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The Times of India 03 December 2015

HAL stresses the need to develop indigenous aerospace technology base

Sumita Sarkar

Hindustan Aeronautics Limited (HAL) organized a national seminar on "Indigenous Technology Base for Growth of Aerospace Ecosystem" by bringing together various stakeholders in aerospace on a common platform as part of its 75 year celebrations on November 28 Dr V M Ghatge Convention Centre, Bengaluru. "This seminar is an opportune mechanism for creating a confluence of knowledge on recent advancements in indigenous cutting-edge technologies," said T Suvarna Raju, CMD (chairman-cum-managing director), HAL. "It is our constant endeavour to lead the sector in providing collaborative support to the aerospace community and creating an ecosystem for aviation technology," he added. Ajay Shankar, Chairman Expert Committee on Regulatory Approvals, Department of Industrial Policy and Promotion (DIPP) complimenting HAL on completing landmark 75 years and said that the nation should be proud of HAL's contributions. He said, "Aerospace is the frontier technology and we have acquired core strength of system design and system integration in the past three decades. We have the ability to innovate things and we could have the enormous success that we are capable of achieving." K Tamilmani, Director General (Aero), DRDO, said that although we are engineering many technologies for bigger platforms, we need to establish aerospace facilities that will place India on the global arena. A compendium comprising of selected papers from various institutions was released on the occasion. A total of fifty papers were received from various participants under the general themes of design, innovations in manufacturing/production, analytical approach, certification, quality and aerospace ecosystem development. Academic institutions- Indian Institute of Technology (IITs), Indian Institute of Science(IISc), Indian Statistical Institute (ISI), Defence Institute of Advanced Technology (DIAT), certifying agencies- Centre for Military Airworthiness and Certification (CEMILAC), Directorate General of Aeronautical Quality Assurance (DGAQA) and Directorate General of Civil Aviation (DGCA), Customers- Aircraft & Systems Testing Establishment (ASTE), Air Force Technical College (AFTC), DPSU's- (BEL, BEML, Midhani, BDL), R&D labs and institutions- (NAL, ADA, ADE, DARE, LRDE, CABS, ARDE, ADRDE, RCI, CIPET etc) and private industries- (TASLand Mahindra Aerospace) participated in the seminar.

The Indian Express 03 December 2015

India, Israeli Air Force officials explore new opportunities for co-operation

Top officials of the Indian and Israeli Air Force met in Delhi on Monday for a review of the ongoing procurement process while also exploring new opportunities for cooperation. Major General Amir Eshel, Commander of Israeli Air & Space forces called on his Indian counterpart Air Chief Marshal Arup Raha at the Air Headquarters in Delhi. A delegation-level talk was also held, defence sources said, adding that bilateral relations have grown steadily between the two countries. Israel views India as a strategic ally and has displayed willingness to co-operate on all fronts. Indo-Israel defence relations comprise mainly of purchase of military equipment, MoD level dialogue, technology collaboration and service-to-service defence co-operation through service-level staff talks. India-Israel defence co-operation has improved rapidly in the last few years with the latter providing state-of-the-art military hardware to India at reasonable cost. Israelis have been at the cutting-edge of R&D in advanced technologies in a wide range of fields such as telecom, software, biotechnology, medical, electronics, agriculture and defence. Indian Air Force (IAF) is in the midst of procuring the Spyder missile system from Israel besides the medium-range surface-to-air missile (MRSAM). The Government this year has also accepted the IAF's proposal for procuring two advanced Israeli AWACS (airborne warning and control systems).

Navies are for more than just fighting

The ability to reach far out and sustain this reach over long periods gives the navy a global face the other two services do not have

Premvir Das

In the context of a nation's military power, many people make the mistake of summing up the capabilities of the army, the navy and the air force and producing that aggregation as the country's prowess. In today's environment, the mechanisms that a country must have to effectively counter the threats that it faces from terrorism, both indigenous and that sponsored from external sources, should be added too - as also its mechanisms to counter the stresses and strains to internal stability and cohesion, which require more nuanced responses. But, in this broad spectrum of issues that must confront any nation and, especially, one as large and multi-dimensional as ours, the one capability that is easily visible and usable, not just close to home but also quite far away, is the one represented by the navy. Interestingly, it does not always need to sail away from home to be seen; it also achieves that effect by staying in its own waters. For this, it must do a variety of things and the fields of training, joint exercises and hosting ship visits are only a few of them. At the very top of this list, and something that cannot be done too often, is the Fleet Review. In essence, the concept of the fleet being reviewed is a very old British one, in which the monarch had the ships, all looking spic and span, lined up in some order and then sailed past them in his or her own royal barge even as the crews stood at attention and saluted. Our navy, like some others, has followed this practice. In theory, the event was initially designed to show to the reviewing person that the navy was in fine fettle or "good shape" as the sailors call it. In practice, however, it has also had ceremonial content which has grown over the years. There are parades, band concerts and 'Beating Retreat' events; and to this list has been added, quite correctly, some professional touch in which maritime security issues are debated. So, a Fleet Review is a major naval display of its maritime attributes by the host nation, which cannot go unnoticed by those present as well as those who are not. The Indian Navy has been holding Fleet Reviews every five years for over four decades, once during the tenure of each president. In 2001, it took a quantum jump when it invited ships from several foreign countries to participate in the event as well. Nearly 70 ships from some 21 countries were present in Bombay (now Mumbai) harbour at this first International Fleet Review (IFR). The chief dignitary sailed around the neatly formed lines of ships in the presidential yacht; there was a parade by contingents of the foreign ships down Marine Drive watched by thousands of people; a concert in which bands of several navies performed; a seminar in which maritime cooperation and security issues were discussed; and, of course, a "Beating Retreat' ceremony at the magnificent Gateway of India followed by a display of fireworks. It was a proud moment in the history of the still young Indian Navy - and, even as participating countries and their naval arms enjoyed our hospitality, they sensed what lay behind the event, a display of maritime power. In early February 2016, the navy will host its second IFR at Visakhapatnam on the east coast. In these intervening fifteen years, two smaller scale and internal equivalents have been held in 2006 and 2011. These also send messages - but an IFR is a much larger and more comprehensive signal. Once again, ships from many nations, including China, will be present, more than were there last time, and the ceremonial will be given more spectacle by weapon demonstrations, which will be watched by millions of people crowding the beautiful Ramakrishna Beach which offers this possibility. Delegations - in many cases led by chiefs of the participating navies - will be present. A display of naval air power will add to the blue water picture. In sum, IFR 2016 will send a more comprehensive maritime message than its predecessor of 2001. What is achieved by such extravaganzas is a question that can legitimately be asked. Ceremonials and parades are all very well, but is there something beyond these that merits discussion? For one, the IFR generates pride and confidence in one's own capabilities - operational, organisational and administrative. These spectacles give joy and a sense of achievement to the people who watch them, live or on television, and speak of what they saw. The ships and delegations that come from across the seas go back with memories not just of the hospitality received, but even more of what they saw for themselves at first hand. Such events contribute to greater recognition of what India's maritime power is and is likely to be in the years ahead, what the country sees as its maritime interests and how it seeks to promote them, in peace as much as in war, possibly more. A message goes out that India stands at the forefront of countries which seek to act as net maritime security providers in cooperation with all others similarly inclined and stands for safety of commerce and freedom of navigation at sea. To those who harbour ill-will against us, IFRs are cautionary - a demonstration of our ability to respond. They are, by any standard, a win-win event, as much in support of diplomacy as an

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Navies are for more than just fighting

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essential adjunct as in furtherance of our national goals. As we celebrate Navy Day tomorrow, it needs recognition that this service is not just a combination of platforms that is geared to fight adversaries in war. It also acts as a messenger of goodwill and friendship as when ships deploy far overseas, east and west; it is also there to bring relief and assistance to those in need of it during natural disasters, as it demonstrated so handsomely during the tsunami of December 2004 and in other such incidents later. On a different plane, when safety of commerce is threatened, it acts as a major player, be it in the waters off the Malacca Straits or in the Gulf of Aden. Its presence offshore in areas of concern makes an impact as it did during the Kargil War, when then US President Bill Clinton had to caution Pakistan's prime minister that India had its navy deployed in the northern Arabian Sea and stood ready to escalate the level of conflict unless the aggression was vacated. It is this unique capability of being able to reach far and, even more important, to sustain this reach over long periods, that gives the navy a face that other two services do not have and which must be exploited in close concert with diplomacy to further our interests. IFRs serve this objective very well. February 2016 is just around the corner and all of us must wish our navy well as it gets ready to receive its guests.

Punjab Kesari 03 December 2015

युद्ध क्षमताओं को त्रि-अंगीय परिवेश में परख रही सेना

'दृढ़ संकल्प'

राजस्थान में दक्षिणी कमान का युद्धाभ्यास 5 को थलसेनाध्यक्ष जनरल सुहाग के आने की संभावना

जैसलमेर,(विमल भाटिया): थार जैसलमेर बाड़मेर क्षेत्र में भारतीय सेना की दक्षिणी कमान में गत 2 माह से चल रहा युद्धाभ्यास 'दृढ़ संकल्प' अब अपने अंतिम चरण में पहुंच गया है। 5 दिसम्बर को समापन के अवसर पर थलसेनाध्यक्ष जनरल दलबीर सिंह सुहाग के आने की संभावना हैं। इस मौके पर भारतीय सेना अपने

जैसलमेर-बाड़मेर के रेगिस्तान में चल रहे सेना के युद्धाभ्यास में टैंक से गोला दागते जवान।

जबरदस्त युद्ध कौशल का प्रदर्शन करेगी तथा टैंकों की ओफेन्सिव फायरिंग का प्रदर्शन किया जाएगा। रक्षा प्रवक्ता लेफ्टिनेंट कर्नल मनीष ओझा ने बताया कि भारतीय सेना की ओर से किए जा रहे युद्धाभ्यास में अपनी युद्ध क्षमताओं को त्रि-अंगीय परिवेश में परख रही है।तमाम नई तकनीकों का इस्तेमाल करते हुए युद्ध अवधारणा को एक नए स्तर तक पहुंचा रही है। युद्धाभ्यास का उद्देश्य सेना के तीनों अंगों के एकीकृत ऑपरेशन क्षमता को बढ़ाना और आपसी तालमेल सुधारना है। उन्होंने बताया कि युद्धाभ्यास की शुरुआत में सेना ने बुनियादी युद्ध प्रशिक्षण को मजबूत करते हुए अपने रण कौशल को सुदृढ़ बनाया और यह सुनिश्चित किया कि वे सभी युद्ध संबंधी मानकों पर खरे उतरें। मैकेनाइज्ड सेना ने हवाई मार्ग से उतारे गए सैनिकों के साथ समन्वित ऑपरेशन से अपना प्रभुत्व स्थापित किया।

The Economic Times 03 December 2015

Tender for Indian Army's 1.86 lakh bulletproof vests nixed over failed trials

The government has withdrawn a 2009 tender for procurement of over 1.86 lakh bulletproof jackets for the army after the items fielded by the vendors failed the trials, said Defence Minister Manohar Parrikar. He said that the Defence Acquisition Council had accorded Acceptance of Necessity in October, 2009, for capital procurement of a total of 1,86,138 bulletproof jackets under the 11th army plan. In a written reply to Rajya Sabha, Parrikar said that the Request for Proposal was retracted on October 5 as the jackets fielded by the vendors failed in the trials. The 1.86 lakh jackets were to be inducted by 2012 while another 1.67 bullet proof jackets were to be ordered in the second round.

30 military copter crashes since 2010 have killed 50

Rajat Pandit

India's horrific crash rate of fighters may grab all the eyeballs, but ageing helicopter fleets are an equally big worry. As many as 30 military helicopters have crashed since 2010, claiming well over 50 lives. And these are just the Category-I crashes, with pilots continuing to grapple with technical problems in their old helicopters almost on a daily basis. Ageing machines, inadequate pilot training, shoddy maintenance and spares support have all come together to lead to a high crash rate of fighters and helicopters over the years in India. Stating that the main reasons for the accidents were "technical defects" and "human errors" in a written reply in Rajya Sabha, defence minister minister Manohar Parrikar put the tally of helicopter crashes at 28 since 2010. Two Russian-origin Mi-17 helicopters had also crashed during relief operations and aid to civil agencies in 2011-2012 and 2013-14, which are generally not included in the statistics maintained for aircraft accidents in the forces. IAF, in fact, has lost at least five of its heavy-duty Mi-17 choppers since 2011. But it's the obsolete, single-engine Cheetah/Chetak helicopter fleets, which are even used to service forward areas like the Siachen Glacier-Saltoro Ridge region, that have been popping up regularly on the radar crash screens for long. In fact, a group of wives of Army officers in March had petitioned Parrikar to retire these "outdated and ageing" light-utility helicopters -- which do not have modern avionics since are based on 1960s technologies -- to avoid casualties. "There have been at least 40 Cheetah/Chetak crashes just in the Army in the last two decades," said an officer. But the long-pending acquisition of 197 such light helicopters from abroad has been scrapped thrice over the last decade due to corruption allegations and technical deviations, the last time in August 2014 by the then newly-elected NDA government. Then, in May this year, the defence acquisitions council gave initial approval for Russia to jointly produce 200 twin-engine Kamov-226T helicopters under the 'Make in India' policy. But India and Russia are yet to finalize the inter-governmental agreement, with discussions taking place between the two once again on Tuesday. "At the earliest, the final commercial contract will be possible only by the next fiscal (2016-17). Actual deliveries, with the first 40 helicopters coming in a flyaway condition and the rest being manufactured in India, will begin at a much later stage," said a source. The slow-decision making process of successive governments and general politico-bureaucratic apathy has also meant, for instance, that Indian warships are now virtually bereft of multi-role helicopters that can detect and destroy enemy submarines. The armed forces, incidentally, have a projected requirement of over 1,200 helicopters of different types over the next 10-15 years, as was earlier reported by TOI.

Army set up sanitary pad plant in Ladakh

By Naseer Ganai

To overcome the non-availability of sanitary napkins among women in Ladakh, where the temperature plummets to -30° C at the peak of winter, the Army on Wednesday inaugurated a low-cost sanitary napkin manufacturing plant in Leh. Lt Gen SK Patyal, GOC 14 Corps inaugurated the low-cost sanitary napkin manufacturing plant at Women Empowerment Centre, Leh. Named Sakhi Suvidha, the initiative has been undertaken to spread awareness about the benefits of adopting hygienic practices. "Representatives of NGOs, villages from various places in Ladakh were present during the inauguration. More than 170 Ladakhi women attended the inauguration ceremony as part of representatives from various villages of Ladakh," an Udhampur-based defence spokesman said. The machine has been designed and developed by Arunachalam Muruganantham, who won an award for best innovation for the betterment of society in 2006 and an Indian presidential award for innovation. His accomplishments were also recognised when he was featured in Time magazine's list of 100 most influential people in the world in 2014. Muruganantham was also present at the ceremony and demonstrated how the machines could be used. Sanitary napkins produced from these machines are quite economical as compared to commercially available products in market. The raw cost of making a sanitary pad is less than one-third of the most competitive brand. This will allow the product to be available to women in Ladakh at a very affordable price.

The plant has been designed by Arunachalam Muruganantham, who won an Indian presidential award for innovation

China blamed for cyber-attack on Australian government

A major cyber-attack against Australia's Bureau of Meteorology that may have compromised potentially sensitive national security information is being blamed on China, the Australian Broadcasting Corporation (ABC) reported on Wednesday. The Bureau of Meteorology owns one of Australia's largest supercomputers and the attack, which the ABC said occurred in recent days, may have allowed those responsible access to the Department of Defence through a linked network. The ABC, citing several unidentified sources with knowledge of the "massive" breach, placed the blame on China, which has in the past been accused of hacking sensitive Australian government computer systems. "It's China," the ABC quoted one source as saying. The Bureau of Meteorology said in a statement on its website that it did not comment on security matters, but that it was working closely with security agencies and that its computer systems were fully operational. The Australian Federal Police declined to comment on the matter. The Department of Defence said in a statement that it was barred by policy from commenting on specific cyber security incidents. China's Foreign Ministry dismissed the accusation, saying the government opposed cyber-attacks and all parties concerned should strengthen dialogue to solve the problem "in the spirit of mutual respect". "Groundless accusations and speculation are not constructive," ministry spokeswoman Hua Chunying told a regular briefing. China has long been accused of using its considerable computing resources to infiltrate online businesses for competitive advantage and for conducting acts of cyber espionage. In June, US officials blamed Chinese hackers for compromising the records of up to four million current and former government employees. China called the US comments irresponsible, while President Barack Obama vowed that the United States would aggressively bolster its cyber defences. China is Australia's top trading partner, with two-way trade of about A$150 billion ($110 billion) in 2013, and they signed a landmark free trade agreement in 2014 that is likely to further boost commercial ties. Australia needs China's help to transition from a reliance on exports of minerals such as coal and iron ore to expanding its food and agricultural exports to a growing Asian middle class, moving from a "mining boom" to a "dining boom". But Chinese firms have been locked out of sensitive deals in the past over security concerns, most prominently a decision in 2013 to bar Huawei from bidding on Australia's National Broadband Network, a deal worth tens of billions of dollars.

Russia Flight Tests Anti-Satellite Missile

Moscow joins China in space warfare buildup

By: Bill Gertz

Russia carried out the first successful flight test of a new anti-satellite missile this month, marking a new phase in the global militarization of space. The flight test of Russia's direct ascent anti-satellite missile, known as Nudol, took place Nov. 18, according to defense officials familiar with reports of the test. It was the first successful test in three attempts, said officials who spoke on condition of anonymity. With the successful anti-satellite missile test, Russia has joined China in arming its forces with strategic space warfare weapons. Twenty days earlier China conducted a flight test of its anti-satellite missile. The Dong Neng-3 direct ascent missile was tested on Oct. 30 in western China. A Pentagon spokesman had no immediate comment on the Russian missile test. Air Force Space Command commander Gen. John Hyten warned this month that both Russia and China are developing space warfare capabilities that threaten critical U.S. satellites. "They are developing capabilities that concern us," Hyten said, according to a report in the Colorado Springs Gazette published a day before the test. Little information is available on the secretive Russian program. However, as with China, the Russian direct ascent missile appears linked to its missile defense programs. Russian state-run press reports have identified the mobile transporter-launcher for what is described as "a new Russian long-range missile defense and space defense intercept complex." The weapon is "being developed within the scope of the Nudol OKR [experimental development project]," Novosti reported in 2014. The new weapon is being developed by the Almaz-Antey Air Defense Concern. Hyten, the Space Command commander, said he does not want to see conflict extend to space but also noted "we have to be able to defend ourselves." Hyten said several nations, including Russia, North Korea, China, and Iran, are developing anti-satellite capabilities. Analysts say the space threat to satellites highlights a strategic vulnerability. With as few as two dozen anti-satellite missiles, Russia or China could cripple U.S. intelligence, navigation, and communications capabilities that are critical for both military operations and civilian infrastructure. Rep. Mike Pompeo (R., Kansas) said the Russian test is a concern. "As President Obama cuts our defense budget and seeks to ally with Putin, the Russians continue to develop their technological abilities to weaponize space and to take out our national technical means-kinetically and through cyber," said Pompeo, a member of the House Permanent Select Committee on Intelligence. "We can foolishly turn a blind eye to these developments, or acknowledge this threat and develop our own capabilities to ensure that our satellites-military and commercial-are not susceptible to attack or blackmail," he told the Washington Free Beacon. Former Pentagon official Mark Schneider said the Russian test highlights the failure of the United States to prepare for space warfare. "There is an enormous asymmetry in play regarding space weapons," said Schneider now with the National Institute for Public Policy. "For decades the Congress has prevented the U.S. from putting weapons in space and even developing a ground-based ASAT capability," Schneider said. "There is no such constraint upon the Russians and Russia violates arms control treaties when this is in their interest to do so and they find ample opportunity to do this." A February 2015 unclassified Defense Intelligence Agency report to the Congress stated that "Chinese and Russian military leaders understand the unique information advantages afforded by space systems and are developing capabilities to deny U.S. use of space in the event of a conflict," Schneider added. Pavel Podvig, director of the online Russian Nuclear Forces Project, said a graphic image depicting the Nudol was posted on a Russian website. "The information is scarce, but as far as I can tell, Nudol is developed as a component of a missile defense system," Podvig said. "It may be related to the program that would upgrade the Moscow missile defense. It might be part of the project known as Samolet-M." The use of the Nudol to hit satellites is possible, according to Podvig, who noted the American use in 2008 of a modified Navy SM-3 anti-missile interceptor to shoot down a falling National Reconnaissance Satellite. However, Podvig says the Nudol system appears to use stationary radar that would give it a limited anti-satellite capability. The mobile image posted online would indicate the system is movable, but without mobile radar it would be limited to hitting satellites that pass over Moscow. Moscow recently announced plans to upgrade its Moscow missile defense system, which uses nuclear-tipped interceptors. Col. Andrei Cheburin, commander of Russia's missile defense battalion in the Aerospace

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Russia Flight Tests Anti-Satellite Missile

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Forces, told the Russian radio on Saturday that missile defenses are being upgraded. "Very soon we will receive an upgraded missile defense system with new means of destruction, thus fulfilling the task of providing missile defense for Moscow in any environment," he told Russian radio, the state-run Interfax news agency reported Monday. The Obama administration has been vocal in opposing China's anti-satellite weapons development but has made no mention of the Russian program. State Department spokesman Blake Narendra said: "We do not comment on intelligence matters." State Department officials in the past have said China's development of space weapons is destabilizing. "The continued development and testing of destructive [anti-satellite] ASAT systems is both destabilizing and threatens the long-term security and sustainability of the outer space environment," Frank Rose, assistant secretary of state for arms control, verification and compliance, said in February. China has conducted several tests of anti-satellite weapons, including a 2007 test that left tens of thousands of pieces of dangerous debris floating in space. The debris continues to threaten both manned and unmanned satellites. Meanwhile, a polar-orbiting National Oceanic and Atmospheric Administration satellite, NOAA 16, broke up in space mysteriously last week, according to the Air Force's Joint Space Operations Center. "The cause is still unknown at this point," said John Leslie, a NOAA spokesman. Air Force Space Command spokesman Nick Mercurio said no satellites or other objects were detected near the NOAA 16 prior to the breakup on Nov. 25. The debris currently is not posing a risk to other satellites, he said.

Army Recommends Limiting Israel's Submarine Fleet to Five Vessels

The air force, meanwhile, will spend less on preparedness for attacking Iran.

Gili Cohen

The Israeli army said Wednesday it now recommends that the navy only operate five submarines - when a sixth German sub arrives, the oldest one will be decommissioned. In 2011 Israel finalized the purchase of a sixth dolphin-class submarine from Germany, with payment to be spread over several years. On Wednesday the IDF also recommended that it close its Sde Dov air base in Tel Aviv within three years; the planes would be deployed to the Hatzor base further to the south. The military also plans to reduce investments in capacity for attacking Iran, if such a foray were ever deemed necessary. In the IDF's multiyear plan currently being forged, the money saved on direct Iran expenditures would go elsewhere in the air force. "We're not building capacity as we did a year or two ago, but the IDF needs available capabilities for the time the nuclear accord reaches its term," a senior officer told military correspondents Wednesday. "The Iranian influence is not restricted to the nuclear issue - it also applies to terrorism in the Golan Heights, to its soldiers in Syria, to events in Yemen and Sudan. The precision ordnance that's present in Lebanon didn't originate there." Also, the number of headquarter staff members will be cut, with a slashing of two brigadier-general positions, 24 colonel positions and 80 lieutenant-colonel positions, the IDF said. On Thursday the IDF is due to hold another day of discussions on its growth priorities. This includes decisions on acquiring new technology; new artillery and a new Merkava tank are among the options. The military is already well into its multiyear planning. For example, it aims to streamline two regional brigades such as the one in the southern Arava district. Initially, the idea was to completely dismantle one brigade. Last month, Chief of Staff Gadi Eisenkot summarized the main points of the multiyear plan known as Gideon; the army expects approval from the cabinet. Decisions on the military's structure and size require government approval. The military is also establishing a cyber-defense brigade next month, to be commanded by a colonel to be promoted to brigadier general. Eventually, the brigade will become part of a new cyber-division. The military is also making significant cuts to units "not related to the army's core activities" such as the military rabbinate, the Education Corps, the military advocate general's unit and a behavioral sciences unit. The method for managing the IDF's various branches will also change; each will be responsible for its own salary spending. This will make each branch better able to save money and manage its units.

The Asian Age **03 December 2015**

Japan Bids to Make Submarines in Australia

It would be the first overseas arms sale for Japan since 1945.

By Kyle Mizokami

Japan has formally entered the competition to build Australia's next generation of attack submarines, the first time the country will attempt to sell arms to a foreign country in 70 years. The country is offering up a modified version of its Soryu-class attack submarine, regarded by many as the best non-nuclear submarine in the world. Australia is set on replacing six locally made Collins-class diesel electric submarines. Built by an alliance of Swedish sub manufacturer Kockums and the Australian Shipbuilding Corporation, the Collins-class submarines have been beset with problems. Buggy control software, hydrodynamic flow problems, cracked propellers, seal troubles, and vibration issues have plagued the submarines. Between October 2009 and February 2010, none of the six were considered ready for deployment. The first Collins-class sub entered service in 1998, but they were so problematic by 2009 Australia had already initiated the Future Submarine Program, which seeks to procure up to a dozen replacements. The first submarine is expected in 2026, when the oldest of the Collins boats will start aging out. In the meantime, Prime Minister Shinzo Abe has successfully pushed to relax Japan's arms export regulations. Since the end of the Second World War, Japan has had strict controls-pretty much amounting to an outright ban-on arms sales abroad. If successful, the Australian submarine contract will be the country's first sale of weapons of any quantity since 1945. he Japanese submarines offered for sale, the Soryu-class, are among the most advanced non-nuclear submarines in the world. At 4,200 tons, Soryus are 20 percent larger than the Collins class. The Soryu submarines have six 533mm torpedo tubes, capable of firing both guided torpedoes and anti-ship missiles, and four Air Independent Propulsion (AIP) units that allow prolonged travel while submerged-the latest production submarines are capable of traveling underwater for up to two weeks without resurfacing. In a step upgrade above stock Soryu submarines, Japan's Australia offer includes the use of lithium-ion batteries to store power. Older submarines use lead acid or nickel-metal hydride batteries, the same technology as in a 1990s laptop. Lithium ion batteries have taken longer to be used in subs, likely due to safety considerations. Under certain conditions, lithium ion batteries can melt down or explode. Still, lithium ion's light weight and superior storage capacity makes it very attractive for use in submarines. In addition to Japan, submarine builders from France and Germany are also bidding for the right to build Australian submarines. TKMS of Germany is offering their Type 216 submarine, while French shipbuilder DCNS is advertising a modified version of itsBarracuda submarine, the Shortfin Barracuda.

The Statesman **03 December 2015**

ISRO likely to launch satellites made by Indian students

The Indian Space Research Organisation (ISRO) is likely to launch seven satellites designed by students of various Indian institutions and universities, the Lok Sabha was informed on Wednesday. In a written reply to the Lok Sabha, Minister of State for Personnel, Public Grievances and Pensions, Atomic Energy and Space, Jitendra Singh said: "ISRO is addressing the possibility of launching satellites being designed by students of various Indian institutions. These satellites are in various stages of development." The seven student satellites are - SWAYAM designed by College of Engineering, Pune, PISAT by PES University, Bangalore, PRATHAM by Indian Institute of Technology (IIT)- Bombay (Mumbai), SATHYABAMASAT by Sathyabama University, Chennai, NIUSAT by Noorul Islam Univeristy, Kumaracoil (Tamil Nadu), PARIKSHIT by Manipal Institute of Technology, Karnataka and IITMSAT by IIT-Madras (Chennai). The minister also said that since 2009, ISRO has successfully launched four student satellites. While the ANUSAT by the Anna University in Tamil Nadu was launched in 2009, STUDSAT was launched the following year and was designed by a consortium of engineering colleges. Two more satellites, SRMSat and JUGNU were launched on the same date on October, 12, 2011 and were made by SRM University (Tamin Nadu) and IIT-Kanpur respectively.

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Cabinet approves funds for 6 IITs

The Union Cabinet chaired by Prime Minister Narendra Modi Wednesday approved funds for setting up of six new Indian Institutes of Technology (IITs) in Karnataka, Andhra Pradesh, Chhattisgarh, Goa, Jammu and Kerala. The Cabinet also gave its approval for operationalisation of these IITs initially by forming Societies under the Societies Registration Act, 1860, in order to give a legal status to them till the amendment for their incorporation in The Institutes of Technology Act, 1961, is enacted. Each new IIT will have an initial intake of 180 students in its first year from temporary/transit which would increase to 450 in the second year and to 928 (840 undergraduates, 80 postgraduates and 8 PhD) in the third year of their operation, an official statement said. The total cost for running these IITs is Rs 1,411.80 crore and will be incurred between 2015-16 and 2018-19, the statement said. The new IITs will be operated from their temporary campuses for the initial period of three years before shifting into their permanent campuses in the fourth year. Each IIT will have a sanctioned strength of faculty members, with a faculty-student ratio of 1:10. The Cabinet also approved the revised cost estimates to the tune of Rs 4,799 crore as against the originally approved Rs 2,500 crore, for setting up of five Indian Institutes of Science Education and Research in Kolkata, Pune, Mohali, Bhopal and Thiruvananthapuram.

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Japan shows off disaster-response robots

Japan on Wednesday (Dec 2) displayed a pair of two-legged humanoid robots that can operate in harsh conditions as the country prone to earthquakes and volcanic eruptions prepares for the next catastrophe. Simulating work in a tunnel after a quake, two slender robots with tiny heads attached with sensors walked through fake debris to extinguish a fire during a demonstration at the International Robot Exhibition in Tokyo. The four-day event which kicked off Wednesday, is held once every two years in Japan's capital. This year it is drawing nearly 450 participating organisations - the biggest since it started about four decades ago. Some 57 of the groups come from countries including France, Britain, Russia and South Korea. This year's show is focused on robotic equipment for disaster relief, assisting the elderly as well as their caregivers, and for farming. Disasters are a fact of life for Japan, an archipelago nation facing the "Ring of Fire" - the rim of the Pacific Ocean that includes other earthquake and volcanic zones from Chile all the way around to New Zealand. The two disaster-relief droids were developed in a project under the New Energy and Industrial Development (NEDO) - a national research organisation - that started after a devastating earthquake and tsunami hit northern Japan in 2011. But unlike in Hollywood movies where bots can run, jump and fly at high-speeds, these droids are the slow and steady type. HRP-2 Kai and red-and-yellow coloured JAXON - named after the late singer Michael Jackson - were on Wednesday focused on more serious tasks. "HRP-2 Kai is now recognising debris and thinking with a sensor on its head about where to put its foot," said Fumio Kanehiro, researcher at the National Institute of Advanced Industrial Science and Technology that developed the robot.

'Wonderful Robots' - While HRP-2 Kai, which is 170cm (5-feet 6-inches), walked on a narrow board, 188cm-tall JAXON - developed by the University of Tokyo - moved forward by bending its back and putting both hands on the floor, judging that the ceiling was too low to move upright. It then lifted itself up to remove a box and debris to secure a pathway - tasks that could be done even in a risky environment hazardous to humans. But humanoid bots are far from perfect, suffering from balance problems on rough terrain, conceded Shuji Yumitori, head of NEDO's robot division. He added that his organisation hopes further improvements will put them in commercial use in as little as five years. "They'll be wonderful robots," Yumitori said. Still Japan, where robots have been developed for decades, does not always excel in global competitions.

In June, Japanese-made robots made it to the finals of a US disaster-response contest inspired by the 2011 meltdowns at the Fukushima nuclear plant that followed the earthquake and tsunami. JAXON's performance at the event - eventually won by South Korean scientists - proved to be cringe-inducing as the droid tumbled and had to be carried away on a stretcher. Yumitori, however, shrugged off the defeat. "Our priority is not about whether we win or not," he said. "It's about whether we can create something that is useful for human beings."

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Biometrics and digital forensics: Cyber security connections

S S Iyengar and Jerry Miller

Most of us are familiar with biometrics, which is the use of fingerprints and other biologically derived data to specifically identify us as the unique people we are. We use biometrics to identify criminals, or to exonerate those falsely accused. Traditionally, we have relied upon the unique pattern of fingerprints. As technology has advanced, we have been able to use other biometrics for identification. Today, many advanced security systems rely on a retinal scan to identify patterns of veins in the back of the eye that also provide a unique identification pattern. Iris recognition has also become a popular identification means relying on the individual patterns and features found within the iris itself to provide a unique signature. As the use of technology increases, so too does crime and terrorism. However, the increased use of technology also provides us an opportunity to derive new biometric and digital signatures to pursue those who engage in criminal and terrorist activities, as each electronic device has its own unique digital signature. Human interaction with our digital world also provides us with some interesting new digital biometrics. Facial recognition has been one of the earliest and most popularly studied computer biometric applications and has remained so over the past 50 years. While the initial attempts to explore facial recognition were made in the 1960s, it wasn't until Sirovich and Kirby developed the methodology for facial recognition in 1987, and Mathew Turk and Alex Pentland implemented the "eigenfaces algorithm" in 1981 that we could successfully use this method of identification. Each of our faces is common in many respects but also unique in particular aspects, even among identical twins. If we can identify those general values, we can focus on facial scans for facial recognition, which rely upon the use of "eigenfaces" or local feature analysis to compose an a image. "Eigenface" is a term derived from "eigenvalues" and "eigenvectors," which exist in pairs and refer to the "vectors" or directions of values that provide the largest "variance" or difference in a set of data points. By employing a process known as principal component analysis to a large group of human face images, we can generate a set of generalised eigenfaces. These eigenfaces represent a set of standardised facial features, which can be combined in various ways to generate an approximation of specific individual faces. Since these eigenfaces are stored as a list of general values, rather than specific pixels of a digital photograph, storage space is significantly reduced. The way we move and interact with our electronic devices also provides a unique form of identification. Studies have shown that the way we swipe our smartphones or the amounts of pressure we apply to computer and tablet keypads all are specific to us and provide a unique way of identifying exactly who is using a device. Even the way we carry and hold our devices provide interesting clues as to the identity of the users. Digital forensics is an expanding branch of forensic science and it involves recovery and investigation of material found in devices in relation to cyber or other crimes. As more research is conducted, and as technology becomes more available and affordable so too will the methods of digital forensics expand. Our computers, mobile phones, tablets, personal digital assistants (PDA), compact disks, digital camera flash cards and flash drives, and every electronic device capable of information storage can be a source of digital evidence. This digital evidence is now used to prosecute all types of crimes, not just cyber or electronic crimes (e-crimes). A suspect's e-mail or mobile phone files could potentially contain critical evidence regarding the suspect's intent to commit a crime, their whereabouts during the crime, or their relationships to the victims. The United States' National Institute of Justice (NIJ) and the National Institute of Standards and Technology (NIST) provide the National Software Reference Library (NSRL) to promote efficient and effective use of computer technology in the investigation of crimes involving computers. This programme collects software from various sources and incorporates file profiles computed from the software into a Reference Data Set (RDS) of information.

Matching file profiles - Law enforcement, government and industry organisations can then use the RDS to review files on a computer by matching file profiles with digital signatures of known, traceable software

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applications. Within the application, hash values in the hash set are applications which may be considered malicious, including steganography tools and hacking scripts. Digital steganography is a method of concealing files, messages, images or video within another file, message, image or video. We are probably most familiar with steganography in the form of invisible inks used to hide messages between visible lines of and open or private letter. The obvious advantage of steganography is that an intended, secret message does not attract attention, and can be openly transmitted, then decoded by the receiver. Digital forensics can also help us unravel crimes involving document forgeries and counterfeiting which can be a direct accessory to criminal and terrorist acts. We are all familiar with the different techniques used to identify authentic bank notes, such as paper watermarks, security fibres, holograms, or special inks. However, these security techniques can be cost prohibitive. Methodologies are currently under development to enable forensics experts to identify a variety of specific inks used in forging documents, as well as identify the "digital signatures" of the printing devices themselves. As the future "Internet of Things" expands and connects us through the use of embedded computer chips with a multitude of mechanical devices, the use of biometrics and digital forensics will become an even more important element in our fight against criminal and terrorist activities.

An improved gene editing tool developed

Scientists have developed an improved gene editing tool that significantly reduces potentially dangerous "off-target" edits, promising an even more precise and efficient system for manipulating human DNA. Editing the genes of living organisms, including humans, holds out great promise for treating diseases. But it could also be used to create "designer babies", prompting critics to call for a global ban on genetic modification of human embryos. Tuesday's news that U.S. researchers have re-engineered the so-called CRISPR-Cas9 system to slash editing errors comes as experts meet in Washington for a three-day summit to discuss the ethical and policy issues surrounding the field. The technology allows scientists to edit genes by using biological "scissors" that operate a bit like a word-processing program that can find and replace defects. The approach has excited academic researchers and drug companies alike, since it offers a way to rewrite the DNA of diseased cells, and the technology has been quickly put to work in laboratories around the world. While CRISPR is highly effective and relatively simple to use, one major shortcoming is that it can cut additional sites on the genome that are not targeted, potentially causing undesired genetic effects. These could include cancer. Now researchers at the Broad Institute of MIT and Harvard and the McGovern Institute for Brain Research at MIT believe they have found a way round the problem by tweaking three amino acids to reduce off-target editing cuts. Feng Zhang of the Broad Institute and colleagues said they were making the new, improved system immediately available to researchers worldwide. Their findings were published online in a paper in the journal Science. CRISPR has been put to work in a range of fields, including crop breeding and engineering mosquitoes that cannot spread malaria. But major ethical concerns were sparked in April when a team in China published details of an experiment to alter the DNA of human embryos. While gene editing could, in theory, be used to stop a range of life-threatening genetic diseases being passed on to future generations, such "germline" modification would take medicine into a whole new area. Opponents worry about unknown effects on future generations and the temptation for future parents to pay for genetic enhancements. The question of how the revolutionary technology should be used is being tackled at the Dec. 1-3 international summit in Washington, convened by the U.S. National Academy of Sciences, alongside Britain's Royal Society and the Chinese Academy of Sciences.