Business Standard

Wed, 04 Dec 2019

India successfully conducts trial of indigenously made Prithvi-2 missile

The flight test of the surface-to-surface missile was carried out barely a fortnight after two back-to-back trials of the Prithvi-2 were conducted successfully at night from the same base on Nov 20

Balasore: India on Tuesday successfully conducted another night trial of its indigenously developed nuclear capable Prithvi-2 missile as part of a user trial for the armed forces from a test range in Odisha coast, a defence source said.

The flight test of the surface-to-surface missile was carried out barely a fortnight after two back-to-back trials of the Prithvi-2 were conducted successfully at night from the same base on November 20.

"Today's trial of Prithvi-2 missile was successful and the test met all parameters. It was a routine trial," the source said.

The trial of the surface-to-surface missile, which has a strike range of 350 kilometres, was carried out from a mobile launcher of the Integrated Test Range (ITR) at Chandipur near here at around 7.50 pm.

Prithvi-2 is capable of carrying 500-1,000 kilograms of warheads and is powered by liquid propulsion twin engines. The state-of-the-art missile uses an advanced inertial guidance system with manoeuvring trajectory to hit its target, the source said.

The missile was randomly chosen from the production stock and the entire launch activities were carried out by the Strategic Force Command (SFC) of the armed forces and monitored by the scientists of Defence Research and Development Organisation (DRDO) as part of a training exercise.

"The trajectory of the missile was tracked by radars, electro-optical tracking systems and telemetry stations by the DRDO along the coast of Odisha," said the source.

The downrange teams onboard the ship deployed near the designated impact point in the Bay of Bengal monitored the terminal events and splashdown.

Already inducted into the armoury of the defence forces in 2003, the nine-metre-tall, single-stage liquid- fuelled "Prithvi" is the first missile to have been developed by the DRDO under the Integrated Guided Missile Development Programme (IGMDP).

https://www.business-standard.com/article/pti-stories/india-conducts-fresh-night-trial-of-prithvi-2-missile-119120301437_1.html

दैनिक जागरण

Wed, 04 Dec 2019

परमाणु आयुध ले जाने में सक्षम पृथ्वी-2 का परीक्षण

जासं, बालासोर : भारत ने मंगलवार देर शाम देश में निर्मित और परमाणु आयुध ले जाने में सक्षम पृथ्वी-2 मिसाइल का ओडिशा के चांदीपुर परीक्षण केंद्र से सफल परीक्षण किया। सतह से सतह पर 350 किलोमीटर तक दुश्मनों पर वार करने की क्षमता वाली इस मिसाइल को देर शाम करीब 7:45 पर चांदीपुर स्थित एकीकृत परीक्षण केंद्र आइटीआर के प्रक्षेपण परिसर-3 से दागा गया। पृथ्वी- 2 मिसाइल 500 से 1000 किलोग्राम तक आयुध ले जाने में सक्षम है। यह दोहरे इंजन वाली तरल प्रणोदक (लिक्विड प्रपल्शन इंजन) से चालित है। इस अत्याधुनिक मिसाइल में लक्ष्य को भेदने के लिए आधुनिक खास दिशा निर्देशक प्रणाली लगी है और यह अपने प्रक्षेप पथ पर बड़ी कुशलता से बढ़ती है। इसकी समूची प्रक्षेपण गतिविधियों को सेना की रणनीतिक बल कमान ने अंजाम दिया है, जबकि रक्षा अनुसंधान एवं विकास संगठन (डीआरडईओ) के वैज्ञानिकों ने निगरानी की। इसे 2003 में भारतीय सेना में शामिल किया गया था।

THE FINANCIAL EXPRESS

Wed, 04 Dec 2019

Indian Air Force to get deadly Akash missiles! Places order for 7 squadrons of Made-in-India missile system

The Missile System which has been designed and developed by the Defence Research and Development Organisation (DRDO) and produced and commissioned by Bharat Dynamics Limited (BDL), Bharat Electronics Limited (BEL) has been performing well in integrated Air Defence (AD) exercises conducted from time to time by IAF

By Huma Siddiqui

New Delhi: Satisfied by the consistent and reliable performance by the indigenous Akash Missile System, Surface to Air Missile (SAM) an additional order for seven more squadrons have been placed by the Indian Air Force recently. This is by far the highest order placed by the service for the Akash Missile System.

The Missile System which has been designed and developed by the Defence Research and Development Organisation (DRDO) and produced and commissioned by Bharat Dynamics Limited (BDL), Bharat Electronics Limited (BEL) has been performing well in integrated Air Defence (AD) exercises conducted from time to time by IAF.

The number of missiles fired in Ex- Vayu Shakti 2019 or Crossbow-18, the Akash Missile System had successfully intercepted and destroyed unmanned aerial targets.

In Ex Crossbow-18 the indigenous Akash Missile System was fielded along with imported SAM weapon system under integrated Air defence operations and it surpassed all expectations. The made in India Akash Weapon System has proved its performance capability and reliability which has been successfully demonstrated by the IAF.

There were some teething problems related to extensive field usage faced by squadrons based in the North East and after several rounds of meetings between the user, DRDO and the defence PSUs BDL and BEL and other agencies involved, a mechanism has been evolved to carry out the maintenance together. However, due to the inclement weather in North East, there have been delays in carrying out the repairs.

To a question about serviceability and maintainability of the system, a former IAF officer explained “The BDL/BEL are Defence PSUs and are responsible for the maintainability of the system. There is no design issue with the system which has been designed and developed by DRDO.” And, “a proper ecosystem has been evolved between the user –IAF, DRDO, BEL/BDL from development to commissioning.”

In case of any faults, proper investigations are carried out by DRDO and issues resolved with the joint efforts of the user IAF, BEL/BDL, and other agencies which also included design change.

Sources said that prototypes were made and tested in one equipment and after successful testing and clearance by Quality Assurance (QA), produced in the required quantity and retrofitted in equipment

in unit locations. The Missile system comes with combat ground systems which are directly responsible for engaging the threat and supporting ground systems to facilitate the readiness of the combat systems.

Dismissing reports in a section of the media about the systems which are supporting ground system, sources said that "maintenance is not carried out by DRDO but the Defence PSUs. However, design solutions towards the main combat systems are given high priority and addressing the issues related to the other supporting ground system was taken simultaneously."

https://www.financialexpress.com/defence/indian-air-force-to-get-deadly-akash-missiles-places-order-for-7-squadrons-of-made-in-india-missile-system/1783341/

THE HINDU

Wed, 04 Dec 2019

Will take DRDO's new deck-based fighter aircraft when it's ready: Navy Chief

Indigenous Aircraft Carrier Vikrant expected to be operational by 2022

By Dinakar Peri

New Delhi: The Defence Research Development Organisation (DRDO) has offered to develop a new twin-engine deck-based fighter aircraft for the Navy based on the experience of the Naval Light Combat Aircraft (LCA) and it should be ready by 2026, Navy Chief Admiral Karambir Singh said on Tuesday. He also noted that the Navy expected to have the first Indigenous Aircraft Carrier (IAC-1) Vikrant operational by 2022.

"The Qualitative Requirements [QR] are being made. They said they should be able to push it out by 2026. If it meets our time and QR requirements, we will definitely take it [fighter aircraft]," he said at the customary annual press conference ahead of the Navy Day.

In the case of the Naval LCA, it recently successfully completed the take-off and landing trials on the Shore Based Test Facility (SBTF) in Goa.

Adm. Singh said the current LCA Mk-1 was a technology demonstrator and it would further be put to carrier compatibility tests. And if it worked, whatever lessons they had learnt the DRDO would plough back into the twin-engine deck-based fighter that they were offering now.

'Three IACs needed'

On the requirement for a third aircraft carrier, Adm. Singh said, "As the Navy Chief, I am convinced the country requires three aircraft carriers so that two are operational at any given time."

He said they were preparing the case for IAC-2 and finalising the requirements. After this, they would go to the government for Acceptance of Necessity (AoN) and it would be followed by design consultancy to decide the exact contours. As of now, the Navy envisaged it to be 65,000 tonnes with Catapult Assisted Take Off But Arrested Recovery (CATOBAR) and full electric propulsion.

On the IAC-1, which is under advanced stage of construction in Kochi, Adm Singh said all ship-building issues "are over" and trials would begin now. "We are almost certain that we will take delivery by February-March 2021, he stated and added that aviation trials would take a year after that. "We should have a fully operational carrier by 2022."

Largest multilateral exercise

The Navy is scheduled to host its largest multilateral exercise, MILAN off the coast of Visakhapatnam in March 2020, for which 41 countries have been invited. So far, over 15 countries have confirmed their participation. China has not been invited.

Asked why China had been left out, Adm. Singh said they invited "like-minded" countries with whom India had interacted earlier. "We called people who we think are like-minded and this is our first attempt at such a large multilateral exercise. We have not even done Passage Exercises with the Chinese Navy so far. Others we have had much better interoperability," he stated.

To a question if the Navy would have an exercise with China given recent improvement in relations, Adm. Singh said, "That's beyond my pay grade."

Stabilising influence

On the Indian Navy's role in the Indian Ocean Region (IOR), Adm. Singh said, "Our intention is to have a stabilising influence and not a military influence in the region. When we had a dispute on the international maritime boundary line with Bangladesh, we resolved it through the Permanent Court of Arbitration (PCA). On the other hand, in the South China Sea (SCS), we know what's happening." He was referring to the 2016 PCA verdict in favour of the Philippines that was rejected by China.

Chief of Defence Staff

Asked about his expectations on the soon-to-be-created post of Chief of Defence Staff (CDS), Adm. Singh said the views of the Services had been taken care of by the Chairman, Chiefs of Staff Committee (COSC), who then became part of the Implementation Committee. The committee has submitted its report to the government. It should be an empowered CDS, which would be able to make a difference, he said. "I hope the CDS is suitably empowered to carry out all the responsibilities that he is given."

https://www.thehindu.com/news/national/will-take-drdos-new-deck-based-fighter-aircraft-when-its-ready-navy-chief/article30149489.ece

ThePrint

Wed, 04 Dec 2019

Navy's Tejas aims for first-ever take-off from aircraft carrier Vikramaditya

DRDO & its Aeronautical Development Agency are aiming to pull off the maiden flight of naval Tejas from Vikramaditya as a technology demonstration

By Snehesh Alex Philip

New Delhi: Having successfully tested the naval version of Light Combat Aircraft (LCA) Tejas, armed with four air-to-air missiles, the Defence Research and Development Organisation (DRDO) and its Aeronautical Development Agency (ADA) now aim to pull off the aircraft's maiden flight from India's only aircraft carrier Vikramaditya.

The flight will serve as the ultimate technology demonstration for the Tejas even as the DRDO looks to develop a twin-engine aircraft that will become the mainstay of operations onboard aircraft carriers.

The trial, however, will take some time as a few more tests have to be carried out, DRDO sources told ThePrint.

"It (carrier-based test) is not too far. Extra safety is being taken and hence time is being consumed," a DRDO source said.

The Navy said the project is being driven by the ADA and the DRDO, and the Vikramaditya will be made available whenever the test needs to be carried out.

Last week, in a major boost for its capability expansion, the DRDO successfully integrated the naval version of Tejas with two beyond visual range (BVR) missiles and as many close combat missiles (CCM).

New naval fighter in making

Even as preparations continue for the Tejas-Vikramaditya trials, the ADA and the DRDO have initiated work on designing the actual indigenous twin-engine aircraft that will fly from Indian aircraft carriers in future.

"The LCA Navy is a technology demonstrator. The naval version is very different from normal fighters because of the peculiar take-off and landing scenarios," a Navy source said.

Unlike fighters meant for the Air Force, which has access to proper runways, naval aircraft only have limited space for take-offs and landings.

Also, unlike Air Force fighters, which come in to land with reduced power, naval aircraft arrive with full force before being stopped by arrestor wires, which are cables laid across the flight deck of a carrier.

The reason why naval fighters come in to land in take-off mode is because the aircraft would need enough power to quickly take off in case they miss the arrestor wires.

"The Navy has been clear from the very beginning that it needs a twin-engine aircraft and not single-engine because even if an engine fails, the aircraft should be able to land on the carrier," the Navy source added.

The DRDO sources said a fresh design with a single higher-thrust engine, which meets the parameters laid down by the Navy, has been achieved.

"However, the Indian Navy has expressed that, with newly-emerging requirements, only a medium weight category twin-engine aircraft will be inducted for operations," said another DRDO source.

"Currently, the configuration design of a twin-engine naval aircraft as sought by the user has been initiated. The initial flight-testing of this aircraft is scheduled to be carried out by 2026," the source added.

The tests carried out so far on the shore and those planned for the aircraft carrier will provide inputs for the design and development of a twin-engine deck-based fighter (TEDBF) aircraft.

The naval Tejas is currently powered by a General Electric F404-GE-IN20 turbofan engine.

What is naval version of LCA?

Carrier-based fighters mainly come in three categories — STOVL (short take-off and vertical landing), STOBAR (short take-off but arrested recovery) and CATOBAR (catapult take-off but arrested recovery).

The LCA Navy is a STOBAR configuration aircraft that is being tested from a shore-based test facility (SBTF) at INS Hansa, Goa, to take off from a ski jump ramp with a short runway and also for arrested landings, as on-board a carrier.

The aircraft behaviour for a few seconds after ski jump take-offs, until wing-borne flight takes place, is critical to achieve a successful launch from carriers.

For the LCA, an automated ski jump take-off mode has been successfully implemented.

The indigenous fly-by-wire flight control system not only provides stability but also helps achieve an optimal take-off through the automatic ski jump take-off mode.

"About 50 ski jump take-offs have been carried out so far with various possible combinations that are likely to be done by this aircraft on-board a carrier," a third DRDO source said.

Another challenging need of this aircraft is landing onboard carriers. Unlike in land-based aircraft, this is achieved through the arrested recovery of aircraft, which is done via arrestor cables, three of which are typically placed 12 metres apart on the deck.

On carriers, a precise landing of aircraft, each of which has an arrestor hook attached to pick up one of the cables, requires advanced flight control laws to aid the pilot.

This also demands high-strength landing gear and airframe.

"Several combinations of aircraft recovery with Arresting Gear System (AGS) at SBTF have been successfully carried out by arresting the aircraft and bringing it to a halt within 90 metres," one of the DRDO sources said. "To date, 28 arrested landings have been successfully achieved without ever missing the arresting wire."

For the eventuality of a miss, a "bolter mode" has been developed. DRDO sources said the bolter mode was tested thoroughly before attempting the first arrested landing.

https://theprint.in/defence/navys-tejas-aims-for-first-ever-take-off-from-aircraft-carrier-vikramaditya/329116/

Firstpost.

Wed, 04 Dec 2019

'Akash missile system can't be trusted during war': Degraded by govt defence agencies, loopholes in strategic weapon system threaten national security

By Yatish Yadav

- ***Other squadrons reported frequent unserviceability of mobile surface-to-air Akash Missile system and long duration downtime, which means that the missiles are dysfunctional and may not be cocked and loaded against enemy in contingency***
- ***Several government agencies, including missile manufacturer Bharat Dynamics Limited, Bharat Electronics Limited, did not tell the truth to the government about malfunctioning Akash Missile system and poor quality of spare parts provided by the private vendors***
- ***CAG was perhaps far-sighted, when in a 2017 report, the national auditor observed that Akash Missiles cannot be trusted in situation of a war***

On 3 June, 2018, Akash Missile's Transportation and Loading Vehicle (TLV), parked at an Air Force Squadron, was jolted after a sudden burst of tube followed by shearing off wheel bolts due to impact. The incident shocked Air Force headquarters. The Air Force officials wanted not only wanted the routine analysis of the incident, but also an in-depth discussion with Defence Research and Development Laboratory (DRDL), a multi-disciplinary Missile System laboratory under the Defence Research and Development Organisation (DRDO) to unearth issues hampering the functioning of the strategic weapon system.

More than a month later, another squadron reported cracks on air intake caps of dummy missiles. An investigation by *Firstpost* revealed that the incidents were followed by other squadrons reporting frequent unserviceability of mobile surface-to-air Akash Missile system and long duration downtime, which means that the missiles are dysfunctional and may not be cocked and loaded against enemy in contingency. This incident forced Guided Weapon Maintenance Department of Air Force on 5 September 2018 to raise the issue, where they clearly stated that the "Squadrons have been reporting frequent unserviceability

of Missiles and it has been noticed that time taken to resolve these failures is considerably high due to delay in analysis of failures."

The sheer inertia of government defence enterprise involved in Akash Missile production and maintenance reached to such an alarming level that at least three squadrons of Akash in February 2019 reported that missile system remained down or simply broken and sometimes even out of order during 90 percent of the time since their date of commissioning. These squadrons were commissioned between 2013-2015 to counter Chinese aggression.

Multiple government agencies, including Missile manufacturer Bharat Dynamics Limited (BDL) which comes under the Ministry of Defence, Bharat Electronics Limited (BEL) which is responsible for radars and maintenance and the DRDO, did not tell the truth to the government about malfunctioning Akash Missile system and poor quality of spare parts provided by the private vendors.

The malfunction of Integrated Air Compressor and Storage Facility (IACSF) revealed another shocker and the Air Force mentioned it on record that the IACSFs of Akash Missile System units are unserviceable due to wobbling and vibration, pneumatic leakage, breaking of mounting pads and bolts. A missile had failed to take off during combined guided weapon firing exercise known as 'CROSSBOW-18' and a team of Missile System Quality Assurance Agency (MSQAA), BDL and DRDL was constituted to investigate the failure.

MSQAA is an independent inspection Agency under the administrative and functional control of Director General Aeronautical Quality Assurance, which comes under the Department of Defence Production of Defence Ministry. The incidents of leakage from fuel tanks and leakage in pressurised Missile containers were taken so lightly that the Air Force, responsible to secure the nation from aerial threats, was forced to direct to the DRDL, BEL and BDL that present configuration of certain systems of Akash Missile will not be acceptable for future squadrons, which are under the process of procurement. The Air Force, BDL, BEL and DRDL are yet to respond to a questionnaire sent by *Firstpost* on 24 November.

Details expose criminal act by government defence enterprises

If there is an emergent situation, several Akash sqaudron may not be able to launch counter offensive because deficiencies in many of the system including hydraulic oil leakage and container pressure leakage, which is pending since 2017. The complaints received from Air Force headquarters, Eastern Air Command and other Akash field units reveals there is no back-to-back agreement with vendors for equipment under warranty, making it difficult to repair the faults. Documents reviewed by *Firstpost* showed that almost all squadrons have expressed that they are unable to get proper feedback from BEL on repairing the faults in Missile System and on problems plaguing Akash Missiles which Indian agencies are ill-equipped to resolve. Surprisingly the field engineers, who are supposed to rectify the critical snags, are not even aware of any action plan.

Documents further said: "Currently majority of the Akash field engineers are working to pass information about issues without any tangible technical output. The untrained and poorly equipped field engineers are neither aware of any corrective action plan nor they are committed."

The documents also pointed to massive delay in supply of spares for Missile System, virtually grounding them for for six months to a year. Air Force in a meeting had informed that most of the problems reported in 2017 were pending for over a year now. The documents also pointed at the repairing of Akash trailers which are covered under annual maintenance contract. It said: "Akash Trailers serviceability is poor and some cases spares supplied to Akash Missile units are not configured as per system requirement which is affecting equipment serviceability in case of failure."

Bharat Dynamics Limited (BDL) the manufacturer of Akash Missile has not been able to resolve three important issues for the last two to three years. BDL, founded in 1970, is a government enterprise under the administrative control of the Ministry of Defence. It is learnt that BDL was told in high level meeting convened last year to come out with solid plan after conducting an investigation

and study of faults in Akash Missile System within a month on long delays of critical faults. Even the investigation to unearth and address the issues was delayed.

The Air Force has refused to pay for new maintenance contract for certain Akash Missile squadrons as the old ones expired in September 2019. They argued that missile systems in several squadrons were left idle for more than a year. Instead, it had asked for extension of warranty for certain squadrons which have been dysfunctional for 17 to 15 months in the last two years. Air Force asserted since system was down and faults were neither rectified nor replaced, it violated the maintenance contract. Air Force is learnt to have said that "during the warranty period, the seller shall either replace or rectify the failed goods free of charge within 30 days of notification of such defects. As per article of the contract, warranty of the equipment would be extended by such duration from time the buyer has reported such unserviceabilities till the time seller has restored the status of the buyer's satisfaction."

Red tapeism in government defence enterprises hurt national security

Firstpost investigation also revealed gross inefficiency of government defence agencies BEL, BDL and DRDL to address the problem in Akash Missile System. Documents reveal that meetings after meetings were convened on the issues but the government defence enterprises couldn't satisfactorily answer the questions raised by Air Force. These government defence enterprises have been passing the buck. They also cheated Air Force by providing substandard and fake spares.

A meeting earlier this year chaired by Air Vice Marshal Bhanoji Rao pointed at severe negligence in handling Akash Missile System which may have serious ramifications in contingency. Documents revealed that certain spares, especially those of sub-vendors (procured by BEL) were being received at Akash Missile System units without 'Quality Assurance' certification and on a few instances it came to light that these spares were old and fake. In a letter, it was noted: "On few instances it has been noticed that the items were not new/authentic."

Air Vice Marshal Rao clearly told his team at the Air Force not to accept spares without 'Quality Assurance' certification. The meeting also revealed a lack of expertise of government-owned defence enterprises which are acting merely as a supplier of equipment after procuring it from domestic and foreign vendors. It basically means that these government enterprises are acting like a payment facilitators. Their complicity in this entire saga was further exposed when government defence enterprises officials told the senior Air Force officials that sub-vendors (private companies supplying spares) were not willing to share their design documents.

An appalled Air Vice Marshal asked, if the Defence Research and Development Laboratory (DRDL) is the authority then it must have intellectual property rights of all designs related to Akash Missile System. Obviously, the defence agencies representatives were not aware about it since they never took the pain to look into the agreements and promised the Air Force to look into the matter to ascertain whether these rights were with vendors. A promise was made to list all major vendors for unhindered supply of spares to overcome single vendor situation. As far as BEL is concerned documents said: "Almost all squadrons have expressed that they are unable to get proper feedbacks from BEL on progress and plan of action of pending faults."

The meeting chaired by Air Vice Marshal Rao also discussed high failure rate of one of the systems of Akash Missile, lacunae in analysis of faults and mismatch in software versions used for the this strategic weapon.

Another major loophole, which highlights the non-seriousness of defence agencies, is the contract with the private vendors. The agreements are more favorable to private parties putting Akash Missile System in jeopardy. Documents flagged these concerns further pointing out that all the vendor supplied items are outside their warranty obligations and in certain cases supplied spares are not configured as per system requirements. Some spares for Akash Missiles are not fit and functional and this is affecting the equipment serviceability in case of failure.

It appears that careless handling of most critical weapons has been going on for a long time. The Comptroller and Auditor General of India (CAG) was perhaps far-sighted when in a 2017 report, the national auditor observed that Akash Missiles cannot be trusted in situation of a war. CAG had categorically stated that Akash missile system delivered by BEL were deficient in quality and 30% missiles failed the test.

"Audit found that the Strategic missile system delivered by BEL were deficient in quality. Out of 80 missiles received up to November 2014, 20 missiles were test fired during April-November 2014. Six of these missiles i.e., 30 percent, failed the test. Preliminary failure analysis report revealed that the missiles fell short of the target, had lower than the required velocity, and also there was malfunctioning of critical units like Servo Control Unit and Connector. Two missiles had failed to take off because the booster nozzle had failed. These deficiencies posed an operational risk during hostilities. Two missiles had failed to take off because the booster nozzle had failed. These deficiencies posed an operational risk during hostilities." CAG report had said.

Firstpost investigation showed that after the CAG report, the squabbling between government defence enterprises had come to light. Eight critical snags in Akash Missile Systems were reported after the CAG report which were pending for three-seven months. CAG had recommended that Ministry of Defence needs to ensure better synchronisation of the various activities and agencies involved in such strategically important projects to ensure their timely completion and quality of Strategic Missiles also needs improvement so as to bring down failure rate.

Notwithstanding, many snags were not rectified citing lack of spares. The Air Force anguished over lackadaisical attitude of BEL and BDL has firmly directed them to resolve all internal issues immediately and ensure that no Missile is kept unserviceable due to their internal problems.

https://www.firstpost.com/india/akash-missile-system-cant-be-trusted-during-war-degraded-by-govt-defence-agencies-loopholes-in-strategic-weapon-system-threaten-national-security-7728651.html