

निस्तेज रहे अर्जुन और तेजस

देश के रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के बनाए स्वदेशी लड़ाकू विमान तेजस और युद्ध टैंक अर्जुन को हथियारों के जखीरे में शामिल करने से सेना ने मना कर दिया है। सेना का कहना है कि डीआरडीओ विश्वस्तरीय गुणवत्ता का वादा करके निम्न स्तर के हथियार देता है। इसमें धन और समय भी तय सीमा से अधिक लगता है। तीस-चालीस वर्ष में जब तक डीआरडीओ कोई हथियार या टैंक तैयार कर पाता है, तब तक वह तकनीक पुरानी हो जाती है। जैसा तेजस और अर्जुन के मामले में हुआ।



हल्का लड़ाकू विमान तेजस

प्रोजेक्ट : 1983 में इस प्रोजेक्ट पर काम शुरू हुआ। अब तक सिर्फ पांच तेजस तैयार हुए हैं जिन्हें अब तक सेवा में आने की हरी झंडी नहीं दिखाई दी गई है। इसमें 40 फीसद सामग्री आयातित है। प्रोजेक्ट की कुल लागत 70,000 करोड़ रुपये रही।

समस्या

- यह अब तक युद्ध के लिए पूरी तरह तैयार नहीं हैं। इन्हें जून, 2018 में आखिरी ऑपरेशनल क्लियरेंस दिया जाना प्रस्तावित है।
- इसकी रेंज और मजबूती दोनों कम हैं। यह सिर्फ 400 किमी के घेरे में वार कर सकता है।
- हथियार ले जाने की क्षमता कम है। सिर्फ तीन टन भार उठा सकता है। ज्यादा रखरखाव की जरूरत।
- उन्नत 83 तेजस मार्क-1ए अब तक तैयार नहीं हैं।



मुख्य युद्धक टैंक अर्जुन

प्रोजेक्ट : 1974 से काम चल रहा है। बीते दस वर्षों में दो रेजीमेंटों को 3,311 करोड़ रुपये में 124 मार्क-1 टैंक दिए गए हैं। इनमें 55 फीसद विदेशी माल का इस्तेमाल हुआ है।

लागत : मार्क-1 की शुरुआती लागत 306 करोड़ रुपये और मार्क-2 की 182 करोड़ रुपये रही। 124 मार्क-1 टैंक 3,311 करोड़ रुपये में सेना में शामिल किए गए। 118 मार्क-2 टैंक की लागत 6,600 करोड़ रुपये से अधिक अनुमानित है।

परेशानी : मार्क-1 62 टन का टैंक है। यह पंजाब और उत्तर के रेतीले इलाकों में पुलों और भूमिगत नालियों से नहीं गुजर सकता। 89 सुधारों के साथ तैयार किया गया मार्क-2 टैंक 67 टन वजन का है। इसकी सेवा बेहद खराब है।

Navy's new tech warriors

By Ajay Banerjee

The first batch of technology graduates with knowledge of current affairs and war history is set to join the Indian Navy. These 328 cadets will soon be officers and India's military face under the 'look east' policy

A cadet at the Indian Naval Academy, Ezhimala, Kerala, has ended a five-minute talk on 'military-positives' of a World War II (1939-1945) campaign in North Africa led by US Army's General George Patton. The Cadet's guide and mentor, Lieutenant Commander Munish Sethi, responds: "Give me a three-point take-away. Always summarize to end it."

A study of such military campaigns, including Pearl Harbour (Japanese attack on the US) or bombing of Karachi harbour and oil-refinery by the Indian Navy in 1971 is now a new module for the four-year training course at the Academy. A concept of 'soft-skills' teaches young cadets (aged 18-23 years) about current affairs, India's relations with countries such as the US, Russia and China, key energy supply routes at sea and importance of dominating the trade-routes. These-soon-to-be-officers will be on warships operating in international waters, coordinating with other navies.

These new 328 cadets will be India's military face in its 'look east' policy and managing relations with Indian Ocean islands and countries which routinely need humanitarian assistance, oceanographic study and patrolling of their exclusive economic zones. The training gels with the fast-expanding role of the Indian Navy which, now routinely patrols in the Red Sea, Indian ocean, Gulf of Aden, Straits of Malacca (through which flows half of world trade by volume) besides visits to Russia, Japan, Vietnam, Malaysia, Hawaii and Australia.

On November 22, Indian Navy Chief Admiral Sunil Lanba will be at this 2,500-acre, sea-facing campus when another batch of Naval officers is commissioned.

Uniquely, this will be the first batch that has undergone the modified training regime that has study of military campaigns, country-specific study and public-speaking besides the usual military discipline. The officers will hold a BTech degree approved by the All India Council of Technical Education and know at least one foreign language out of Russian, Arabic, French and Chinese. Also, they are trained to fight a war at sea — on board warships, fighter jets, surveillance planes, helicopters, submarines and radars.

Commandant of the Academy, Vice Admiral SV Bhokare, who has overseen the transition, terms his wards as 'tech-warriors'. "Today a sound technical mind is needed to be a good soldier. We are already in the beyond-visual-range missile era and satellite-guided systems," he said.

New training

The Navy has to shape 18-year-olds into officers. "We have to groom them for conflict, but also like a 'diplomatic-uniformed' force", says Rear Admiral MD Suresh, the Deputy Commandant of the Academy.

The dreaded 'front roll', a form of punishment in military academies, has been done away with. These boys come from 'science backgrounds' and are slowly conditioned as per specially designed exercises. Military fitness has benchmarks for running, horse-riding, sailing besides swimming that is taught at an Olympic-sized indoor pool, named after the legendary Capt MN Mulla, who opted to sink with his ship, the INS Khukri, after it was hit during the 1971 Indo-Pak war. He was awarded the Mahavir Chakra (MVC).

In the last 18 months of training, cadets make presentations about countries and are graded for the same. Complex topics such as navigation in the disputed South China Sea are introduced. "Besides having its own faculty, a memorandum of understanding with Indian Institute of Technology at Delhi and Mumbai, respectively, adds to the edge," says Principal Rear Admiral Amit Vikram.

The Navy provides top-end sports shoes to the cadets besides the training kit. It is looking to provide air-conditioning in existing living spaces.

The role of parents

On day one, when a cadet joins, the Navy calls in the parents and shows videos of its operations — warships at sea, helicopters, the fighter aircraft carrying carriers. The parents are advised by the Academy staff: “Training will be tough. Be sufficiently impressed by the effort to keep him going.” Cadets are from diverse socio-economic backgrounds. The present strength of 1,120 cadets has 58% coming from tier-III cities (classified as cities with population of less than a million). Northern states form more than half the strength. Some of them belong to: UP (180), Rajasthan (52), Punjab (51), Haryana (109), HP (47), Delhi (57), J&K (25), Uttarakhand (75) and Chandigarh (8).



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Interview with HAL CMD: ‘No frozen standard of preparation of LCA... that’s where delays are coming’

By Sushant Singh

“We have kept things in place to produce eight and we are investing Rs 1,331 crore to increase the capacity to 16 deliverable a year,” said HAL CMD T Suvarna Raju

Hindustan Aeronautics Limited (HAL), Bengaluru-based fully government-owned defence aviation company, has recently been in the news because of the debate over the choice of single engine fighter for the Indian Air Force (IAF). The indigenously developed Light Combat Aircraft (LCA) Tejas has been inducted into the IAF last year. But there are questions about HAL’s capacity to produce the requisite number of LCA fighters in specified time. *Indian Express* spoke with T Suvarna Raju, chairman and managing director of HAL.

HAL is blamed in some quarters for not having delivered the LCA Tejas on time. Is that criticism fair?

I don’t think the criticism is fair. That is why I am asking all the people who have such an opinion to visit the facilities which have been established. HAL can only make the product which is sellable or acceptable to the customer. As long as the development process is on, there is always a question about when is it going to stop and who is going to take this. There is always a mutual discussion and it goes step-by-step. There is not frozen standard of preparation of LCA except for the IOC. So, that’s where the delays are coming. But I know that is in the past, all the delays etc. Now, we are in the run to make these aircraft in numbers in the near future.

On the recent reports about the LCA Tejas and the foreign single-engine fighter, where does the HAL stand? Is everything fine with LCA?

There is not much controversy about the LCA. HAL stands very strongly behind the LCA. We have established the production line capacity of eight aircrafts, the first five of them are already flying and have done more than 600 sorties. They are doing up. and we have kept things in place to produce eight and we are investing Rs 1,331 crore to increase the capacity to 16 deliverable a year. We have also used another concept of contracting the main components of the aircraft such as the front fuselage, centre fuselage, rear fuselage to L&T, WhAM, DTL.

We have placed the orders. If these guys start giving me the required top-quality product, that adds to my deliverables. Now question comes, how much order I have. I have 20 IOC, of which I will provide 11 to IAF

by the end of this financial year, and that would leave me with 4 fighters and 4 trainers, and trainers' SOP we hope can be concluded so that the production run can be there.

As far as the FOC order is concerned, mid-2018 is when FOC is expected to come but we are asking the customer (IAF) to allow us to cut the material. Because if we start now, the aircraft will come after three years. By then, this AON of 83 LCA will be converted into a contract between the IAF and HAL. However, today the facilities are on and the rate at which jigs are created are available, and the purchase orders can be verified and checked.

What is the delay in getting the FOC now?

The aircraft are flying and the operational capacity enhancement requires a thorough verification. It is a developmental work and we are planning to fly 60 sorties a month. Now between IAF, ADA and HAL, we are ensuring that these many sorties happen.

While the promises are for getting the FOC by mid-2018, we will definitely get it by December 2018. We should then be able to supply these 20 FOC by 2022. And then on to the next 83... If capacities are put on depending on the configuration clearance, the numbers can be rolled out. This is not like an automobile that today you give me a number and automatically I will give you the aircraft immediately. There is a lag, we require all the material to be procured and we need to make 10,000 odd components and put them together, and some components need to be bought from outside.

What is the HAL's response to the Strategic Partnership model which is being introduced in defence aviation industry now?

As far as HAL is concerned, we are doing good, we are plans are firm, the vertical of helicopter is really credible, we have our BTA, and our LCA and we are on to the upgrades of platforms which are there. We created our own upgrade on Hawk which gives us business. We are partnered upgrading the Jaguars, the Mirages and of course, the next in line would be Sukhoi. I agree that besides BTA and LCA, there is not new manufacturing but another hope for the industry is the FGFA for another 20 years in the future.

Otherwise yes, the current manufacturing plus upgrades plus helicopters, we have work for us. As far as the SP is concerned, business in defence is something beyond the bottomline. Looking at the SP, possibly we are looking at is 200-odd single engine fighters or whatever it is, the future requirement. So that doesn't really, and I don't want to use the word, HAL is not worried about it. HAL could well be in the SP loop, that is what we expect.

Is the order book a challenge for HAL?

We are trying to improve it. In aviation industry, the target is an order for 7-10 years. Currently, our annual turnover is Rs 18,000 crore and our target is to have an order book of Rs 1.8 lakh crore. It may not be impossible but it will depend on HAL, what we are promising and delivering. If it is kept on schedule, the order book should not be an issue at all.

THE ASIAN AGE

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Rafale a win-win deal, says French minister

Make public final price of each aircraft, says Rahul Gandhi.

New Delhi/Jaipur: A day after defence minister Nirmala Sitharaman had hit out at the Congress and termed its allegation on the Rafale deal as "shameful", French foreign minister Jean-Yves Le Drian said the fighter jet deal would bolster India's security and was a "win-win partnership" between the countries.

Speaking at the launch of Bonjour India 2017-18, a four-month-long event to mark Indo-French partnership, the Mr Le Drian was quoted by news agencies as saying, "It (the Rafale deal) is really a win-win

partnership.” To a question on the row over the fighter jet deal, he said, “I read the statement of the defence minister of India, who explains how the purchase of 36 Rafales has been a very good opportunity for India’s security and a very good opportunity to work in the context of Make In India as well.”

But Congress vice-president Rahul Gandhi, undeterred, continued his attack on the deal.

Responding to Ms Sitharaman’s comments, Mr Gandhi tweeted on Saturday, “What’s shameful is your boss silencing you.”

Mr Gandhi also asked the defence minister about the pricing of the Rafale jets. “Final price of each Rafale jet? Did the Prime Minister take permission of the Cabinet Committee on Security before announcing the purchase in Paris? And why did the Prime Minister bypass experienced Hindustan Aeronautical Limited?” Mr Gandhi asked.

The Congress and the BJP have been exchanging barbs over the Rafale aircraft deal, with Mr Gandhi accusing the Prime Minister of allegedly changing the “entire deal” to benefit a businessman, a charge debunked by the ruling party.

India had inked an inter-governmental agreement with France in September last year for procurement of 36 Rafale fighter jets at a cost of around Rs 58,000 crore, nearly one- and-half years after Prime Minister Narendra Modi announced the proposal during a visit to Paris. The delivery of the jets is scheduled to begin from September 2019.

Addressing a press conference on Friday, Ms Sitharaman had dismissed the Congress’ charge of irregularity in the deal, and claimed it was cheaper than what was negotiated under the previous multi-role combat aircraft (MMRCA) deal under which 126 fighter jets were to be bought. She also said that her government had addressed the “vacuum” in the national security structure created by the indecisiveness of the UPA dispensation by “immediately” going for procurement of 36 Rafale fighter planes in a fly-away condition.

However, CPIM(M) leader Sitaram Yechury said that Ms Sitharaman’s statement on the Rafale jet fighter deal has raised more questions than answers. He said he would like to know why comparative prices between the earlier scrapped deal for 126 fighter jets and the present one for 36 aircraft had not been shared.

“The defence minister’s press conference raises more questions than it answers about the Rafale deal. Why have comparative prices not been shared, as the Modi government claims it bought Rafales cheaper?” Mr Yechury tweeted on Saturday.

MAIL TODAY

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Military tones up its muscles along the border with China

By Ajit K Dubey

In A bid to strengthen position against the threat of Chinese troops carrying out incursions along the Line of Actual Control, the Indian Army has enhanced its presence in relatively peaceful areas, such as Himachal Pradesh and Uttarakhand where new formations have been deployed. In recent past, along with raising the Mountain Strike Corps to tackle the rising chinese military presence along the borders, the Army has also deployed additional two brigades (approximately 8,000 troops) in eastern Ladakh for better security preparedness . “In Himachal Pradesh, there was one sector which has now been converted into new brigade in the area bordering the Chinese territory.

While in Uttarakhand, a brigade has been sent from a rear position to Pithoragarh in the Kumaon hills of the state,” sources told Mail Today. During the Doklam crisis also, senior level officers from the directorate

general of military operations had visited the Uttarakhand and Himachal Pradesh borders near China to review the security situation . In the last one decade, incursions and transgressions from the China's People's Liberation Army into the Indian side have gone up due to different perception about the actual boundary line between them. However, eastern Ladakh, Sikkim and Arunachal Pradesh have been the most active in terms of transgressions committed by the Chinese Army. During the Doklam crisis, when Indian and Chinese troops were in an eyeball to eyeball situation with each other, a People's Liberation Army (PLA) border patrol crossed the Uttarakhand border and entered the Indian territory.

They crossed into Barahoti in Chamoli district on July 25 at about 9 am, and came upto 200 metres on the other side of the border where they entered the Indian side and asked cattle owners to leave the area. However, the soldiers left after a couple of hours later. Last year also a similar incident was reported from the region. The ITBP team, patrolling the area, raised the issue and the Chinese soldiers went back after a meeting. Indian army also patrols this area, but without uniform or weapons.

The flat land is used by grazers of both India and China. Chinese and Indian soldiers had been locked in a face-off n Doklam plateau at the tri-junction with Bhutan where Beijing wanted to build a road up to Jhampiri which would have allowed them to come close to the Indian chicken's neck area in Siliguri corridor. The two sides disengaged from the area but have maintained their presence there. India's strong stand on the issue resulted in China backtracking from its hard stand as its official media was even threatening to wage a war if India did not allow it to construct a road there.

THE ASIAN AGE

Sun, 19 Nov, 2017

‘There's disconnect between Pakistan Army HQ, troops’

A.K. Bhatt however told his Pakistani counterpart that the Indian Army was only engaging in retaliatory firing in response to the Pak firing.

New Delhi: The Indian Army's Director General of Military Operations (DGMO) told his Pakistani counterpart on Saturday evening that there appeared to be a "disconnect" between the Pakistan Army headquarters which reiterates its desire for peace and the actions of Pakistan Army troops along the LoC who resort to heavy firing without provocation at the LoC, adding that the Pakistan Army should "resolve this existent credibility gap".

The Pakistan Army DGMO, who had requested for the conversation that lasted about 20 minutes, however alleged that the Indian Army had resorted in unprovoked firing. Indian Army DGMO Lt. Gen. A.K. Bhatt however told his Pakistani counterpart that the Indian Army was only engaging in retaliatory firing in response to the Pakistani firing, while making it clear that India "retained the right to punitively respond" to Pakistani provocation.

"In an unscheduled hotline interaction, the Indian Army DGMO spoke to his counterpart at 17.00 hours today. The Pakistan Army DGMO alleged that Indian security forces had resorted to unprovoked firing and had targeted civilians along the LoC opposite the Indian Poonch sector. The Indian Army DGMO emphatically stated that retaliatory firing by Indian troops has only been carried out in response to unprovoked and repeated ceasefire violations by Pakistani troops," the Army said.

"The DGMO further exhorted Pakistan Army DGMO to resolve this existent credibility gap to ensure that peace and tranquillity is maintained along the LoC. He clarified that the Indian Army always maintains impeccable standards of professionalism and does not target civilians in any manner," the Indian Army DGMO added.

Desi drones to spy on Pak & China

By **Manjeet Negi** in New Delhi

SEEKING to bolster its ability to monitor movements of Chinese and Pakistani troops along the border, the Indian Army is looking to procure 60 medium-level Unmanned Aerial vehicles while it is moving ahead to procure 600 mini drones to monitor terrorist activities.

The army issued a request for information (RFI), which stipulates that the drones should have a range of 200 kilometers and must remain operational at altitudes of 15,000 feet.

The RFI says the drones should be based on proven or matured technologies that do not require further fundamental research. Notably, the RFI adds that the drones will be developed and manufactured by an Indian company. A request for proposal (RFP) is likely to be issued in Jan 2018.

The development comes a month after Army Chief General Bipin Rawat said Indian military must prepare for a two-front war.

Only last week, the army had



accepted tender inquiries for an acquisition of 600 mini-UAVs. The force is looking to spend around ₹950 crore to procure these mini-UAVs under a “buy Indian” scheme that will work to boost the Modi government’s ambitious ‘Make in India’ project.

The army already has four Nishant Unmanned Aerial Vehicles, which were procured in 2011 and are tasked with intelligence gathering over enemy territory as well as reconnaissance, surveillance, target designa-

tion and artillery fire correction.

On the mini-UAV front, the sources in the army said the process of accepting tender inquiries was over and the technical assessment was under progress. According to sources, each infantry battalion will be allocated one mini-UAV. Under the “Buy Indian”

Army to spend ₹950 crore to procure mini-UAVs

category, the preference in government procurement will be given to local suppliers. In the recent past, many infiltration bids from Pakistani side were made along the Line of Control. The UAVs will be procured for the infantry battalions of the Indian Army.

The army’s proposal for mini-UAVs came after a similar move by the Directorate of Naval Air Staff, which has sought UAVs for maritime patrol use.

On the Infantry Day recently, Rawat had said that “Modernisation of infantry is very much on cards.”

THE HINDU BusinessLine

NASA launches next-generation weather satellite

Los Angeles: NASA today launched a next-generation satellite into space designed to monitor weather around the world and help improve forecasts.

The satellite, called the Joint Polar Satellite System-1 (JPSS-1), is a joint venture between the US space agency and the National Oceanic and Atmospheric Administration (NOAA), which provides weather reports and forecasts.

The satellite was launched aboard a United Launch Alliance Delta II rocket as scheduled at 1:47 am (local time) from Vandenberg Air Force Base in California.

It will orbit the Earth 14 times each day from one pole to the other at 824 kms above the planet, “providing scientists full global coverage twice a day,” NASA said.

The satellite “is the first in NOAA’s series of four, next-generation operational environmental satellites representing major advancements in observations used for severe weather prediction and environmental monitoring,” it said.

JPSS-1 “carries a suite of advanced instruments designed to take global measurements of atmospheric, land and sea conditions, from sea surface temperatures, volcanic ash, hurricane intensity and many more.”

Four smaller satellites called CubeSats, part of NASA’s educational nano-satellite program, are to be released on the same mission.

The CubeSats belong to four US universities and will be set in orbit after the weather satellite has been deployed, NASA said.

Two previous launch attempts had been cancelled, once due to high winds and another due to technical problems.



Sun, 19 Nov, 2017

Healing with a laser touch

By Shikha T. Malik

Lasers are providing a breakthrough in burn injury management

Burn injuries are a major public health issue and their management is a key concern. Regular assessment of healing tissues is necessary but biopsies are painful and may hinder the healing process. Now, a group of Indian scientists have come up with a solution for easier assessment of healing progression, using laser light.

The process

Scientists at Manipal University in Karnataka have demonstrated the ability of the laser-induced fluorescence (LIF) technique to quantify the amount of collagen in healing tissues and thus analyse the recovery process: the more the collagen content, the healthier the tissue.

The strategy is to study biochemical changes by exploiting tissue fluorophores or chemical compounds that can re-emit light upon light excitation. Some of the most common fluorophores are collagen, elastin, amino acids (building blocks of proteins) such as tryptophan, phenylalanine and tyrosine that are responsible for tissue autofluorescence.

Researchers hit injured areas with a laser light of a particular wavelength and captured the emitted light in the range, generating a spectrum. For each region, multiple spectra are generated and averaged. This yields an image that correlates with the collagen content reflective of healthy repair. Based on this knowledge, scientists have proposed a simple technique to evaluate the progression of healing using a non-invasive, fast and an easy-to-use tool. The results have published in the journal, *Lasers in Medical Science* .

“With LIF we evaluated collagen synthesis and the healing process in vivo without sacrificing the animal. The evaluation using this technique takes only 15-20 seconds and is a biopsy free or non-invasive approach,” explains Prof. Krishna K. Mahato, who led the research team.

Preliminary studies on monitoring effectiveness of low power laser therapy (LPLT) in mice with burn wounds showed encouraging results. “LIF is sensitive and since it is an objective assessment, it doesn’t demand experienced operators and thus is user-friendly,” suggest the researchers.

“We have promising results in tissue samples from burn patients and with further analyses and studies, we hope to have this tool routinely used for patients in the near future,” Prof. Mahato told India Science Wire.

— India Science Wire