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प्रोसपीना मिसाइल का सफल फायरिंग टेस्ट

विमल भाटिया/पंजाब केसरी/जैसलमेर

फायर एंड फोरगेट वाली थर्ड जनरेशन एंटी टैंक नाग मिसाइल का अपग्रेड वर्जन अब प्रोसपीना मिसाइल के लैंड अटैक वर्जन के फायरिंग टेस्ट बुधवार सांय जैसलमेर की पोकरण फील्ड फायरिंग रेंज में हुआ। इस अवसर पर सेना व डी.आर.डी.ओ के उच्च अधिकारी मौजूद थे। इस बार के ट्रायल सफल रहे हैं।

सूत्रों के अनुसार पोकरण रेंज में एंटी टैंक गाइडेड मिसाइल, जिसे डिफेंस रिसर्च डेवलपमेंट ऑर्गनाइजेशन ने विकसित किया है के शुरू हुए ट्रायल पूरी तरह सफल रहे। दो टैंकों पर बने डम्मी टारगेट को मिसाइल को हिट करके अचूक निशाने साधे। इस अवसर पर सेना व डी.आर.डी.ओ के अधिकारी मौजूद थे।

इस सफलता पर डायरेक्टर जनरल मिसाइल एंड स्ट्रेटिजिक सिस्टम इंस्पेक्टर डॉ. सतीश रेड्डी ने बधाई देते हुए कहा कि यह डेवलपमेंट ट्रायल था तथा मिसाइल ने अपनी पूरी क्षमता सिद्ध करते हुए यह साबित कर दिया है कि यह मिसाइल किसी

अचूक निशाने साधे

■ किसी भी परिस्थितियों में दुश्मन के हर टारगेट को नेस्तनाबूद करने को तैयार

भी परिस्थितियों में दुश्मन के हर टारगेट को नेस्तनाबूद करने को तैयार है। अब इसके डेवलपमेंट ट्रायल पूरे हो गए हैं। यह इंडक्शन के लिए तैयार है। डिपार्टमेंट ऑफ डिफेंस रिसर्च एंड डेवलपमेंट सेक्रेटरी एंड डीआरडीओ चेयरमैन एस. क्रिस्टोफर ने भी नाग टीम को इस उपलब्धि बधाई देते हुवे कहा है कि एंटी टैंक गाइडेड मिसाइल नाग अलग परिस्थितियों में टारगेट को नेस्तनाबूद कर सकने की क्षमता है।

मिसाइल में इमेजिंग इन्फ्रारेड सीकर्स में और सुधार किया

गौरतलब है कि पोकरण रेंज के चांधण क्षेत्र में नाग की अपग्रेड वर्जन प्रोसपीना मिसाइल ने दुश्मन के छद्म टारगेट को हिट कर अचूक निशाना साधा। ये यूसर ट्रायल पोकरण फील्ड फायरिंग रेंज में सफल रहे हैं। इस

मिसाइल में इमेजिंग इन्फ्रारेड सीकर्स में और सुधार किया गया है, जो कि मिसाइल छोड़ने के बाद टारगेट को हिट करने के लिए गाईड करते हैं। इससे पहले इन्फ्रारेड सीकर्स को टारगेट और उसके आसपास के इलाकों को गर्म तापमान में पहचान करने में कुछ दिक्कत आ रही थी। इसलिए इस मिसाइल में अब उच्च सेनसिटिव डिटेक्टर्स डाले गए, जो कि हीट और इन्फ्रारेड सिग्नल को भांप सके।

10 साल तक बगैर रखरखाव के इस्तेमाल

इस मिसाइल को 10 साल तक बगैर रखरखाव के इस्तेमाल किया जा सकता है। नाग मिसाइल की गति 230 मीटर प्रति सैकंड है। मिसाइल की एक खासियत और है कि अगर एक बार मिसाइल दाग दी गई, तो इसे रोका नहीं जा सकेगा।

मिसाइल एंड स्ट्रेटिजिक सिस्टम्स के डायरेक्टर जनरल पी सतीश के मुताबिक, इस टैस्ट फ्लाइट के बाद टारगेट को हर तरह की भेदने की एटीजीएम क्षमता साबित हो गई है।

दिन-रात दोनों समय हो सकती है इस्तेमाल

मिसाइल को डिफेंस आर.डी. लेब्रोट्री हैदराबाद में विकसित किया है। इस पर अब तक 350 करोड़ से

ज्यादा का बजट लग चुका है। इस मिसाइल को दिन व रात दोनों में इस्तेमाल किया जा सकता है। मिसाइल प्रोजेक्ट की लागत 350 करोड़ रुपये से अधिक है। इसमें उच्च क्षमता के उपकरण लगाए गए हैं। ज्यादा तापमान में भी मिसाइल दिशा नहीं भटकेगी।

मिसाइल की कई खूबियां हैं

डी.आर.डी.ओ के सूत्रों ने बताया कि दागो और भूल जाओ वाली इस मिसाइल की कई खूबियां हैं, जिसमें इमेज के जरिए संकेत मिलने पर इसे दागने के बाद ये दुश्मन के टैंक का पीछा करते हुए उसे तबाह कर देगी। अन नाग मिसाइल्स को पहाड़ी पर या एक जगह से दूसरी जगह मेके नाइज्ड इन्फेन्ट्री कोमबोट व्हीकल के जरिए कहीं भी ले जाया जा सकता है।

वर्ष, 2018 के अंत तक सेना में शामिल

नाग की रेंज 8 किलोमीटर है और इसे वर्ष, 2018 के अंत तक सेना में शामिल किया जा सकता है। यह कई लक्ष्यों पर निशाना साधने में सक्षम है। इस मिसाइल को डीआरडीओ तथा अन्य प्रतिष्ठानों ने मिलकर विकसित किया है। इससे पहले 13 जून, 2017 को मिसाइल का पोकरण फील्ड फायरिंग रेंज में सफल परीक्षण किया गया था। आपको बता दें कि नाग में जिस तकनीक का प्रयोग किया गया है वह दुनिया के कुछ देशों के पास ही है।

नाग की खासियत : नाग फायर एंड फोरगेट श्रेणी की मिसाइल है। इसके दागे जाने के बाद रोक पाना संभव नहीं है। नाग मिसाइल का वजन 42 किलोग्राम है। नाग मिसाइल की गति 230 मीटर प्रति

सकेंड है। यह 8 किलोग्राम विस्फोटक लेकर चल सकती है। यह बेहद हल्की मिसाइल है जो सटीक निशाने के लिए जानी जाती है। इसे युद्ध मैदान तक आसानी से ले जाया जा सकता है।

No proposal to ‘shelve’ Tejas project, says Nirmala Sitharaman

By Sanjib Kr Baruah

The Tejas is a supersonic, lightweight, all-weather, multi-role fighter designed for air-to-air, air-to-ground and air-to-sea combat roles.

New Delhi: Scotching recent media reports that the government has “shelved” the plan to acquire the homemade Tejas Light Combat Aircraft (LCA) fighter, defence minister Nirmala Sitharaman said during an informal interaction on Saturday that the Tejas plan is “on” and the government has not “ditched” it.

“We are not ditching it, not shutting it down. On the contrary, we are looking at an upgraded and strengthened version of the Tejas. The IAF will have a combination of single engine fighters and India’s Tejas will hold importance. I reject the idea that Tejas has been ignored by us. We want Tejas’s Mk-II version,” the minister said, adding that the Hindustan Aeronautics Limited (HAL), which makes the Tejas, has been asked to produce more aircraft at a faster rate. “We want them to produce much more. We have to increase production from the 6-8 that we make a year.”

The Tejas is a supersonic, lightweight, all-weather, multi-role fighter designed for air-to-air, air-to-ground and air-to-sea combat roles. It is expected to plug a vital gap in IAF’s might that is suffering from a critical shortage of fighter squadrons. The government had already ordered for 83 HAL-made Tejas fighters.

At present, about 70 per cent of the LCA components are manufactured in India.

“It is meant for the Navy as well,” the minister said. More than a year back, Navy Chief Admiral Sunil Lanba had slammed the aircraft. “The LCA Navy in its present form does not meet the naval qualitative requirements to be a carrier-based aircraft... It doesn’t meet the weight and thrust ratio requirement to be able to take off with full weapon load,” he had said.

Talking about the export potential of the aircraft, Ms Sitharaman said that many countries have evinced interest on it.

“We are talking to HAL and finding out if we can outsource some of the work to domestic producers and also if we can export it to others.”

On the Rafale aircraft deal that has snowballed into a controversy on grounds of alleged corruption, the minister dismissed the possibility of the Rafale deal “going the Bofors way”.

“Do not even compare it (Rafale deal) with Bofors. There is no scam here,” she said, adding that she will only welcome it if the Congress raises the issue during the Budget Session of Parliament that reconvenes from Monday.

In the late 80s, a deal for Swedish Bofors artillery guns had severely impacted the political fortunes of the then ruling Congress.

Asked if the government was thinking of reviewing the Armed Forces Special Powers Act (AFSPA) in operation in Jammu and Kashmir and certain areas of the Northeast, the defence minister said: “At this stage, there is no rethinking on AFSPA in J&K and the Northeast”.

The controversial AFSPA enables security forces to shoot at sight and arrest anybody without a warrant in “disturbed” areas of the Northeast and J&K. For quite sometime, there has been a demand from various quarters, including civic society organisations, to withdraw the law or at least dilute it.

Sun, 04 March, 2018

Ready to face questions on Rafale deal: Sitharaman

New Delhi: Ahead of the Parliament session from Monday, the NDA government has once again slammed the Congress for levelling baseless allegations against the Rs 59,000 crore contract for 36 French Rafale fighters, stressing it was not a scam like the Bofors one that brought down the Rajiv Gandhi government in 1989.

“I will welcome it (If the Congress brings up the Rafale deal in Parliament). We are ready,” said defence minister Nirmala Sitharaman here on Saturday, while adding the government had also put its full weight behind ramping up the production of the indigenous Tejas light combat aircraft.

Asked whether the Rafale controversy could derail IAF’s fighter acquisition plans, much like the Bofors scandal ensured the Army could not induct a single modern 155mm howitzer for over 30 years, Sitharaman said, “Bilkul nahi hoga (it will not happen). Don’t even compare it with the Bofors case. There is no scam here.”

The Congress has alleged the “non-transparent” Rafale deal was vastly overpriced, violated defence procurement procedures, included no transfer of technology, and was intended to benefit the Anil Ambani-promoted Reliance Defence as the “offsets partner” of the French fighter manufacturer Dassault Aviation.

Strongly rejecting these allegations, the NDA government says it secured a “better deal” in terms of price, capability, equipment, delivery and maintenance than the one “notionally being negotiated” by the previous UPA regime for 126 Rafale jets under the now scrapped MMRCA project.

In the backdrop of IAF grappling with just 31 fighter squadrons, when 42 are required to face the “collusive threat” from China and Pakistan, Sitharaman said the government was “putting all its energies” into making defence PSU Hindustan Aeronautics Ltd deliver the Tejas fighter at a much faster pace.

The government had sanctioned Rs 1,381 crore for this in March 2017. “We are not ditching the Tejas. We want it both for ourselves (IAF) as well as export to other countries.

They (HAL) have to increase their production from the existing six to eight Tejas per year. We also want the Tejas Mark-2 at the earliest,” said the minister. The Tejas is still not combat-ready despite its developmental project being approved way back in 1983 to replace the aging MiG-21s.

The IAF has also begun the process to order another 83 Tejas Mark-1A fighters, at a cost of over 50,000 crore, from HAL.

Sun, 04 March, 2018

India, Vietnam lay stress on defence ties

By Suhasini Haidar

Commit to free South China Sea, open sea lanes

India and Vietnam committed to enhancing joint co-production in defence, including transfer of technology from India in their ongoing defence cooperation, visiting President Tran Dai Quang and Prime Minister Narendra Modi announced on Saturday after delegation level meetings. The two sides also built on previous statements on maritime security in the “Indo-Pacific” region, calling for free and open sea lanes.

“Our militaries continue to build deep cooperation between all the services,” Mr. Modi said after the meeting, “We will jointly work for an open, independent & prosperous Indo-Pacific area where the

international rules-based order is respected.” The Vietnam President said the two countries would together address “regional security challenges especially in spheres of maritime security and cyber-security.”

Three agreements

Officials of the two countries exchanged three agreements on enhancing trade and agricultural research and an MoU on Cooperation between the Global Centre for Nuclear Energy Partnership (GCNEP) and the Vietnam Atomic Energy Institute (VINATOM). The two countries had signed a civil nuclear cooperation agreement in 2016 and the MoU will enhance training and research collaboration possibilities.

Both Mr. Modi and Mr. Quang spoke of the importance of joint exploration of oil and gas reserves off the coast of Vietnam in the South China Sea (SCS) by ONGC Videsh Limited (OVL) and PetroVietnam (PVN).

In January this year, the Chinese Foreign Ministry reacted to the Vietnamese Ambassador’s invitation to India for more joint exploration projects in areas it claims, by saying that they must not be used as an “excuse to infringe upon China’s legitimate rights and interests in the South China Sea and impair regional peace and stability”.

Going a step further on Saturday, Mr. Modi said that not only would India and Vietnam strengthen their bilateral relations in oil and gas, “but will also work along with other nations on trilateral possibilities.”

Credit line

The two sides did not sign any agreements in the field of defence cooperation, but are expected to continue to work on fulfilling India’s \$100 million Credit Line commitment to Vietnam, some of which has been used for procuring Offshore Patrol Vehicles (OPVs), while talks continue on Akash Surface to Air Missile systems (SR-SAMS) and Dhruv advanced light helicopters.

Mr. Quan will give a special address at the Nehru Memorial Museum and Library (NMML) on Sunday. He also met with a delegation of Congress party leaders, including former Prime Minister Manmohan Singh, Sonia Gandhi and Anand Sharma.

(with inputs from Dinakar Peri)

Bloomberg

Sun, 04 March, 2018

Saudis Want to Make Their Own Weapons. Russia Is Eager to Help

By Glen Carey

Saudi Arabia aims to build a defense industry at breakneck speed, and it’s ready to look beyond its traditional Western allies for help.

The oil-rich kingdom has long been a favorite customer of arms sellers, especially American ones. President Donald Trump announced \$110 billion in deals during his trip there last year. Now, 32 year-old Crown Prince Mohammed bin Salman wants to make weapons at home, and he’s set an ambitious goal: Half of Saudi procurement is supposed to be done locally by 2030, from about 2 percent today.

The Saudis will need partners -- which means opportunities for Western companies, who were energetically exploring them at an arms fair in Riyadh this week. But there’s a potential catch. For joint ventures to work, U.S. and European governments may have to sign off on transfers of technology.

‘Other Partners’

In case they're reluctant to do so, the Saudis are making it clear that they have other options. They're already planning to buy the Russian S-400 air-defense system, under a deal that would let them manufacture related products at home. The prospect of more such agreements is likely to alarm American policy makers, who worry about losing ground to Russia and China in the Middle East.

"We will very carefully evaluate what our partners can bring to the table," Andreas Schwer, head of Saudi Arabian Military Industries or SAMI, said in an interview Tuesday at the Riyadh fair.

"We won't hesitate to go to second-tier suppliers or other potential partners, if they have full governmental support and no restrictions," said Schwer, previously an executive at German defense group Rheinmetall AG. Saudi Arabia "could end up with other partners," and with less U.S. involvement than some people would like, he said.

Filling the Gaps

One of those people just delivered a warning to Congress on precisely this issue.

Russia and China are seeking "to fill in perceived gaps in U.S. interest by increasing defense cooperation and sales of their equipment to our regional partners," General Joseph Votel, the head of U.S. Central Command, told the House Armed Services Committee on Feb. 27.

Russia's influence in the Middle East has soared since 2015, when its military intervention in Syria swung the civil war in President Bashar al-Assad's favor. China's economic role in the region is expanding, as it signs deals with Iran and seeks to get involved in rebuilding Syria.

Unlike America, the Saudis have cordial ties with China and Russia. The former is one of its best oil customers, and the latter increasingly its partner in regulating world oil output.

Both countries are competing with a U.S.-backed group, headed by Westinghouse Electric Co., to win nuclear-power contracts in the kingdom. And both have expressed interest in getting a piece of the action when the Saudis put a stake in Aramco up for sale. (So has Trump, who tweeted that the oil giant's IPO should be in New York.)

'Many Have Reconsidered'

To be sure, Saudi-U.S. ties have deeper roots. They stretch back to before World War II. And Trump has assured Saudi leaders that he's keen to sign more defense deals.

But close relations have been accompanied by skepticism on the American side about Saudi military capabilities. Doubts have been fueled by the kingdom's struggle to defeat poorly equipped rebels in Yemen, over three years of war that have taken a heavy civilian toll. Some members of Congress have opposed weapons deals with the Saudis, and transfers of nuclear technology.

One longtime U.S. ally in the neighborhood has already angered Washington by switching arms suppliers.

NATO member Turkey is buying the S-400 from Russia. During a visit last month, Secretary of State Rex Tillerson made his opposition clear.

America has been "advising countries around the world" that they could fall afoul of U.S. sanctions by going ahead with arms purchases from Russia, Tillerson said. "Many have reconsidered."

'Special Arrangements'

For now, American companies are in pole position in a lucrative market.

Saudi Arabia has earmarked 210 billion riyals (\$56 billion) for military spending in 2018, the biggest budget item. Raytheon Co. is among the firms set to help build the domestic industry, and estimates it will earn \$7 billion of revenue from localization of Saudi defense projects over five to seven years.

SAMI will let its joint-venture partners retain "operational leadership" and the top executive jobs, Schwer said.

Still, export controls could be a hurdle for some American companies, and they may have to win over their own country's politicians, according to John Bottimore, an executive at the U.S. unit of BAE Systems Plc.

"We've got to work with our government to understand what can and can't be transferred, or what can be transferred under certain types of special arrangements," said Bottimore, who's vice president of international business development. "That is probably the biggest challenge from the U.S. side."



Sun, 04 March, 2018

'No talks till West gives up nuclear weapons'

Iran's armed forces spokesman Brigadier General Masoud Jazayeri said on Saturday that there can be no talks on the country's missile programme without the West's destruction of its nuclear weapons and long range missiles.

"What Americans say out of desperation with regards to limiting Iran's missile capability is an unattainable dream," he said. AFP



Sun, 04 March, 2018

JNCASR's novel material to convert waste heat into electricity

By R. Prasad

With nearly 65% of utilized energy wasted, the focus is on materials to mitigate this

A novel compound that exhibits poor thermal conductivity in the 25-425 degree C range but shows good electrical conductivity has been developed by a team of researchers led by Dr Kanishka Biswas from Bengaluru's Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR). The compound, silver copper telluride (AgCuTe), shows promise as a thermoelectric material for converting waste heat into electricity.

Since nearly 65% of utilized energy is wasted as heat, the focus is on developing materials that exhibit good thermoelectric property with both glass- and metal-like properties. Potential applications of the thermoelectric technology are in automobile industry, chemical, thermal and steel power plants where large quantities of heat are wasted.

Due to the low thermal conductivity of the material developed by JNCASR, one end of the 8 mm-long rod that is contact with waste heat remains hot while the other end maintains cold temperature. The temperature difference is essential for the generation of electrical voltage. At the same time, the material exhibits good electrical conductivity like metal. The results were published in the journal *Angewandte Chemie*.

In the AgCuTe material, the silver atoms (cation) are weakly bound, giving rise to poor thermal conductivity due to the slow vibration of the lattice (soft lattice). At high temperatures, copper in the material further lowers the thermal conductivity along with silver. "Since the silver lattice vibrates slowly, it provides record low thermal conduction of 0.35 W per metre per kelvin, which is actually close to the glass," Dr Biswas says.

"Both cations [silver and copper] contribute to low thermal conductivity but silver contributes more. Over 170 degree C, both silver and copper ions flow like liquid within the rigid tellurium sublattice, thereby reducing the thermal conductivity to the level of glass without affecting the hole (electrical carrier) transport," says Subhajit Roychowdhury from JNCASR and first author of the paper.

Tellurium lattice

In contrast, the tellurium atoms (anion) are strongly bound and the lattice is very rigid. The strongly bound tellurium provides a conduction channel for holes thus rendering good electrical conductivity as seen in metals.

“By combining silver and copper with tellurium we have made our material as a combination of glass and metal — poor thermal conductivity and good electrical conductivity,” Dr Biswas says.

“Silver telluride does not have good thermoelectric property because it has higher thermal conductivity than our material,” says Roychowdhury.

It is a challenging task to have glassy and metallic properties in a single material, which is the fundamental challenge in the field of thermoelectrics. “We addressed this challenge through structural chemistry by creating a bonding hierarchy in the material,” Dr Biswas says.

The calculated efficiency to convert heat into electricity is 14% for the new material developed by JNCASR researchers. The lead telluride (PbTe) has higher efficiency of 18%. “But unlike lead telluride that contains lead, which is toxic, our material is lead-free,” he adds. The theoretical calculation to know the electronic structure was done in collaboration with Prof. Umesh V. Waghmare of JNCASR and coauthor of the paper. “We are trying to increase the efficiency by doping with different cations and anions,” Dr Biswas says.