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DRDO pins hopes on target drone Abhyas

Bengaluru: The Defence Research and Development Organisation (DRDO) is aggressively pushing Abhyas – the Highspeed Expendable Aerial Target (HEAT) – to enter into the production mode by next year.

Buoyed by successful text-book-launch of Abhyas last month from ITR Chandipur, the DRDO scientists are now readying the flight for another trial in the presence of Service representatives.

Abhyas was virtually put to death by the previous regime at the helm of affairs in DRDO, citing initial setbacks the programme had. All that has changed with a new team in place and Abhyas has now being given a rebirth.



During the recent trial, it EW for 32 minutes and successfully cleared 21 way-point-navigation modes. The MEMS based (Micro-Electro-Mechanical Systems) navigation developed by RCI Hyderabad came to its rescue this time.

Unlike DRDO's extravagant size of project teams, Abhyas had only a small and young team. The idea took birth in 2013, when the Services wanted an expendable self-propelled aerial target.

With the mandate of developing a low-cost target, scientists wanted to convert the tow-body of a recoverable Lakshya PTA into an expendable self-propelled aerial target.

The inspiration was that they had identified a mini gas turbine engine which fits inside the diameter of the tow-body.

Having grown into a UAV laboratory, Aeronautical Development Establishment (ADE) had already developed many systems over the years. The industry too had matured enough by supporting various UAV platforms developed by ADE.

Abhyas was designed to be launched from a zero-length launcher by two 68 mm rockets. It could y up to an altitude of 5 km and a speed of 180 met/sec. The platform had a maximum endurance of 45 minutes.

Abhyas boasts of being light weight (70kg), modular construction, easy to handle, auto-pilot, low cost, simple launcher and can be deployed in a decoy role as well.

DRDO scientists are excited about the recent trials but they have a long way to go before the Services accept it and give the go-ahead for the mass production.

While ADE over the years has tested the patience of Services with many of its projects hitting road-blocks, delays and uncertainties, it is left to be seen what future holds for Abhyas.

Similar to Abhyas, the subsonic cruise missile Nirbhay project too was revived by the DRDO top brass.

DRDO insiders say that Abhyas team is now gearing up for developmental flight trials with active user participation. The next task will be to transfer the technology to an Indian industry.

For now, they have set an internal target of December 2020 to begin production.

Until then and may be beyond, the Services will continue to test the accuracy of their weapons and air defence training against Jet Banshee, an imported target drone from the hangars of Meggit Systems, UK.

And, DRDO will have to deliver a target drone that meets all requirements of the user.

<https://english.manoramaonline.com/news/nation/2019/06/18/drdo-pins-hopes-on-target-drone-abhyas.html>



Thu, 20 June 2019

INS Vikramaditya to get indigenous landing aids

By Vijay Mohan

Chandigarh: The flight deck of Navy's sole aircraft carrier INS Vikramaditya will be equipped with indigenous landing aids after the force has expressed dissatisfaction with the original Russian equipment.

Called the Optical Landing System (OLS), it has been developed by the Central Scientific Instruments Organisation (CSIO) here and is undergoing shore-based trials at a Naval airbase.

The OLS provides the glide slope information to the pilot through a system of lens and coloured lights so as to enable him to touchdown at the right spot on the carrier deck and snag the arrester cables that bring the aircraft to a halt. The system is located at an angled position on the deck's left side towards the rear.

According to scientists associated with the project, the Navy had wanted the landing aids to be visible from a longer distance than was possible with the Russian system and also to have a higher resolution for coloured light to ensure clarity.

INS Vikramaditya, an extensively modified Soviet-era warship, was commissioned into the Navy in November 2013 and formally entered service in June 2014 after arriving here from Russia. It has an aerial complement of MiG-29K fighters and helicopters.

The OLS is critical to the safe recovery of fighter aircraft due to the high landing speed and restricted runway space, which is just about 150 m. The system tells the pilot whether he is too high or too low when approaching the carrier from the rear for landing. An image of a "meatball" is created by the lights and lens, which turns red if the aircraft is too low. If it is too high, the ball will move above horizontally placed bars of green datum lights that act as a reference point for the pilot to judge his position.

<https://www.tribuneindia.com/news/nation/ins-vikramaditya-to-get-indigenous-landing-aids/790230.html>

The defence policy must be prioritised

The government has enormous political capital to bring in defence reforms. Band-aid fixes won't work

By Srinath Raghvan

A striking feature of the 2019 Lok Sabha elections was the unusual prominence accorded to national security in the Bharatiya Janata Party (BJP)'s campaign. In 2014, the party's election manifesto discussed security policy, but only towards the end. By contrast, the 2019 manifesto began with national security. Political scientists will debate the extent to which these issues shaped voters' preferences, but the Narendra Modi government now has enormous political capital to bring about far-reaching reforms in defence, reforms that cannot be put off.

Indeed, the Modi government faces a string of daunting challenges from reforming the security architecture and structuring the armed forces to strengthening the defence industrial base and military readiness. Rhetorical fixes and institutional band-aids can no longer help.

Need for a Chief of Defence Staff: Let's start with issues that are well recognised before considering those that have yet to register in policy debates. It is almost 20 years since the Kargil Review Committee set out its recommendations for national security reforms — recommendations that were broadly endorsed by a subsequent Group of Ministers and revisited by another committee in 2011. The most important, yet thorny, of these was creating the post of a Chief of Defence Staff (CDS) as a single-point military adviser to the political leadership. The idea had met with resistance both from within the armed forces — the Air Force was not keen — and from political leaders who were averse to concentrating military authority in a single office.

During Prime Minister Narendra Modi's first term in office, it appeared that these concerns had been smoothed over. In the summer of 2015, the then Defence Minister, the late Manohar Parrikar, publicly asserted that a "Chief Defence Staff is a must" and that he would come up with a proposal within three months. Three years on, Parrikar was still hoping to get this done. The problem, he observed, lay in ensuring that the CDS was linked with meaningful jointness among the three services.

In fact, the importance of creating integrated theatre commands had been emphasised all along. As a starting point, it was felt that supply and logistics functions could be integrated. But the Modi government failed to make any headway in the remainder of its tenure, partly owing to resistance from within the armed forces. It bears emphasising, however, that defence reforms of this scale have been pushed through in other democracies in the teeth of greater or lesser opposition from the military. Even the choice of the first CDS or equivalent has often been unpalatable to the services and their leadership. Lord Mountbatten was chosen as Britain's first CDS because he was equally detested by all the three services. It is time the government moved decisively to create a fully-empowered CDS with a clear road map for integration of commands.

Defence manufacturing: The strategic imperative of creating a solid defence industrial base is equally well recognised. Here, too, the first Modi government sounded the right notes. Speaking at the Aero India show in February 2015, the Prime Minister said that defence manufacturing was "at the heart of the Make in India programme" and that the country should aim to manufacture 70% of military equipment domestically in the next five years. By the end of the term, the proposed defence manufacturing ecosystem had, along with Make in India, slipped out of sight. The only thing the BJP's 2019 manifesto could talk about was manufacturing of AK-203 rifles in Amethi.

But this is as good a time as any to revive and push ahead the plans for a defence manufacturing base that includes private sector as well as public sector undertakings. If there is one area where

industrial policy can work, it is defence. Emphasising this domain could fit well with the country's larger requirements of economic renewal.

The fiscal challenge: The next priority for defence policy is to deal with the shrinking resources for military modernisation and the consequent need for structural change in the armed forces.

Following the grant of one-rank-one-pension and the implementation of the 7th Pay Commission, manpower costs of salary and pension now account for over 70% of the defence budget. In the budget of 2018-19, the allocation for pensions grew at 27% over the previous year, while capital expenditure rose by only 9%. Given the real constraints on increasing the overall allocation for defence, capital expenditure for military modernisation is unlikely to increase in line with the requirements.

This fiscal challenge, however, is also an opportunity to rethink the fundamental structure of our armed forces, especially the balance between long-service and short-service components as well as manpower and technology. The services are reportedly considering how to prune manpower, but this should be part of a broader exercise that ideally should be led by a CDS.

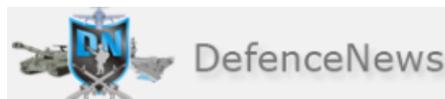
Military education must: This brings us to the last major challenge: military readiness. Much of the discussion around this tends to focus on critical shortages of equipment and spares. But the real, long-term problem lies in professional military education, especially for officers.

Our training establishments impart narrow professional skills. They focus on preparing officers to command companies, battalions and brigades, or perform staff duties at various levels. There is practically no attempt to give the officers a sense of the larger contexts — strategic, political and international — in which the armed forces function. It is only at the highest training establishment, the National Defence College, that senior one-star officers get exposed to some of these issues. This is too little and too late.

This outmoded approach to training affects the quality of human capital at all levels in the services. Yet, no government has paid serious attention to this. The fate of the long-heralded Indian National Defence University is symptomatic of the political leadership's neglect of this crucial area.

The BJP's mandate gives the Modi government an opportunity to place defence policy in the top tier of its priorities. It should seize this rare opportunity. The time for tarrying has passed.

<https://www.hindustantimes.com/analysis/the-defence-policy-must-be-prioritised/story-ewRxG0xP0J47WUqSjnlzOI.html>



Thu, 20 June 2019

India to acquire 10 more Anti-Submarine P-8Is - deal to be signed during Mike Pompeo's visit

On the eve of the visit of the U.S. Secretary of State, Mike Pompeo, to India, the first step towards a major defence deal with the United States has been taken.

India wants ten more P-8I aircraft for surveillance, reconnaissance and anti-submarine operations in addition to the eight it contracted for in 2009 for the Navy. The search for the additional ten P8Is cleared its first hurdle today when the Services Capital Acquisition Categorization Higher Committee (SCAPCHC), headed by the Chief of Integrated Staff or CISC, a senior lieutenant-general and including the three vice chiefs of staff of the three services cleared the proposal of about Rs 22,500 crore.

This is only the first step. The deal will have to be cleared by the Defence Acquisition Council (DAC) headed by defence minister Rajnath Singh and including the three chiefs and the defence

secretary and then, by the Cabinet Committee on Security (CCS) headed by Prime Minister Narendra Modi and including the finance, defence, home and external affairs ministers.

The purchase will be through the Foreign Military Sales (FMS) route, meaning it is a government-to-government deal. It is also a follow-on order. This avoids the lengthy process of bidding and usually, charges of corruption and favouritism. Many large orders have taken the FMS route including very recently, the 145 M-777 light howitzers for the Indian Army and also, the C-130 and C-17 aircraft and the Apache and Chinook helicopters.

"This is a follow-on order and through the FMS system. We have indicated we especially want this aircraft," a senior navy official said.

The Pompeo visit later this month comes at a time when Indo-US defence ties are at a high, primarily after the signing of the COMCASA (Communications, Compatibility and Security Agreement) and a similar logistics agreement earlier.

But there are also some major differences: the USA is not happy with the purchase of the S-400 air-defence missiles from Russia. The Indian side feels there were indications of acceptance by the USA earlier. Issues like the purchase of Iranian oil, though that is coming down and the differences over the Generalised System of Preferences (GSP) trade agreement also have to be sorted out between the two countries.

The USA is also keen that the Indian Air Force buys the F-35 fighter aircraft. India is keen to buy about 114 fighters and the French, Russians and Swedes are also bidding for the deal.

<http://www.defencenews.in/article/India-to-acquire-10-more-Anti-Submarine-P-8Is---deal-to-be-signed-during-Mike-Pompeos-visit-585361>



Thu, 20 June 2019

India-US military trade: Partnership between the two nations on an upward trend

The aggregate worth of India's defense acquisition from the US Defense companies which have crossed over \$ 18 billion are now expected to cross \$25 billion over the next few years.

The defense relationship has emerged as a major pillar of India-US strategic partnership. There has been intensification in defense trade, joint exercises, personnel exchanges, collaboration and cooperation in maritime security and counter-piracy, and exchanges between each of the three services for over a decade. The two countries now conduct more bilateral exercises with each other than they do with any other country, including naval, air and land.

Both India and the US inked in 2005 the new framework for the India-US Defense Relationship, which sets priorities for defense cooperation in maritime security, humanitarian assistance/disaster relief, and counterterrorism.

The Civil Nuclear Cooperation Initiative was completed in 2007 which is a ten-year defense framework that lifts a three-decade US moratorium on nuclear trade with India. And makes India the only country outside of the Non-proliferation Treaty (NPT) with nuclear capabilities and allowed to participate in nuclear commerce.

Shortly thereafter renowned US scientist, Dr Vivek Lall, took over as Boeing's top official in charge of US-India Defense trade. Recognized by many world leaders including several US Presidents and heads of state from Europe and Japan for his acumen as a renowned scientist and his ability to

bridge nations with technology and trade, Lall is the man behind growing military trade between the governments of the US and India.

During his 14 year career in the Boeing Company, he had led a team to work on the path-breaking military deals including the P8I Anti Submarine Warfare (ASW) aircraft for the Indian Navy, C17 (military transport aircraft), anti-ship Harpoon missiles, Apache and Chinook helicopters for the Indian Air Force (IAF) and oversaw multiple campaigns as well as pan India strategic industrial tie-ups.

When he was appointed Vice President of Strategy and Business Development at Lockheed Martin (LM) Aeronautics in January 2018, the same year witnessed his appointment by the US Government in a key advisory role in a Federal Advisory Committee. This is a two-year term to the US Cabinet Secretary heading Department of Transportation in Washington DC which affects the American and global aviation policies and technologies.

Since he joined LM there has been significant momentum in addressing the urgent need of 24 MH60R anti-submarine helicopters for the Indian Navy with the recent receipt of a Letter of Agreement in response to India's request.

Also, he had the distinction of introducing an India unique platform the F21 for the fighter requirements in India to the world during Aero India 2019, which has a large Israeli content on board. The company is the only one in the world to have operational fifth-generation aircraft like the F22 and F35.

Prior to his appointment at LM he was Chief Executive in charge of the US and International Strategic Development at General Atomics (makers of the Predator UAV's) and was behind the path-breaking agreement by the White House to release armed category 1 UAV's to India, a non-NATO country.

As has been reported by the Financial Express Online earlier, India is in advanced discussions with the US for 30 drones for all its services.

The US government has offered India the THAAD (Terminal High Altitude Area Defense) which has been designed to intercept ballistic missiles at high altitude and is a competitor for the Russian S-400.

The PAC-3 (Patriot Advanced Capability) an upgrade of the Patriot air defense missile system has been offered to India.

Bilateral dialogue mechanisms in the field of defense now include several such as the Defence Policy Group, Defence Joint Working Group, Defense Procurement and Production Group, Senior Technology Security Group, and Joint Technical Group, Military Cooperation Group.

Both India and the US governments have already signed four agreements including the Logistics Exchange Memorandum of Association (LEMOA) in August 2016; Fuel Exchange Agreement in November 2015; Technical Agreement (TA) on information sharing on White (merchant) Shipping in May 2016 and the Information Exchange Annex (IEA) on Aircraft Carrier Technologies in June 2016; and Communications Compatibility and Security Agreement, India specific version of the Communication and Information Security Memorandum of Agreement (CISMOA) last year.

<http://www.defencenews.in/article/India-US-military-trade-Partnership-between-the-two-nations-on-an-upward-trend-585351>

Thu, 20 June 2019

Induction of Indian Navy's Second *Kalvari*-Class Attack Sub Delayed

*The Indian Navy has pointed out 36 defects in the second boat of the
Kalvari class. Fixing them will take at least a year*

The Indian Navy is refusing to commission the second *Scorpene*-class (*Kalvari*-class) diesel-electric attack submarine (SSK), the future INS *Khanderi*, until a total of 36 defects and deficiencies are addressed by Indian shipbuilder Mazagon Dock Limited (MDL) and its partner, French state-owned submarine builder Naval Group, formerly known as Direction des Constructions Navales Services (DCNS), according to local media reports. MDL is license-building the SSK in collaboration with France's Naval Group in Mumbai.

The Indian Navy is insisting that MDL deliver a "fully sea- and battle-worthy" submarine and address "all outstanding snags and shortcomings," a senior naval officer was quoted as saying by *IHS Jane's* on June 17. The officer refused to provide many details regarding the cited deficiencies, but mentioned that one of the "principal drawbacks" is the "unacceptably high" engine and propeller noise level.

According to the *Business Standard*, 29 deficiencies require testing on a calm sea, which will prove difficult to achieve given the imminent beginning of the monsoon season in India. As a result, no testing will likely occur until the middle to the end of September. "Another four issues require the submarine be docked in a navy dockyard for testing," the paper reports. "This runs up against an existing docking schedule that dockyards have already issued, involving numerous other warships."

Overall, the induction of the future INS *Khanderi* may be delayed by up to a year.

The 1,565-ton conventionally powered submarine *Khanderi* was launched in January 2017 and commenced sea trials in July of the same year. Originally, the SSK was supposed to be commissioned already in 2017; however, various technical and logistical issues caused repeated delays. In May I summarized the armament and technical characteristics of the *Kalvari*-class:

Powered by two 1250 kW MAN Diesel Engines, the SSK's operational range is around 6,500 nautical miles (12,000 kilometers). Each SSK is powered by 360 battery cells and a permanently magnetized propulsion motor for operation under water.

While the class will not be equipped with an air-independent propulsion (AIP) system for the time being, there are plans to retrofit the boats with a domestically designed and built AIP in the coming years.

The Kalvari-class will be armed with French-made Exocet SM39 anti-ship missile, a sea-skimming, subsonic, solid-fueled anti-ship missile with an estimated operational range of 50-70 kilometers, and heavy-weight torpedoes. Each submarine can carry up to 18 anti-ship missiles or heavy-weight torpedoes.

Notably, the Indian Navy does not possess modern heavyweight torpedoes for the *Kalvari*-class as of now.

Naval Group was awarded a \$4.16 billion contract by the Indian government to build six SSKs for the Indian Navy in cooperation with MDL under the Indian Ministry of Defense's Project-75 acquisition program. This January, the Defense Acquisition Council, the Ministry of Defense's principal procurement body, approved the procurement of six additional SSKs under Project-75. Given

the current induction rate, it appears unlikely that the Indian Navy will commission all six Project-75 SSKs by 2022, as originally planned by the service.

<https://thediplomat.com/2019/06/induction-of-indian-navys-second-kalvari-class-attack-sub-delayed/>



Thu, 20 June 2019

Sri Lanka successfully launches its first satellite ‘Ravana-1’ into orbit

The satellite was officially handed over to the Japan Aerospace Exploration Agency on February 18 and was sent to the ISS on April 17, through the assistance of Cygnus-1 spacecraft from the US

Sri Lanka’s first satellite ‘Ravana-1’, designed and developed by two local engineers, was successfully launched into orbit this week from the International Space Station (ISS) along with two other BIRDS 3 satellites from Japan and Nepal.

Ravana 1, the cube satellite measuring 11.3 cm x 10 cm x 10 cm, and weighing around 1.05 kg, was launched into orbit at 3:45 pm (Sri Lanka time) on Monday, the Colombo Page reported.

The satellite was designed and developed by two Sri Lankan engineers – Tharindu Dayaratne and Dulani Chamika – studying space engineering at Japan’s Kyushu Institute of Technology.

Ravana-1 was deployed to the 400-km of orbit at an inclination of 51.6 degrees using the JAXA (Japanese Aerospace and Exploration Agency) owned Kibo experiment module, the paper said.

<https://indianexpress.com/article/technology/science/sri-lanka-successfully-launches-first-satellite-ravana-1-orbit-iss-5788898/>