Nuclear, Missile & Space Digest

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A. India

Startups are building nuclear reactors in the US—India weighs opening its nuclear sector

CNBC TV 18, November 9, 2024

Global tech giants Amazon, Microsoft and Google are pivoting. The IT honchos recently announced that they are investing in nuclear energy-based companies to mitigate the rising electricity demands due to AI and support their mission of turning carbon neutral.

Last month, Google revealed that they signed a corporate agreement with Kairos Power to purchase nuclear energy from multiple small modular reactors (SMRs) that are being developed by the company.

Meanwhile, Amazon says that they are investing $500 million in Maryland-based X-Energy which is building small modular nuclear reactors in Washington. Microsoft, on the other hand, signed a deal with Constellation Energy to enable the restart of an 835MW Pennsylvania-based nuclear facility which was retired in 2019 in a bid to go "carbon-free".

SMRs are nuclear reactors built from prefabricated items which can be assembled in a cheaper, faster manner vis-a-vis a conventional nuclear reactor.

https://www.cnbctv18.com/energy/startups-are-building-nuclear-reactors-in-the-us-india-weighs-opening-its-nuclear-sector-19506940.htm

Isro to establish a lunar space station by 2040, dedicated to moon missions

India Today, November 11, 2024

The Bharatiya Antariksha Station, India's first space station in low Earth orbit, is slated for launch by 2035. This Earth-orbiting platform will serve as a crucial testbed for technologies and systems needed for the more ambitious lunar station.

Isro's roadmap aligns with the global trend of renewed interest in lunar exploration, with several countries and private entities announcing plans for Moon missions.

India's approach, however, stands out for its comprehensive, phased strategy that bridges current capabilities with long-term visionary goals.

As Isro works towards these milestones, the agency continues to develop key technologies, including the Next Generation Launch Vehicle (NGLV) and advanced life support systems. These developments are crucial not only for the lunar station but also for India's broader space exploration objectives.

https://www.indiatoday.in/science/story/isro-to-establish-a-lunar-space-station-by-2040-dedicated-to-moon-missions-2631750-2024-11-11

In Major Push For Nuclear Power, India Asks States To Set Up Reactors

NDTV World, November 13, 2024

India has ambitious plans to set up nuclear reactors across the country, especially in states where thermal power plants have either completed its life, or where access to coal is a challenge.

With its focus on clean energy, India aims to reduce its dependence fossil fuels, and for this, the central government has now asked states to set up nuclear power plants.

India's Power Minister, Manohar Lal, on Tuesday chaired the Conference of Power Ministers of States & Union Territories where he asked states that are distant from coal resources to set up nuclear-based power plants. The move has also been made keeping in mind the rapidly-growing demand for electricity in the country.

In the Union Budget, the central government had proposed to partner with private investors to set up small-scale nuclear reactors to meet its growing energy demands.

"States should consider setting up nuclear power plants at the sites where coal-based thermal power plants have completed their life," the Union Minister told state

governments as per a statement issued by the Centre.

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https://www.ndtv.com/world-news/in-major-push-for-nuclear-power-india-asks-states-to-set-up-reactors-7005942

B. Pakistan

Suparco joins China's mission for lunar exploration

Dawn, November 14, 2024

The Space and Upper Atmo-sphere Research Comm-ission (Suparco) annou-nced on Wednesday its collaboration on a groundbreaking lunar exploration mission in partnership with China's Chang'e 8 mission, set to launch in 2028.

"This collaboration marks a significant milestone for Pakistan's space programme, as Suparco's indigenous rover will be part of the mission to explore the lunar surface," said a press release issued the commission.

The collaboration underscores the strong bilateral relations between Pakistan and China and their shared vision for advancing space exploration. Suparco's rover, weighing approximately 35 kilogrammes, will join the Chang'e 8 mission, which is part of the larger International Lunar Research Station (ILRS) initiative.

https://www.dawn.com/news/1872256/suparco-joins-chinas-mission-for-lunar-exploration

C. China

'Moon bricks' to be sent to space station

China Daily, October 22, 2024

Chinese scientists have made some bricks using simulated lunar soil and plan to send them to the nation's Tiangong space station for experiments, according to China Central Television. The State broadcaster quoted Professor Zhou Cheng from Huazhong University of Science and Technology, where the bricks were made, as saying that the interlocking blocks were made inside a vacuum hot-pressing furnace that heated the materials, which simulated the composition of real lunar soil, up to about 1,000 C to be sintered. Each brick is more than three times stronger than a standard red brick or concrete brick, which means each square centimeter is able to support more than 1 metric ton of weight, he said. The composition of lunar soil varies in different locations on the moon, Zhou said, noting that there is one composition of the brick that simulates the soil at the landing site of China's Chang'e 5 probe, which is mainly basalt.

https://www.chinadaily.com.cn/a/202410/22/WS67170291a310f1265a1c8d82.html

MSS unveils spy activities intended to steal national secrets from space

Global Times, October 23, 2024

Foreign intelligence agencies have been conducting remote sensing detection on China through high-precision satellites, with the intention of observing and stealing secrets from space in recent years, China's Ministry of State Security (MSS) revealed. "Space security represents a frontier in the expansion of national security from traditional domains to emerging fields in the new era. It is a crucial aspect of safeguarding national strategic interests and demonstrating national security capabilities," the MSS said in an article published on its official WeChat account. It stressed that space security holds significant and far-reaching strategic and overall importance for defending the country's sovereignty, safety and development interests.

https://www.globaltimes.cn/page/202410/1321714.shtml

China's 1st reusable satellite payloads returned

The State Council, the People's Republic of China, October 25, 2024

Scientific payloads returned from the maiden flight of China's first reusable satellite were delivered to their owners. At a handover ceremony held by the China National Space Administration at its Beijing headquarters, the CNSA delivered payloads to governmental departments and officials, including authorities from the provinces of Hainan and Anhui and the Ministry of Agriculture and Rural Affairs. It also handed over payloads to foreign officials from countries such as Thailand and Pakistan. Meanwhile, China Aerospace Science and Technology Corp, the nation's leading space contractor and the satellite's maker, delivered commercial goods to domestic enterprises. The articles delivered, arrived after a 13.5-day flight with Shijian 19, the first Chinese recoverable satellite that can be reused. Previously, China had launched nearly 30 recoverable satellites, but none of them could be reused.

https://english.www.gov.cn/news/202410/25/content_WS671b0cbfc6d0868f4e8ec491.html#:~:text=The%20articles%20delivered%20on%20Thursday,of%20them%20could%20be%20reused

Chinese space tourism set for 2027 take-off with aerospace firm offering US$210,000 seats

South China Morning Post, October 25, 2024

The countdown has begun for the launch of Chinese space tourism, with a private space firm selling two tickets – at 1.5 million yuan (US$210,000) each – for seats on a rocket ride in 2027. Tech start-up Deep Blue Aerospace, which is based in eastern Jiangsu province, said its first passengers would be sent on a journey of around 12 minutes during which they could experience at least five minutes of weightlessness in outer space before heading back to Earth.

https://www.scmp.com/news/china/science/article/3283890/chinese-space-tourism-set-2027-take-aerospace-firm-offering-us210000-seats

Chinese state-owned nuclear company claims breakthrough with radiation detection chip

South China Morning Post, October 28, 2024

A Chinese state-owned nuclear company said it has started mass production of the world's first chip that can detect X-ray and gamma radiation, in the latest sign of China's unrelenting efforts to seek semiconductor technology breakthroughs. The state-owned China National Nuclear Corporation (CNNC) said in a statement on its official WeChat channel that the self-developed chip can measure dose rates of X- and gamma-ray radiation ranging from 100 nanoSievert per hour to 10 milliSievert per hour. The typical dose rate of radiation exposure when flying on a commercial aeroplane, for instance, is around 3,000 nanoSievert per hour, while that of exposure to natural background is around 60 to 200 nanoSievert per hour.

https://www.scmp.com/tech/big-tech/article/3284168/chinese-state-owned-nuclear-companyclaims-breakthrough-radiation-detection-chip

China unveils design of Haolong space shuttle for low-cost transport missions

Global Times, October 29, 2024

China unveiled the design of the Haolong space cargo shuttle. It is an independently developed, reusable commercial winged spacecraft for low-cost space station cargo transport missions, the Global Times learned from the spacecraft's maker. Lin Xiqiang, spokesperson of the China Manned Space Agency, announced the selection progress of China's development plans for lowcost cargo spacecraft and manned lunar rover at a press conference for the Shenzhou-19 manned spaceflight mission. The Haolong space cargo shuttle, developed by the Chengdu Aircraft Design and Research Institute under the state-owned Aviation Industry Corporation of China (AVIC), was among the winning

projects, and was awarded a contract for the engineering flight verification phase.

https://www.globaltimes.cn/page/202410/1322079.shtml

China launches Shenzhou-19 crewed spaceship

Xinhua, October 30, 2024

China launched the Shenzhou-19 crewed spaceship, sending three astronauts — including the country's first female space engineer — to its orbiting space station for a six-month mission. The spaceship, atop a Long March-2F carrier rocket, blasted off from the Jiuquan Satellite Launch Center in northwest China.

The launch of the Shenzhou-19 crewed spaceship was a complete success, according to the China Manned Space Agency (CMSA). China launched the Shenzhou19 crewed spaceship, sending three astronauts — including the country's first female space engineer — to its orbiting space station for a six-month mission.

https://english.news.cn/20241030/9e18d13908ba4684a2a9ad87d62d2ff8/c.html

China's domestic third-generation nuclear project Guohe One connects to power grid

Global Times, October 31, 2024

China's domestic nuclear project Guohe One, with independently developed third-generation nuclear technology, has been connected to the power grid and generated electricity, the National Energy Administration (NEA) announced.

The No.1 unit of the large-scale advanced pressurized water reactor Guohe One nuclear power demonstration project, using China's fully independent intellectual property rights, was connected to the power grid and started electricity generation, Dong Wancheng, an official at the NEA, said.

https://www.globaltimes.cn/page/202410/1322238.shtml

Is China prepared to uncork the nuclear option?

Air & Space Forces, November 1, 2024

The U.S. faces the "increased likelihood of a limited nuclear exchange in a future Indo-Pacific crisis scenario," notes a new report from the Atlantic Council. Based on a wargame plus analysis of China's public statements and internal machinations, the September report asserts that China would drop its "no-first-use" policy should an attempted invasion of Taiwan begin to fail. Beijing is willing to use its power, however, to counter "perceived external threats that could negatively impact domestic political interests."

https://www.airandspaceforces.com/article/sp-is-china-prepared-to-uncork-the-nuclear-option/

China's first CAP1400 begins supplying power

World Nuclear News, November 4, 2024

The first of two demonstration Guohe One (CAP1400) reactors at Huaneng Group's Shidaowan site in China's Shandong province has been connected to the grid. The 1400 MWe pressurised water reactor design is intended to be deployed in large numbers across the country, as well as for export. The CAP1400 is an enlarged version of the CAP1000 PWR developed from the Westinghouse AP1000, with consulting input from the USA-based company.

Research and development for Guohe One began in 2008. In December 2009, the State Nuclear Plant Demonstration Company – a 55-45% joint venture company by State Power Investment Corp (SPIC) and China Huaneng Group – was set up to build and operate two demonstration unit of the CAP1400 at Huaneng's Shidaowan site at Rongcheng. SPIC officially launched the CAP1400 reactor design in September 2020.

https://www.world-nuclear-news.org/articles/china-first-cap1400-begins-supplying-power

China rolls out plan to promote nuclear technology application industry

CGTN, November 6, 2024

On November 6, China established an alliance to promote the development of the nuclear technology application industry, with a group involving key industry stakeholders in the industrial chain and nuclear energy corporations. The establishment comes after China's Atomic Energy Authority rolled out in recent days a three-year plan to promote a nuclear technology application industry.

https://news.cgtn.com/news/2024-11-06/China-plan-to-promote-nuclear-technology-application-industry-1yjB7I8ET9S/p.html

China space station crew returns to Earth after 6 months in space

AP, November 4, 2024

Three Chinese astronauts returned to Earth on Monday after a six-month stay on the Tiangong space station, part of China's effort to be a global leader in space exploration.

A parachute slowed their capsule's nighttime descent to a remote landing area in China's Inner Mongolia region. The crew emerged after touching down at 1:24 a.m. A Chinese national flag stuck in the ground near the capsule flapped in the wind.

In recent years, the country's space program has brought back rocks from the moon and landed a rover on Mars. It aims to put a person on the moon by 2030, which would make China the second nation after the United States to do so.

The space station astronauts returned after welcoming a replacement three-person crew last week for the latest six-month mission. The new team of one woman and two men will conduct experiments, carry out spacewalks and install equipment to protect the station from space debris.

https://apnews.com/article/china-tiangong-space-station-crew-return-b23703fcdff5b61bc0eab69ef6b581c8

China's crewed lunar rover, eyeing 2030 launch, enters initial prototype R&D stage

Global Times, November 6, 2024

In order to achieve the goal of landing on the moon by 2030, the crewed lunar rover has entered the initial prototype research and development (R&D) stage, with two teams under the state-owned space giant, China Aerospace Science and Technology Corporation (CASC), winning the R&D contracts. The two winners are the Shanghai Academy of Spaceflight Technology (SAST) and China Academy of Space Technology, both subsidiaries under CASC, The Paper reported. The solicitation for the crewed lunar rover proposals went through two rounds of selection, and the two finalists that received the contracts each have their own unique characteristics in terms of innovation and advancement, the SAST revealed.

https://www.globaltimes.cn/page/202411/1322564.shtml

Commercial space firm launches first satellite for foreign client

China Daily, November 12, 2024

CAS Space, a Beijing-based rocket maker owned by the Chinese Academy of Sciences, conducted the fifth flight of its Kinetica 1 rocket model, transporting 15 satellites, including one built by China for Oman, into space. It marked the first time that a Chinese commercial space company has launched any satellite for a foreign client. It is also the first time that an Omani satellite has been successfully put into orbit. Among the satellites launched by the rocket, the IRSS-1 was designed and built by the China Academy of Space Technology, a subsidiary of the State-owned space conglomerate China Aerospace Science and Technology Corp, for the Omani space industry startup Oman Lens.

https://www.chinadaily.com.cn/a/202411/12/WS6732b0bba310f1265a1cccb8.html

Chang'e-6 lunar samples on display at 15th Airshow China

CGTN, November 12, 2024

Samples collected from the moon's far side by China's Chang'e-6 mission are on display at the 15th China International Aviation and Aerospace Exhibition (Airshow China) in Zhuhai City, south China's Guangdong Province, according to the China National Space Administration (CNSA). The lunar soil on display, weighing about 75 milligrams, represents the first public welfare samples from Chang'e-6. It was collected from the largest, deepest and oldest impact crater on the far side of the moon, where the lunar crust is at its thinnest. Visitors to the event will be able to view the samples up close. "The lunar samples are expected to draw significant public interest," said Zhang Tao, an official with the CNSA.

https://news.cgtn.com/news/2024-11-12/Chang-e-6-lunar-samples-on-display-at-15th-Airshow-China-1ysAP6NIhlS/p.html

Domestically developed missiles of internationally acknowledged defence-penetration technologies showcased at Airshow China

Global Times, November 13, 2024

Cruise missiles including CM-98, YJ-12E and YJ-18E showcasing two globally acknowledged defence-penetration technologies have been put on display at the ongoing 15th Airshow China, which experts noted highlighting the range and diversity in China's cruise missile development. The air launched stealth cruise missile CM-98 developed by China Aerospace Science and Industry Corporation Limited (CASIC), China's biggest developer of defence weapons and equipment, made its debut at the 15th Airshow China, which kicked off in Zhuhai, South China's Guangdong Province.

https://www.globaltimes.cn/page/202411/1322984.shtml

China unveils fully reusable Starship-like rocket concept

SpaceNews, November 14, 2024

An animated video of the new Long March 9 concept shows the large first stage deploying grid fins and making a reentry burn. It then performs a landing burn, targeting an offshore platform, with moveable rails closing to capture the stage, with the grid fins just above or resting on the rails.

SpaceX demonstrated the first capture of its Super Heavy booster in October, with arms on the rocket's launch pad contracting to catch the stage just below the grid fins.

Another section of the video shows a Starship-like upper stage performing a familiar "belly flop" reentry and landing vertically after a powered descent.

"The heavy-lift rocket has a capacity of 100 tons to low Earth orbit and 50 tons to lunar transfer orbit, which can cover the launch needs of various space missions from low orbit to deep space exploration," Chen Ziyu, a designer at the China Academy of Launch Vehicle Technology (CALT) under the China Aerospace Science and Technology Corporation (CASC), told state media China Central Television (CCTV).

https://spacenews.com/china-unveils-fully-reusable-starship-like-rocket-concept/

Chinese Foreign Ministry on Philippines' plan to buy U.S. missile system

Ministry of Foreign Affairs, the People's Republic of China, November 14, 2024

The Philippines, by bringing in this offensive strategic weapon, is enabling a country outside the region to fuel tensions and antagonism in this region, and incite geopolitical confrontation and arms race. Such a move is provocative and

dangerous, and it is an extremely irresponsible choice to its own people and people of all Southeast Asian countries, to history, and to regional security. What the region needs is peace and prosperity, not the missile system or confrontation. We once again urge the Philippines to heed the call from regional countries and their peoples, correct its wrongdoings as soon as possible, quickly pull out the Typhon missile system as publicly pledged, and stop going further down the wrong path.

https://www.fmprc.gov.cn/eng/xw/fyrbt/lxjzh/202411/t20241114_11526475.html

D. Russia

Dmitry Medvedev warns US it should take Russia nuclear warnings seriously to avoid World War Three

Sky News, November 2, 2024

Dmitry Medvedev, deputy chairman of Russia's security council and who served as the country's president from 2008 to 2012, warned the US on Saturday it was "wrong" to believe "that the Russians will never cross a certain line".

He told Russian-state broadcaster RT that Moscow believed the current US and European political establishments lacked the "foresight and subtlety of mind" displayed by the late Henry Kissinger.

"If we are talking about the existence of our state, as the president of our country has repeatedly said, your humble

servant has said, others have said, of course, we simply will not have any choice," Mr Medvedev said.

Russia has been signalling for weeks to the West that Moscow will respond if the US and its allies help Ukraine fire longer-range missiles deep into Russia.

https://news.sky.com/story/dmitry-medvedev-warns-us-it-should-take-russia-nuclear-warnings-seriously-to-avoid-world-war-three-13246539

Russia launches Soyuz rocket with dozens of satellites, including two from Iran

Reuters, November 5, 2024

Russia launched a Soyuz rocket early on Tuesday carrying two satellites designed to monitor the space weather around Earth and 53 small satellites, including two Iranian ones, Russia's Roscosmos space agency said.

The Soyuz-2.1 launch spacecraft, which lifted off from Russia's Vostochny Cosmodrome, carried two Ionosfera-M satellites, which will become part of the space system for monitoring the Earth's ionosphere, the agency said.

Each Ionosfera-M satellite weighs 430 kg (948 lb) and its working orbit is at an altitude of 820 km (510 miles), according to Interfax news agency.

The system will include in total four of the Ionosfera-M satellites. The next two devices are planned to be launched in 2025, Roscosmos reported.

https://www.reuters.com/technology/space/russia-launches-soyuz-rocket-with-dozens-satellites-including-two-iran-2024-11-05/

Security hawk says Russia will take more steps up nuclear 'ladder of escalation'

Reuters, November 6, 2024

Russia will keep sending nuclear warning signals to its enemies in the West until they get the message, an influential foreign policy hawk said on Wednesday.

Security expert Sergei Karaganov has consistently urged President Vladimir Putin to lower the threshold for using nuclear weapons, and in the past has even advocated a pre-emptive strike on a NATO country.

Putin has said that Russia does not need to resort to nuclear weapons in order to

achieve victory in the Ukraine war. But in September he said Moscow was extending the list of scenarios under which it would consider using such weapons.

Karaganov told Reuters he hoped that strikes against Western countries would not happen. But he said the changes announced by Putin to Russia's nuclear doctrine were part of an effort to "sober up our Western partners, especially the Europeans".

https://www.reuters.com/world/europe/security-hawk-says-russia-will-take-more-steps-up-nuclear-ladder-escalation-2024-11-06/

Putin Oversees Launch Ceremony for Russia's Newest Nuclear Icebreaker

The Moscow Times, November 6, 2024

President Vladimir Putin on Wednesday presided over the launch ceremony for Russia's latest nuclear-powered icebreaker, as Moscow aims to expand its presence in the Arctic and replace markets lost to Western sanctions.

"Strengthening the nation's icebreaker fleet is crucial to our plans for Arctic development and boosting cargo traffic on the Northern Sea Route," Putin said via video link.

Russia touts the Northern Sea Route, which stretches some 5,000 kilometers (3,107 miles) between the Barents Sea and the Chuckchi Sea, as an alternative shipping lane between Europe and Asia, claiming it can shorten transit times by up to 15 days compared to the Suez Canal.

The new icebreaker, named Chukotka, joins Russia's fleet of nuclear-powered icebreakers, built to endure extreme Arctic conditions and plow through ice up to 2.8 meters (9.2 feet) thick. Vessels in this series are around 173 meters long, have a displacement of 33,500 metric tons and an expected service life of 40 years.

The Chukotka is set to join its predecessors — the Arktika, Sibir and Ural — upon its commissioning in late 2026. Meanwhile, two more nuclear icebreakers, the Yakutia and the Leningrad, are under construction, with plans to begin work on a seventh vessel, the Stalingrad, in 2025.

https://www.themoscowtimes.com/2024/11/06/putin-oversees-launch-ceremony-for-russias-newest-nuclear-icebreaker-a86923

Rwanda Counting on Russia to Train Nuclear Power Specialists

The Moscow Times, November 9, 2024

Rwanda said Saturday it was counting on Russia training its citizens to become specialists in nuclear energy, as the African country bets on nuclear power to boost its energy supply.

Moscow is courting fresh diplomatic and economic ties with African countries, and its expertise in nuclear power is seen as one of the major draws of closer ties.

"Rwanda needs nuclear energy," Rwanda's Foreign Minister Olivier Nduhungirehe told AFP in an interview at the Russia-Africa forum taking place in the resort city of Sochi this weekend.

Hundreds of Rwandan students have graduated from Russian universities including "those who specialize in nuclear science," he said.

"We hope to be able to train a certain number of scientific managers specializing in this field," he added.

Rwanda, a small landlocked country with a population of around 13 million, generates around half its electricity from thermal sources, another 44 percent from hydro and four percent from solar.

https://www.themoscowtimes.com/2024/11/09/rwanda-counting-on-russia-to-train-nuclear-power-specialists-a86964

NASA and Roscosmos disagree on cause and severity of ISS air leak

SpaceNews, November 13, 2024

NASA and Roscosmos continue to disagree on the cause and severity of an air leak in the Russian segment of the

International Space Station, one that NASA worries could lead to a "catastrophic failure" of part of a Russian module.

That disagreement was brought to light during a brief meeting of NASA's ISS Advisory Committee Nov. 13, which recounted a meeting of that committee with its Roscosmos counterpart in Moscow in September to discuss issues with the station.

The major concern has been a small but persistent leak in a vestibule of the Zvezda service module called PrK that separates a docking port from the rest of the module. That leak has existed for several years, and station crews have dealt with the leak by sealing off PrK from the rest of the station when they do not need access to Progress cargo spacecraft docked to the port.

"Although the teams continue to investigate the causal factors for the crack initiation and growth, the U.S. and Russian technical teams don't have a common understanding of what the likely root cause is or the severity of the consequences of these leaks," said Bob Cabana, a former NASA astronaut and associate administrator who now chairs the committee.

https://spacenews.com/nasa-and-roscosmos-disagree-on-cause-and-severity-of-iss-air-leak/

E. Europe

Nuclear propulsion system proposed for European space missions

World Nuclear News, November 1, 2024

The RocketRoll project - or 'Preliminary European Reckon on Nuclear Electric Propulsion for Space Applications' - brought together leading stakeholders in aerospace and nuclear within a consortium led by Tractebel that includes the French Alternative Energies and Atomic Energy Commission (CEA), ArianeGroup, Airbus and Frazer Nash. It also included researchers from the University of Prague, the University of Stuttgart and engineers from OHB Czechspace and OHB System in Bremen.

The partners studied the feasibility of an electric nuclear propulsion (NEP) system where the electricity produced by a nuclear power reactor powers electric ion thrusters - ionising a gas and accelerating the ions produced, which are then ejected to generate thrust. This method's thrust is lower but continuous, and with far greater fuel efficiency it has higher speeds and could cut 60% off the Mars travel time of traditional chemical rockets.

"Thanks to its huge energy density, NEP offers disruptive advantages in terms of speed, autonomy, and flexibility," Tractebel said. "This innovative propulsion technology has the potential to transform space exploration and space mobility by enabling longer-duration missions, potentially shaping the future of interplanetary exploration."

The RocketRoll project, which started more than a year ago and concluded last month, has now submitted a technology roadmap to develop an NEP system, including a candidate design for a demonstrator spacecraft that could flight test NEP systems for deep space missions by 2035.

https://www.world-nuclear-news.org/articles/nuclear-propulsion-system-proposed-for-european-space-missions

UK says it voted against UN nuclear war panel because consequences already known

The Guardian, November 4, 2024

The UK was one of three countries to vote against creating a UN scientific panel on the effects of nuclear war because, the Foreign Office argued, the "devastating consequences" of such a conflict are already well known without the need for a new study.

The UK, France and Russia were the only countries to vote on Friday night against a UN general assembly committee resolution drafted by Ireland and New Zealand to set up an international scientific inquiry to take a fresh look at the multifaceted impact of nuclear weapons use.

Backers of the motion said the last such UN study had been carried out towards the end of the cold war and that a lot had changed since then, in geopolitics and in science.

A total of 144 UN member states voted for the resolution, and 30 abstained, including the US. North Korea had been expected to vote no, but abstained. In another surprise, China voted for the proposal, the only nuclear-armed state to do so, as did eight Nato allies. The resolution will now go to the full general assembly for a final vote.

A Foreign Office spokesperson said: "Nuclear war would have devastating consequences for humanity. We don't need an independent scientific panel to tell us that.

https://www.theguardian.com/world/2024/nov/04/uk-joins-russia-and-france-in-voting-against-un-nuclear-war-inquiry

UK energy system operator recognises role of nuclear

World Nuclear News, November 5, 2024

NESO has released a comprehensive and independent analysis of how to achieve Clean Power in 2030. This advice was commissioned in August by the Secretary of State for Energy Security and Net Zero, Ed Miliband.

The analysis shows that overall systems costs should not increase for a clean power system. Other factors could reduce electricity bills in 2030, including a reduction in legacy policy costs (as contracts expire) and energy efficiency improvements. Government policy decisions could also reduce bills by 2030.

"Our clean power pathways see Great Britain become a net exporter of power and reduce the share of unabated gas generation to below 5%," the report says. "All our pathways involve early electrification of heat, transport and industry. A reductionist approach that slows down electrification to lessen the challenge of clean power would undermine the core objectives of cutting energy costs and supporting net-zero.

"Our clean power pathways see a four-to-fivefold increase in demand flexibility (excluding storage heaters), an increase in grid connected battery storage from 5 GW to over 22 GW, more pumped storage and major expansions in onshore wind (from 14 GW to 27 GW) and solar (from 15 GW to 47 GW) along with nuclear plant life extensions."

NESO says nuclear power will play an important role in achieving a clean power system by 2030 and beyond into the 2030s, when a new generation of nuclear plants can help replace retiring capacity and meet growing demand as the economy electrifies.

https://www.world-nuclear-news.org/articles/uk-energy-system-operator-recognises-role-of-nuclear

EU eyes new clampdown on Russian nuclear sector

Politico, November 5, 2024

There's renewed European Union momentum to kick Russia's nuclear sector out of the bloc and strip Moscow of one of its remaining holds over Europe's energy supplies — if Viktor Orbán will allow it.

In Brussels, the European Commission, the EU's executive, has pledged to explore whether the EU should sever ties with Russia's "full nuclear supply chain" as part of a broader plan to eradicate energy dependency on Moscow.

And across the EU's more hawkish capitals, officials are agitating to include nuclear restrictions in Brussels' next Russia sanctions package, the 15th so far, expected to move forward early next year.

Together, it marks a revitalized effort to target Russia's nuclear revenues, which have continued to benefit from European business throughout Moscow's war in Ukraine.

https://www.politico.eu/article/eu-eyes-new-clampdown-russia-nuclear-sector-hungary-viktor-orban/

Kazakhstan's Nuclear Plant Decision Might Deepen Strategic Partnership with France, Tokayev Told Le Figaro

The Astana Times, November 5, 2024

In a comprehensive article, President Tokayev emphasized the growing importance of middle powers in today's polarized world. He also highlighted Kazakhstan's contributions to peacebuilding and climate action, and outlined key areas of cooperation with France.

"During President [Emanuel] Macron's visit to Astana last November, our countries expressed mutual interest in developing cooperation in the areas of rare earth metals, renewable energy and civil nuclear energy, which opens up new prospects for expanding our strategic partnership," said Tokayev in the article.

"The positive outcome of the recent national referendum on the construction of the first nuclear power plant in independent Kazakhstan lays a solid foundation for mutually beneficial cooperation in the future. Undoubtedly, it will also contribute to strengthening global energy security," he added.

Tokayev cautioned that the world is becoming increasingly unpredictable and polarized.

https://astanatimes.com/2024/11/kazakhstans-nuclear-plant-decision-might-deepen-strategic-partnership-with-france-tokayev-told-le-figaro/

IAEA chief says German return to nuclear power is 'logical'

DW, November 14, 2024

The head of the International Atomic Energy Agency (IAEA) said in an interview late on Wednesday that it was "rational" for Germany to return to nuclear power even though the country's phase out was completed in 2023.

"I think it's a logical. It's a rational position," Rafael Grossi told German news agency DPA, noting that Germany is the only country in the world to have completely phased out nuclear energy.

Speaking at the COP29 UN Climate Conference in Baku, Azerbaijan, Grossi added: "You might wonder: Why does the rest of the world see things differently... I respect German politics, and you are going through a very complex phase, so we will see."

He said he was "not surprised" there was renewed debate about returning to nuclear power, as it emits almost no greenhouse gases.

"This is why countries that have nuclear want more nuclear," he said. "Many countries that did not have nuclear want nuclear."

Grossi stressed, however, that Germany would first need a rigorous assessment of if and how its plants could be brought back online.

https://www.dw.com/en/iaea-chief-says-german-return-to-nuclear-power-is-logical/a-70774127

F. The United States of America

US microreactor company invests in laser enrichment

World Nuclear News, November 6, 2024

NANO Nuclear said it invested USD2 million into the recently closed LIS Technologies (LIST) USD11.88 million seed round financing.

A strategic agreement between the two companies will see NANO Nuclear and LIST collaborate on advancing LIST's enrichment technology as it continues its development and moves towards the regulatory licensing process, NANO Nuclear said. "LIST will ultimately provide NANO Nuclear with quantities of uranium hexafluoride (UF6) fuel for use in NANO Nuclear's advanced portable microreactors in development and for future sale by NANO Nuclear and LIST to third parties," it said, added that it believes the technology has the potential to be fully developed, licensed and capable

of producing commercial quantities of low-enriched and high-assay low-enriched uranium fuel within ten years.

As part of the agreement, NANO Nuclear will develop "supportive capabilities", including deconversion and fuel fabrication facilities, to incorporate LIST's enriched UF6 into an integrated fuel manufacturing process. NANO Nuclear will also collaborate with LIST on joint research and development initiatives.

https://www.world-nuclear-news.org/articles/us-microreactor-company-invests-in-laser-enrichment

US Unveils Plan to Triple Nuclear Power by 2050 as Demand Soars

Bloomberg, November 12, 2024

President Joe Biden's administration is setting out plans for the US to triple nuclear power capacity by 2050, with demand climbing for the technology as a round-the-clock source of carbon-free power. Under a road map being unveiled Tuesday, the US would deploy an additional 200 gigawatts of nuclear energy capacity by mid-century through the construction of new reactors, plant restarts and upgrades to existing facilities. In the short term, the White House aims to have 35 gigawatts of new capacity operating in just over a decade.

"Over the last four years the United States has really established the industrial capacity and the muscle memory across the economy to carry out this plan," said Ali Zaidi, the White House national climate adviser.

https://www.bloomberg.com/news/articles/2024-11-12/cop29-us-has-plan-to-triple-nuclear-power-as-energy-demand-soars

DOD Sends Report to Congress on the Nuclear Weapons Employment Strategy of the United States

US Department of Defense, November 15, 2024

Yesterday, the Secretary of Defense submitted an unclassified report to Congress describing the nuclear employment strategy of the United States. The 491 Report, submitted in accordance with 10 U.S.C. Section 491, reflects an unclassified description of Presidential nuclear employment Guidance issued by President Biden earlier this year. The Secretary submitted the report in anticipation of issuing his classified implementation guidance to the Department and to the Joint Force.

The 491 Report describes, in an unclassified format, changes from previous presidential employment guidance. Updating U.S. nuclear employment guidance is routine and critical to ensuring that U.S. nuclear forces, plans, and posture evolve to maintain the United States' ability to deter adversaries, assure allies and partners, and achieve national objectives if deterrence fails.

The updated Guidance accounts for the new deterrence challenges posed by the growth, modernization, and increasing diversity of potential adversaries' nuclear arsenals. It builds on the findings of the 2022 National Defense Strategy and Nuclear Posture Review, and directly informs development of nuclear employment options for consideration by the President in extreme circumstances to defend the vital interests of the United States and its allies and partners.

The Guidance also directs that the United States plan to deter multiple nuclear-armed adversaries simultaneously; requires the integration of non-nuclear capabilities where feasible to support the nuclear deterrence mission; stresses the importance of escalation management in U.S. planning for responding to limited nuclear attack or high-consequence non-nuclear strategic attack; and enables deeper consultation, coordination, and combined planning with allies and partners in order to strengthen U.S. extended deterrence commitments.

https://www.defense.gov/News/Releases/Release/Article/3966543/dod-sends-report-to-congress-on-the-nuclear-weapons-employment-strategy-of-the/

West Asia

G. Bahrain

Bahrain international airshow 2024: A gateway to the future of aerospace and defence

Aljundi, November 1, 2024

The Bahrain International Airshow 2024 (BIAS) is a premier event in the Middle East, bringing together decision-makers, industry experts, and leaders from the global aerospace and defence sectors every two years at the Sakhir Airbase in the Kingdom of Bahrain. The 7th edition of BIAS, kicking off from 13 to 15 November 2024, serves as a key platform for showcasing the latest in aerospace and defence technologies, exploring business opportunities, and fostering international cooperation. With thrilling aerial displays and the participation of top global companies, the event reinforces Bahrain's position as an international hub for innovation and technology. This year's edition is expected to attract significant global attention thanks to high-level conferences and valuable networking opportunities, cementing its status as one of the most prominent aviation events in the Middle East. Since its inception in 2010, the Bahrain International Airshow has been a key driver of growth and innovation in the aviation and defence sectors, and the 2024 edition promises to raise the bar even further. Bahrain's Growing Importance in the Global Aviation Landscape. Bahrain has long held a clear vision for the future of aviation and defence, playing a pivotal role in regional and international arenas. With its strategic location, Bahrain aims to attract more global aviation companies and strengthen its regional role.

https://www.aljundi.ae/en/profile/bahrain-international-airshow-2024-a-gateway-to-the-future-of-aerospace-and-defence/

Bahrain's NSSA to participate in moon payload mission

Aerospace Global News, November 14, 2024

The Bahrain National Space Science Agency (NSSA) is to join the Emirates Lunar Mission of the UAE's Mohammed Bin Rasid Space Centre (MBRSC), building on an MoU initially signed in 2019. To achieve this ambitious mission, the NSSA will develop a lunar rover to carry "a Bahraini payload with versatile capabilities" to the moon's surface, with data gathered to be used for research, analysis and development purposes. "Bahrain's participation in this historic mission underscores the high level of expertise and talent that our national workforce has reached, showcasing our continuous efforts to enhance the Kingdom's technical and scientific capabilities," explained NSSA CEO Dr Mohamed Ibrahim Al-Aseeri. "This achievement…proves that Bahrainis are ready to make meaningful contributions at the international level, especially in the vital space sector". He added that the collaboration between the Kingdom of Bahrain and the United Arab Emirates "will contribute to a significant scientific achievement and represent an important step towards strengthening the Arab presence in future sciences and space exploration".

https://aerospaceglobalnews.com/news/bahrains-nssa-to-participate-in-moon-payload-mission/

H. Iran

Leader's advisor says Iran may change nuclear doctrine if threats become 'existential' Politics

Tehran Times, November 1, 2024

Kamal Kharrazi, Iran's former Foreign Minister and head of Iran's Strategic Council on Foreign Relations, has clarified that while Iran's policy against nuclear weapons remains intact, any existential threat to Iran could alter this stance. The advisor to the Leader of the Islamic Revolution made the remarks in an interview with Lebanon's Al Mayadeen, where he offered insights into Iran's nuclear policy and regional security stance. Kharrazi began by emphasizing that while Iran currently refrains from developing nuclear weapons due to a religious decree, this position might not hold if Iran faces an existential threat.

"Iran has respected the Leader's fatwa prohibiting nuclear weapons," Kharrazi stated, "but if the survival of Iran comes under serious threat, we reserve the right to reconsider." Kharrazi also criticized European countries for not reciprocating Iran's respect for their concerns, particularly over missile ranges and regional security sensitivities. "Iran no longer feels obliged to consider European concerns," he said, hinting at Iran's growing willingness to increase missile ranges if its own concerns continue to be ignored.

https://www.tehrantimes.com/news/505731/Leader-s-advisor-says-Iran-may-change-nuclear-doctrine-if-threats

Iran adviser hints at expansion of missile range, nuclear doctrine review after Israel strikes

Economic Times, November 1, 2024

Kamal Kharrazi, an adviser to Iran's supreme leader, said on Friday that Tehran is likely to increase the range of its ballistic missiles and possibly review its nuclear doctrine, amid growing tensions with arch-enemy Israel and tit-for-tat missile and airstrikes. Asked by Lebanon-based pro-Iran broadcaster Al-Mayadeen whether Iran was ready if conflict were to expand after the recent strikes, Kharrazi said Iran was likely to up the range of its ballistic missiles beyond a self-imposed limit of 2,000 km (1,250 miles). He said that although Iran has the technical capability to produce nuclear weapons, it is currently held back by a fatwa, or religious decree, issued in the early 2000s by Supreme Leader Ayatollah Ali Khamenei. Ayatollah Khamenei, who has the last say on Tehran's nuclear programme, banned the development of nuclear weapons in that fatwa. The Islamic Republic has long denied that it is trying to build nuclear weapons and insists its nuclear work is solely for peaceful purposes.

https://economictimes.indiatimes.com/news/defence/iran-adviser-hints-at-expansion-of-missile-range-nuclear-doctrine-review-after-israel-strikes/articleshow/114857018.cms?from=mdr

Iran's shifting discourse on nuclear weaponization: Bargaining tactic or doctrine change?

Middle East Council on Global Affairs, November 6, 2024

Heightening Threat Perception is the Main Driver of a Discourse Shift: Iran's rhetoric shift toward nuclear armament is largely driven by external pressures, including Israel's ongoing war on Gaza, and the wider region, along with its nuclear capabilities, and the limits of Iran's conventional deterrence capabilities. The Worst-Case Scenario: Iran may be preparing for a concrete move toward nuclear weaponization, either by gradually reaching the nuclear breakout point or by accelerating its push in that direction. Potential Diplomatic Leverage: In the best-case scenario, this shift could be a strategy to raise the stakes in future negotiations, signaling that Iran may be open to broader discussions beyond the nuclear file, particularly regarding its regional security concerns. Trump's Re-Election is a Critical Factor: Trump's return to the White House, with his history of "maximum pressure" on Iran and unwavering support for Israel, could heighten tensions and serve as a catalyst for Iran's push toward nuclear weapons.

https://mecouncil.org/publication/irans-shifting-discourse-on-nuclear-weaponization-bargaining-tactic-or-doctrine-change/

Iran, Iraq vow to expand security ties

Islamic Republic News Agency, November 12, 2024

Iran's Secretary of Supreme National Security Council (SNSC) Ali Akbar Ahmadian and Iraqi National Security Advisor Qasim al-Araji have stressed their countries' commitment to broadening of security cooperation. While emphasizing the acceleration of the process of implementing the clauses of the security agreement between the two countries,

Ahmadian and al-Araji discussed the abuse of the Iraqi space by the Zionist regime and the United States against the Islamic Republic of Iran. Also, in this meeting, the Islamic Republic of Iran and Iraq reviewed the latest security agreement between the two countries and emphasized on accelerating the process of implementing the clauses of the said agreement, especially preventing the presence and activities of terrorists outside the country's western borders. The two sides agreed to cover other common threats, including military, security and economic threats, by completing and extending the security agreement. Tehran and Baghdad signed their security pact in 2023. Part of the agreement calls for disarming separatist terrorist groups operating against Iran.

https://en.irna.ir/news/85656806/Iran-Iraq-vow-to-expand-security-ties

No evidence Iran is building nuclear weapons, says IAEA chief

Islamic Republic News Agency, November 13, 2024

Director General of the International Atomic Energy Agency (IAEA) Rafael Grossi has reiterated that international inspectors have not found any evidence that could suggest that Iran is seeking to build nuclear weapons. Grossi made the clarification on the sidelines of the Baku Climate Change Summit on Tuesday evening and expressed hope for resolving the alleged safeguards issues with Iranian officials during his visit to Tehran. "That is this gap, this lack of confidence, which we should not allow to grow into a self-fulfilling prophecy of using nuclear facilities as targets", the IAEA chief who will leave for a two-day trip to Tehran on Wednesday told reporters, adding that "We have a problem that we need to solve." In response to the question whether the agency is concerned about Iran's nuclear weapons development, he clarified that the IAEA has no evidence to prove such a claim. Earlier in an interview with CNN, Grossi said the purpose of his trip to Iran which certainly won't be the last one is important to find diplomatic solutions to remaining issues. Referring to the future the Joint Comprehensive Plan of Action (JCPOA), he said: This is not a secret issue. Since the new government came into office, it is looking for solutions in this regard.

https://en.irna.ir/news/85657908/No-evidence-Iran-is-building-nuclear-weapons-says-IAEA-chief

I. Israel

Israel launches 'new era of warfare' Iron beam laser defence system

Economic Times, November 2, 2024

Israel's new "Iron Beam" laser defence system is expected to be operational within a year, significantly enhancing the country's ability to counter aerial threats. The Israeli defence ministry recently announced a $500 million investment in contracts with Rafael Advanced Defence Systems and Elbit Systems to boost production of this cutting-edge technology. About the Iron Beam: Developed alongside the well-known Iron Dome, the Iron Beam is designed to neutralise various aerial threats, including missiles, drones, rockets, and mortars. Eyal Zamir, director general of the defence ministry, stated, "It heralds the beginning of a new era in warfare." This system aims to address the increasing missile and drone threats posed by Iran and its allies. How the Iron Beam Works: The Iron Beam utilises a high-power laser to target and disable projectiles from hundreds of metres to several kilometres away. This method contrasts with Israel's existing missile defence approach, which relies on radar detection and interceptor missiles. Military analysts suggest that the laser system could enhance Israel's defences while also being more cost-effective.

https://economictimes.indiatimes.com/news/defence/israel-launches-new-era-of-warfare-iron-beam-laser-defence-system-heres-how-it-works/articleshow/114872647.cms?from=mdr

Israel moves forward on deploying Arrow-3 missile defence system in Germany in 2025

Economic Times, November 10, 2024

Israel's Defence Ministry has begun coordinating joint preparations with the German Federal Ministry of Defence for the initial deployment of Israel's Arrow-3 missile interception system on German soil in 2025, it said on November 10. The ministry said it has held meetings at Israel Aerospace Industries (IAI) along with Israel defence firm Elbit Systems and MBDA Deutschland GmbH. The Arrow system, which includes the Arrow-2 and Arrow-3 interceptors, was developed in cooperation between Israel and the United States to counter long-range ballistic missile threats, with IAI as the prime contractor. Israel, with U.S. approval, agreed last year to sell the Arrow-3 system to Germany in a $3.5 billion deal, its biggest defence sale to date. Germany and its neighbours in Europe are boosting defence spending following Russia's war in Ukraine.

https://economictimes.indiatimes.com/news/defence/israel-moves-forward-on-deploying-arrow-3-missile-defence-system-in-germany-in-2025/articleshow/115148758.cms?from=mdr

Is Israel ready to hit Iran's nuclear sites?

Deutsche Welle, November 12, 2024

Israel's new defence minister said on November 11, that Iran was "more exposed than ever to strikes on its nuclear facilities." "We have the opportunity to achieve our most important goal — to thwart and eliminate the existential threat to the State of Israel," Defence Minister Israel Katzwrote on X. Tensions between Israel and Iran are running high after both sides traded tit-for-tat missiles strikes, sparking fears of a wider Middle East war. Israel has for years accused Iran of seeking to build nuclear weapons. According to recent reports by the International Atomic Energy Agency (IAEA), Iran is rapidly advancing its atomic program, enriching uranium up to 60%, just 30% below the grade needed for atomic weapons. Iran has repeatedly denied the claims that it is seeking to acquire nuclear weapons. Katz replaced Yoav Gallant as Israel's defense minister last week after Prime Minister Benjamin Netanyahu fired Gallant, citing disagreements over domestic political issues as well as the military campaign in Gaza. Israeli response to Iran's attack expected within days Iran has spread its nuclear facilities over a number of sites and built some in underground bunkers, making it more difficult to destroy them completely.

https://www.dw.com/en/are-irans-nuclear-sites-potential-targets-for-israel/a-70388202

Iran says willing to hold nuclear talks, but not 'under pressure and intimidation'

Times of Israel, November 14, 2024

Iran said on November 14, that it was willing to hold nuclear talks with world powers but will not negotiate "under pressure and intimidation," as International Atomic Energy Agency chief Rafael Grossi met with the Islamic Republic's top diplomat. Iran's Foreign Minister Abbas Araghchi said Tehran was "willing to negotiate" based on the "national interest" and "inalienable rights." Grossi, who arrived in Tehran late on November 13, was expected to negotiate with the country's top nuclear and political officials, according to Iran's official IRNA news agency. The IAEA chief also said there should be no attacks on Iranian nuclear installations and urged diplomacy to resolve compliance issues the UN watchdog has with the Iranians as he met with officials in Tehran. "I say this with regards to Iran… nuclear installations should not be attacked," Grossi told a news conference, days after Israel's Defense Minister Israel Katz said that Iran was "more exposed than ever to strikes on its nuclear facilities." Israel is believed to have destroyed parts of Iran's air defenses in a series of strikes last month in retaliation for a massive Iranian ballistic missile attack on Israel.

https://www.timesofisrael.com/iran-says-willing-to-hold-nuclear-talks-but-not-under-pressure-and-intimidation/

J. Yemen

Yemen's Houthis launch drones and missiles at US warships near the Red Sea but do no damage

Arab News, November 12, 2024

Yemen's Houthi militants targeted two US Navy warships with multiple drones and missiles as they were traveling through the Bab el-Mandeb Strait, but the attacks were not successful, the Defense Department said on November 12. Maj. Gen. Pat Ryder, Pentagon press secretary, said the Iranian-backed Houthis launched at least eight drones, five anti-ship ballistic missiles and three anti-ship cruise missiles at the USS Stockdale and the USS Spruance, both Navy destroyers, on November 11. He said there was no damage and no one was injured. The strait is a narrow waterway between the Red Sea and the Gulf of Aden, which typically sees $1 trillion in goods pass through it a year. The militants have been targeting shipping through the strait for months over the Israel-Hamas war in Gaza and Israel's ground offensive in Lebanon. The Houthis have insisted that the attacks will continue as long as the wars go on, and the assaults already have halved shipping through the region. Meanwhile, a UN panel of experts now allege that the Houthis may be shaking down some shippers for about $180 million a month for safe passage through the area. Houthi military spokesman Brig. Gen. Yahya Saree in a prerecorded statement earlier Tuesday had claimed the militants attacked two American destroyers in the Red Sea with ballistic missiles and drones.

https://www.arabnews.com/node/2579078/middle-east

K. East Asia

Japan launches defence satellite carried by new flagship rocket

South China Morning Post, November 4, 2024

Japan launched a defence satellite designed for information-gathering and military operations on a new flagship H3 rocket on Monday, as the country seeks to build up its military capability amid growing tension in the region.

The rocket lifted off from the Tanegashima Space Centre on a southwestern Japanese island.

Everything went as planned and the satellite placed at the top of the rocket was successfully separated about half an hour after lift-off, the Japan Aerospace Exploration Agency, or JAXA, said in a live streaming.

JAXA was due to give further details about the launch later on Monday.

The rocket is carrying a Defence Ministry satellite, Kirameki No. 3, which uses X-band communication for military operations and reconnaissance, including information-gathering for signs of North Korean missile activity.

https://www.scmp.com/news/asia/east-asia/article/3285156/japan-launches-defence-satellite-carried-new-flagship-rocket

Japan blasts world's first wooden satellite into space – with a little help from SpaceX

South China Morning Post, November 6, 2024

The world's first wooden satellite has blasted off on a SpaceX rocket, its Japanese developers said, as part of a resupply mission to the International Space Station.

Scientists at Japan's Kyoto University expect the wooden material to burn up when the device re-enters the atmosphere – potentially providing a way to avoid generating metal particles when a retired satellite returns to Earth.

These metal particles may negatively affect both the environment and tele-communications, the developers say.

Each side of the boxlike experimental satellite, named LignoSat, measures just 10cm (four inches).

It was launched on an unmanned rocket from Nasa's Kennedy Space Centre in

Florida, Kyoto University's Human Spaceology Centre said.

The satellite, installed in a special container prepared by the Japan Aerospace Exploration Agency, "flew into space safely", it said on Tuesday in a post on X.

A spokeswoman for LignoSat's co-developer Sumitomo Forestry said the launch had been "successful".

https://www.scmp.com/news/asia/east-asia/article/3285349/japan-blasts-worlds-first-wooden-satellite-space-spacexs-help

L. Southeast Asia

Vietnam prepares for nuclear power

World Nuclear News, November 6, 2024

Just one day after signing a contract with the Japan Atomic Power Company (JAPC) to conduct a feasibility study into the construction of a nuclear power plant in the southern Ninh Thuan province, state-owned EVN signed a memorandum of understanding with the International Nuclear Energy Development of Japan Co (JINED). The two companies will now cooperate in designing, building and operating the proposed plant.

EVN submitted six criteria which are to be addressed by the MoU. These include the supply of reactors using the latest technology and having the highest safety; a stable supply of nuclear fuel; and support for the disposal of radioactive waste. In addition, JINED must support Vietnam in developing a nuclear energy industry, training workers and providing financial support.

The requirements are in line with a May 2008 cooperation agreement, under which Japan agreed to help Vietnam prepare and plan for the introduction of nuclear energy, educate experts in nuclear power and help the country formulate nuclear safety regulations.

https://www.world-nuclear-news.org/Articles/Vietnam-prepares-for-nuclear-power

Thailand plays host to Southeast Asia's largest space technology event

Nation Thailand, November 8, 2024

The key highlights of **Thailand Space Week 2024** include the Space Leaders Forum, which will discuss pressing global challenges and the role of space technology in addressing them. Other notable sessions will explore topics such as financing the future of space and opportunities in the space industry.

The event is being attended by representatives from leading space agencies worldwide, including the China National Space Administration, the Korea Aerospace Research Institute, the United States Geological Survey, the European Union Space Agency, the Japan Aerospace Exploration Agency and the Philippine Space Agency.

By hosting Thailand Space Week 2024, the country aims to foster collaboration, knowledge sharing, and business opportunities in the space sector, positioning itself as a key player in the global space economy.

https://www.nationthailand.com/news/general/40043111

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