

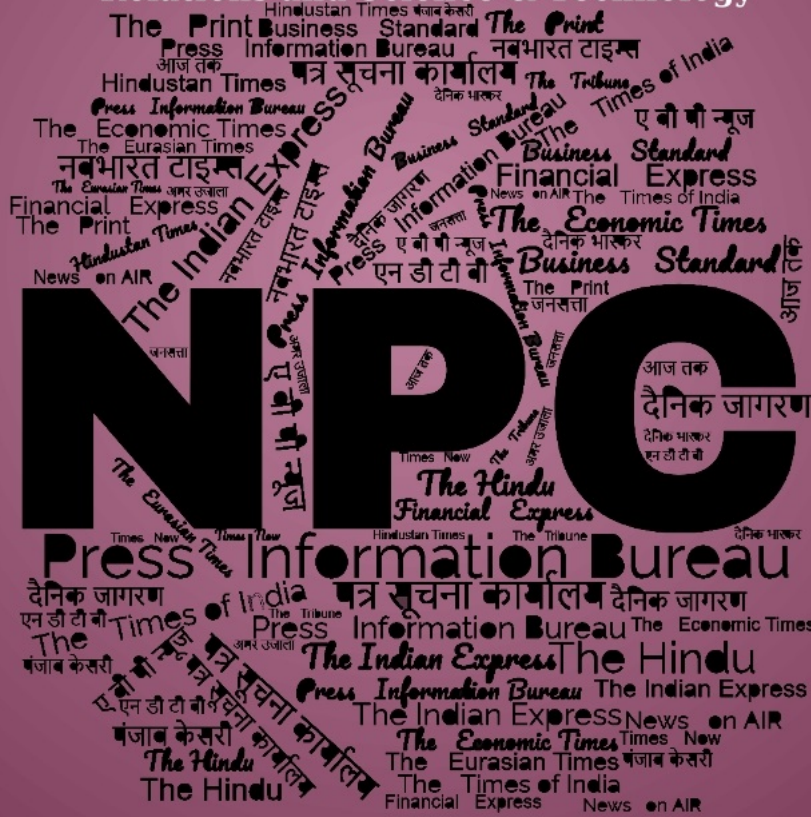
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CONTENTS

S. No.	TITLE	Source	Page No.
Defence News			1-19
Defence Strategic: National/International			
1	Army Commanders' Conference Concludes: External Affairs Minister Addresses Senior Leadership Of Indian Army	<i>Press Information Bureau</i>	1
2	Marching Towards Atmanirbharta: India's Defence Revolution	<i>Press Information Bureau</i>	3
3	Swavlamban 3.0: Raksha Mantri launches ADITI 3.0 challenge and DISC 13 to advance indigenous defence technologies & operational efficiencies	<i>Press Information Bureau</i>	6
4	Raksha Mantri reviews the performance of DPSUs; Receives dividend cheques amounting to Rs 1,620 crore	<i>Press Information Bureau</i>	8
5	Open tender likely for IAF's mega 114 fighter jets deal	<i>The Economic Times</i>	9
6	General Electric may deliver F-404 engines by March or April; India invokes penalty clause	<i>The Hindu</i>	10
7	Top Army commanders discuss operational preparedness, critical strategic issues	<i>The Economic Times</i>	11
8	How far has India come in achieving self-reliance in defence production?	<i>The Week</i>	13
9	EAM Jaishankar calls for military readiness as geopolitical risks intensify	<i>The Week</i>	14
10	Army reveals how AI helped neutralise terrorists in Jammu and Kashmir's Akhnoor	<i>Hindustan Times</i>	15
11	Rajnath leaves for Arunachal; to interact with Armed Forces personnel	<i>Business Standard</i>	16
12	2X Faster Than Anglo-French Concorde, China Claims Testing Mach 4 Supersonic Passenger Jet Prototype	<i>The EurAsian Times</i>	17
Science & Technology News			20-25
13	Magic recipes to create hydrogels from viral protein fragments can improve drug delivery	<i>Press Information Bureau</i>	20
14	NIAB scientists working on next-gen vaccine against leptospirosis	<i>The Hindu</i>	21
15	PRL scientists discover Saturn-sized exoplanet orbiting Sun-like star. Its 'year' shorter than an Earth week	<i>The Print</i>	22
16	China launches new crew to its space station as it seeks to expand exploration	<i>The Economic Times</i>	23





Press Information Bureau
Government of India

Ministry of Defence

Tue, 29 Oct 2024

Army Commanders' Conference Concludes: External Affairs Minister Addresses Senior Leadership Of Indian Army

The second phase of the Army Commanders' Conference concluded today in New Delhi. This phase, conducted on 28th and 29th of October 2024, witnessed the Indian Army's senior leadership deliberating on critical strategic issues affecting both border security and the hinterland.

A key highlight of the conference was the address by Hon'ble External Affairs Minister (EAM), Dr S Jaishankar, on the theme of the 'Evolving Geopolitical Landscape and Opportunities for the Indian Armed Forces'.

Dr Jaishankar underscored the intricate global and geopolitical dynamics that impact India and highlighted the country's expectations from the Armed Forces and the preparedness required to address the contradictions and challenges of the current world order.

He appreciated the Indian Army for remaining vigilant and urged leadership to be prepared to adapt to rapidly evolving geopolitical threats and opportunities and emphasised the importance of technological advancements and the lessons drawn from ongoing global conflicts in shaping India's strategic posture.

Over the last two days, the Indian Army's senior hierarchy engaged in in-depth discussions on operational and administrative issues. The Chief of Defence Staff (CDS), General Anil Chauhan, addressed the gathering, reflecting on the recent success of the Joint Commanders' Conference in Lucknow. Reviewing the current security situation, General Chauhan stressed the importance of jointness and the roadmap for enhanced integration across domains, which is critical for future warfare and effective operations.

He outlined the step-by-step approach towards integration, starting with Cross-Service Cooperation, progressing to a 'Joint Culture', and ultimately achieving full integration for joint

operations. He reiterated the need for operational readiness to counter emerging challenges, underscoring modernisation and strategic autonomy as pivotal goals, especially within the framework of Vision 2047.

Additionally, the Chief of Naval Staff (CNS), Admiral Dinesh K Tripathi, addressed the audience, discussing the rapidly shifting dynamics in geopolitics, technology, and tactics. Admiral Tripathi emphasised the need for the Armed Forces to remain proactive and adaptable to these changes, particularly within the Indian Ocean and Indo-Pacific regions.

He highlighted the Indian Navy's preparedness to tackle maritime challenges and their cascading effects on land operations, underscoring the importance of maintaining operational superiority in these strategic waters.

During the conference, the Army leadership also deliberated on welfare measures and financial security schemes for soldiers, veterans, and their families, while various Boards of Governors met to discuss these critical issues.

The conference concluded with the distribution of awards to Military Stations in several categories for Green Military Station and Aviation Flight Safety, highlighting the Army's commitment to environmental sustainability and safety. The awards for Green Military Stations were conferred as follows:

- Military Station (Population >10,000): Patiala (1st Position) and Jodhpur (2nd Position).
- Military Station (Population 5,000-10,000): Bagrakote (1st Position) and Bhuj (2nd Position).
- Military Station (Population <5,000): Kannur (1st Position) and Umroi (2nd Position).
- Avshesh Mukt Sainya Abhiyaan (Best Waste Disposal Mechanism): Sevoke Road (1st Position) and Pratap Pur (2nd Position).
- Best Transformative Station: Suratgarh (1st Position) and Abohar (2nd Position).

In the realm of Aviation Flight Safety, 257 Army Aviation Squadron and 663 Army Aviation Squadron were awarded best-in-flight safety trophies.

This conference reaffirmed the Indian Army's unwavering commitment to readiness and adaptability, as the senior leadership resolved to accelerate ongoing transformational initiatives and actively contribute to various national endeavours.

Emphasising a forward-looking approach, the Indian Army remains fully dedicated to preparing for present and emerging challenges, ensuring a progressive, resilient, and future-ready force aligned with India's strategic interests

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**Press Information Bureau
Government of India**

Ministry of Defence

Tue, 29 Oct 2024

Marching Towards Atmanirbharta: India's Defence Revolution

**Domestic production hit ₹1.27 lakh crore in FY 2023-24, with exports
growing 30x in a decade**

The recent inauguration of the TATA Aircraft Complex at the TATA Advanced Systems Limited (TASL) Campus in Vadodara, Gujarat, on October 28, 2024, marks a key milestone in India's journey toward Atmanirbharta in defence. This facility, dedicated to manufacturing C-295 military transport aircraft, becomes the first private sector Final Assembly Line (FAL) for military aircraft in India, underscoring the government's commitment to enhancing indigenous production capabilities. Under the program, 56 C-295 aircraft will be delivered, with the initial 16 arriving from Airbus in Spain and the remaining 40 produced domestically. This initiative exemplifies India's shift toward self-reliance in defence manufacturing, aimed at strengthening operational readiness and reducing dependency on foreign imports.

India's commitment to Atmanirbharta in defence is further evidenced by its transformation from a major arms importer to an emerging centre for indigenous production. Driven by strategic government policies, this shift reached a landmark in FY 2023-24, with the Ministry of Defence reporting an unprecedented ₹1.27 lakh crore in domestic defence production. Once reliant on foreign suppliers, India now places a high priority on self-reliant manufacturing to meet its security needs, reinforcing its vision to strengthen national resilience and reduce dependency on external sources.

Rise in India's Defence Production

India has achieved the highest-ever growth in indigenous defence production in value terms during Financial Year (FY) 2023-24, driven by the successful implementation of government policies and initiatives led by Prime Minister Shri Narendra Modi, focusing on attaining Atmanirbharta. According to data from all Defence Public Sector Undertakings (DPSUs), other public sector units manufacturing defence items, and private companies, the value of defence production has surged to a record high of ₹1,27,265 crore, representing an impressive increase of approximately 174% from ₹46,429 crore in 2014-15.

Historically, India relied heavily on foreign countries for its defence needs, with about 65-70% of defence equipment being imported. However, this landscape has dramatically shifted, with around 65% of defence equipment now manufactured within India. This transformation reflects the country's commitment to self-reliance in this critical sector and underscores the strength of its defence industrial base, which comprises 16 Defence Public Sector Units (DPSUs), over 430

licensed companies, and approximately 16,000 Micro, Small, and Medium Enterprises (MSMEs). Notably, 21% of this production comes from the private sector, bolstering India's journey toward self-reliance.

As part of the Make in India initiative, major defence platforms such as the Dhanush Artillery Gun System, Advanced Towed Artillery Gun System (ATAGS), Main Battle Tank (MBT) Arjun, Light Combat Aircraft (LCA) Tejas, submarines, frigates, corvettes, and the recently commissioned INS Vikrant have been developed, reflecting the growing capabilities of India's defence sector.

Consequently, the annual defence production has not only crossed ₹1.27 lakh crore but is also on track to reach a target of ₹1.75 lakh crore in the current fiscal year. With aspirations to achieve ₹3 lakh crore in defence production by 2029, India is solidifying its position as a global manufacturing hub for defence.

India's Defence Exports Surge

India's defence exports have reached an all-time high, surging from ₹686 crore in FY 2013-14 to ₹21,083 crore in FY 2023-24, reflecting a remarkable increase of over 30 times in export value over the past decade. This achievement is driven by effective policy reforms, initiatives, and improvements in the ease of doing business implemented by the government, all aimed at attaining self-reliance in defence. Notably, defence exports also experienced a substantial growth of 32.5% over the previous fiscal year, rising from ₹15,920 crore.

India's export portfolio boasts a diverse range of advanced defence equipment, including bulletproof jackets and helmets, Dornier (Do-228) aircraft, Chetak helicopters, fast interceptor boats, and lightweight torpedoes. A noteworthy highlight is the inclusion of 'Made in Bihar' boots in the Russian Army's equipment, marking a significant milestone for Indian products in the global defence market and showcasing the country's high manufacturing standards.

Currently, India exports to over 100 nations, with the top three destinations for defence exports in 2023-24 being the USA, France, and Armenia. According to Raksha Mantri Shri Rajnath Singh, the target is to further increase defence exports to ₹50,000 crore by 2029. This expanding international footprint underscores India's commitment to becoming a reliable defence partner globally while bolstering its economic growth through enhanced defence production and exports.

Key Government Initiatives

In recent years, the Indian government has implemented a series of transformative initiatives aimed at bolstering the country's defence production capabilities and achieving self-reliance. These measures are designed to attract investment, enhance domestic manufacturing, and streamline procurement processes. From liberalizing foreign direct investment (FDI) limits to prioritizing indigenous production, these initiatives reflect a robust commitment to strengthening India's defence industrial base. The following points outline the key government initiatives that have been pivotal in driving growth and innovation in the defence sector.

- **Liberalized FDI Policy:** The Foreign Direct Investment (FDI) limit in the defence sector was raised in 2020 to 74% through the Automatic Route for companies seeking new defence industrial licenses and up to 100% through the Government Route for those likely

to result in access to modern technology. As of February 9, 2024, ₹5,077 crore worth of FDI has been reported by companies operating in the defence sector.

- **Budget Allocation:** The allocation for the Ministry of Defence for the financial year 2024-25 is ₹6,21,940.85 crore, as part of the “Demand for Grant” presented in Parliament during the ongoing Budget Session.
- **Priority for Domestic Procurement:** Emphasis is placed on procuring capital items from domestic sources under the Defence Acquisition Procedure (DAP)-2020.
- **Positive Indigenization Lists:** Notification of five ‘Positive Indigenization Lists’ totalling 509 items of services and five lists of 5,012 items from Defence Public Sector Undertakings (DPSUs), with an embargo on imports beyond specified timelines.
- **Simplified Licensing Process:** Streamlining the industrial licensing process with a longer validity period.
- **iDEX Scheme Launch:** The Innovations for Defence Excellence (iDEX) scheme was launched to involve startups and Micro, Small, and Medium Enterprises (MSMEs) in defence innovation.
- **Public Procurement Preference:** Implementation of the Public Procurement (Preference to Make in India) Order 2017 to support domestic manufacturers.
- **Indigenization Portal:** Launch of the Self-Reliant Initiatives through Joint Action (SRIJAN) portal to facilitate indigenization by Indian industry, including MSMEs.
- **Defence Industrial Corridors:** Establishment of two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu, to promote defence manufacturing.
- **Opening Defence R&D:** Defence Research & Development (R&D) has been opened up for industry and startups to foster innovation and collaboration.
- **Domestic Procurement Allocation:** Out of the total allocation of ₹1,40,691.24 crore under the Capital Acquisition (Modernization) Segment, ₹1,05,518.43 crore (75%) has been earmarked for domestic procurement in the Budget Estimates for 2024-25.

Conclusion

India's journey toward Atmanirbharta in defence reflects a transformative shift from reliance on imports to becoming a self-sufficient manufacturing hub. The record achievements in domestic production and exports underscore the government's commitment to enhancing national security and bolstering economic growth through robust defence initiatives. With strategic policies in place, a growing emphasis on indigenization, and a vibrant defence industrial base, India is poised to not only meet its own security needs but also emerge as a key player in the global arms market. The ambitious targets set for future production and exports signify a strong resolve to reinforce the country's position as a reliable defence partner worldwide. As India continues to innovate and collaborate across sectors, it is well on its way to solidifying its status as a formidable force in global defence manufacturing.

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Ministry of Defence

Tue, 29 Oct 2024

Swavlamban 3.0: Raksha Mantri launches ADITI 3.0 challenge and DISC 13 to advance indigenous defence technologies & operational efficiencies

Indian Navy receives over 2,000 proposals from Indian industries under SPRINT challenges; To be completed as 171 contracts

Swavalamban collaborates with 213 MSMEs & start-ups under iDEX; AoNs worth over Rs 2,000 crore given in 19 cases; Contracts worth Rs 784 crore completed

Shri Rajnath Singh exhorts innovators & start-ups to come up with products, which can become a necessity for the Armed Forces
“Govt’s self-reliance efforts have made science, tech & innovation a revolutionary idea in the country”

Another highlight was the Flag off of ‘Sagarmala Parikrama’ to conduct an autonomous passage of about 1,500 kms from Mumbai to Tuticorin

The third edition of Acing Development of Innovative Technologies with iDEX (ADITI 3.0) challenge and 13th edition of Defence India Start-up Challenges (DISC 13) were unveiled by Raksha Mantri Shri Rajnath Singh during Naval Innovation and Indigenisation Organisation (NIIO) seminar ‘Swavlamban’ at Bharat Mandapam, New Delhi on October 29, 2024. These challenges aim to advance indigenous defence technologies and operational efficiencies.

The ADITI 3.0 features a challenge from the Indian Navy to design a High-Power Microwave Weapon System. The DISC 13 presents seven challenges – three from Indian Army and two each from Indian Navy & Indian Air Force – in the domains of Artificial Intelligence, military communication and autonomous bots among others.

Raksha Mantri also felicitated iDEX winners and Hackathon awardees on the occasion. In his address, he stated that in the last two sessions of ‘Swavlamban’, Indian Navy has received over 2,000 proposals from Indian industries under the SPRINT challenges, which were unveiled by Prime Minister Shri Narendra Modi during Swavlamban 1.0 in July 2022. SPRINT stands

for Supporting Pole-Vaulting in R&D through iDEX, Naval Innovation & Indigenisation Organisation and Technology Development Acceleration Cell.

Shri Rajnath Singh said that these proposals have been converted into 155 challenges, which will help in completing 171 contracts. In addition, the Swavalamban initiative has collaborated with 213 MSMEs and start-ups under iDEX. Till now, Acceptance of Necessity of more than Rs 2,000 crore has been given in 19 cases, of which contracts worth up to Rs 784 crore have been completed. Raksha Mantri congratulated the winners for their innovative solutions to the challenges given by the Armed Forces, terming their feats as extraordinary. He exhorted them to think ahead and come out with products, which are not immediately needed, but can become a necessity for the Armed Forces after they are actually developed.

Citing the success of digital transactions, Shri Rajnath Singh stated that today India has emerged as the world's largest country in terms of the value of digital payments. He also spoke of the Jan Dhan, Aadhaar and Mobile Trinity, which has made the delivery of government schemes easy and transparent. "You don't wait for the right time, you bring the right time. You're fully capable. You must come up with new ideas through innovation," he said, assuring all possible help of the Government in this endeavour.

Raksha Mantri highlighted the self-reliance efforts being made by the Government, led by Prime Minister Shri Narendra Modi, stating that the changes brought about in the last few years have created an innovative culture in India, keeping national security in mind. "There was a time when we had become so dependent on imports for arms and equipment that innovative ideas could never take birth. Even if there were ideas, there was no system to execute them. It is a result of our Prime Minister's farsightedness that the situation has improved rapidly in the last few years. Today, we also have a concrete ecosystem, and we are moving rapidly towards self-reliance," he said. He described the Indian Navy as an Innovative Navy, commending its efforts towards achieving self-reliance.

Acknowledging the vital contribution of both public & private sectors in realising the vision of 'Aatmanirbhar Bharat', Shri Rajnath Singh reasserted the Government's commitment to march ahead on the road to progress by taking all the stakeholders together. "Our public sector was already involved in the defence sector. But, when we came to power, we realised that a bird fly cannot fly with one wing, and there is a need to strengthen the other wing as well. We are making efforts to increase the participation of the private sector in the defence industrial ecosystem. Our DPSUs are moving rapidly towards achieving the goal of self-reliance. Hindustan Aeronautics Limited recently achieved the status of 'Maharatna' by increasing its capacity. I am quite satisfied with the performance of our DPSUs. I appeal to our DPSUs and the private sector to continuously achieve new heights on the strength of 'Continuous Innovation'," he said.

Raksha Mantri added that the Government's concerted efforts have not only reduced import dependency & ensured public and private sectors to work together for 'Aatmanirbharta in defence, it has also resulted in the emergence of science, technology, innovation & self-reliance as a revolutionary idea throughout the country. He was of the view that the idea of innovation & self-reliance has blossomed, and the Government's efforts have awakened this consciousness among the youth.

Shri Rajnath Singh credited the innovation in the youth for the rise in the number of start-ups in the country, which has crossed over one lakh - more than 100 being unicorns. “Start-ups are playing a big role in defence manufacturing. Our youth have realised that they can make the country self-reliant through innovation,” he said. Speaking on the occasion, Chief of the Naval Staff Admiral Dinesh K Tripathi reiterated the Indian Navy’s commitment to safeguard national maritime interests, adding that to facilitate this journey, a solemn resolve has been made to become a ‘Fully Aatmanirbhar Force’ by 2047. He mentioned that through collaborative efforts of Defence Innovation Organisation (DIO) and NIIO, 173 challenges presented to the Industry by the Navy, including all the 75 challenges launched by the Prime Minister as part of ‘Azadi ka Amrit Mahotsav’ have been converted into pragmatic solutions and positive outcomes.

“The overwhelming success of our previous two editions has inspired us to expand the scope and scale of this year’s edition through the launch of new transformational technology challenges and a Hackathon. This landmark edition is also witnessing the largest ever participation of delegates from across our defence sector, including counterparts from the Army, Air Force and Coast Guard as well as Central Armed Police Forces, Defence PSUs and DRDO,” the Chief of the Naval Staff said. On the occasion, Raksha Mantri witnessed the innovation and futuristic technologies developed by the iDEX winners and innovators. Another highlight was the Flag-off of the ‘Sagarmala Parikrama’ to conduct an autonomous passage of about 1,500 kms from Mumbai to Tuticorin. Towards adding streamlined focus in developing manufacturing capability for niche products like semiconductors, an MoU was exchanged between Bharat Electronics Limited, 3rdiTech and Bharat Semiconductors.

Chief of the Army Staff General Upendra Dwivedi, Chief of the Air Staff Air Chief Marshal AP Singh, Defence Secretary-designate Shri RK Singh, Secretary, Department of Defence R&D, Chairman DRDO Dr Samir V Kamat, Chief of Integrated Defence Staff Lt Gen JP Mathew, other senior civil & military officials of Ministry of Defence, President, Society of Indian Defence Manufacturers Shri Rajinder Singh Bhatia, industry leaders and academia were present on the occasion.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2069297>



Press Information Bureau
Government of India

Ministry of Defence

Tue, 29 Oct 2024

Raksha Mantri reviews the performance of DPSUs; Receives dividend cheques amounting to Rs 1,620 crore

Raksha Mantri Shri Rajnath Singh reviewed the performance of Defence Public Sector Undertakings (DPSUs) at South Block, New Delhi on October 29, 2024. He emphasised the

importance of development of new technology by DPSUs & indigenisation and lauded the role of DPSUs in preparedness of the Armed Forces.

Raksha Mantri directed the DPSUs to put dedicated efforts and resources towards Research & Development (R&D), Export & Indigenisation. He further exhorted them on increasing the production capacity, quality of products and timely deliveries to Armed forces.

Shri Rajnath Singh congratulated CMD, Hindustan Aeronautics Limited (HAL) on getting the Maharatna Status & becoming the 14th Maharatna PSU of India and first among the DPSUs. He also encouraged other DPSUs to become maharatna and navratna. Secretary (Defence Production) Shri Sanjeev Kumar briefed the minister about the overview of DPSUs including financial performance, present status & category of DPSUs and further efforts by them in the areas of R&D & Indigenisation etc.

At the end of the review, DPSUs namely HAL, Bharat Electronics Limited, BEML Limited, Bharat Dynamics Limited, Mazagon Dock Shipbuilders Limited, Garden Reach Shipbuilders & Engineers Ltd and Goa Shipyard Limited handed over Dividend Cheques amounting to Rs. 1620 Cr to Raksha Mantri.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2069296>

THE ECONOMIC TIMES

Tue, 29 Oct 2024

Open tender likely for IAF's mega 114 fighter jets deal

The government agrees with requirement projected by the Indian Air Force to buy 114 multirole fighter aircraft and would consider adopting a non-controversial model for the acquisition of these advanced planes, which will have to be made in India, official sources said.

The Indian Air Force has been pushing the case for buying 114 multirole fighter aircraft to augment its fleet, which has been facing shortages of modern 4.5 generation aircraft. The sources said that in 2016, the government procured 36 Rafale aircraft under emergency procurement to meet the urgent requirements of the force.

However, the matter became controversial, which resulted in the matter reaching the Supreme Court, where matters of national security had to be discussed in public. The sources hinted that the government would be going for a multi-vendor tender to acquire these aircraft under the Make in India procedure, as the government is clear that it would not be going for imports of any major weapon systems.

The sources said the government is well aware of the frustrations expressed by the services due to the paucity of aircraft and would soon be taking a considered decision on the matter. Asked whether the government would go in for more Rafale fighter jets, the sources said that it would take at least 10 years for the French firm to supply its aircraft due to the huge global order book from different countries.

The Indian Air Force acquired 36 Rafales under a direct government-to-government deal in 2016, as the planes had been selected in the Congress-era multirole medium combat aircraft deal. The matter became controversial as the opposition levelled allegations of corruption in the deal.

The Indian Air Force has around 30 squadrons of fighter aircraft and many of its aircraft including the Jaguars, Mirage-2000 and MiG-29, are set to retire in the next five to seven years. The MiG-21s are also set to be phased out in the next few months. The IAF feels that it requires the advanced 4.5 generation aircraft to meet the challenges posed to it on both the northern and western fronts.

<https://economictimes.indiatimes.com/news/defence/open-tender-may-be-coming-for-iafs-mega-114-fighter-jets-deal/articleshow/114729630.cms>



Tue, 29 Oct 2024

General Electric may deliver F-404 engines by March or April; India invokes penalty clause

After several delays, the F-404 jet engines, meant to power the indigenous Light Combat Aircraft (LCA)-Mk1A, are expected to be delivered by the U.S. engine manufacturer, General Electric (GE), by March or April 2025, according to sources in the know.

The contractual obligations in terms of penalty for delayed deliveries have been invoked, sources has said. The deal is between the GE and defence public sector undertaking Hindustan Aeronautics Limited (HAL). However, sources said there were no politics involved, and termed the delay in deliveries a “pure logistical issue”. In February 2021, the Defence Ministry had signed a ₹48,000-crore deal with HAL for 83 LCAMk1A, a more capable fighter than the current LCA-MK1 in service.

Following this, in August 2021, HAL signed a \$716-million deal with the GE Aviation for 99 F-404 aircraft engines and support services for the LCA-Mk1A. As per contract, three jets were to be delivered to the IAF in February 2024 and 16 aircraft per year for subsequent five years. “The GE issue is purely logistical. There are no politics involved,” the first source said, staying that GE has supply chain issues with the engines and they are now tying that up to restart regular production.

There are two engines available with GE for now that are being given to India, sources said. They will be used to deliver two jets to the Indian Air Force (IAF) while regular deliveries are awaited. The engines are now expected by March or April next year, which is a two-year delay from the contractual terms, a source said that contractual terms will have to be implemented.

Highvalue defence contracts typically have a penalty clause for delays or violations. Another source confirmed that the penalty clause in the deal has been invoked. The engine delays were also discussed between the National Security Advisers of the two countries when they met and was also taken up during the visit of Union Defence Minister Rajnath Singh.

In response to a query from The Hindu, a GE Aerospace Spokesperson reiterated their earlier response, “The Aerospace industry continues to experience unprecedented supply chain pressures. The GE Aerospace is working with our partner HAL and suppliers to resolve constraints and deliver F-404-IN20 engines for the LCA-Mk1 programme.”

The Security of Supply Arrangement (SoSA) that India and the U.S. concluded recently enables this kind of cooperation, sources noted. In addition to the 83 Mk1A aircraft on order, the Defence Ministry has given approval for procurement of another 97 LCA-Mk1A. This would eventually make 180 LCA-MK1 jets and 220 jets of the MK1 variant. The combined cost of the 180 Mk1As is an estimated at ₹1.15-lakh crore.

Against the backdrop of repeated delays having a cascading effect on aircraft deliveries of the jets, the HAL has worked out a plan for using Category-2 or used engines as a temporary measure till the new engines arrive, as reported earlier

<https://www.thehindu.com/news/national/penalty-clause-invoked-against-general-electric-for-engine-delays-for-lca-mk1a/article68809690.ece>

THE ECONOMIC TIMES

Tue, 29 Oct 2024

Top Army commanders discuss operational preparedness, critical strategic issues

Top Army commanders deliberated on critical strategic issues affecting border security and the hinterland during a two-day key conference that concluded here on Tuesday. The 1.3 million-strong Army's senior leadership also resolved to accelerate the ongoing transformational initiatives to boost its overall combat capabilities.

The Army Commanders' Conference happened at a time when troop disengagement at the two friction points at Demchok and Depsang Plains in eastern Ladakh is in its "final stages", following a key agreement firmed up between India and China. And it concluded on a day, when security forces in the morning gunned down two terrorists holed up in a forest area in the Akhnoor sector in Jammu and Kashmir, taking the number of militants killed in the 27-hour gunfight near the Line of Control (LoC) to three.

Over the last two days, the Indian Army's senior hierarchy engaged in indepth discussions on operational and administrative issues, the Ministry of Defence said in a statement. The conference witnessed the Army's "senior leadership deliberating on critical strategic issues affecting both border security and the hinterland," it said.

The phase one of the Army Commanders' Conference (ACC) 2024 took place in Sikkim on October 10 and 11, while the second phase was hosted in Delhi.

"The current operational preparedness, critical strategies & future directives will be deliberated in the #ACC with emphasis on facets of national security especially the technological advancements in the #IndianArmy," the Army posted on X in the afternoon.

"General Anil Chauhan, #CDS addressed the audience on the imperatives of Transformation in Jointness and Integration. Admiral Dinesh K Tripathi, #CNS highlighted the aspects of #MaritimeSecurity, challenges and roles played by the #IndianNavy in the Indian Ocean Region #IOR with an emphasis on interoperability," it wrote on the social media platform.

The conference reaffirmed the Indian Army's unwavering commitment to readiness and adaptability, as the senior leadership "resolved to accelerate ongoing transformational initiatives" and actively contribute to various national endeavours. Emphasising a forward-looking approach, the Indian Army remains fully dedicated to preparing for present and emerging challenges, ensuring a progressive, resilient, and future-ready force aligned with India's strategic interests, it said. Navy Chief Adm Tripathi, in his address, discussed the "rapidly shifting" dynamics in geopolitics, technology, and tactics.

He emphasised on the need for the armed forces to "remain proactive and adaptable to these changes, particularly within the Indian Ocean and IndoPacific regions".

The Navy chief highlighted the naval force's preparedness to tackle maritime challenges and their cascading effects on land operations, underscoring the importance of "maintaining operational superiority in these strategic waters", the statement said. CDS Gen Chauhan reflected on the recent success of the Joint Commanders' Conference in Lucknow.

Reviewing the current security situation, Gen Chauhan stressed the importance of jointness and the roadmap for enhanced integration across domains, which is critical for future warfare and effective operations. He outlined the step-by-step approach towards integration, starting with cross-service cooperation, progressing to a 'Joint Culture', and ultimately achieving full integration for joint operations.

The CDS reiterated the need for operational readiness to counter emerging challenges, underscoring modernisation and strategic autonomy as pivotal goals, especially within the framework of Vision 2047, the statement said.

During the conference, the Army leadership also deliberated on welfare measures and financial security schemes for soldiers, veterans, and their families, while various Boards of Governors met to discuss these critical issues.

The conference concluded with the distribution of awards to military stations in several categories. In the realm of aviation flight safety, 257 Army Aviation Squadron and 663 Army Aviation Squadron were awarded best-in-flight safety trophies, it added.

<https://economictimes.indiatimes.com/news/defence/top-army-commanders-discuss-operational-preparedness-critical-strategic-issues/articleshow/114742427.cms>

How far has India come in achieving self-reliance in defence production?

In the financial year 2023-24, the ministry of defence reported Rs 1.27 lakh crore in domestic defence production, suggesting that India, which once heavily relied on foreign suppliers for arms, is becoming increasingly self-reliant in defence manufacturing to meet its security needs.

The ministry claimed that India has transformed from a major arms importer to an emerging centre for indigenous production.

“India has achieved the highest-ever growth in indigenous defence production in value terms during financial year (FY) 2023-24, driven by the successful implementation of government policies and initiatives led by Prime Minister Narendra Modi, focusing on attaining Atmanirbharta,” the defence ministry said in a release.

Data from all Defence Public Sector Undertakings (DPSUs), other public sector units manufacturing defence items, and private companies, reveal that the value of defence production has gone up to a record high of Rs 1,27,265 crore—an impressive increase of approximately 174 per cent from RS 46,429 crore in 2014-15.

Earlier, India used to import about 65-70 per cent of the defence equipment, while today, around 65 per cent of the equipment is manufactured in India, underscoring the strength of the country's defence industrial base, which comprises 16 DPSUs, over 430 licensed companies, and approximately 16,000 Micro, Small, and Medium Enterprises.

The private sector accounts for 21 per cent of the defence production.

“As part of the 'Make in India' initiative, major defence platforms such as the Dhanush Artillery Gun System, Advanced Towed Artillery Gun System (ATAGS), Main Battle Tank (MBT) Arjun, Light Combat Aircraft (LCA) Tejas, submarines, frigates, corvettes, and the recently commissioned INS Vikrant have been developed, reflecting the growing capabilities of India's defence sector,” the defence ministry stated.

The annual defence production is also on track to reach a target of Rs 1.75 lakh crore in the current fiscal year, and the plan is to achieve Rs 3 lakh crore in defence production by 2029.

India's defence exports

India's defence exports have reached an all-time high, from Rs 686 crore in FY 2013-14 to Rs 21,083 crore in FY 2023-24. According to defence ministry, effective policy reforms, initiatives, and improvements in the ease of doing business implemented by the government aimed at attaining self-reliance in defence are the reasons for this growth.

India plans to achieve the target of Rs 50,000 crore in defence exports by 2029.

India's export portfolio boasts a diverse range of advanced defence equipment, including bulletproof jackets and helmets, Dornier (Do-228) aircraft, Chetak helicopters, fast interceptor boats, and lightweight torpedoes.

Currently, India exports to over 100 nations, with the top three destinations in 2023-24 being the USA, France, and Armenia.

“India's journey toward Atmanirbharta in defence reflects a transformative shift from reliance on imports to becoming a self-sufficient manufacturing hub...With strategic policies in place, a growing emphasis on indigenization, and a vibrant defence industrial base, India is poised to not only meet its own security needs but also emerge as a key player in the global arms market,” the defence ministry added.

<https://www.theweek.in/news/defence/2024/10/29/how-far-has-india-come-in-achieving-self-reliance-in-defence-production.html>



Tue, 29 Oct 2024

EAM Jaishankar calls for military readiness as geopolitical risks intensify

External Affairs Minister S. Jaishankar highlighted India's expectations from the armed forces and the preparedness required to address the contradictions and challenges caused by the intricate global and geopolitical dynamics of today.

Addressing the Army Commanders' Conference that concluded in Delhi on Tuesday, during which senior leadership discussed the critical strategic issues affecting India, Jaishankar hailed the Indian Army for remaining constantly vigilant.

He urged military leadership to be prepared to adapt to rapidly evolving geopolitical threats and opportunities. The minister highlighted the importance of technological advancements and the lessons drawn from ongoing global conflicts in shaping India's strategic posture.

Chief of Defence Staff (CDS), General Anil Chauhan, who also addressed the military leadership, highlighted the importance of jointness of the three forces.

Further, he stressed the importance of a roadmap for enhanced integration across domains, which is critical for future warfare and effective operations.

CDS Chauhan reiterated the need for operational readiness to counter emerging challenges, underscoring modernisation and strategic autonomy as the major goals.

Chief of Naval Staff (CNS), Admiral Dinesh K. Tripathi highlighted the need for the armed forces to remain proactive and adaptable to the changes, particularly within the Indian Ocean and Indo-Pacific regions.

During the conference, the Army leadership also deliberated on welfare measures and financial security schemes for soldiers, veterans, and their families.

"This conference reaffirmed the Indian Army's unwavering commitment to readiness and adaptability, as the senior leadership resolved to accelerate ongoing transformational initiatives and actively contribute to various national endeavours," the defence ministry said in a release.

<https://www.theweek.in/news/defence/2024/10/29/eam-jaishankar-calls-for-military-readiness-as-geopolitical-risks-intensify.html>



Tue, 29 Oct 2024

Army reveals how AI helped neutralise terrorists in Jammu and Kashmir's Akhnoor

The Indian Army on Tuesday said it used unmanned vehicles and artificial intelligence (AI) in the counter-terror operations in Jammu and Kashmir's Akhnoor. " We have used unmanned vehicle, artificial intelligence that gave us a quick and successful result... We lost one Army Dog - he was ahead when we were doing search operations, and militants fired upon the Dog. It's due to his sacrifice, many of the lives could be saved," Major General Sameer Shrivastava, GoC 10 Infantry Division, said in a briefing.

The Indian Army's four-year-old sniffer dog Phantom was killed in action during counter-terror operations. According to officials, the canine sustained fatal bullet injuries while trying to protect the troops from terrorists' assault.

"After this operation, such information was spreading that the Army had used BMP - we had used that kind of vehicle because the area was tough - with a gradient of 30 degrees and dense forest - we used those vehicles after locating militants to reach there," the senior Army official added.

3 terrorists eliminated in Akhnoor anti-terror ops

The security forces eliminated three terrorists after they had fired at an ambulance in the army's convoy in J&K's Akhnoor sector on Monday.

"When these people (terrorists) were detected, we received information from the village and hence our reaction was quick. Their purpose for which they had come wasn't fulfilled and hence they opened fire at our convoy, Major General Shrivastava was quoted by ANI as saying.

"The way terrorists were armed, we believe that they were here for a big purpose. Terrorist organisations had also posted that they were planning to do something big. Hence, we were prepared, and all the organisations including intelligence agencies were working in coordination," he added.

The anti-terror operations was part of Indian security forces' counter-offensive Operation Asan, launched after terrorists attacked an Army convoy in the Battal area.

According to security forces, the terrorists fired on an Army ambulance, prompting immediate retaliation. The area was swiftly sealed off, and a coordinated search effort was initiated by Jammu and Kashmir police and Indian security forces.

<https://www.hindustantimes.com/india-news/army-reveals-how-ai-helped-neutralise-terrorists-in-jammu-and-kashmirs-akhnoor-101730203385137.html>

Business Standard

Wed, 30 Oct 2024

Rajnath leaves for Arunachal; to interact with Armed Forces personnel

Defence Minister Rajnath Singh on Wednesday began his two-day visit to Arunachal Pradesh, where will interact with the Armed Forces personnel deployed in the Tawang sector.

Rajnath Singh along with Union Minister Kiren Rijiju left for Tawang on Wednesday morning.

"Leaving New Delhi for Tawang on a two day visit to Arunachal Pradesh. Looking forward to interact with Armed Forces personnel and attend the inaugural ceremony of a museum dedicated to brave Indian Army officer Major Ralengnao Bob Khathing," Rajnath Singh posted on X.

On Tuesday, Rajnath Singh praised the Indian Navy's efforts towards self-reliance and innovation and called it an "innovative Navy," adding that India has made significant strides in reducing its dependence on imports.

While addressing 'Swavalamban Conference 2024', Singh said that the Indian Navy's commitment to innovation and humbleness is clearly visible in the program they are carrying out.

"The effort of the Indian Navy is highly praised for your humbleness. I have praised the Indian Navy on many occasions and on many stages. From my point of view, the Indian Navy is in a way an innovative Navy. Your commitment to innovation and humbleness is clearly visible in the program you are carrying out," he said.

He also congratulated the stakeholders participating in the event and the winners of the various competitions.

"The theme of this event is strength and power through innovation and indigenization. I believe that this is not only relevant to the present situation, but it will definitely help in directing your efforts for the future. So I congratulate all of you on this. I congratulate all of the stakeholders participating in this event and the winners of the various competitions," he said.

Recalling his prior visit, Singh said, "A while ago, I visited a region here. The technologies and products shown to me there, they instill faith in the mind that in the coming time, you are going to play a long-term role in the field of innovation and technology."

The Defence Minister highlighted the vibrant culture developed through innovation and technology development in country.

Rajnath Singh said that India has made significant strides in reducing its dependence on imports and becoming self-reliant in defence production.

https://www.business-standard.com/external-affairs-defence-security/news/rajnath-leaves-for-arunachal-to-interact-with-armed-forces-personnel-124103000098_1.html



Tue, 29 Oct 2024

2X Faster Than Anglo-French Concorde, China Claims Testing Mach 4 Supersonic Passenger Jet Prototype

Two decades after the iconic Concorde was retired, a Chinese aircraft designed to travel twice as fast as the Anglo-French plane has successfully completed its test flight. The Beijing-based company Space Transportation announced on October 27 that its Yunxing prototype, capable of reaching speeds of Mach 4—twice the speed of the Anglo-French Concorde—completed a successful test flight on October 26, according to Chinese media.

The company said that Yunxing's advanced aerospace design is tailored for high-speed, efficient travel. Designed for vertical take-off and landing, the jet aims to reach altitudes exceeding 20,000 meters (65,600 feet). The company claimed that the capability would allow passengers to travel from Beijing to New York in just two hours, significantly reducing transcontinental travel times.

Company officials further revealed that they plan to test the jet's engine technology in November. These assessments are critical steps toward achieving the 2027 goal of a full-scale, commercially viable supersonic passenger jet. Founded in 2018 in Sichuan province, Space Transportation has expanded rapidly, establishing R&D and manufacturing centers across Beijing, Xi'an, and Anhui provinces. The company also maintains a test facility in Korla, Xinjiang.

With a focus on hypersonic technology, it has developed a broad range of services and products, including suborbital space tourism vehicles and hypersonic flight platforms for global transportation. Moreover, Space Transportation has worked closely with China's military, research institutes, and universities, pushing the boundaries of hypersonic and supersonic technologies.

On October 26, the Yunxing underwent rigorous tests on key components, including aerodynamics, thermal protection, and control systems. Space Transportation highlights the aircraft's high lift-to-

drag ratio, which enables it to maintain efficient performance as it ascends into lower-density altitudes. This would not only make flights faster but also more economical and comfortable.

Space Transportation envisions a future where supersonic jets like the Yunxing are used in global commercial flights and accessible space tourism. If successful, the Yunxing project could pave the way for a new era of commercial aviation, combining revolutionary speed with a broader range of passenger services.

The Rise & Fall Of Supersonic Travel

While today's aviation industry is bustling with companies racing to develop the next generation of supersonic commercial aircraft, it is essential to remember that supersonic travel was not merely a dream but a reality in the twentieth century. The Anglo-French Concorde epitomized this golden era of aviation. It was co-developed by British Aircraft Corporation (BAC), a predecessor of BAE Systems, and Aerospatiale, now part of Airbus. As the last civilian supersonic jet, the Concorde left an indelible mark on aviation history.

The Concorde entered service in 1976 and operated until its retirement in 2003. It cruised at twice the speed of sound, had four turbojet engines, and could perform horizontal take-offs and landings while soaring to altitudes of 60,000 feet (about 18,300 meters). British Airways operated the Concorde for nearly three decades, completing just under 50,000 flights and transporting over 2.5 million passengers supersonically.

A typical flight from London to New York took just under three and a half hours, significantly less than the eight hours required by subsonic aircraft. Notably, in November 1986, a British Airways Concorde accomplished a remarkable feat by circumnavigating the globe, covering 28,238 miles in an astonishing 29 hours and 59 minutes.

However, the Concorde was not without competition. The lesser-known Tupolev Tu-144, developed by the Soviet Union, holds the distinction of being the world's first supersonic transport aircraft. It made its maiden flight on December 31, 1968, just two months before the Concorde, and achieved its first supersonic flight in June 1969—four months ahead of its British counterpart.

These early successes were significant, especially considering that the United States had effectively withdrawn from the race when Congress canceled funding for a comparable Boeing project in 1971. When the Tu-144 made its foreign debut at the Paris Air Show in 1971, it captivated audiences. French President Georges Pompidou, setting aside nationalistic sentiments, praised it as “a beautiful plane.”

The Concorde's developers also acknowledged the Tu-144's advantages, admitting it was “quieter and cleaner.” However, the development of the Tu-144 encountered significant challenges. One of the major setbacks occurred during the 1973 Paris Air Show, when its first production model, the Tu-144S, tragically crashed, ultimately limiting its commercial viability.

While the Tu-144 operated as a cargo aircraft until 1983 and contributed to Soviet space training and NASA research, it never achieved the same acclaim as the Concorde. Meanwhile, despite its success, the Concorde faced challenges. The high operational costs and the tragic crash in 2000 contributed to a gradual decline in interest and support.

Ultimately, it was the governmental refusal to subsidize its expensive operations that led to its retirement in 2003. The thunderous noise generated by supersonic travel, especially over land, resulted in bans that stymied further development of similar aircraft. Regardless of these setbacks, the 21st century has witnessed a resurgence of interest in supersonic travel as new players emerge in the field aiming to build on the Concorde legacy.

Among the companies leading the charge in this new era is US-based Boom Supersonic. In recent years, the company has made headlines with its ambitious plans for the Overture, a Concorde-inspired aircraft intended for transatlantic passenger flights by 2029. In July 2024, Boom's prototype plane, the XB-1, completed its inaugural flight, marking a significant milestone for the company.

Furthermore, the Federal Aviation Administration (FAA) has issued Boom its first-ever Special Flight Authorization (SFA), permitting the XB-1 to exceed the sound barrier during tests in the Black Mountain Supersonic Corridor. Simultaneously, other firms are making progress in developing high-speed passenger travel alternatives. The UK-based Reaction Engines has recently unveiled progress on its engine project, which could facilitate transatlantic flights in just two hours. This innovative engine aims to push the limits of commercial flight, combining speed with efficiency.

<https://www.eurasiantimes.com/2x-faster-than-concorde-china-claims/>



Press Information Bureau
Government of India

Ministry of Science & Technology

Tue, 29 Oct 2024

Magic recipes to create hydrogels from viral protein fragments can improve drug delivery

A new way discovered to create hydrogels using tiny protein fragments of just five amino acids from the SARS-CoV-1 virus, could help improve targeted drug delivery & reduce side effects

Due to the increase in chronic and infectious diseases, researchers are for ever on the lookout for new methods of drug delivery to improve the effectivity of treatments. Hydrogels are known to be suitable for drug delivery because of their swelling behaviour, mechanical strength and biocompatibility.

Short peptide-based hydrogels hold enormous potential for a wide range of applications. However, researchers have found the gelation of these systems very challenging to control. Minor changes in the peptide sequence can significantly influence the self-assembly mechanism and thereby the gelation propensity.

Following the involvement of SARS CoV E protein in the assembly and release of the virus suggested to researchers from Bose Institute an autonomous institute of the Department of Science and Technology (DST) in Kolkata that it may have inherent self-assembling properties that can contribute to the development of hydrogels.

Professor Anirban Bhunia and his team at the Department of Chemical Sciences in Bose Institute, explored this possibility and discovered a new way to create useful gel materials.

In a paper recently published in the prestigious journal *Small* (Wiley), Prof. Bhunia and his collaborators from the Indian Institute of Science, Bangalore, University of Texas Rio Grande Valley, USA and Indian Association for the Cultivation of Science, Kolkata showed that by rearranging just five amino acids of the SARS-CoV-1 virus, one can make gels made up of pentapeptides with unique properties. Some of them gel when heated, others at room temperature.

This unique discovery could lead to significant medical advancements like customizable hydrogels that can improve targeted drug delivery enhancing treatment efficacy while reducing side effects.

These materials could revolutionize tissue engineering, potentially aiding in organ regeneration. These gels might also advance wound healing treatments and enable more accurate disease modelling for research.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2069176>



Tue, 29 Oct 2024

NIAB scientists working on next-gen vaccine against leptospirosis

Scientists at the National Institute of Animal Biotechnology (NIAB) are working on the next generation vaccine against ‘Leptospirosis’ — a serious disease affecting both animals and people — caused by a bacteria called ‘Leptospira’, which has over 300 different types of strains.

This zoonotic (affecting humans and animals) disease remains a public health concern as it has become more of a threat having escalated prevalence due to the impacts of climate change and global warming.

Efficacy of antibiotics

One million cases of human leptospirosis are reported every year resulting in an estimated 60,000 deaths. Despite the availability of a good number of antibiotics, their effectiveness becomes less when the bacteria infiltrates vital organs causing damage, often due to delayed diagnosis, said scientists of the Institute, under the Department of Biotechnology.

While vaccination is a cost-effective and secure preventive measure to combat this disease, the current killed vaccine only provides short-term immunity specific to certain strains of the zoonotic disease and fails to prevent bacterial shedding through urine.

At present, there’s a vaccine for animals only but it doesn’t protect against all strains of these bacteria and there is no vaccine for humans. The existing vaccines, despite inducing robust cross-protection, do not provide sterilizing immunity or a long-lasting protective response, they said.

A next-gen vaccine

The NIAB scientific team led by Syed Faisal focused on developing the next generation vaccine against this important zoonotic infection against multiple strains, have already characterized a Lipopolysaccharide (LPS) which is one the most important protective antigen and defines the strains specificity, said the Institute Director G. Taru Sharma.

The team has also demonstrated that the initial immune response against LPS may decide whether the host will develop mild infection or succumb to severe infection associated with multi-organ dysfunction.

This work has further highlighted that a component of LPS, called Lipid A, is less toxic, can boost the immune response and make vaccines more effective, a significant step in developing a new type of vaccine, she said.

Various antigens, such as leptospira immunoglobulin-like proteins called ‘LigA and LigB’, have been identified as potential subunit vaccine candidates. These antigens require potent adjuvants for effectiveness. Experiments conducted on mice and hamsters showed these proteins combined with alum and Leptospira Lipid A as adjuvant exhibited significantly higher levels of cellular immune responses and provided sterilizing immunity against Leptospirosis.

“Overall, this research study, supported by Department of Science & Technology (DST) sheds light on the adjuvant properties of Leptospira Lipid A and offers promising avenues for developing LPS-based vaccines against this devastating zoonotic disease. The potent adjuvant activates the innate immune system enhancing a sustained, antigen-specific protective immune response,” said Dr. Faisal.

The work has been published in ‘Open Biology and Vaccines’, an international Journal of repute.

<https://www.thehindu.com/sci-tech/science/niab-scientists-working-on-next-generation-vaccine-against-leptospirosis/article68760155.ece>

ThePrint

Wed, 30 Oct 2024

PRL scientists discover Saturn-sized exoplanet orbiting Sun-like star. Its ‘year’ shorter than an Earth week

Scientists from Ahmedabad’s Physical Research Laboratory (PRL) have discovered a dense Saturn-sized exoplanet orbiting a Sun-like star. It is five times larger and around 60 times heavier than the Earth.

Senior scientists at the PRL told ThePrint that the exoplanet, named TOI-6651b, was discovered using the PARAS-2 (PRL Advanced Radial-velocity All-sky Search-2) spectrograph and is the fourth exoplanet discovered by scientists from the institute.

PARAS-2 is a high-resolution spectrograph attached to the recently installed 2.5-metre telescope in the PRL’s Mount Abu InfraRed Observatory (MIRO).

“We have found that around 87 percent of the planet’s mass consists of dense materials such as rocks and iron in the core, and the remaining mass comprises a low-density envelope of hydrogen and helium,” a senior scientist from the PRL, who did not want to be named, explained.

Significance of discovery

PRL scientists have said that the discovery of TOI-6651b is significant because it is located at the edge of a 'Neptunian desert' or 'sub-Jovian desert—a region close to a star where usually no Neptune-sized exoplanets are found.

The discovery is also significant because it challenges conventional planet formation theories. The exoplanet may have been formed as a result of merging events or a significant atmospheric mass loss through tidal heating, which is the repeated deformation of a celestial body, say, a moon, due to tides in another body, say, a planet, resulting in the heating of the former's interior.

Therefore, the discovery highlights the complex interplay of dynamic processes and atmospheric evolution in the formation of massive, dense sub-Saturn planets.

Researchers found that this distant planet takes 5.06 days to orbit its Sun-like host star. This means its 'year' equals less than a week on Earth. Its orbit is eccentric—slightly oval—which also distinguishes it from a planet.

The star, TOI-6651, is a G-type subgiant, which means it has used almost all of its hydrogen and is changing into a giant, a star that is not yet in the final stages of its life. A G-type subgiant has strong absorption lines from ionised calcium and appears yellow to the human eye.

The star is slightly larger and hotter than the Sun, with a surface temperature of about 5940 Kelvin. The discovery supports the theory of a positive correlation between planet mass and host star metallicity.

<https://theprint.in/science/prl-scientists-discover-saturn-sized-exoplanet-orbiting-sun-like-star-its-year-shorter-than-an-earth-week/2334135/>

THE ECONOMIC TIMES

Wed, 30 Oct 2024

China launches new crew to its space station as it seeks to expand exploration

China declared a "complete success" after it launched a new three-person crew to its orbiting space station early Wednesday as the country seeks to expand its exploration of outer space with missions to the moon and beyond.

The Shenzhou-19 spaceship carrying the trio blasted off from the Jiuquan Satellite Launch Center in northwest China at 4:27 a.m. local time atop a Long March-2F rocket, the backbone of China's crewed space missions. "The crew condition is good and the launch has been successful," the state broadcaster China Central Television announced.

China built its own space station after being excluded from the International Space Station, mainly because of U.S. concerns over the People's Liberation Army, the Chinese Communist Party's military arm's overall control over the space program. China's moon program is part of a growing rivalry with the U.S. and others, including Japan and India.

The team of two men and one woman will replace the astronauts who have lived on the Tiangong space station for the last six months. They are expected to stay until April or May of next year. The new mission commander, Cai Xuzhe, went to space in the Shenzhou-14 mission in 2022, while the other two, Song Lingdong and Wang Haoze, are first-time space travelers, born in the 1990s. Song was an air force pilot and Wang an engineer with the China Aerospace Science and Technology Corporation. Wang will be the crew's payload specialist and the third Chinese woman aboard a crewed mission.

Besides putting a space station into orbit, the Chinese space agency has landed an explorer on Mars. It aims to put a person on the moon before 2030, which would make China the second nation after the United States to do so. It also plans to build a research station on the moon and has already transferred rock and soil samples from the little-explored far side of the moon in a global first.

The U.S. still leads in space exploration and plans to land astronauts on the moon for the first time in more than 50 years, though NASA pushed the target date back to 2026 earlier this year. The new crew will perform spacewalks and install new equipment to protect the station from space debris, some of which was created by China.

According to NASA, large pieces of debris have been created by "satellite explosions and collisions." China's firing of a rocket to destroy a redundant weather satellite in 2007 and the "accidental collision of American and Russian communications satellites in 2009 greatly increased the amount of large debris in orbit," it said.

China's space authorities say they have measures in place in case their astronauts have to return to Earth earlier. China launched its first crewed mission in 2003, becoming only the third nation to do so after the former Soviet Union and the United States. The space program is a source of enormous national pride and a hallmark of China's technological advances over the past two decades.

<https://economictimes.indiatimes.com/news/science/china-launches-new-crew-to-its-space-station-as-it-seeks-to-expand-exploration/articleshow/114754895.cms>



Tue, 29 Oct 2024

China's Space Legends: Shenzhou18 Crew Returns with stunning New Space data

China's Shenzhou-18 crew, with astronauts Ye Guangfu, Li Cong, and Li Guangsu, are expected to return to earth after their six-month mission on November 4th. This revelation was made by the China Manned Space Agency during a press briefing, adding that, after the crew transfers the spacecraft control to Shenzhou-19 on orbit, the crew will return to Earth at the Dongfeng landing site in Inner Mongolia.

This year's Shenzhou-18 has been productive in several scientific and technical outcomes since it was launched in April. Presently, the crew is in good health and has just prepared for the upcoming return mission. The Shenzhou-18 crew members have been performing different scientific activities in the Tiangong space station, especially in space material science microgravity fluid physics, and combustion science. Among their studies, the astronauts performed China's first aquatic ecological experiment in space, an experiment that aimed at studying the behaviour of fish in space.

They bred zebrafish in a facility that mimics microgravity, and the fish was seen swimming in the wrong direction—upside down, with rotation and circular patterns, which would not be seen in normal gravity on Earth. The study seeks to establish how vertebrate growth, development, and behaviour are influenced by space conditions, and the study also offers information on the cycling of materials in closed ecological systems, which is crucial in supporting long-term space missions.

Extraordinary Spacewalks for China's Astronauts

As part of the mission, the crew set new records for China's space program, including two spacewalks in May and July. For instance, the first of them established a new record for China as they spent almost 8.5 hours in the open space—the longest single extravehicular activity by China's astronauts. Spacewalks let the crew repair equipment, check its functionality, and contribute to China's experience in long-duration space missions.

Last preparations and data sharing

Before their return, which has been scheduled recently, the crew managed to perform several significant operations, such as in-orbit data removal and sending, equipment inventory, and rearrangement.

These steps help them make sure all their data, samples, and equipment from their experiments are well labelled and well stored in readiness for analysis when they get back. The water samples, fish eggs, and videos captured from the zebrafish experiments will be studied by the scientists in the future to investigate how space environments affect biological and ecological processes.

The Shenzhou-18 mission has built up China's research capability in space science and provided important data that will assist in future long-duration space missions. As the crew members get ready for their return, it has been seen that China's interstellar capabilities have increased and the country is more inclined towards scientific progress in microgravity conditions.

<https://www.news9live.com/science/chinas-space-legends-shenzhou-18-crew-returns-with-stunning-new-space-data-2736194>

