 374 days. Their fellow crewman aboard MS-25, NASA astronaut Tracy Caldwell Dyson, returned with "only" 184 days under her belt. Kononenko now has a cumulative total of 1,111 days in space. That total was accumulated over five missions and is more than a year more than his closest active rival, former NASA astronaut Peggy Whitson, (675 days to date). He's the first human to log more than 1,000 days off earth.

Article: https://www.space.com/soyuz-ms-25-landing-record-days-space

Just Don’t Call It a Rescue Mission

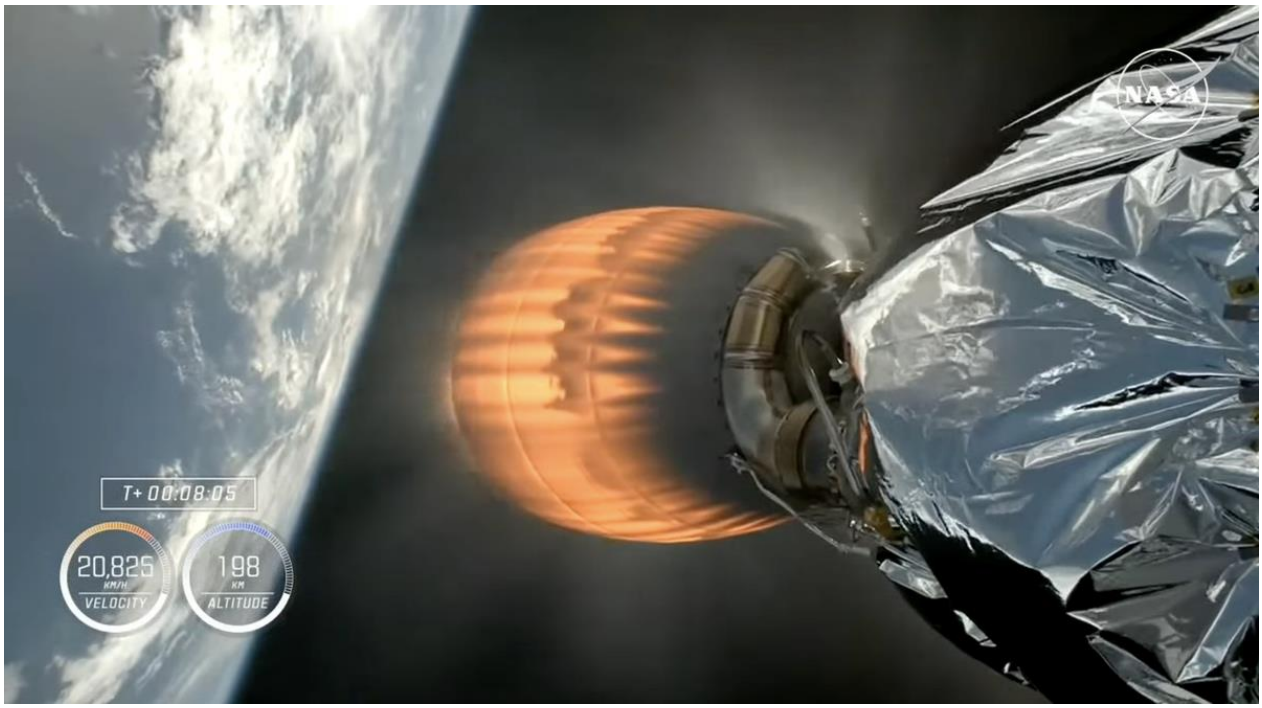
Credit: NASA

Butch and Suni now have a safe lifeboat docked to ISS. The Crew-9 mission lifted off on September 28, carrying NASA astronaut Nick Hague, cosmonaut Alexandr Gorbunov, and two empty seats for the Starliner refugees. It was the first manned launch from SLC-40 on the Cape Canaveral Space Force Station side of the Florida spaceport; that’s SpaceX's first Florida launch pad, which has hosted lots of unmanned launches over the years.

Articles: https://spacenews.com/falcon-9-sends-new-crew-to-iss-on-first-crewed-launch-from-slc-40/

https://www.space.com/spacex-crew-9-astronaut-launch-success

Damn the Torpedos, Full Speed Ahead!



Credit: NASA webcast

Their Falcon 9 gave Crew-9 a safe ride to orbit, but its upper stage, said SpaceX, "experienced an off-nominal deorbit burn…As a result, the second stage safely landed in the ocean, but outside of the targeted area.". That's the second problem with the upper stage in less than three months. Is this a sign that SpaceX is pushing its launch cadence too hard? SpaceX has suspended all Falcon 9 launches until the current issue is resolved; that's the third time this year. The FAA cleared a Falcon 9 to launch ESA's Hera probe to asteroid Didymos (follow-up look at the changes wrought by the DART impact) because that Falcon's second stage would not be deorbited, but otherwise the grounding remains in effect. Hera launched without a hitch on October 7; the upper stage got some cool views of earth in the rearview mirror.

Articles: https://www.space.com/spacex-pause-launches-crew-9-falcon-9-issue

https://spacenews.com/spacex-pauses-falcon-9-launches-after-upper-stage-deorbit-anomaly/

https://spacenews.com/faa-clears-falcon-9-launch-of-hera-mission/

https://spacenews.com/falcon-9-launches-esas-hera-asteroid-mission/

https://www.space.com/spacex-esa-hera-asteroid-mission-launch-success

https://www.space.com/spacex-falcon-9-hera-launch-earth-photos

Move It!

Credit: SpaceX

In early September, the FAA announced that it was fining SpaceX a total of $630,000 for launch license violations stemming from the June 2023 Falcon 9 launch of the Satria-1 broadband satellite and the July 2023 Falcon Heavy launch of the EchoStar-24 broadband satellite. SpaceX returned fire with a letter to Congress contesting the fines, arguing that the two alleged infractions were frivolous and should not be viewed as violations at all. In testimony before the House Committee on Transportation and Infrastructure Subcommittee on Aviation on September 25, FAA Administrator Michael Whitaker defended his agency's decision to fine SpaceX, and its delays in licensing the next Starship test flight. Now Elon Musk has called on Whitaker to resign. As some of the questions he got from Congress attest, Musk isn't the only one unhappy.

Articles: https://www.space.com/faa-fining-spacex-launches-2023

https://spacenews.com/faa-fines-spacex-for-launch-license-violations/

https://spacenews.com/spacex-letter-criticizes-faa-for-systemic-challenges-in-launch-licensing/

https://spacenews.com/faa-administrator-defends-spacex-licensing-actions-on-safety-grounds/

https://www.space.com/spacex-elon-musk-faa-administrator-resign

They're Suiting Up

Credit: CMSA

The China Manned Space Agency has released promotional video of the new spacesuit its taikonauts will wear when they walk on the moon. The red stripes on its upper sections are inspired by ribbons from the famous "flying apsaras" of Dunhuang art; the overall design is stated to draw on the style of traditional Chinese armor.

Article: https://spacenews.com/china-unveils-lunar-spacesuit-for-crewed-moon-mission/

Ambitious India

Credit: ISRO

On September 18, India's cabinet approved several big projects: 1) the Chandrayaan-4 lunar sample return mission, which will require two launches and a rendezvous in lunar orbit; it's budgeted at about 21 billion rupees, or $253M, 2) the Venus Orbiter Mission (VOM), scheduled for launch in 2028 and budgeted at 12.36 billion rupees, or $149M, 3) the first Bharatiya Antariksh Station (BAS-1) module, to provide a destination for the Gaganyaan manned flights, 4) development of the Next Generation Launch Vehicle (NGLV) to launch the Bharatiya Antariksh Station and enable manned lunar landings by 2040; that project has a budget of 82.4 billion rupees, or $994M. The Gaganyaan budget was expanded by 111 billion rupees ($1.35B). In accordance with an agreement announced in June, two of India's four astronauts, Shubhanshu Shukla and Prasanth Balakrishnan Nair, are now in the United States training for a mission to the ISS.

Articles: https://spacenews.com/india-approves-moon-sample-return-venus-orbiter-space-station-module-and-reusable-launcher/

https://spacenews.com/u-s-and-india-advance-human-spaceflight-cooperation/

https://spacenews.com/indian-astronauts-to-start-training-for-iss-mission/

Cleared?

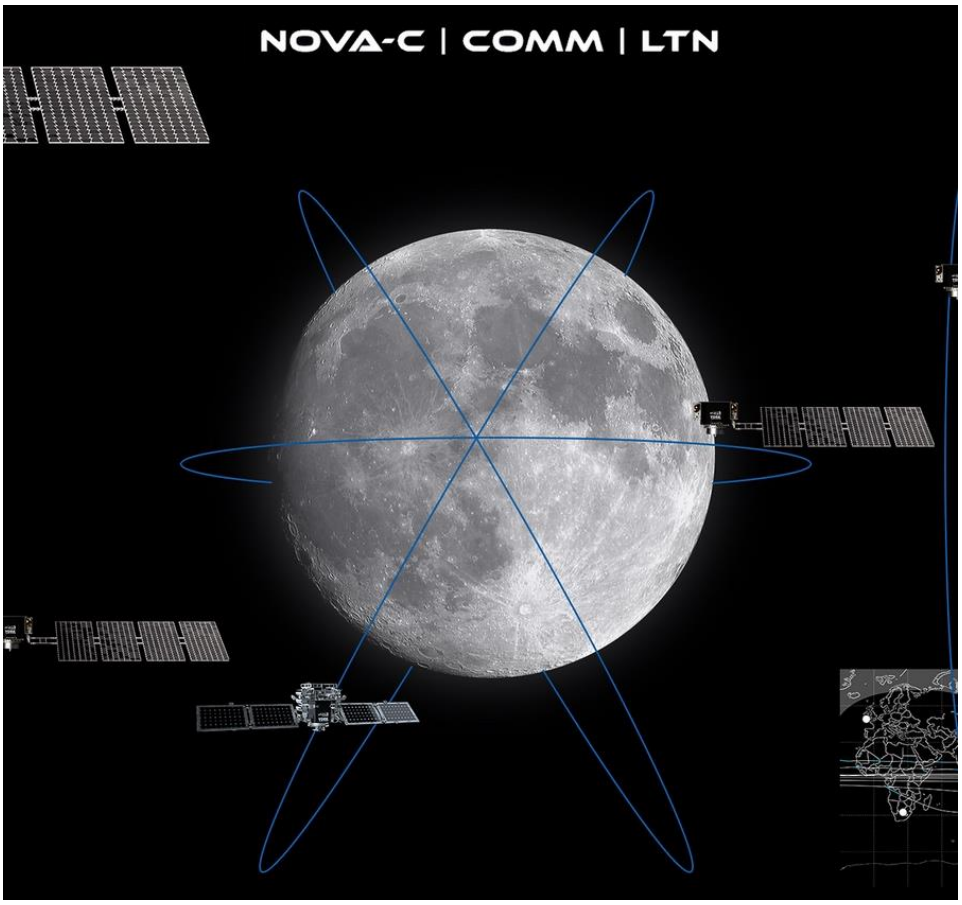
Credit: ULA

ULA originally planned to launch Sierra Space's Dream Chaser spaceplane on their Cert-2 flight (the second of two certification flights before Vulcan is cleared to carry DoD payloads), but Dream Chaser wasn't ready in time for a fall launch. Unwilling to delay Cert-2 – they want to be cleared to launch a couple DoD payloads before year-end – ULA replaced Dream Chaser with an inert mass simulator payload and launched it on October 4. The launch was successful and ticked all the boxes, including two long burns of the upper stage engine, but there were some troublesome anomalies that may delay certification: a failed nozzle on one of the SRBs, and delayed separation of the SRBs. It may be a while before we know whether DoD will require another certification flight.

Articles: https://www.space.com/ula-vulcan-centaur-second-test-flight-launch-success

https://spacenews.com/vulcan-competes-second-flight-despite-srb-anomaly/

Luna Needs Comms



Credit: Intuitive Machines

Intuitive Machines just got a big win. On September 17, NASA announced the award of an indefinite-delivery, indefinite-quantity contract to Intuitive Machines to support its Near Space Network (NSN is an existing system that provides communications services for NASA missions in Earth orbit and cislunar space). The award has a maximum value if all options are exercised of $4.82 billion.

Article: https://spacenews.com/nasa-selects-intuitive-machines-for-lunar-communications-and-navigation-services/

Starshield: Safety in Numbers

Credit: USAF

The DoD has been an avid Starlink user, and likes the system so much it wants congressional authorization to buy 100 of the Starlink sats and deploy them by 2029 to create its own dedicated constellation. The military version of the Starlink smallsat, equipped with enhanced encryption and other security features, is to be called Starshield. The PLEO (proliferated low Earth orbit) constellation concept is catching on with the military.

Article: https://spacenews.com/pentagon-embracing-spacexs-starshield-for-future-military-satcom/

The Space Sustainability Division

Credit: IARPA

Presently there are eight different entities within NASA (the Orbital Debris Program Office, Meteoroid Environments Office and Conjunction Assessment Risk Analysis program, among others) that have some role in orbital debris. That will change with the creation of a Space Sustainability Division, announced on September 19. NASA doesn't have regulatory authority over commercial operations, though. The FCC had attempted to assume some of that authority with new rules passed in September 2022 that require satellite operators to deorbit their satellites within five years of their missions, rather than 25 years as had been required. The new rules were set to come into effect this September, but the recent Supreme Court decision overturning "Chevron deference" (i.e. allowing government bureaucracies very broad authority to make up their own rules without explicit congressional legislation) makes that questionable.

Articles: https://spacenews.com/nasa-creates-space-sustainability-division-to-consolidate-orbital-debris-activities/

https://spacenews.com/supreme-court-case-could-affect-orbital-debris-mitigation-rules/

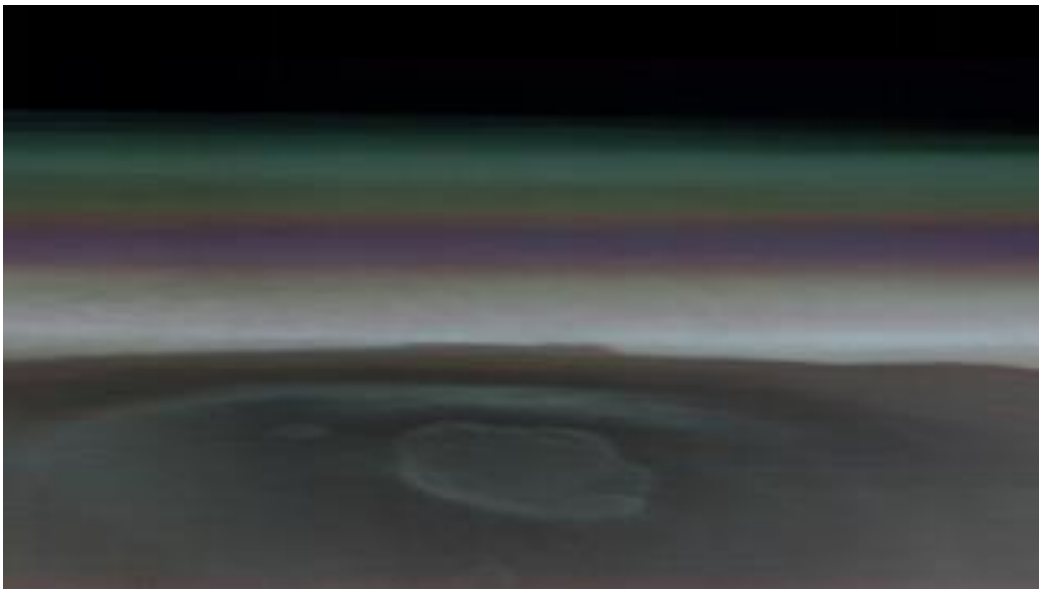
China’s Vacuum Cleaner

Credit: Sustain Space

A Chinese company hoped to launch its first orbital debris removal demonstration satellite before the end of this year. Sustain Space, or Sanyuan Aerospace, is developing multiple on-orbit servicing operation technologies to support satellite and active debris removal (ADR), satellite refueling and life extension, and on-orbit satellite repair and manufacturing. All these applications, especially ADR, have military implications. Sustain Space is a “private” company, but it is, after all, Chinese…

Article: https://spacenews.com/chinese-on-orbit-servicing-and-debris-removal-company-secures-early-funding/

100,000 Orbits



Credit: NASA/JPL-Caltech/ASU

A noteworthy milestone was passed a few months ago, with no great fanfare. NASA's Odyssey probe, which reached Mars orbit in October 2001 and has been returning data for 23 years now, completed its 100,000th orbit of the Red Planet on June 30 of this year. To celebrate its longest-running Mars probe's milestone, NASA released a panorama of Olympus Mons as seen from Odyssey.

Article: https://www.sciencealert.com/change-5-mission-discovers-significant-water-rich-mineral-in-moon-soil

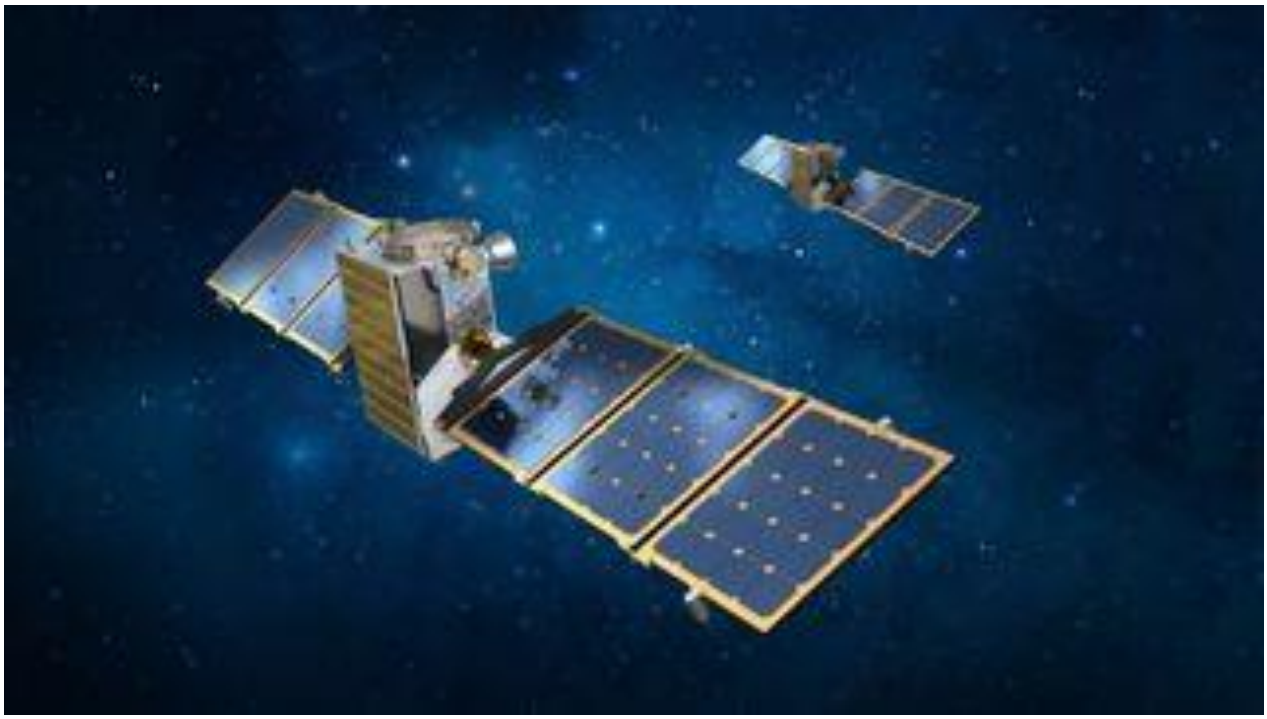
The Zero-G Fountain of Youth

Credit: SpaceX/Inspiration4

Turns out the Inspiration-4 crew got genetically younger on their flight. Sadly, the effects didn't last.

Article: https://www.space.com/spacex-inspiration4-crew-younger-in-space

Apophis Calling



Credit: Lockheed Martin

99942 Apophis is headed for an April 2029 flyby of Earth. It's a rock that has attracted a lot of attention, due to its size (1,100 ft. diameter) and the closeness of its approach (19,600 miles, inside geostationary orbit. Apophis briefly set the record for highest rating ever on the Torino scale of potential danger to earth, reaching level 4 on December 27, 2004. NASA already has one probe on the way to visit that asteroid: the OSIRIS-REx asteroid sample return spacecraft, redirected to intercept Apophis after sending its samples of asteroid Bennu home. Now renamed OSIRIS-APEX, that spacecraft will rendezvous with Apophis after the rock has passed earth. It now appears that OSIRIS-APEX may be only one of several probes to Apophis. NASA has issued, retracted, and then reissued an RFI for "the development of a non-NASA-led mission to Apophis utilizing the agency's near-fully developed but still un-flown Janus spacecraft." Those twin asteroid probes were originally designed to launch with NASA's Psyche probe; they were put into storage when the trajectory of that mission changed so that it couldn't deliver them to their target. ESA is pushing ahead with Ramses (Rapid Apophis Mission for Space Safety), using the same spacecraft bus as its recently-launched Hera mission, to visit Apophis before it passes earth. Finally, the private company Exploration Labs, a Southern California startup focused on space resources, is planning a 2028 mission to rendezvous with Apophis before it reaches earth.

Articles: https://www.space.com/nasa-janus-spacecraft-aphophis-asteroid

https://spacenews.com/nasa-removes-technical-details-from-janus-rfi/

https://spacenews.com/esa-supports-work-on-apophis-mission/

https://spacenews.com/exlabs-plans-mission-to-rendezvous-with-asteroid-apophis/

About That Chinese Spaceplane…

Credit: Felix Schöfbänker

We still don’t know much about China's Shenlong ("Divine Dragon") unmanned spaceplane, but it recently completed its third orbital mission, landing September 5 after 267 days in orbit. We have some tantalizing pictures taken by veteran space watcher Felix Schöfbänker in Upper Austria using a 14-inch telescope that show a delta shape and some deployed protuberances (solar panels? antennae?). During its stay in orbit it launched at least one subsatellite and conducted proximity operation with it (Shenlong seemed to have performed at least two and possibly three capture/docking operations with a co-orbiting object during its second flight in 2022-2023). Six other objects spotted near the spaceplane early in the mission were later identified as pieces of debris.

Articles: https://www.space.com/china-space-plane-image-delta-wing-design

https://www.space.com/china-space-plane-caught-on-camera

https://www.space.com/china-spaceplane-earth-orbit-third-mission

https://spacenews.com/chinas-secretive-spaceplane-conducts-proximity-operations-with-small-spacecraft/

https://spacenews.com/chinas-secretive-reusable-spaceplane-lands-after-267-days-in-orbit/

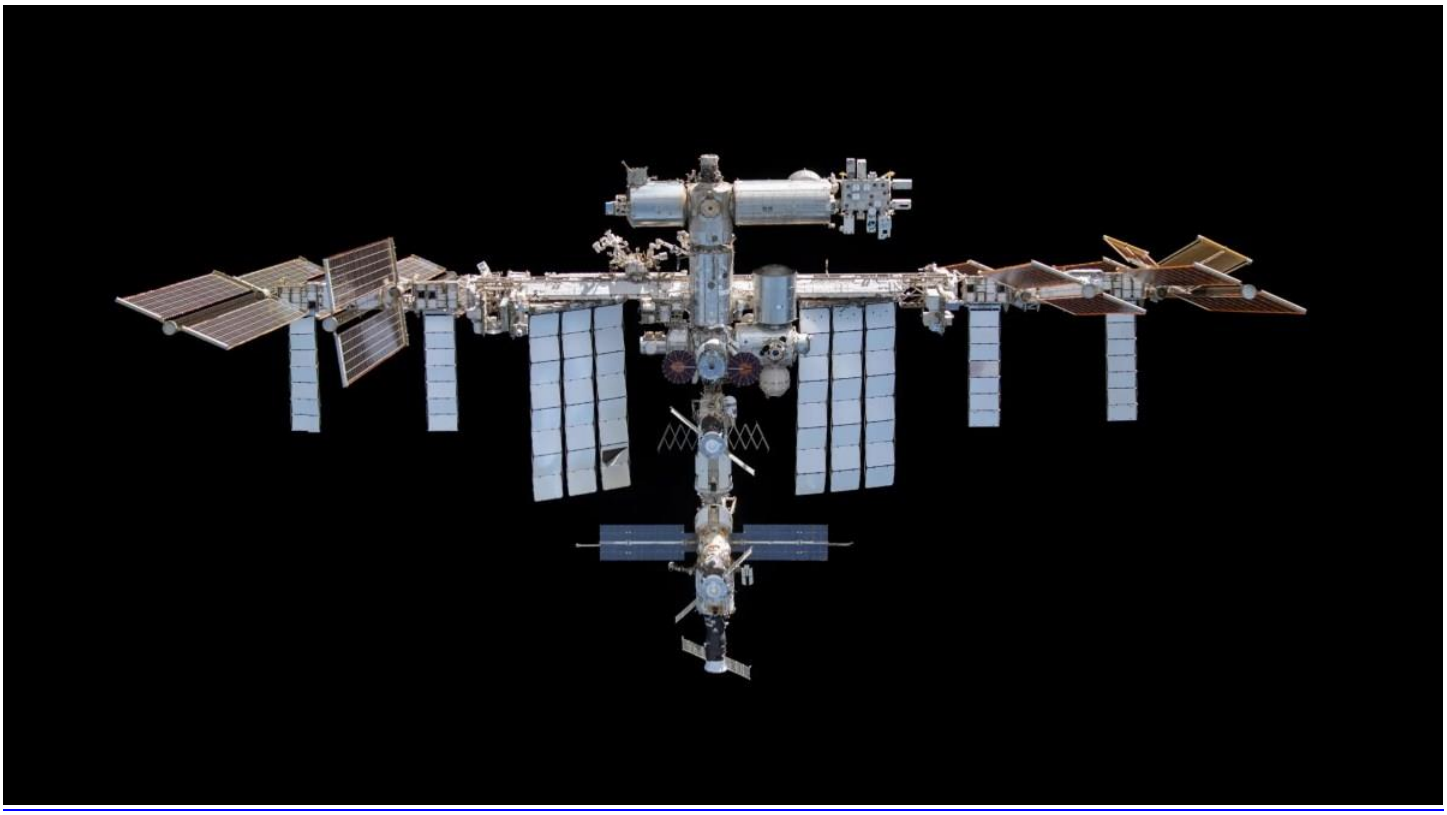
Human Mars Missions Will Need This

Credit: NASA

The first 3D printed metal part has been produced in space, aboard ISS in August. An ESA team lead the experiment through several months of tweaking before getting a good part. They plan to print two more objects, after which all three will be brought back to Earth for quality analysis and future planning.

Article: https://www.space.com/astronauts-3d-print-first-metal-part-on-iss

It’s Still There



Credit: NASA

The air leak in the Russian portion of ISS, in an area that connects Zvezda to a docking port has been going on for five years now. A report from NASA's Office of the Inspector General (OIG) calls this leak the top safety risk to keep ISS operational until 2030. There are other maintenance items cited in the report, including increased risk of micrometeoroid impact, and NASA says the air leak risk is currently manageable. But the leak, which has been as low as 0.2 lb./day, has also been as high as 3.7 lb./day (the day after the OIG report, NASA said that recent repair work had reduced the leak rate by about one third). The ISS program has elevated the leak “to the highest level of risk in its risk management system.”

Articles: https://www.space.com/iss-leak-safety-risk-nasa-oig-report

https://spacenews.com/nasa-cites-progress-in-reducing-iss-air-leak/

This Week At NASA

Videos: https://www.youtube.com/watch?v=WqPSN-P-y-o&list=PL1D946ACB21752C0E

That’s All, Folks

Newest image of Earth and Moon as seen from Space by Japanese satellite - Himawari-8