समाचार पत्रों से चयित अंश
Newspapers Clippings

दैनिक सामयिक अभिज्ञता सेवा

A Daily Current Awareness Service

Vol. 44 No. 227 26 Nov 2019

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the pioneer

Tue, 26 Nov 2019

DRDO scientists told to set benchmarks

Baleswar: The 7th DRDO Young Scientists' Meet was held at Chandipur from November 20 to 22 by the Integrated Test Range (ITR).

It was the 7th edition of the annual meet of young scientists from all the laboratories of DRDO spread across the country.

Department of Defence R and D Secretary and DRDO Chairman Dr G Satheesh Reddy inaugurated the event along with Director of ITR Dr BK Das and other dignitaries from DRDO.

Over 250 young scientists who joined the event were engaged in team building activity, group discussion, extempore presentation and technical quiz spanned over three days. Invited talks were delivered by eminent personalities from academia, industry and research institutes.

This edition of YSM was unique in many ways such as launching a dedicated app for ensuring wider reach among the young scientists, conducting online interactions through quiz, opinion polls and discussion forums etc. As a part of ITR's green initiative, no plastic policy was adopted. Moreover, a novel idea of a 'Young Scientists Forest' was conceived where in all the participants, guests and senior officials planted more than 300 fruit bearing plants inside the ITR technical complex to mark the event.

ITR products and technologies were demonstrated in a well-crafted ITR pavilion. The art and culture of Odisha were displayed in stalls demonstrating Patachitra from Raghurajpur and Jaukandehi from Baleswar which proved to be a main crowd puller. Cultural events were also organised after the technical sessions. Eminent Odishi performer Sujata Mahaptra and team presented mesmerizing dance. Besides, renowned standup comedian Praveen Kumar also enthralled the participants and guests with his signature style.

Winners of various competitions were awarded during the valedictory function. In his address Director, ITR Prof Das urged all the young scientists of DRDO to have faith in their potentials and work on innovative and challenging ideas to meet futuristic requirements in the defence sector.

https://www.dailypioneer.com/2019/state-editions/drdo-scientists-told-to-set-benchmarks.html

NEWS18

Tue, 26 Nov 2019

Opinion | DRDO should learn from United States' DARPA so we don't fight tomorrow's war with yesterday's weapons

The annual DARPA budget is a little over $3 billion, while the DRDO budget is approximately $2.5 billion. With not much difference in budget, why does DARPA accomplish so much more than the DRDO?

By Lt Gen (Retd) DS Hooda

The October 4, 1957 announcement by Tass, the Soviet Union news agency, of the successful launch of the first artificial satellite Sputnik 1 had caused a great deal of shock to the American people. Proud of their technological prowess, the news had a 'Pearl Harbor' effect on public sentiment. However, notwithstanding all the criticism of the Eisenhower administration, there was also a long-term positive impact. The Sputnik launch spurred a determination in the American leadership to become a world leader in military technology.

One of the first steps undertaken by the US government was the establishment of the Defense Advanced Research Projects Agency (DARPA) in February 1958. According to its website, DARPA works on the principle that the US should be "the initiator and not the victim of strategic technological surprises", and it "explicitly reaches for transformational change instead of incremental advances".

DARPA's achievements have been extremely significant. They include the ARPANET that led to the Internet, stealth technology, microelectronics, sensors for surveillance and reconnaissance, unmanned aerial vehicles, and infrared night vision systems. All these have revolutionised warfighting techniques.

One of the reasons for DARPA's success has been its focus on creating breakthrough technologies and capabilities rather than incremental or evolutionary advances in existing systems. It would, therefore, be instructive to see how DARPA looks at future warfare.

Five months ago, the Tactical Technology Office (TTO) of DARPA asked for proposals for grant of funds for "applied research, advanced technology development, platform demonstrations, or systems studies that aim to enable new warfighting constructs". The TTO note states that the "US military must expand from their historic emphasis on dominance to one of disruptive performance – enabling enhanced capability where needed, applied by a more agile and resilient force."

The note outlines the future capabilities that it foresees in air, ground, maritime, and space systems. While many capabilities are listed out, one area stands out — reducing reliance on monolithic and high-value systems like aircraft, ships, submarines, and space assets. TTO also suggests that "evolutionary advances in traditional stealth technology" in air systems may not be the way forward.

The TTO's vision envisages low-cost, disaggregated, networked systems as a key to disruptive capabilities for future warfare. Let me directly quote from the DARPA document. Under 'Air Systems' it calls for "lethality through a combination of overwhelming performance (e.g. hypersonics) and overwhelming numbers (e.g. swarming low-cost weapons)".

For 'Naval Systems' the capability requirement is for the "proliferation and disaggregation of maritime assets using small, inexpensive, massively-networked vessels derived from commercial designs".

‘Space Systems’ should be based on “proliferating and disaggregating space assets at LEO (low earth orbit), to reduce reliance on GEO (geosynchronous earth orbit) assets — creating smaller, simpler satellites derived from commercial designs, and that leverage the emerging commercial private sector development of network and user segments. Even in ‘Ground Systems’, the focus is on “innovation in mobility and lethality for small units, or even individual warfighters, to enable local dominance”.

It is quite apparent that DARPA's vision for future warfighting focuses on smaller, networked systems rather than the expensive aerial and naval platforms that dominate the battle space today. There is no doubt that the aircraft, the naval destroyer, and the submarine will not lose their relevance in the immediate future, but their importance as a war-winning factor could increasingly come into question.

Saudi Arabia has an extremely advanced air defence system, but it failed to prevent an attack by cheap, low-flying drones and cruise missiles on the Aramco oil processing facility that temporarily cut the country’s oil production by half.

In India, despite being the 5th largest defence spender in the world, there is little focus on advanced technologies. Our military technology achievements are the production of mostly outdated tanks, helicopters, and missiles, or the establishment of factories producing foreign weapons after technology transfer.

The army, navy and air force are reluctant to reduce their numbers and are, therefore, procuring platforms or weapon systems that permit them to retain the existing organisational structure. The Defence Research and Development Organisation (DRDO) also focuses on meeting the existing shortfalls of the services rather than future technologies.

The annual DARPA budget is a little over $3 billion, while the DRDO budget is approximately $2.5 billion. With not much difference in budget, why does DARPA accomplish so much more than the DRDO? The answer to this lies in the different cultures of the two organisations. DARPA is a funding agency and has no laboratories or research staff. It has an establishment of about 200 persons, of whom half are hired for a three to five-year period. All research is conducted through contracts with universities, industry and government R&D institutions.

The DRDO, on the other hand, has an employee strength of about 30,000 and a network of more than 50 labs. With the running cost of this kind of establishment, it is apparent that only limited amounts would be available for research.

There is no doubt that the DRDO has some impressive accomplishments in developing our nuclear triad at a time when international sanctions were imposed on us. The DRDO also cannot ignore the current equipment requirements of the three services that are saddled with mostly vintage equipment, and the fact that the ‘Make in India’ programme has met with only limited success.

It could also be argued that India’s strategic environment and requirements are not comparable to that of the US and that DARPA and DRDO have very different functions. All these are valid arguments but do not take away from the need to focus on future force structures and technologies that will shape the character of wars to come. The military and DRDO must work together with the universities and private industry in a comprehensive effort to research and develop future warfighting technologies so that we don’t end up fighting tomorrow’s war with yesterday’s doctrine and weapon systems.

(The author is former Northern Commander, Indian Army, under whose leadership India carried out surgical strikes against Pakistan in 2016. Views are personal.)

https://www.news18.com/news/opinion/opinion-drdo-should-learn-from-united-states-darpa-so-we-dont-fight-tomorrows-war-with-yesterdays-weapons-2398997.html

Tue, 26 Nov 2019

Swasraya Bharat science fest inspires young minds

Kochi: Gaganyaan, the first Indian-crewed space mission by ISRO planned to be launched 2022, sonar technology developed by DRDO for submarines and technological innovations introduced by various research institutes were some of the attractions at the Swasraya Bharat-Kerala Science Fest 2019, organised by Swadeshi Science Movement at Marine Drive here. Union Minister of State for External Affairs V Muraleedharan inaugurated the fest. The science fest helps the common man better understand the functioning of various research units. Apart from the science documentaries screened at the venue, competitions are organised for students in a bid to create awareness. Governor Arif Mohammad Khan will deliver the valedictory address on the concluding day on November 26.

https://www.nyoooz.com/news/kochi/1419446/swasraya-bharat-science-fest-inspires-young-minds/

THE ECONOMIC TIMES
WWW.ECONOMICTIMES.COM

Tue, 26 Nov 2019

General Bipin Rawat set to be first Chief of Defence Staff

The General – who is serving a rare full three year term as the Army Chief after he superseded two officers in 2016 – is likely to get a term of over two years as the CDS, which will largely see the creation of a new structure to provide military ...

By Manu Pubby

New Delhi: General Bipin Rawat is on a series of farewell visits to military establishments as his tenure as the Army Chief draws to an end in December.

However, the top officer is unlikely to shed his uniform anytime soon, with the decks being cleared for him to take over as the first Chief of Defence Staff (CDS) – a four star position being created as part of a defence management overhaul.

The General – who is serving a rare full three year term as the Army Chief after he superseded two officers in 2016 – is likely to get a term of over two years as the CDS, which will largely see the creation of a new structure to provide military advise to the government and implement joint procurement by the three services.

The appointment of a new CDS is expected to be announced in December.

Sources have confirmed that a committee tasked to draw out the role, responsibilities and powers of the CDS has submitted its report, which is to be approved by the Cabinet Committee on Security (CCS). The recommendation includes creation of a post senior to the current service chiefs with an age limit of 64 years.

As reported by ET, the government had tasked National Security Advisor Ajit Doval to head the committee for the setting up of a new position that was announced by Prime Minister Narendra Modi at his Independence Day address. While joint operations and tri services commands are likely to be overseen by the CDS, the top officer is set to be heavily involved in procurement of military equipment as well.

Given the shrinking capital budget of the defence ministry, this role will determine immediate procurement cycles for the three forces.

https://economictimes.indiatimes.com/news/defence/general-bipin-rawat-set-to-be-first-chief-of-defence-staff/articleshow/72230362.cms

THE HINDU BusinessLine

Tue, 26 Nov 2019

IAF commanders review regional security scenario

New Delhi: The top commanders of the Indian Air Force on Monday brainstormed over the evolving security scenario in India's neighbourhood and explored ways to further bolster the country's aerial prowess, officials said.

Defence Minister Rajnath Singh chaired the inaugural session of the conference.

The commanders will be deliberating extensively on the need for focussing IAF's capability in the field of space, cyber, artificial intelligence and drone technology, the officials said.

They said the conference will hold detailed discussions on evolving security scenario in India's immediate neighbourhood and beyond with a focus on boosting the IAF's operational capability in the short and long term.

The speedy implementation of the IAF's ambitious modernisation plan will be a key priority, said the officials, adding that the focus in the last few years has been to improve overall infrastructure and readiness of the force in the north-eastern sector.

The conference facilitates conceptual level deliberations culminating in important policy decisions.

The commanders are also deliberating on how the IAF can compliment government's efforts to enhance the defence manufacturing capabilities of the country, particularly through acquisitions under the strategic partnership model.

The government announced the strategic partnership model in May 2017 under which select private firms were to be roped in to build key military platforms like submarines and fighter jets in India in partnership with global defence majors.

https://www.thehindubusinessline.com/news/iaf-commanders-review-regional-security-scenario/article30074966.ece#

THE TIMES OF INDIA

Tue, 26 Nov 2019

Fund crunch tying hands of defence forces, stalling upgrades

By Rajat Pandit

HIGHLIGHTS

- ***The armed forces are either slowing down modernisation projects or slashing operational requirements due to severe fund crunch***
- ***The grim situation can also be gauged from the fact that arms acquisition cases are piling up in the Cabinet Committee on Security without being cleared***

New Delhi: Hit by a severe fund crunch, the armed forces are either slowing down modernisation projects or slashing operational requirements, while also delaying payments to defence PSUs and foreign armament companies for contracts inked earlier.

The grim situation can also be gauged from the fact that arms acquisition cases are piling up in the Cabinet Committee on Security without being cleared due to the prevailing shortage of funds. The armed forces, in fact, have told defence minister Rajnath Singh and top defence finance officials that there is a "critical requirement" for additional funds during the ongoing financial year, said sources on Monday.

TOI in mid-September had reported the over 15-lakh strong armed forces had projected an additional requirement of around Rs 80,000 crore more for modernisation, plugging critical operational gaps and paying "committed liabilities" at the revised estimates stage in December.

"While the entire Rs 80,000 crore may not be possible, at least 40% (Rs 32,000 crore) of the amount is now critical for the armed forces. IAF and Navy have already spent over 85% of their allocated funds. Payments to defence PSUs are being progressively stopped, and may come to a complete halt by December," said a source.

Given the budgetary constraints the three Services are being forced to curtail their operational necessities on several fronts.

The Army, for instance, has cut down its long-standing requirement for 5,719 new-generation sniper rifles by two-thirds to just about 1,800 guns now. Earlier, in April 2018, the force had gone in for a Rs 5.34 crore emergency purchase of 32 long-range advanced sniper rifles for troops deployed along the Line of Control with Pakistan.

Similarly, the Navy has been told to halve its requirement of 10 more Poseidon-8I long-range maritime patrol aircraft, which are packed with radars and weapons for anti-submarine warfare, at a cost of over $3 billion from the US. The Navy had earlier ordered 12 P-8I aircraft, with eight of them inducted and the rest four slated for delivery by 2021-2022.

The defence ministry is also likely to delay the actual inking of the virtually finalized deals with the US like the Rs 13,500 crore one for 24 multi-role MH-60 'Romeo' helicopters for Navy and the Rs 4,168 crore acquisition of six Apache attack helicopters for Army, said the sources.

Officers acknowledge that a big problem is that the ballooning revenue expenditure (salaries and day-to-day running costs) is eating into the capital outlay for modernisation for the manpower-intensive armed forces year after year. The overall defence outlay in the 2019-2020 budget was Rs 3.18 lakh crore, with Rs 2.10 lakh crore earmarked for revenue and just Rs 1.08 lakh crore for capital expenditure.

https://timesofindia.indiatimes.com/india/fund-crunch-tying-hands-of-defence-forces-stalling-upgrades/articleshow/72232632.cms

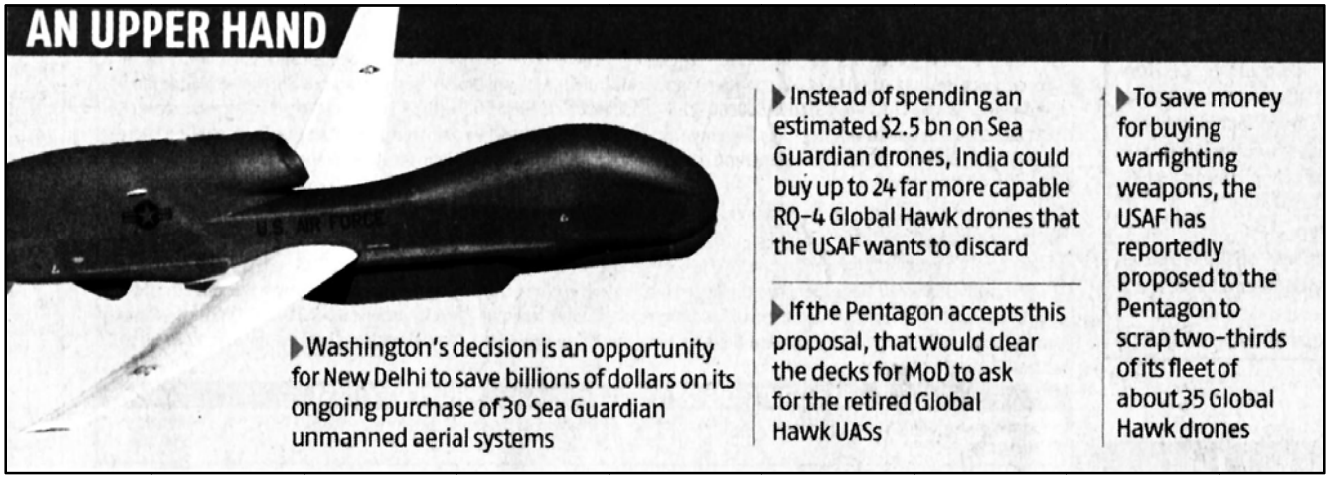
Business Standard

Tue, 26 Nov 2019

India can save billions of dollars as US to retire Global Hawk Drones

By Ajai Shukla

New Delhi: Stemming from America's changing security threats is a lucrative opportunity for New Delhi to save billions of dollars on its on-going purchase of 30 Sea Guardian unmanned aerial systems (UAS), and another 10 P-8I Poseidon multi-mission maritime aircraft (MMA) for monitoring the Indian Ocean.



Instead of spending an estimated $2.5 billion on Sea Guardian drones, India could buy up to 24 far more capable, sophisticated and longer-range RQ-4 Global Hawk drones that the US Air Force (USAF) wants to discard. It believes long-range drones are superfluous as Washington shifts attention from combating terrorism (which requires drones to track and kill terrorists) and focuses instead on building the capabilities needed to combat a new threat – superpower adversaries Russia and China.

To save money for buying cutting-edge warfighting weapons like stealth bombers and hypersonic missiles, the USAF has reportedly proposed to the US Department of Defense (the Pentagon) to scrap two-thirds of its fleet of about 35 Global Hawk drones.

If the Pentagon accepts the USAF proposal, that would clear the decks for India's Ministry of Defence (MoD) to ask for the retired Global Hawk UASs under the Pentagon's "Excess Defence Articles" (EDA) programme. The Pentagon's decision will be known in February 2020, when it submits its final budget projections to the US Congress.

The EDA programme allows the Pentagon to supply its unneeded weaponry to allies and partner countries at heavily discounted prices, or even free of cost in cases where US national security objectives are being furthered. Building India's capability as a "net security provider" in the Indian Ocean Region (IOR) is a stated US national security policy objective.

In 2005, India experienced the cost benefits of buying US equipment under the EDA programme. That year, the Pentagon sold the Indian Navy the USS Trenton — an amphibious warfare ship, now renamed INS Jalashwa — for just $60 million, about a tenth of what it was worth. That price included the cost of six helicopters on the warship. The Jalashwa is currently the second-biggest warship in India's navy.

The Global Hawk is classified as a "high altitude long endurance" (HALE) UAS, that can carry out surveillance of a stretch of land or ocean for over 30 hours continuously, physically scanning up to

100,000 square kilometres each day – more than the Sea Guardians that India's millitary is currently acquiring.

Teams of drone pilots, working in shifts, fly long-range drone missions from ground stations thousands of kilometres away, using satellite communication links. The information the UAS picks up is transmitted to the ground station in real time, allowing the military to respond to threats immediately.

US firm Northrop Grumman, which designed and built the Global Hawk, is currently developing it into a maritime variant called the MQ-4C Triton, which is customised for oceanic surveillance. Under the so-called Broad Area Maritime Surveillance (BAMS) program, Northrop Grumman is integrating the Triton with the P-8A Poseidon for intelligence, surveillance and reconnaissance (ISR) maritime missions.

Joining the US, Australia, which also operates the P-8A Poseidon, has joined BAMS. With the Indian Navy currently operating the world's largest Poseidon fleet (outside for the US Navy), acquiring Global Hawks under the EDA programme and modifying them to MQ-4C Triton configuration could provide a cheap and effective BAMS solution for surveillance of the Indian Ocean.

Since 2001, a generation of US drones like the Predator, Reaper and Global Hawk has played a central role in the "War on Terror", killing hundreds of terrorists and their supporters in Pakistan, Afghanistan, Iraq and Yemen. But UAS are highly vulnerable to radar-based air defence systems of the kind that state adversaries deploy. This was underscored in June, when Iran shot down a Global Hawk that America was operating over the Strait of Hormuz.

However, India does not intend to fly Sea Guardian drones (or Global Hawks if those are bought) over hostile airspace, but over international waters – to monitor shipping over the vast expanses of the Indian Ocean. Therefore the vulnerability of these UAS to radar-guided air defence weapons is not a major concern.

Asked whether it plans to approach the Pentagon for buying surplus Global Hawk drones under the EDA programme, the navy has not commented.

The Pentagon's shift from counterterrorism to combating great-power threats from China and Russia has been laid out in the Pentagon's National Defense Strategy document that was published in January 2018.

DefenceNews

Tue, 26 Nov 2019

Indian Army's new Integrated Battle Groups to be ready in early 2020

The Indian Army's Integrated Battle Groups (IBGs), meant to ensure faster punitive and defensive operations, will come into being by early next year after necessary government approvals, top defence sources have said.

The Army is awaiting a report on the recent IBG-styled exercise carried out by the Mountain Strike Corps in Arunachal Pradesh, a development which had upset China according to reports.

The concept of IBGs has also been test-bedded at the 9 Corps at the western border with Pakistan, and the Army is fine-tuning them based on ground feedback.

What are IBGs?

IBGs are self-contained, agile, brigade-sized fighting units, which were proposed in one of four studies initiated by Army chief General Bipin Rawat on the overall restructuring of the force.

They are to replace the current Cold Start Doctrine, which called for defensive corps to carry out shallow cross-border thrusts within 72 hours for limited objectives such as the capture of territory. Gen. Rawat acknowledged the existence of the doctrine for the first time in January 2017.

The IBGs are to perform both offensive roles, involving cross-border operations, and defensive roles to withstand an enemy attack.

Each IBG will be headed by a major general. The integrated units for the border will be all-encompassing, with artillery, armoured, combat engineers and signal units.

Resources for the IBGs would depend on 'Threat, Terrain and Task', and should be able to mobilise in 12 to 48 hours based on where they are located.

The composition of every IBG would differ on the basis of the terrain where it is located — an IBG operating in a desert needs to be constituted differently from one operating in the mountains.

Gaps found in recent experiment ::

While the Eastern Command is yet to file a report on the IBG experiment in the eastern theatre, sources said the experiment on the western front has brought to light critical gaps in the operations of the IBGs.

"For example, the resources given to IBG for signals were found to be insufficient, particularly because of the mountainous terrains," a second Army source said.

The signals corps of the Indian Army is responsible for all military communications.

"Then with the animal transport (battalions), the need was felt for better tracks and more load-carrying capacity of mules," the source added.

Overall, the test emphasised the need for leaner, smaller, more agile and more manoeuvrable forces, the first Army sources quoted above said.

https://www.defencenews.in/article/Indian-Army%e2%80%99s-new-Integrated-Battle-Groups-to-be-ready-in-early-2020-768161

पंजाब केसरी

Tue, 26 Nov 2019

सेना ने इजराइल से खरीदीं 240 स्पाइक मिसाइलें

- **बंकरों का सफाया करने में सक्षम ये मिसाइलें एलओसी पर तैनात होंगी**

नई दिल्ली, (एजेंसी): पाकिस्तान के कब्जे वाले कश्मीर में आतंकी ठिकानों पर प्रभावी कार्रवाई के लिए सेना एलओसी पर 'स्पाइक' एंटी टैंक मिसाइल तैनात करेगी। यह बात सोमवार को रक्षा विभाग के सूत्रों के हवाले से न्यूज एजेंसी ने बताई। 'स्पाइक' एक गाइडेड मिसाइल है, जिसका इस्तेमाल बंकरों में छिपे आतंकियों को निशाना बनाने के लिए किया जा सकता है।

सेना ने आपातकालीन परिस्थितियों से निपटने के लिए इजराइल से 240 स्पाइक मिसाइलें खरीदी हैं। इन मिसाइलों का इस्तेमाल मूल रूप से टैंक विध्वंसक के तौर पर किया जाना था, लेकिन इसे बंकरों को नष्ट करने के लिए भी प्रयोग किया जा सकेगा। दरअसल, सीमा पार आतंकी छिपने के लिए बंकरों का इस्तेमाल करते हैं।

बालाकोट एयर स्ट्राइक के बाद सेना ने स्पाइक मिसाइल की तैनाती को लेकर योजना बनाई थी। इन मिसाइलों से एलओसी के पार स्थित आतंकियों के बंकरों को निशाना बनाया जा सकेगा। एक महीने पहले सेना ने पाकिस्तान के कब्जे वाले कश्मीर में आतंकियों के कई लॉन्च पैड और ट्रेनिंग कैंप नष्ट किए थे। इस ऑपरेशन में 4-6 आतंकी मारे गए थे। अब स्पाइक मिसाइल की तैनाती के बाद, इस तरह के ऑपरेशन को अंजाम देना आसान होगा।

पंजाब केसरी

Tue, 26 Nov 2019

भारत रक्षा उपकरणों का सबसे बड़ा आयातक नहीं : नाईक

नई दिल्ली, (भाषा): सरकार ने सोमवार को संसद में इस बात को स्वीकार करने से इंकार किया कि भारत रक्षा उपकरणों का सबसे बड़ा आयातक देश है तथा उसने कहा कि इस बारे में कोई प्रामाणिक एवं आधिकारिक सूचना नहीं है। रक्षा राज्य मंत्री श्रीपाद नाईक ने एक प्रश्न के लिखित उत्तर में राज्यसभा में यह बात कही।

उन्होंने कहा कि कोई भी देश रक्षा उपकरणों के आयात के बारे में आधिकारिक खुलासा नहीं करता। ऐसे में भारत के रक्षा उपकरणों का सबसे बड़ा आयातक देश होने के बारे में कोई प्रामाणिक एवं आधिकारिक सूचना नहीं है। उन्होंने बताया कि 2016 में रक्षा खरीद प्रक्रिया की समीक्षा की गयी थी और घरेलू रक्षा उद्योग के विकास को गति देने के लिए इसमें एक विशेष प्रावधान डाला गया था। मंत्री ने बताया कि इस मकसद से प्रत्यक्ष विदेशी निवेश नीति में भी समुचित संशोधन किया गया है।

- **सरकार ने कहा- कोई भी देश रक्षा उपकरणों के आयात के बारे में आधिकारिक खुलासा नहीं करता**

The Tribune
VOICE OF THE PEOPLE

Tue, 26 Nov 2019

India to host Naval drill 'Milan 2020' at Visakhapatnam

By Ajay Banerjee

New Delhi: India aims to conduct a unique naval exercise for which an invitation has been extended to 41 countries who are otherwise unlikely partners.

"The Naval Exercise 'MILAN 2020' is scheduled to be held at Visakhapatnam in March 2020 in which 41 countries have been invited," the Ministry of Defence said in a written reply in the Rajya Sabha.

SENDS INVITE TO 41 COUNTRIES

- An invitation for the exercise has been extended to 41 countries who are otherwise unlikely partners
- Among those invited are the US and Russia which otherwise don't see much in common and are at loggerheads
- Also on the invite list are navies of Saudi Arabia, Iran and Israel and those countries which are locked in dispute over territorial boundaries in South China Sea

Among those invited are the US and Russia which otherwise don't see much in common and are at loggerheads. Since 2018 the US has brought in Countering America's Adversaries through Sanctions Act (CAATSA) that requires imposing curbs on nations that have "significant" defence relations with Russia.

India is one of the countries that faces a threat of sanctions since it purchased S-400 missiles from Russia despite US pressure to not do so.

Among the invitees are the navies of Saudi Arabia, Iran and Israel. The Saudis have been accusing Iran of having masterminded the attack on ARAMCO, its crude oil processing units. Israel has edgy relations with Iran and Saudi Arabia.

Also on the invite list are those countries which are locked in dispute over territorial boundaries in the South China Sea. The invitees include Indonesia, Malaysia, Vietnam, Brunei and the Philippines — all are locked in framing a "code of conduct" on navy and cargo operating in the South China Sea.

Defence Minister Rajnath Singh while addressing the Sixth ASEAN Defence Ministers' Meeting Plus (ADMM Plus) in Bangkok on November 18 said interest of countries like India, which are not part of the negotiations for the code of conduct, should be protected.

China, which has lost its argument at the UN on defining territorial waters under the United Nations Convention on the Law of the Sea (UNCLOS), has refused to accept the verdict. It has opened own negotiations to establish a "code of conduct" in the hydro-carbon rich sea.

Among others on the invite list are Japan and Australia, who are part of the four-nations grouping the 'Quadrilateral' along with India and US. New Zealand, UAE, Singapore, UK, Bangladesh, France, Kuwait and Myanmar are others.

https://www.tribuneindia.com/news/nation/india-to-host-naval-drill-milan-2020-at-visakhapatnam/866053.html

the pioneer

Tue, 26 Nov 2019

Sino-India Army exercise ‘Hand in Hand’ from Dec 7

New Delhi: India and China will hold the joint army exercise ‘Hand in Hand’ in Umroi near Shillong from December 7 to 20. The two countries will field 100 soldiers each and they will practice counter-terrorism drills in urban and rural setting. This is the seventh edition of the joint exercise which is part of confidence building measure between the two countries which share a disputed border of more than 4,000 km.

The exercise could not take place in 2017 due to standoff in Doklam plateau near Sikkim when the two armies were engaged in a face off lasting 70 days. The stand-off took place after the Indian Army protested against the construction of a road in the region considered strategically important for the country. Intervention by the top diplomatic channels and political leadership of India later defused the situation.

The last edition was held in 2018 in Chengdu province of China after Prime Minister Narendra Modi and Chinese President Xi Jinping, in April 2018, had held an informal summit at Wuhan to improve relations between the two countries.

The latest exercise will be spread over 15 days wherein the troops will also conduct joint firing practice besides improving jointmanship and understanding the operational philosophy of each other’s armies, sources said here on Monday.

https://www.dailypioneer.com/2019/india/sino-india-army-exercise----hand-in-hand----from-dec-7.html

DefenceNews

Tue, 26 Nov 2019

Pak-China naval exercise at India’s doorstep

Pakistan and China are working together once again, and this time right at India's doorstep, in the North Arabian Sea.

PCMEX-2019, the Pakistan-China maritime exercise, begins in December, with the Chinese PLA Navy likely to be present in strength. The Chinese contingent comprises at least four warships, and also helicopters. The warships concerned are:

* Kunming, a Luyang III class modern guided-missile destroyer of about 7,000 tonnes. It was readied only in 2012.

* Yueyang, a Jiang Kai II class multi-role frigate of about 4,000 tonnes.

* Luomahu, a Fuchi-class tanker of about 20,000 tonnes and recently commissioned.

* A Song-class submarine - these are conventional (diesel-electric) and not nuclear-powered.

* Liugongdao, a Daloo-class submarine support ship. This suggests that the submarine will be in the Indian Ocean and surrounding waters for a longish spell.

Chinese helicopters and a detachment of marines will participate in the exercise.

Besides, China and Pakistan are planning another exercise. This is Sea Guardians-2020 off the coast of China in December next year and will be about maritime security cooperation.

Meanwhile, China is commissioning a Qing-class conventional submarine. These large boats -- about 6,000 tonnes -- have the ability to launch land-attack missiles. The Qing-class boats will replace the older Golf-class submarines.

https://www.defencenews.in/article/Pak-China-naval-exercise-at-India%e2%80%99s-doorstep-768156

THE TIMES OF INDIA

Tue, 26 Nov 2019

Scientists may have found fifth force of nature

It has long been recognised that there are four "fundamental forces" which govern nature. They are gravity, electromagnetism, the weak nuclear force, and the strong force.

There have been many unsubstantiated claims of the existence of a fifth fundamental force, and as the hunt for dark matter continues to prove fruitless, efforts to find new forces to help fill in the gaps the standard model of particle physics can't explain have increased. Dark matter is a theoretical substance hypothesised to account for around 85% of all mass in the universe, but has not yet been glimpsed.

But now, scientists at Hungary's Atomki Nuclear Research Institute believe they may have found more solid evidence of a fifth fundamental force of nature. Attila Krasznahorkay and his colleagues at Atomki first reported some surprising results in 2015 after studying the light emitted during the radioactive decay of beryllium-8, an unstable isotope. Beryllium-8's existence and the unique way it decays have been the focus of numerous studies related to stellar nucleosynthesis — how nuclear fusion in stars forms elements.

In 2015, they found, when firing protons at the isotope lithium-7, which creates beryllium-8, the subsequent decay of the particles did not produce the expected light emissions, and that a specific tiny "bump" occurs, which means for an unexplained reason the electrons and positrons, which burst apart as the atom decays, were frequently pushing away from each other at exactly 140 degrees. Various retests confirmed the results.

It is thought the moment the atom decays, excess energy among its constituent parts briefly creates a new unknown particle, which then almost immediately decays into a recognisable positron and electron pair.

But we are not all about to be turned inside out or flattened into a different dimension. The unknown particle, described as a "protophobic X boson", is thought would carry a force that acts over microscopic distances.

The particle has been named X17, as its mass is calculated to be 17 megaelectronvolts. But Krasznahorkay now believes they have measured the same results in stable helium atoms. However, the angle at which the electrons and positrons in helium atoms were separating was closer to 115 degrees. If the particle's existence is confirmed, it means physicists will have to finally reassess the interactions of the existing four fundamental forces of particle physics and make space for a fifth.

https://timesofindia.indiatimes.com/home/science/scientists-may-have-found-fifth-force-of-nature/articleshow/72234031.cms