समाचार पत्रों से चयित अंश
Newspapers Clippings

दैनिक सामयिक अभिज्ञता सेवा

A daily Current Awareness Service

Vol. 42 No. 193 14 September 2017

रक्षा विज्ञान पुस्तकालय
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THE HINDU

Thu, 14 Sep, 2017

Indo-Russian war games in Oct.

By Dinakar Peri

Details being worked out for first bilateral exercise involving the three services

India and Russia have begun discussions to work out the modalities for their first tri-service military exercise to be held in October. It will also be India's first bilateral military exercise with any country involving all three services.

"The Indra exercise is scheduled from October 19 to 29. The Final Planning Conference (FPC) will be held from September 12 to 15 in Russia. All logistical issues and modalities will be finalised here," an Army source told *The Hindu*.

In April, the two countries decided to upgrade Indra from an individual service exercise into an integrated tri-service.

"The aim of the exercise is to carry out joint exercises for suppression of international terrorist activities under the United Nations mandate," the source added.

The Army will send about 350 soldiers from the infantry, artillery and armoured streams.

Heavy equipment

While the soldiers will take with them infantry weapons, ammunition, radio sets and related equipment, the issue of taking T-72 tanks and other heavy equipment will be decided in the FPC.

The Navy is fielding two ships, a stealth frigate, *INS Satpura*, and an anti-submarine warfare (ASW) corvette, *INS Kadmatt*, along with two on-board helicopters. The naval component is likely to include an ASW component, the details of which are awaited.

The Air Force, which flies a large number of Russian aircraft, is likely to share fighter jets of the host. Details of contingent and other support elements would be decided in the planning conference.

Finding synergy

"This will be an opportunity for India to synergise jointness between its services and see how other countries function jointly," one defence official said referring to India's efforts for tri-service integration.

The headquarters of the Integrated Defence Staff under the Defence Ministry is leading the exercises from the Indian side.

the pioneer

Thu, 14 Sep, 2017

Surely, the time is of essence

By Pravin Sawhney

Arresting dwindling combat strength of the IAF will be a priority for Sitharaman. Each category of the aircraft has specific roles and only a naïve would suggest replacement of one category with another

Arresting the dwindling combat squadron strength of the Indian Air Force (IAF) will be a priority of the new Defence Minister Nirmala Sitharaman. This will not be easy since it would involve correcting a politically expedient decision; and, restoring the minimum possible mix of heavy, medium and light weight multi-role

combat aircraft categories. To be fair to the Air Force, each category aircraft has specific roles and missions, and only the naïve would suggest replacement of one category with another.

The IAF wants 42 fighter squadrons (each with 18 plus two attrition aircraft) to be able to maintain a dissuasive posture on one front when the other is active. At present, it claims to have 33 squadrons, including the obsolete MiG-21, MiG-23 and MiG-27. Adding to operational problems are (a) India's lack of credible defence industry to provide timely logistics support, especially of spares and ammunition; and (b) the fact that both quality and quantity of aircraft in a desired mix would be necessary.

Given this, the tender for 126 medium-weight aircraft (seven squadrons) was floated by India in 2007, where, after an excruciatingly long technical evaluation, twin-engine Rafale and Eurofighter Typhoon were shortlisted in April 2011. The IAF wanted twin-engine aircraft for three reasons: One, since these aircraft would be required to go on the offensive deep inside Tibet Autonomous Region, single-engine aircraft would be extremely vulnerable; two, given that civilian habitation has come around most Air Force stations, chances of bird and kite hits during peacetime training have increased impacting on the survivability of aircraft; and three, twin-engine is preferred for overall aircraft safety.

Since the politically-heavyweight AK Antony was not known to take timely decisions, it was left to the Narendra Modi Government to close the deal on Rafale. In the operationally bizarre decision, days before Prime Minister Narendra Modi was to visit France in April 2015, the Air headquarters was handed the fait accompli: India would buy only 36 (two squadrons) Rafales. This added to the IAF's woes. On the one hand, given the small numbers, it would be unviable to build maintenance and repair facilities in India. Sending aircraft to France would be costly and operationally risky since the service would have to fight with assets in hand at short notice. On the other hand, two squadrons would be dangerously inadequate for desired multi-roles and missions.

According to sources at the Air headquarters, 'the critical operational necessity is minimum five squadrons (90 Rafale aircraft) and ideally six squadrons (108 with no attrition aircraft)'. For this reason, Dassault Aviation chief executive officer, Éric Trappier, is now in talks with the Indian Defence Ministry for purchase of additional twin-engine Rafale aircraft.

In the light weight multi-role category with single-engine aircraft, the choice is between the US' F-16 Block 70 and Sweden's Gripen-E. The Defence Ministry is expected to issue the request for proposal for this category soon so that technical evaluations can begin. Simultaneously, as the IAF does its job, the Ministry could deal with the commercial and procurement policy (guidelines for strategic partnership) aspects. To be sure, time is of essence.

While sources at Air headquarters refused to share aircraft preference with this writer, they were willing to compare the two contenders. According to them, F-16 Block 70 is fourth generation proven aircraft which will be easy to evaluate and will cost up to 20 per cent less than its contender. And, with production line in India, they would be able to deliver up to 14 aircraft a year. Gripen-E, on the other hand — claimed as fourth generation plus platform — is an integrated aircraft which is still evolving.

Since all F-16 technologies are totally owned by the US, one source could decide expeditiously on what technologies can and cannot be given to India. Given that India is named as a major defence partner, and the US, under the Defence Trade and Technology initiative, is pushing for joint research, development and production, especially in engine technology, the possibility of technology sharing by the US is high.

Technology sharing is of three types: Transfer of know-how or assembling of kits; transfer of source-codes; and of object-codes. The source and object codes are akin to 'before' and 'after' versions of a computer programme. While source codes are the core which gives out the creation of a technology, the object codes give out the sequencing of the programme which would help in re-programming a computer to specific needs. To be sure, no nation will give away the source codes. However, bargain could be made for object codes with the US, which, in itself, would be a leap in technology for the Indian industry, especially for the Light Combat Aircraft (LCA) Mark-1A and the Advanced Medium Combat Aircraft (AMCA).

In case of Saab Group, the owner company of Gripen, technology sharing is a fuzzy area since it does not own nearly 30 per cent of the aircraft technology. It is powered by the United States' GE-414 engine and uses the electronically scanned Selex Raven-05 radar (Leonardo Aerospace, erstwhile Finmeccanica). While Saab claims that it has developed the Gallium Nitride Active Electronically Scanned Array (AESA) radar (incidentally, the US too has developed Gallium Nitride AESA, which is more effective than the present one. There are two issues here.

One, it has made sharing of Gallium Nitride radar technology conditional on India selecting the Gripen-E. Saab officials, who are upfront in saying that Sweden is a small country which needs India to sustain its growth, wants to be a part of LCA Mark-1A and AMCA. "It is all about business", is what Saab India head, Jan Widerström said to the writer. And two, Widerström conceded that it would be 'if and but' regarding transfer of US technology used in Gripen since it would be guided by the US export regulations. What he did not say is that it would be a political decision.

On the viability of the F-16 airframe being four decades old, while it does not affect the manoeuvrability of the aircraft, the question is whether the airframe can sustain the structural developments. Following the US Air Force authorised F-16 Service Life Extension Programme structural modifications, the service life of the aircraft has been increased to 12,000 equivalent flight hours, far beyond the aircraft's original design service life of 8,000 hours. The US Air Force can now safely operate even Block 40-52 aircraft to 2048 and beyond.

Moreover, there is strong possibility of US sharing spin-off technologies of F-35 aircraft with India. And, not to forget the political heft that F-16 will bring with it. Given this, the choice before India is between a partner nation which will be dependent on it; or the partner country, which, despite lows and highs, will remain a strategic partner in Asia-Pacific and Indian Ocean region.

THE TIMES OF INDIA

Thu, 14 Sep, 2017

Defence, nuclear cooperation key items on table for Indo-Japan talks

By Indrani Bagchi

As Japanese Prime Minister Shinzo Abe begins his two-day visit, India and Japan are expected to dig deep into their bilateral relationship, especially with an eye on converging their strategic and economic outlook to take it to the next level.

As a detailed joint statement is still being worked out, the focus is on defence and nuclear technologies as India is likely to finalise its first defence purchases from Japan, the US-2 amphibious plane that has been on the table for some years. Some element of `Make in India' may be introduced, but the two sides are looking at a future where joint development will be the key. Given the fact that bureaucracies in both countries are notoriously slow, this may still take a while, needing strong political push to get it off the starting block.

On the other side, with the North Korean crisis deepening, Japan is looking for defence partnerships that deliver ballistic and cruise mis siles, as was made clear by Katsuyuki Kawai, Abe's top foreign policy adviser, who was in New Delhi last week.

In order to counter China, India and Japan are teaming up to roll out big infrastructure and connectivity projects in Asian and African countries. The Asia-Africa growth corridor is slowly getting off the ground, and while it will never be as nimble as the Chinese OBOR (One Belt, One Road), India and Japan are working on a different philosophy, involving more local interests and participation.

With the completion of the civil nuclear deal, India is looking for more collaboration between nuclear companies of the two countries. The deal was finally signed be tween India and Japan in November 2016, and the Japanese Parliament cleared it in June.

The financial troubles of Westinghouse has necessitated a change in strategy .The Indian government will roll out the proverbial red carpet for the hundreds of Japanese nuclear companies which are in desperate need of markets, after the Fukushima disaster closed doors in Japan and many western countries.

The model will be different from the Russian one, where the foreign partner builds entire reactors from scratch. Instead, Japanese companies like Hitachi, Toshiba, Mitsubishi and numerous smaller nuclear companies are being invited to invest and provide support services to Indian firms for designing, building and operating reactors.

Here the Indian government's decision in May to build 10 new nuclear power reactors is expected to provide a glide path for Japanese companies. It also shifts India's focus from negotiating for full reactors to using Japanese expertise and technology to augment Indian capacities, and, India hopes, in time to look for third country markets. It would have helped India if its membership to the NSG was through, but there is little hope that it will be done any time soon. Until then, India plans to use the waiver granted to it in 2008 to the fullest.

The high speed railway, India reckons, will be a gateway to a different way of life and work for Indians just as Maruti Suzuki and the metro changed the face of urban transportation in India. The two sides are already looking at adding new lines to the high-speed railway network, one of the aims being to connect the major metropolises in the coming years.

`Why is PM hosting Abe in poll-bound Guj?'

Congress accused Prime Minister Narendra Modi of trying to gain political mileage ahead of the Gujarat assembly polls by hosting Japanese PM Shinzo Abe in Ahmedabad. Congress spokesman Manish Tewari said, “We have a great relationship with Japan and it started during the UPA regime. But it is rather quixotic that the prime minister of a country as important as Japan is strangely not even being hosted in Delhi and with an election in Gujarat round the corner, it does raise a question that a state visit is actually being used for political purposes.“ TNN

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Thu, 14 Sep, 2017

North Korea nuclear yield 250 kilotons’

North Korea's latest nuclear test probably had a yield of 250 kilotons, a US monitoring group said today much higher than official estimates. Pyongyang conducted its sixth and largest nuclear test last week saying it was a hydrogen bomb that could be fitted into a missile prompting global condemnation and heightening tensions over its weapons ambitions. The US Geological Service put the magnitude of the resulting earthquake at 6.3, and the Comprehensive Nuclear Test Ban Treaty Organisation (CTBTO) and Norwegian agency NORSAR had raised their initial figures to 6.1.

As a result, the respected US website 38 North, which is linked to Johns Hopkins University, said it was raising its estimate for the yield of the blast to “roughly 250 kilotons”. The figure is more than 16 times the size of the 15- kiloton US bomb that destroyed Hiroshima in 1945.

“This large explosive yield is also quite close to what 38 North had previously determined to be the maximum estimated containable yield for the Punggye-ri test site,” said 38 North. Governmental estimates of the yield vary from South Korea's 50 kilotons to Japan's 160. US officials have said they are still assessing

whether it was an H-bomb, also known as a thermonuclear weapon, but that "so far there is nothing inconsistent with the North Korean claim that this was a hydrogen bomb".

According to 38 North, satellite pictures from last Friday, five days after the test, showed new activity in alternate tunnel portal areas at the Punggye-ri test site including parked trucks, mining carts and other equipments. "Onsite work could now be changing focus to further prepare those other portals for future underground nuclear testing," it said. Pyongyang has staged a series of missile tests in recent months that appeared to bring much of the US mainland into range, followed by the September 3 nuclear blast. It prompted the United Nations Security Council to adopt its eighth set of sanctions on North Korea, but previous resolutions have done little to halt Pyongyang's weapons ambitions.

The Statesman
PEOPLE'S PARLIAMENT, ALWAYS IN SESSION

Thu, 14 Sep, 2017

N Korea vows to boost weapons programmes after sanctions

UN Security Council unanimously imposed an eighth set of sanctions on the country on Monday

North Korea vowed today to accelerate its weapons programmes in response to "evil" sanctions imposed by the UN Security Council following its latest and most powerful nuclear test. The respected 38 North website in the US raised its estimate for the yield from the explosion, which Pyongyang says was a hydrogen bomb small enough to fit onto a missile, to around 250 kilotons -- more than 16 times the size of the device that devastated Hiroshima in 1945.

The detonation, Pyongyang's sixth nuclear blast, prompted global condemnation and came after it carried out two intercontinental ballistic missile launches in July that appeared to bring much of the US into range. The UN Security Council unanimously imposed an eighth set of sanctions on the North Monday, banning it from trading in textiles and restricting its oil imports, which US President Donald Trump said was a prelude to stronger measures.

The resolution, passed after Washington toned down its original proposals to secure backing from China and Russia, came just one month after the council banned exports of coal, lead and seafood in response to the ICBM launch. The North's foreign ministry condemned the new measures "in the strongest terms", calling them a "fullscale economic blockade" driven by the US and aimed at "suffocating" its state and people. It was "another illegal and evil 'resolution on sanctions' piloted by the US", it said in a statement carried by the official KCNA news agency.

"The DPRK will redouble the efforts to increase its strength to safeguard the country's sovereignty and right to existence," the ministry said, using the abbreviation for the North's official name. But the South's unification ministry described the statement as "the most low-key form of response from North Korea to UN Security Council resolutions". Seoul conducted its first live-fire exercise of its new long-range Taurus missile in response to the nuclear test, its Air Force said.

The German air-to-surface weapon was capable of precision strikes on key North Korean facilities even if launched from the central part of the South, it added. The US and its allies argue that tougher sanctions will pile pressure on North Korea to negotiate an end to its weapons programmes but experts are sceptical. US President Donald Trump said the latest measures were a "very small step - not a big deal" that must lead to tougher measures. "Those sanctions are nothing compared to ultimately what will happen," Trump said, but added that it was "nice to get a 15 to nothing vote".

The North says it needs nuclear weapons to protect itself from "hostile" US forces and analysts believe Pyongyang's weapons programme has made rapid progress under leader Kim Jong-Un, with previous sanctions having done little to deter it. Government estimates of the yield from its sixth nuclear test vary from South Korea's 50 kilotons to Japan's 160, but 38 North, which is linked to Johns Hopkins University in the US,

raised its estimate to “roughly 250 kilotons”, in line with upward revisions for the magnitude of the resulting tremor.

the pioneer

Thu, 14 Sep, 2017

Living easily with robots

By Angela Paljor

An Indo-Japan colloquium emphasises how technological relationships would be able to secure a symbiotic relationship with AI, says Angela Paljor

The Japanese have not only been using robots for disaster management and rescue, like they did in the tsunami and earthquake-ravaged Fukushima in 2011, they are upgrading them to sense and rescue survivors, overcoming the odds of debris. A couple of months ago, Japanese scientists developed a snake-like robot that stretches 26 ft in length and is covered in short brush hairs.

Slithery and serpentine, it can find its way through the most challenging terrain and upheaval and is reportedly the first in the world that can lift its front tip off the ground to climb and navigate obstacles. It can even squeeze itself through slim crevices and rubble, to look for signs of life with a sensor camera mounted on its snout. It can even warn authorities about possible cave-in zones. The plastic brush hair makes it move forward. The new robot can be deployed for practical rescue efforts within three years. Meanwhile, Japanese underwater ROVs are already in use for bridge inspection and underwater recovery.

While Japan has surged ahead with artificial intelligence with humanoid talking robots that reportedly can acknowledge “emotions” to Transformer-like foldable versions, its application in everyday life seems far-fetched in India. Japanese Prime Minister Shinzo Abe has even voiced his hopes to stage a so-called Robot Olympics, to run alongside the Tokyo Games, in summer 2020.

Coinciding with his visit to India, a joint dialogue was held in the capital to discuss the wide applicability of AI in the Indian context. Dr Tairo Nomura from Saitama University elaborated on the proven role of robots in disaster management and reaffirmed the need to segregate the various aspects of robotics – who will use it and how will he/she use it? Thus, he felt, there was an urgent need to include technology in mass education. “It is here that we can put AI to work. While AI stores all the data base, the application will solely depend on the humans. To create such an education system, it becomes essential to have a qualitative approach towards education. Activities become the source of understanding any subject,” he said.

However, Nomura feared that the diversity of language in India would be a challenge as it becomes really difficult to translate the developments in technology in various languages, known as the second class digizen issue – gap in terms of digital and technological awareness due to language barriers. If one is able to sort this issue, just the way Japan has been able to, India will not have to hover around technological giants and become one itself, he felt.

Policy-making is also an essential part of creating a symbiotic relationship with the robot, AI and humans. Rather than postponing crucial agenda like climate change, nuclear powers and epidemics, regulatory bodies should be classified into various sections. K Vijay Raghavan, head of National Centre for Biological Sciences said it was essential that both the local and the scientific community were equally a part of the decision-making process. Only then would the nation be able to find viable solutions to various problems.

K Vijay Raghavan, head of National Centre for Biological Sciences, argued for technology in dealing with complex diseases. He cited the example of the practical application of research in Huntington’s disease (HD), also known as Huntington’s chorea, an inherited disorder that results in the death of brain cells.

“Huntingtin is a 350-kilodalton protein of unknown function that is mutated in HD, a neuro-degenerative disorder. The mutant protein is presumed to acquire a toxic gain of function that is detrimental to striatal

neurons in the brain. However, loss of a beneficial activity of wild-type Huntingtin may also cause the death of striatal neurons. Biotechnology demonstrates that wild-type Huntingtin up-regulates transcription of brain-derived neurotrophic factor (BDNF), a pro-survival factor produced by cortical neurons that are necessary for the survival of striatal neurons in the brain. It shows that this beneficial activity of Huntingtin is lost when the protein mutates, resulting in decreased production of cortical BDNF. This leads to insufficient neurotrophic support for striatal neurons, which then die. Restoring wild-type Huntingtin activity and increasing BDNF production may be therapeutic approaches for treating HD."

New technology means scientists can now do that. The drug, Ionis-HTTRx, is a gene-silencing drug, a molecule small enough to enter the cell and intercept the genetic instructions for the protein before it can be made. It is like taking out the messenger and you can stop the mutant protein from forming. Getting the drug to the brain is difficult. It has to be injected with a four-inch needle into the liquid that surrounds the spine. From there, it travels up to the brain and into the brain cells, most of which are tucked away in hard-to-reach places. Without technology-aided treatment, human lives would not get better.

Raghavan and Nomura were optimistic that the India-Japan technological relationships would be able to secure a symbiotic relationship with robot, AI and humans to succeed in today's complex and diverse world.