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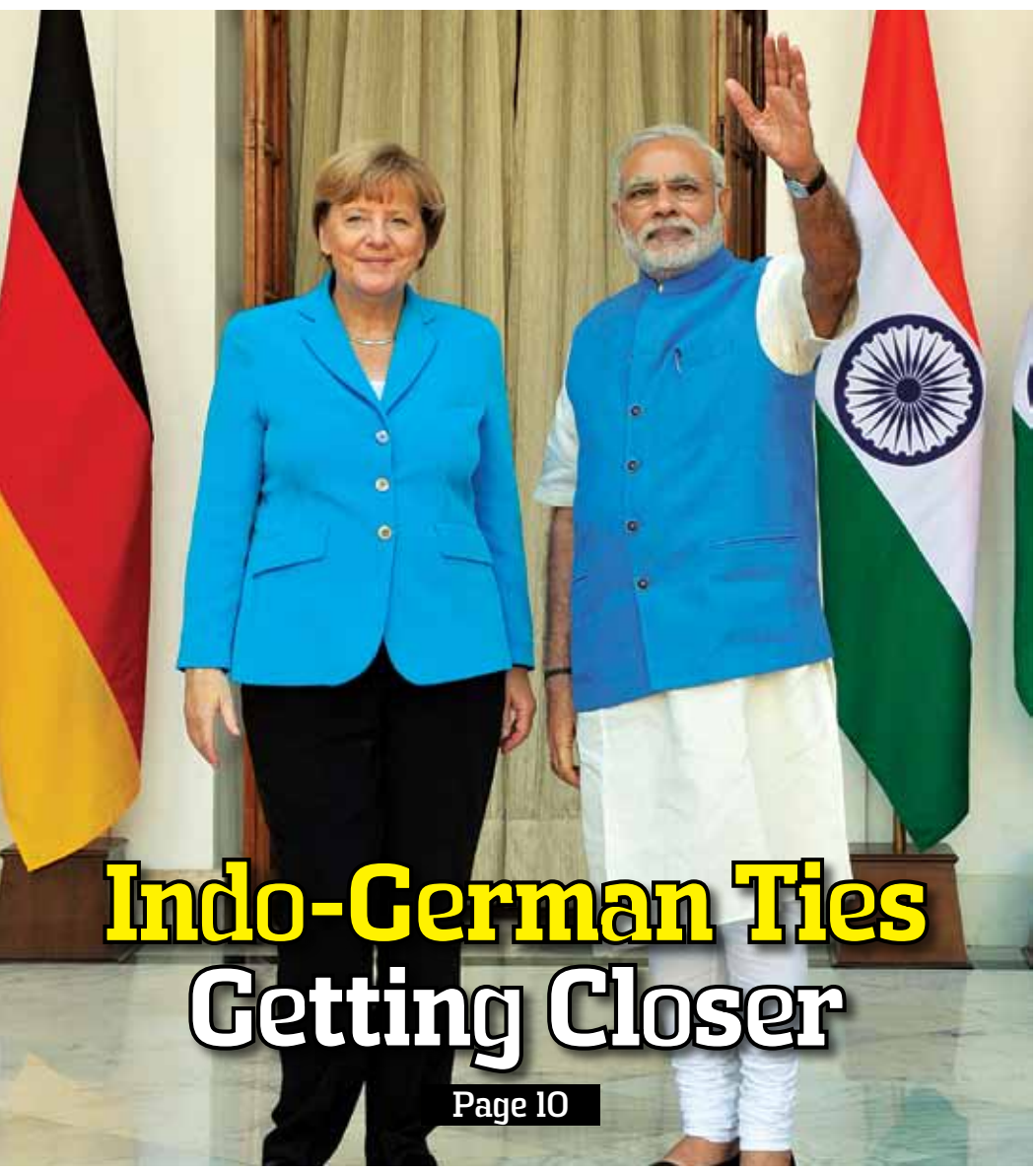

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In a country like India with limited support from the industry and market, initiating 50 years ago (in 1964) publishing magazines relating to Army, Navy and Aviation sectors without any interruption is a commendable job on the part of SP Guide Publications. By this, SP Guide Publications has established the fact that continuing quality work in any field would result in success.

Narendra Modi, Hon'ble Prime Minister of India

51 YEARS of SP's
SINCE 1964
DECADES OF BOUNDLESS EXCELLENCE

While we at SP's cherish our journey started in 1964, founded by our Founder Editor and Founder Publisher Shri S P Baranwal; we do believe that the entry into 51st year and beyond is just a beginning for us. We therefore look forward to constantly evolving and expanding our qualitative efforts during coming years and coming decades.

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Pipistrel to supply 194 aircraft to IAF, Navy and NCC

Pipistrel, globally renowned light aircraft manufacturer with 26 years of aircraft design and production experience, will equip the Indian Air Force (IAF), Indian Navy (IN) and National Cadet Corps (NCC) with its modern, carbon-fibre microlight aircraft Virus SW 80 'Garud'. Pipistrel was selected as the winning bidder among 11 competitors.

The design chosen by the respective Indian parties is a two-seat trainer, capable of take-off and landing on prepared as well as semi-prepared surfaces. Made from advanced carbon-fibre composite materials it is capable of carrying two crew members and their equipment.

Pipistrel's CEO Ivo Boscarol says: "With more than a quarter of century experience in the field, Pipistrel makes the ideal partner to IAF, IN and NCC. Our

PHOTOGRAPH: Pipistrel

Virus SW 80 'Garud', which was carefully configured to suit and fulfil the requirements of all ordering parties, is a culmination of advanced design, state-of-the-art composite construction and modern digital avionics, forming a 21st century basic trainer solution any operator would envy."

The aircraft is powered by an 80 HP aviation certified engine and can reach a maximum speed of more than 220 kmph, fly for minimum of three hours and climb to altitudes in excess of 6,000 metres. The aircraft will be used exclusively for training of Flight Safety and Air Wing Cadets, so Pipistrel equipped it also with a special Ballistic Parachute Rescue System which saves the entire aircraft and both pilots in the case of accident.

Pipistrel's Virus SW 80 'Garud', named after a bird that appears in Hindu mythology and is the mount of the God Vishnu, was thoroughly tested.

The Indian personnel will be trained by a Pipistrel's partner company from Slovenia, the Pipistrel Academy which trains pilots and new instructors. SP

Cover:
Prime Minister Narendra Modi with the German Chancellor Dr Angela Merkel at Hyderabad House, New Delhi, October 5, 2015

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India under Modi engages with Germany

The Prime Minister Narendra Modi has excelled on many fronts, but the most noticeable is his engagement with different powers of the world. The latest being India-Germany ties which are getting transformed, thanks to the leadership of the two countries. The German Chancellor, Dr Angela Merkel, was in India during the first week of October and the two set off a new direction to the Indo-German cooperation efforts.

Though the German Defence Minister was not part of the delegation, the two countries nevertheless held the defence consultation under the rubric of the Inter-Governmental Consultations (IGC). The IGC comprised of subjects like economy and trade, climate change, science and technology cooperation, energy cooperation, skills development, etc. The defence consultation was held at the level of Ministers of State on both sides during which they discussed the bilateral cooperation in joint research and development and the 'Make in India' programme.

Germany had lost the race to grab the growing Indian defence market to the French, the Americans, the Israelis and the Russians. The Germans now want to rejoin the race and is taking keen interest in Indian Navy's submarine construction programme.

Germany has evinced interest in the Indian Navy's six submarine programmes, under the Project 75I, which are to be acquired through the 'Make in India' route. German company, ThyssenKrupp AG is said to be in discussion with the Anil Ambani-led Reliance group to partner in building up possible 12 submarines, the full contract may run into the range of over ₹1,00,000 crore. The Reliance group has set up the Reliance Defence Systems which is a subsidiary of Reliance Infrastructure, which holds 18 per cent stake in Pipavav Defence and Offshore Engineering.

This engagement comes close on the heels of India signing up a deal for Apache and Chinook helicopters from the US. In SP's Exclusives, we have detailed information on what these two choppers will be like for the Indian armed forces.

The Indian Air Force (IAF) celebrated its 83rd anniversary, showing its air power across the country. The Chief of the Air Staff Air Chief Marshal Arup Raha announced that plans are afoot to induct women pilots into the fighter stream of the IAF. So far, 94 women pilots and 14 women navigators are restricted to fly transport aircraft and helicopters.

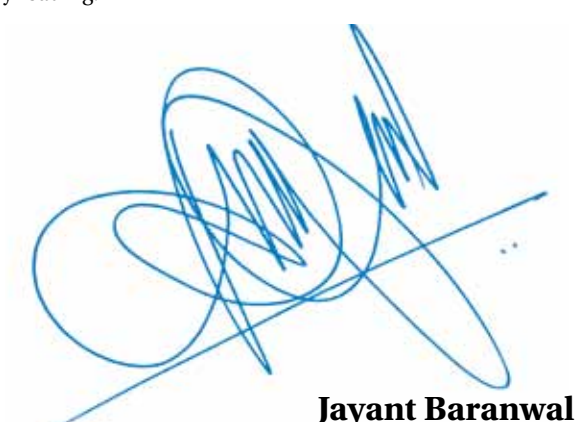
In this issue, we have a report by Lt General V.K. Kapoor (Retd) on the joint exercise India and China had recently. The exercise called 'Hand-in-Hand' is all a part of the confidence building measures which have been instituted in the past few years to overcome the 'trust deficit' between the two countries.

While these engagements are significant in the context of global peace, strategic collaborations, enhancing trade pacts, etc, it must be mentioned that the Prime Minister is on a mission.

One event that will further enhance Indian Navy's image is the upcoming International Fleet Review (IFR) which is slated to be held in February 2016, with over 50 navies of the world participating. There is speculation that India's first indigenously constructed nuclear powered submarine INS Arihant will be commissioned during the IFR.

Besides these we have the regular departments focusing on different aspects concerning military, aerospace, security and other allied areas which give an insight into global supply chain.

Happy reading!



Jayant Baranwal
Publisher & Editor-in-Chief

To Ka band and beyond!

The future is Ka band. Now, there's a rugged, dependable handheld designed to deliver precise, lab-grade measurements up to 50 GHz. At only 7.1 lbs., it's an all-in-one cable and antenna tester (CAT) + vector network analyzer (VNA) + spectrum analyzer and more. Which means, now you get comprehensive system performance insight at higher frequencies. Plus with easy upgrades and multiple configurations, you'll be ready to go where no handheld has gone before – today and beyond.

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Agilent's Electronic Measurement Group is now **Keysight Technologies**.

PHOTOGRAPH: US Army

What's inside the AH-64E Apache for India?

The AH-64E Apache Longbow attack helicopter that India has contracted 22 of is possibly the world's most advanced helicopter of its kind. The re-designated AH-64D Block III will arrive in an unspecified mix of Longbow and non-Longbow configurations and will form two helicopter units within the Indian Air Force (IAF). The stand-out features of the Block III as compared to earlier variants of the legendary platform include an all composite rotor (with a 6-inch extension), which provides a life-saving increased hover out of ground effect (HOGE) capability. The IAF has been shown that this principally translates into a 540 lbs higher payload carrying capability during HOGE. Sporting unprecedented blade tip erosion protection, the composite blades come with increase reliability of 10,000 calculated fatigue life and a 4,000 MTBR—all qualities crucial to the IAF.

The AH-64E is a modernised target acquisition and designation system (MTADS) that includes a day/night sight and laser designator. Its pilot night vision sensor has a helmet-mounted infrared view with full pilot symbology—gear so far never used by Indian chopper pilots. The Block III, of course, comes with a full in-flight refuelling capability – the Apaches will be refuellable even from the IAF's C-130Js if necessary. Crashworthy external fuel tanks beef up the Block III's endurance and time on operation in addition to auxiliary internal fuel tank. This internal fuel tank replaces a 1,200 round ammo pack with an additional 100 gallons of fuel and 300 rounds of 30mm for the M230 chain gun. Add to that range some extended brute force: four wing-mounted weapon stations for up to 16 Hellfire missiles, up to 76 rockets and the capability to add laser designated rockets too.

The AH-54E that India will induct sports a combat mission speed of 164 knots and combat range of 260 nautical miles. It has a combat endurance of 2.5 hours. Crucial to the new 'E' is an improved, souped up engine. The T700-GE-701D engines now sport an enhanced digital electronic control unit (EDECU), which brings with it improved system reliability and reduced operating costs. The new arrangement is dual engine contingency capable and brings increased power at 35 degrees Celsius. A new firewall data cable is incorporated, while engine indications are now multiplex signals. A significantly improved hot and high performance as a result of the rejigged engine assembly means the helicopter's performance could be well-tuned for tropical clime operations. The split torque face gear transmission is the heart of a hugely improved drive system on the E variant of the Apache. Apart from contributing to the boosted hot and high performance, it also brings with it an increased power capability to 3,500 shaft HP and a reliability jump of a meaty 130 per cent. An improved nose gear-

box and improved overall component performance translates into increased MTBR, according to Boeing that will build the choppers for India at its Mesa, Arizona, Apache facility.

New and improved open systems architecture translates into a highly configurable helicopter custom tailored for each mission. The radar electronics unit that sits atop the main rotor, which replaces the programmable signal processor (PSP) and low power radio frequency on earlier models, saving about 85 lbs in weight. The new configuration brings with it range extensions, air-to-air improvements and a crucial maritime mode. A dozen, reportedly, of the 22 Apaches that India has ordered will come in the formidable Longbow configuration – principally fitted with the Northrop Grumman/Lockheed Martin AN/APG-78 fire control radar that, among other things, delivers Hellfire missiles with devastating accuracy. According to Northrop Grumman, "The Longbow fire control radar and its weapons counterpart, the radar-guided, 'fire and forget' Longbow Hellfire missile, enable the potent Apache attack helicopter to detect, classify and prioritise ground targets day or night, in poor weather and obscured conditions; then attack those targets with pinpoint accuracy from ranges that safeguard the lives of the aircrew. The radar provides high performance with very low probability of intercept. High system reliability and two-level maintenance provide high operational availability with low support costs."

The IAF has also been most impressed during trials with the AH-64E's advanced crew stations (trials were conducted on a modified Block II platform with Block III features), which includes multi-purpose colour displays that the IAF is now accustomed to on its machines, digitally shared graphics, management by exception, common cockpit configuration, automated data input/output, voice and aural cues, embedded training and, crucially, hands on collective and stick. The new layout also includes a useful secondary flight display system for both the pilot and co-pilot/gunner stations. Clearly laid out graphics provide an advanced situational scenario, clearly separating enemy entities from own troops or units.

Over 150 AH-54E choppers have been built and delivered so far, with the Indian Government itself expected to exercise options for more aircraft. As of December 2014, the AH-64E programme of record involves 690 aircraft with a total delivery schedule stretching from 2011 till 2026. Total US Army flight hours on the AH-64E is 26,934, with over 10,000 combat hours and mission capable rates reported by the US Army at an impressive 88 per cent. SP

Apache fire control products support soldiers in combat

[By **Phil Shaw**, Chief Executive, Lockheed Martin India Pvt. Ltd.]

Lockheed Martin's Apache fire control products include electro-optical sensors, radar and data link technologies for the AH-64D/E Apache helicopter. Our products provide aircrews with enhanced situational awareness and greater performance and survivability.

The Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor (M-TADS/PNVS) provides Apache pilots with the most advanced, long-range, electro-optical precision engagement and pilotage capabilities to ensure mission success and flight safety while conducting day, night and adverse weather missions. Fielded since 2005, it employs state-of-the-art forward-looking infrared (FLIR) sensors to provide Apache pilots with enhanced image resolution giving them the complementary benefits of significant standoff range and unrivaled targeting capabilities. More than 1,300 systems and spares have been delivered to US Army and 14 international customers.

The LONGBOW Fire Control Radar (FCR) was developed by the LONGBOW Limited Liability Company, a joint venture of Lockheed Martin and Northrop Grumman. For more than a decade, the combat-proven LONGBOW FCR has provided Apache aircrews with target detection, location, classification and prioritisation, as well as automatic and rapid multi-target engagement. The LONGBOW FCR integrates with the LONGBOW HELLFIRE missile, enhancing the Apache's lethality fourfold and increasing survivability sevenfold. LONGBOW LLC is also under contract to produce Radar Electronic Units (REUs) for the US Army's new fleet of AH-64E Apaches. The LONGBOW AH-64E FCR REU provides reduced size, weight, maintenance and power requirements of the radar system. SP

Editor's Note: The comments from the Chief Executive of Lockheed Martin India come at the time when a contract of $3.1 billion has been signed with Boeing for a supply of 22 Apaches for IAF (in addition to the supply of 15 Chinooks).

The combination of multiple sensors on the Apache helicopter makes it a versatile, highly survivable, all-weather, day/night anti-armor platform. Lockheed Martin's sensors provide an integrated system that identifies targets with pinpoint accuracy and protects pilots at safe ranges.

PHOTOGRAPH: Lockheed Martin

What's inside the CH-47F Chinook for India?

The CH-47F Chinook being configured to Indian Air Force specifications is all set to be a formidable special heavylift capability helicopter. The 15 choppers, once delivered will be part of a single helicopter unit, with the country expected to exercise options for more helicopters from Boeing's Philadelphia facility where the Chinook is built.

The CH-47F programme begin officially in the mid-2000s and involves a mix of a brand new aircraft as well as renewed older airframes to the F standard. India's choice of the CH-47F was a considered one, given it had formidable competition from the Mi-26T2, a modernised version of a platform the IAF already deploys from Chandigarh. For starters, the CH-47F involves all new components across the board, new machined frames, corrosion protection and airframe tuning of the kind not done on any earlier variant. These changes have been principally a result of feedback from combat units operating earlier variants of the Chinook in combat theatres in Iraq and Afghanistan from 2001-02. (The first combat-ready CH-47F was deployed in July 2007.) The improvements and changes to the helicopter, therefore, are almost singularly in keeping with a warfighter requirement. For instance, the F variant includes improved jettisonable doors, soldier-focused logistics, improved avionics and flight controls.

The CH-47F is built around a newly designed, improved monolithic-machined airframe. It's powered by twin Honeywell engines, each generating 4,733 horsepower. These engines and tandem rotor design allow the Chinook to operate at speeds of more than 175 mph (280 kilometres per hour) and give it the ability to transport more than 21,000 pounds (9,525 kilograms) of material and soldiers. Along with more brawn, the F-model features new brains compared to the earlier CH-47D. Apart from the new Rockwell Collins Common Avionics Architecture System (CAAS), there's a BAE-designed Digital Advanced Flight Control System which will give IAF crew vastly improved situational awareness and substantially better flight-control capabilities. That translates into improved performance and safety in the harshest operating environments. CAAS also incorporates an advanced digital map display and a data transfer system to allow for mission management and mission changes in flight.

Several engineering improvements exist on the CH-47F too: a redesigned aft pylon, redesigned 46 section and ramp. The electronic

PHOTOGRAPH: US Army

warfare suite includes improved countermeasures and a common missile warning system. Situational awareness, low-speed handling and enhanced survivability features built into the system architecture of the CH-47F as well as flying qualities make it one of the most capable and safe special operations and transport helicopters in the world today. Boeing and the US Army, of course, never fail to remind the Indian Air Force that the CH-47F dwarfs other comparable platforms in terms of combat experience and flight hours in hostile territory.

It contains a fully integrated, digital cockpit management system and advanced cargo-handling capabilities that complement the aircraft's mission performance and handling characteristics, Boeing says. High mission flexibility and high-altitude/high-temperature performance make it a workhorse of US Army aviation, quite a bit on the lines of what Mi-17s do for the Indian Air Force. The IAF is hoping that the flexibility that the CH-47F brings to bear provides a paradigm shift in even heavylift operations. The IAF's Mi-26 fleet (only three aircraft currently exist) has been beset with troubles for long, including low availability and chronic turnaround issues.

The IAF is likely to integrate certain bits of equipment to the CH-47F itself, like the Indian Navy has with the P-8I. These may include Indian-built IFF transponders/interrogators, speech secrecy systems, mobile SATCOM for special operations configuration and data links. Fitted with a new Extended Range Fuel System, the Chinook can operate at ranges of over 400 nautical miles (740 kilometres) and offers a combination of lift and 'legs' for nearly any mission. The CH-47F also offers the warfighter improved survivability thanks to the Common Missile Warning and Improved Countermeasure Dispenser systems. These systems work in tandem to help protect aircraft and crew from anti-aircraft missiles by detecting incoming warheads and dispensing a mix of chaff and flares to help avoid them.

"The Chinook has been in US Army service since 1962. The CH-47F/MH-47G modernisation programme is now in full-rate production, and will ensure this tandem rotor medium-lift helicopter remains in the Army fleet at least through the 2030s. It is conceivable that Chinooks will be Army Aviation assets for a century or more. In addition, Chinooks have served the armed forces of more than 15 international customers and performed in commercial service around the world," says.

In IAF service, the CH-47F will perform missions that include transport, air assault, special forces and combat re-supply, humanitarian relief, Army para operations and search and rescue. SP

IAF for EW boost to Mi-17V5 fleet

In a decision that had been expected ever since the IAF threw in its lot with the formidable Mi-17V5 medium-lift multi-role helicopter platform, Air HQ has invited interest in arming the chopper with brand new electronic warfare (EW) suites comprising Radar Warning Receiver (RWR), Missile Approach Warning System (MAWS) and Counter Measure Dispensing System (CMDS). A limited number from the fleet would also be fitted with a Laser Warning Receiver (LWR) and Directed Infrared Counter Measure (DIRCM). The IAF has stipulated that it wants this to be an Indian system by an Indian vendor. A decision to this effect was expected, given the enormous operational load taken on by the V5s. The integrated EW suite is intended to provide capability of intercepting, identifying, prioritising and displaying airborne and ground based threat from radars and missiles to the pilot and effectively provide self-protection to the helicopter against radar controlled weapon and IR seeking missiles by employing different counter measures (chaffs, flares, directed infrared, etc). The Missile Approach Warning System (MAWS) is intended to prioritise air-to-air and ground-to-air missile threats to the pilot. It should be passive and be able to cue Counter Measure Dispensing System and allow integrated functioning with DIRCM, if required. SP

PHOTOGRAPHS: IAF, SP Guide Pubns

IAF scouts 60 armoured vehicles for commando units

In a first, the Indian Air Force (IAF) is looking to give its commando squads protected mobility during operations on the lines of their counterparts in the Army. The Indian Air Force has announced interest in procuring 50-60 armoured vehicles on the lines of protected personnel carriers intended to be used by its Special Forces Garud units for operational tasks. The IAF has stipulated that it requires armoured vehicles that can

be transported by air, capable of all terrain operations (both cross country and urban terrain) by Special Forces and easy to handle with minimum maintenance. The vehicles should be capable of carrying minimum six personnel along with their combat equipment. The request for information endorsed to global vendors describes the requirement as a highly mobile vehicle with front-side back-armoured protection from small arms, RPGs and IEDs. As is usually the case with such platforms, the IAF wants the option to use the vehicles as part of offensive units. Operating conditions of the vehicle, spares and associated accessories will of course be hot/cold/humid/dusty/snow weather conditions, indicating a range of deployment possibilities. The IAF will keenly be looking at air transportability with its C-17 and C-130 transports, both platforms the IAF is looking to beef up in terms of numbers and capability. SP

Prime Minister Narendra Modi with the German Chancellor Dr Angela Merkel at Hyderabad House in New Delhi

The Germans are considered to be a serious partner in the defence sector and the Indian side sees merits in developing strong bonds with the German defence industry which has developed high technology equipment

Merkel pushes for defence cooperation

[By **Ranjeet Kumar**]

In recent decades defence cooperation has not been a shining example of Indo-German relations and strategic partnerships. And the just concluded visit (October 4-6, 2015) of the German Chancellor Dr Angela Merkel conveyed the same impressions. This was evident from the fact that the German Chancellor was not accompanied by her Defence Minister Ms Von der Leyen, though her delegation comprised four other powerful cabinet ministers. Though this did not prevent the two sides to specially hold the Defence Consultation under the rubric of the Inter-Governmental Consultations (IGC), which is the one German sides hold with some of her important partners.

The IGC comprised of many other subjects like economy and trade, climate change, science and technology cooperation, energy cooperation, skills development, etc, and the consultations were held under the chair of the cabinet ministers. The defence consultation was held at the level of Ministers of

PHOTOGRAPHS: PIB

State on both sides during which they discussed the bilateral cooperation in joint research and development and the 'Make in India' programme.

Though the two sides have not revealed details of the defence consultation, the Foreign Secretary S. Jayshankar told this writer that the discussions essentially covered the business opportunities that would arise out of our defence FDI policy. "There were a number of areas where the Germans actually expressed interest. I think there was a broad interest in various materials technology which came up. Licensing issues were discussed, cyber issues were discussed. There was appreciation of the liberalisation of FDI, of our navy to navy cooperation. There are a number of tenders which are global tenders. In some of them obviously Germany had an interest but that would move forward depending on what is the tender outcome."

German Chancellor Dr Angela Merkel introducing the Prime Minister Narendra Modi to the German delegation at the ceremonial reception at Rashtrapati Bhavan in New Delhi on October 5, 2015

German interest in submarines

The Foreign Secretary did not specifically reveal the type of equipment the German side was interested in India's proposed global tenders. But sources said that the Germans are keenly interested in Indian Navy's six submarine programmes, under the Project 75I, which are to be acquired through 'Make In India' route. Indian Ministry of Defence recently sought responses from the Indian public and private sector shipyards. The foreign manufacturers have tied up with Indian shipyards and will be responding to the request for information, likely to be issued very soon.

According to reports the German company, ThyssenKrupp AG is in discussion with the Anil Ambani-led Reliance group to partner in building up possible 12 submarines, the full contract may run into the range of over ₹1,00,000 crore. The Ministry of Defence (MoD) will be issuing tenders for six submarines initially which will range in the range of over ₹50,000 crore. The Reliance group has set up the Reliance Defence Systems which is a subsidiary of Reliance Infrastructure, which holds 18 per cent stake in Pipavav Defence and Offshore Engineering Ltd. The Germans have great expectations from this proposed submarine tenders and hence they are aligning with the Indian private sector conglomerates.

Defence relationship did not form the bedrock of German Chancellor's talks with Prime Minister Narendra Modi, probably because over the years, the German side had lost the race to grab the Indian defence market to the French, the Americans, the Israelis and the Russians. The Germans now want to rejoin the race and is taking keen interest in Indian Navy's submarine construction programme. The Germans had in fact emerged as great defence partner in the late 1980s, when both countries entered into contract for supply of four submarines under which two were acquired off the self and two were made in India.

Cooperation in Arjun tanks

This possibility of deepening this cooperation was nipped in the bud during the 1980s when the two countries had begun serious partnerships in submarine manufacturing and Arjun tanks development programme. For the Arjun main battle tank, the Germans provided the MTU engines which are still the mainstay of the Arjun tanks. But the cooperation in the naval submarines went astray as India discovered the allegations of kickbacks in the submarine deal in the late 1980s and the then V.P. Singh-led government cancelled the deal halfway. The Germans had already supplied two Type-209 submarines and two were manufactured in India but the programme for making the additional two in India were cancelled as the Indian Government decided in haste. If the German-India cooperation in naval equipment sector had continued India by now would have manufactured a dozen submarines on its own and mastered the submarine making technology.

The Germans were teaching India how to make submarines but a strategic folly committed by the domestic politics-led decision killed the Indian submarine programme. In fact Mumbai's Mazagon Dock Ltd had developed the required infrastructure for manufacturing submarine, which all went waste because of cancellation of deals. Now that the Indian judiciary has cleared the Germans of any wrongdoing they are once again in the race. They are offering their Advanced Type-214 Air Independent Propulsion (AIP) equipped submarines, which Indian Navy is lacking till now.

The Germans are considered to be a serious partner in the defence sector and the Indian side sees merits in developing strong bonds with the German defence industry which has developed high technology equipment. The Germans were strong contenders for the medium multi-role combat aircraft (MMRCA) contest of the Indian Air Force, but its four-nation partnered European fighter Typhoon narrowly lost the race. Since the MMRCA has been prematurely cancelled, and only 36 of its 126 aircraft are to be acquired from the French Dassault, the Germans have still kept their interests alive. SP

Chief of the Naval Staff Admiral R.K. Dhowan at the curtain-raiser for IFR-16 held in New Delhi

The Second International Fleet Review

[By **Ranjeet Kumar**]

The commissioning of India's first indigenously constructed nuclear powered submarine INS Arihant will perhaps be the highlight of the prestigious international event, the International Fleet Review (IFR), of the Indian Navy. The review to be held in the first week of February at Visakhapatnam next year will attract more than 50 navies of the world, which would include the navies of the United States, China, Japan, Gulf countries and other littoral states of the Indian Ocean. But one significant omission will be Pakistan, which was extended an invitation, but the Pakistani naval headquarters did not respond.

Regarding the commissioning of the INS Arihant, the Chief of the Naval Staff Admiral R.K. Dhowan, during the media briefing of the IFR-2016 to be held from February 4-8, 2016, was non-committal. He neither confirmed nor denied the possibility of the Arihant being commissioned by the Prime Minister Narendra Modi during the show. But knowledgeable sources are sure of the commissioning of the INS Arihant during this high-profile international congregation of the top navies of the world. Sources said that the sea trials of INS Arihant are almost over and the ship was waiting for a commissioning date from the Prime Minister. Sources said that the Indian Navy found the occasion of IFR as extremely appropriate. The occasion has been chosen to highlight the entry of Indian Navy in nuclear age. This will form the part of the Indian military's nuclear triad and showcase the capabilities of Indian Navy. Indian Navy has already been endowed with the nuclear submarine INS Chakra, obtained on 10-year lease from Russia, but this ship is not equipped with nuclear tipped missiles. The IFR-2016 will convey the message to the world that Indian Navy has an indigenous nuclear submarine programme and is ready to rule the high seas from the Indian Ocean to Pacific Ocean.

The President of India Pranab Mukherjee will review the naval parade. According to the Chief of the Naval Staff Admiral R.K. Dhowan, "The Indian Navy today is widely acknowledged as a professional three-dimensional maritime force. The hosting of the International Fleet Review by the Indian Navy in February 2016 can be seen in this light, as a significant event in the nation's maritime history."

Continued on page 21...

CNS on INS Arihant

Rear Admiral Sushil Ramsay (Retd), Senior Technical Group Editor, *SP's M.A.I.*: Can we expect the indigenously developed and constructed INS Arihant to be on Parade at the IFR 2016 for review by the Supreme Commander of the Armed Forces of India?

Chief of the Naval Staff Admiral R.K. Dhowan: Currently Arihant is going through the critical phase of extensive sea trials. Each of the trial schedules is crucial from the nuclear safety point of view. These trials are being monitored by multiple agencies and do not have the scope of hastening. It is only after satisfactory and successful completion of the trials the submarine can be considered for commissioning. So, at the present time it will be very difficult to predict whether she will participate in IFR. Yes, two aircraft carriers, INS Vikramaditya and INS Viraat, in addition to several Destroyers, Frigates, submarines and 50 aircrafts will form the Review Column. SP

IFR-16 logo and mascot

The specially designed signature elements for the event comprising the logo, the chosen mascot – the Dolphin, the adopted theme as 'United through Oceans' and the theme song composed for the event were also released. The website www.ifr16.indiannavy.gov.in and the mobile app IFR-16 Indian Navy which will serve as the single window interface for interaction with the public and the participants was also launched.

The IFR logo represents the initial letters of the International Fleet Review, namely I, F and R and are coordinated in a fashion to indicate the three dimensions of the Navy, viz. ship, submarine and aircraft. The inner circle has the colours of the Indian Tricolour. The outer circle has the event, the year and its venue. SP

IFR-16 logo

IFR-16 mascot

PHOTOGRAPHS: Indian Navy

Fifth Joint India-China Counter Terrorism Exercise

LT GENERAL
V.K. KAPOOR (RETD)

The fifth joint counter terrorism exercise by troops of the Indian Army and China's People's Liberation Army (PLA) got underway on October 12, 2015. The exercise termed 'Hand-in-Hand 2015' will terminate on October 23, 2015. This time the exercise is being held in Kunming in China. The first such exercise was held in south-west China's Yunnan province in 2007, followed by an exercise in Belgaum in Karnataka in 2008. The third round was held in south-west China's Sichuan province in 2013, followed by the fourth exercise in Pune in 2014.

India for the first time fielded troops from the Naga Regiment to take part in the exercises. A contingent of 175 troops from 2nd Battalion of Naga Regiment from Eastern Command reached Kunming by IAF IL-76 aircraft to take part in the exercise. On the Chinese side troops from 14 Corps of China's Chengdu Military Region, which focuses on borders with India, are taking part in the exercise. Troops of both sides will undergo intensive joint training, which will include displays, demonstrations, and a comprehensive joint exercise. The purpose of the exercise is to develop joint operating capability, share useful experience in counter-terrorism operations and to promote friendly exchanges between the armies of India and China, the press release said.

Observer groups of both armies witnessed an impressive opening ceremony at Dabanqiao Training Base of 14 Group Army at Kunming on October 12. Indian Ambassador to China Ashok K. Kantha and head of Observer's Delegation Lt General Surinder Singh attended the meeting and addressed the participating troops. From the Chinese side, Lt General Zhou Xiaozhou addressed the participating troops.

These exercises are all a part of the confidence building measures which have been instituted in the past few years to overcome the 'trust deficit' between the two countries. The two armies have already operationalised their fifth border personnel meeting (BPM) point at Daulat Beg Oldi last month, which adds to the existing ones at Chushul (Ladakh), Nathu La (Sikkim), Bum La and Kibithu (Arunachal). Additional BPM points, the border defence cooperation agreement inked in October 2013 and proposed hotlines between top commanders are all designed to bridge the trust gap between the two armies ranged against each other along the 4,057-km line of actual control (LAC).

India's wariness to China's activities in the region is understandable even though there has been no firing along the LAC now for many decades. The PLA's fast pace of military modernisation and acquiring potent trans-border, space and cyberspace military capabilities at such a rapid pace together with its strategic partnership with Pakistan and assistance given to Pakistan in the nuclear and the conventional military fields, and its presence in the Pakistan occupied Kashmir (PoK), clearly indicate a nexus which makes India wary of their long-term intentions. Some analysts feel that China is primarily trying to counter the ongoing 'rebalance' of US military forces to the Asia-Pacific. However the expanding footprint of Chinese nuclear and conventional submarines in the Indian Ocean region over the last year has also served to accentuate the concerns in India.

Joint military drills between China and India will "surely promote bilateral collaboration", said an opinion piece in China's state-run *Global Times*. "In order to match Chinese troops' combat skills, officers and soldiers from elite Indian forces are drafted into the exercise. As always, Western public opinion is paying close attention to Sino-Indian military ties, as well as the impact of the Sino-Indian border disputes on Asian geopolitics," wrote Wang Dehua, who is Director of Institute for the Southern and Central Asian Studies at the Shanghai Municipal Center for International Studies.

Indian Ambassador to China Ashok Kantha takes a look at the weapons during Exercise Hand-in-Hand 2015 at Kunming, China

Wang went on to further state that in his view "a joint military exercise is a barometer of bilateral relationships". Commenting on the doubts expressed in western media, Wang added: "As a new measure of establishing mutual trust, there is no point in making a fuss over the drill. Confrontations in recent years were not created on purpose, but happened by accident. Leaders from both China and India have consensus and enough means to take divergences under control". SP

PHOTOGRAPH: MoD

Saab finds enabling business environment in India under the present government

Jan Widerstrom**, Chairman of Saab India Technologies Pvt Ltd., in conversation with **Neetu Dhulia** of **SP's M.A.I.

***SP's M.A.I.* (SP's): In India, Saab has been around for a long time in defence and civil applications. Which business is growing for you?**
Jan Widerstrom: We have been around for quite some time. However we started focus on India as a market from 2006. We opened this office in 2007-08. Prior to that, we also did business in India on a case-to-case ad hoc basis. We have been here from day one but the focus on India as a market started in 2006. In the beginning we were looking at civil security which they now call it smart security. Going back five to seven years, that market was very distributed. It was difficult to find and identify as a foreign OEM to identify the business opportunities.

Last time it was the Commonwealth Games (CWG) and security system was supposed to be big. But what actually happened was the CWG bought cameras from one guy, scanner from second and got the wiring done by the third guy. For us it was not an opportunity. However, in niche areas like airports and harbours, we are supplying complete transponder and sensor systems including the automatic identification system (AIS) transponders for the Indian coastline. Within certain niche areas we have been successful and that includes ground surveillance systems for airports. We have got quite broad portfolio of products and solutions for airports.

We see tremendous scope in the defence. We are growing. We are looking at the Defence Procurement Procedure (DPP) and 'Make in India' movement which I believe is a very big step forward. It creates an enabling environment on how to get the Indian defence industry moving, how to grow the indigenous capabilities. The new 'Make in India' concept is creating a platform for the foreign OEM to partner with both public and private sector. You cannot force a foreign OEM to do business when it does not make business sense. Now they are creating an attractive environment and the OEM can partner with an Indian company and export globally. It is a big difference.

SP's: Recently you won a programme for the Airports Authority of India for deployment of surface movement guidance and control systems. Could you give details of the same and will there be any more deployment?
Widerstrom: We are in nine airports. It is sure one of the focus areas. The airport market is growing rapidly in India. We see a growth in the airport business and growth opportunities in harbour security and management systems.

The rapidly increasing air traffic and seasonal fog conditions for example unique to New Delhi created flight delays and cancellations at India's second busiest airport, the Indira Gandhi International Airport (IGI). To safely accommodate almost 24 million passengers a year, the Airports Authority of India (AAI), the air navi-

PHOTOGRAPH: Neetu Dhulia

gation service provider for IGI, needed to provide air traffic controllers with a reliable, accurate picture of the airport surface traffic in extreme weather conditions. To safely deliver high levels of airport movement, AAI deployed Saab Sensis Corporation Advanced – Surface Movement Guidance and Control System (A-SMGCS), improving operational efficiency and providing accurate surveillance in all weather conditions.

In addition to airports in India, A-SMGCS was also selected for Brisbane, Melbourne, Perth and Sydney airports in Australia, Ben Gurion International Airport in Israel, Hong Kong International Airport in China, King Abdulaziz International Airport and King Fahd International Airport in Saudi Arabia and 35 airports in the United States.

In maritime traffic management and port security we have a strong presence. The AIS in India was installed in 2012. We have 85 base stations (lighthouses and towers), seven regional headquarters, two control centres (Mumbai and Visakhapatnam), providing the Indian Navy, the Indian Coast Guard and the port authorities, effective solutions.

SP's: Do you have any solutions for the Smart Cities?
Widerstrom: We are monitoring the Smart City movement which is now hyped in India. We are looking at what would be the actual evolution.

For the Smart Cities we have various products and solutions in surveillance, monitoring, smart software, etc. We have smart software which on low-tech camera can give very high quality imagery, and that is extremely efficient. Also we have software to upgrade the existing cameras. We are currently in the monitoring state and looking at where the Smart Cities concept is heading. I had an interesting meeting with the head of L&T recently in Stockholm and find that they are doing a lot. It was interesting to hear how they have been managing the market. We have the products and the capabilities.

SP's: Could you give the details about the Aerostructures Assemblies India, having rolled out the first batch of A380 structural assemblies from Belgaum? What is the order like and will there be any more work for Airbus from Belgaum?
Widerstrom: We have a joint venture, Aerostructures Assemblies India, with Aequs in Belgaum in Karnataka. AAI makes aerostructure assemblies for Saab, for our Boeing and Airbus programmes. It is a terrific success story. We built it up in 18 months from nothing. One of the best answers on the project came from a Swedish product manager who said that the quality at AAI is better or as good as what we get back in Sweden. It is at less cost but same or better quality. We export to both Boeing and Airbus from that facility and I see tremendous growth there.

Carl-Gustaf M4 a man-portable multi-role weapon system

PHOTOGRAPH: Saab

SP's: Would you be part of the India Aviation event in Hyderabad next year?
Widerstrom: Yes, we are going to participate in India Aviation.

SP's: Way back in 1974 Saab sold Carl-Gustaf to India. Have you any plans to provide India with modern anti-tank systems?
Widerstrom: We are extremely proud of the Carl-Gustaf systems. It is the backbone of the Indian Army today and we are constantly developing that. The latest version is Carl-Gustaf M4 a man-portable multi-role weapon system that provides high tactical flexibility through its wide range of ammunition types. It is lightweight with more intelligence and better performance. The ammunition is also new and with better performance. It is a global success story. India is one of our important customers. We have a licence agreement with ordnance factories and we work closely with them and are further developing our relationship with ordnance factories.

SP's: What are your plans for airborne subsystems like Integrated Defensive Aids Suite and headup display?
Widerstrom: On the Integrated Defensive Aids Suite (IDAS) we have recently got an order. That is a cooperation we have with HAL (Hindustan Aeronautics Limited). It is top priority for us to develop that business and work more closely with HAL. We are setting up production and creating production hub in India for that system globally. We have started to build up the capability. The plan is to move production to India and we hope we can accomplish that in the near future.

SP's: With the cancellation of the tender for 126 Rafale medium multi-role combat aircraft (MMRCA) for the Indian Air Force, do you see any possibility of the Saab Gripen re-emerging on the scene as a possible option for the Indian Air Force?
Widerstrom: With all respect for the Indian Air Force, there is tremendous need for more aircraft in India for sure. Now that they have closed the MMRCA deal and finalising 36 Rafale aircraft instead of 126, we still see opportunities. Our message to the IAF in the last two to three years has been: "Yes, we have extremely good product." India needs aircraft in big numbers as a replacement of the older aircraft in the fleet. We have a perfect solution and we respect the processes. They are busy on finalising the deal with the French. We are here and we are ready to answer any questions that the IAF or anybody else has.

SP's: How does the Gripen compare with the Dassault Rafale in performance? Do you feel that the Gripen would be able to fulfil the requirement of the Indian Air Force for an MMRCA?
Widerstrom: Rafale is a bigger aircraft and yet the Gripen can do whatever the Rafale can do. The latest Gripen aircraft is a modern aircraft, latest generation. We are waiting for the final signature from the latest success in Brazil. It is an ongoing development. It is a small aircraft but as capable as the Rafale. If we get the possibility to deliver Gripen to India then it would be in line for the 'Make in India' programme. We are prepared to produce and manufacture here,

whether it is fighters, missiles or air defence systems or anything. We are looking forward to the 'Make in India' programme. The major differences between us and some of our competitors is that our global strategy is that our home market is where we do business and it is not Sweden. We as a small nation are more flexible. Whether it is India, South Africa, Europe, US or Australia, we see ourselves as a global industry rather than a Swedish company.

'Make in India' is good news. It creates an environment for us to do good business. It is a win-win. We can do it with Indian industry and with long-term perspective. We can export out of India to Sweden or Australia or anywhere in the world. I am really looking forward to this.

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SP's: Saab has formed joint ventures/partnerships with various Indian companies. Could you give an update on the programmes in these joint ventures? Is Saab planning any more joint ventures and in which areas?
Widerstrom: Other than the joint venture with Aequs, we have in India an R&D centre in Hyderabad. It is a cooperation agreement with Tech Mahindra and we are outsourcing R&D from Sweden and Australia to India. The centre has about 200 employees and in total we are 350 across India. It is a very good success story. That is going to be a growth story as well. We as a company are investing 25 to 30 per cent of turnover into R&D and our company is unique globally in that respect. We need to do that to be ahead of not the biggest but the best and have technology edge. Portion of that goes to India cursrently by utilising the huge bank of talent of people who have Master degrees and Phds. The engineering bank in India is tremendous. As part of the 'Make in India' programme, it is important that we make investment not just in companies but also in the right resources and education/training is one of them.

Saab has acquired 3.3 per cent of the shares in Pipavav Offshore and Defence Engineering Ltd, at an investment of MSEK 250 (around ₹235 crore). The investment offers a solid platform for growth for Saab in the Indian market. Today Saab and Pipavav work closely together in developing the next-generation Combat Management System (CMS), addressing the current and future needs of the Indian Navy and Coast Guard. Leveraging off of the previous work done with combat systems engineering, the joint effort aims to deliver a scalable CMS for all purposes, providing the Indian operators with superior situational awareness. The naval market is one of the bigger activities.

We have a sourcing office in Bengaluru, where employees from our Aerostructures division manage our ongoing relationships with partners such as Cim Tools, Aequs and Tata Advanced Materials.

SP's: How do you rate the skillsets in India?
Widerstrom: I would say as good as back home. The experience in Hyderabad is very good. It started small and now it is gaining momentum and everyone back home sees it is good value for money. This will grow as developing civilian and IT infrastructure will take time.

SP's: Does Saab have any collaboration with the European, American or Israeli aerospace industry for the manufacture of aircraft for military use as well as the onboard systems?
Widerstrom: Yes we have worldwide collaborations. Gripen as such consists of number of major subsystems. We have an American engine, we have cooperation with Selex on the radars. One of the advantages with the Gripen system is that we are not forced to go to one or two nations. For instance, if we are going to manufacture in India with indigenisation of the aircraft, it is going to be easier than other older aircraft because of the Gripen's modularity and design. Gripen is a huge global collaboration and it contains subsystems from all over the world. If we sell it to South Africa, they have their requirements, if we sell it to Thailand, they have theirs, or to Czechslovakia, they have their systems. It is one of the key features as it is extremely modular in design and easier to adopt to global requirements. As a major aerospace player we are collaborating with a number of companies in a number of fields.

SP's: What are your plans to promote your business interests in the Asia-Pacific region?
Widerstrom: Currently we have integrated India into the Asia-Pacific region. Across the globe we have five different market areas and Asia-Pacific is one of them with India, Japan and New Zealand among other countries. The advantage of this that cooperation between Asia and Pacific countries is growing and we can tap on resources. We are in Korea and India and we have the advantage of setting up production either in Korea or India or vice versa. We are closely integrating the Asia-Pacific market. We are trying to look upon it as one market, especially in the naval domain we see one big opportunity and advantages. We see Indian Navy buying Korean ships.

SP's: Tell us something about the Nobel week?
Widerstrom: I am proud to say that I was part of the team which created this about 9 years ago. Nobel is such a good brand. It is such a strong name and people around the world would know Nobel more than they would know about Sweden. The Nobel week has been a success and we have backed it. It is about research and technologies and for us it is a perfect match. There are companies such as ABB; Ericsson, Atlas Copco and Volvo and together we can show a strong front with the Swedish industries. They are global industries. For instance, the Volvo in Bengaluru is mistaken to be an Indian company and that is good for us. Five years from now, I believe that same will happen with Saab. The focus of this year's Nobel week would be Smart Cities. Ericsson will be there so also us and we will be tapping around Nobel and the values surrounding that. For the Swedish community in India it is something they can look forward to.

The Nobel week is unique to India and it is carefully handled by the Nobel Committee. We are the only one doing this programme.

SP's: Saab is engaged with the CSR activity, please elaborate?
Widerstrom: We have a school in Vijayawada and we are looking into expanding the programme. We are looking into several other areas, vocational training, support Indian college students, etc. We also have scholarship for two years for university study. We have a skills training programme, DEEP (Diploma Employment Enhancement Programme) designed to enhance employability of engineering graduates. It is hosted by colleges in Gudivada and Kakinada in Andhra Pradesh. The six-month Saab DEEP programme is designed to help engineering students learn and hone the right mix of technical and soft skills while they are still in college. The curriculum involves classroom training and a two-month on-the-job training and internship. SP

AIR MARSHAL
B.K. PANDEY (RETD)

The Indian Air Force turns 83

On October 8, 2015, the IAF turned 83, an occasion that was celebrated with enthusiasm and pride in all its units and establishments across the nation

Chief of the Air Staff Air Chief Marshal Arup Raha reviewing the parade during Air Force Day at the Hindon airbase

While the anniversary of the IAF is certainly an occasion to celebrate, it is also the time for introspection to reminisce over the past and to prepare for the challenges that lie ahead

The Indian Air Force (IAF) was officially established with the prefix 'Royal' on October 8, 1932, in British India with the enactment of the Indian Air Force Act the same year. Nearly six months later, the RIAF commissioned No. 1 Squadron, its very first squadron, at Drigh Road, Karachi, now in Pakistan. On its inventory, No. 1 Squadron had just four Westland Wapiti IIA biplanes and was manned by six officers five of whom were pilots, and 19 airmen, all trained by the Royal Air Force of the United Kingdom. From its humble beginnings, over the last over eight decades, the IAF has grown to be the fourth largest air force in the world and today, it is a force to reckon with. On its inventory, the IAF now has over 1,400 aircraft and around 1,70,000 personnel. Since independence, the IAF has participated in the wars with Pakistan in 1965, 1971and 1999 and has always risen to the occasion providing swift response for disaster relief during natural calamity in India or abroad. It has also successfully extricated Indian nationals and citizens of other nations trapped in conflict zones in different parts of the world.

Celebrations on Air Force Day

On October 8, 2015, the IAF turned 83, an occasion that was celebrated with enthusiasm and pride in all its units and establishments across the nation ranging from Kashmir to Kanyakumari. Such events help enhance amongst the general public awareness of and confidence in the capabilities of the IAF to meet with the challenges of national security. It also helps boost morale and elevate the spirits of servicemen themselves. The national hub centre of the 83rd anniversary celebrations of the IAF was Air Force Station at Hindon located on the outskirts of Delhi. The event was marked by a parade and an impressive display of aerial might of the IAF. The parade which had nearly 300 IAF personnel including women officers, was reviewed by the chief guest Air Chief Marshal Arup Raha, Chief of the Air Staff (CAS)

PHOTOGRAPH: SP Guide Pubns

and the Chairman Chiefs of Staff Committee, who conferred awards to honour air warriors in recognition of their selfless service to the nation. No. 1 Air Force Band was in attendance.

Also gracing the occasion were General Dalbir Singh, Chief of the Army Staff, and Admiral R.K. Dhowan, Chief of the Naval Staff. Adding unique flavour to the event was the legendary national cricketing idol Sachin Tendulkar who has been conferred the honorary rank of Group Captain and was sporting the ceremonial uniform of the IAF. Incidentally, he is the first sportsperson in India to receive this honour!

Felicitations from Different Quarters

The IAF was felicitated on this occasion by both the President of India Pranab Mukherjee, the Supreme Commander, and Prime Minister Narendra Modi. The message from the President which was infinitely inspiring, read: "I am happy to know that the IAF is celebrating its 83rd anniversary on October 8, 2015. The IAF has remained in the vanguard of the Indian skies safeguarding the sovereignty of our nation all through its glorious history of over eight decades. Over the years, the IAF has evolved into a formidable force with new acquisitions and weapons of great precision. Today, the IAF is rated one of the best in the world and has acquired the capability of strategic reach and precision targeting. In today's world order, the role of IAF is not only limited to fighting a war; but also rendering timely assistance during national crisis. On numerous occasions in the past, during natural disasters, IAF has been at the forefront providing timely succour and relief. The recent efforts of the IAF to airlift our countrymen from Yemen, rescuing people during flash floods in Srinagar and the assistance rendered to the people of Nepal during the aftermath of a massive earthquake is praiseworthy. It bears testimony to the IAF's glorious legacy of valour, courage and commitment. The nation remains indebted to the air warriors for their selflessness and sacrifice. I am confident that the ongoing process of modernisation will transform the IAF into an even more potent and strategic force and it will continue to serve the nation with dedication and commitment. On this occasion, I extend my warm greetings and felicitations to all IAF personnel, civilians and their families. I am proud of the achievements by the IAF over the years and wish it continued success in all its future endeavours".

The Prime Minister eulogised the IAF with his message which read, "I salute our Air Force personnel on Air Force Day. They have always served India with great courage and determination. Contribution of our Air Force is monumental. They are always at the forefront be it in protecting skies or in times of disasters".

Not to be left behind, Honorary Group Captain Sachin Tendulkar too expressed his sentiments about the IAF. His post on the social media read: "I am proud of the dedication of the IAF. Every member plays his part to perfection. Thank you to each one of them for their commitment and many sacrifices."

Air and Static Display

The commencement of the parade was marked by the flag-bearing skydivers of the famous Akash Ganga team of the IAF. The team

(Below, left-right) Indian Air Force colours Nishan Toli on march; IAF Air Warrior Drill Team displaying their alluring skills during Air Force Day parade; (bottom, left-right) Newly raised Hawk AJT as Surya Kiran performing manoeuvres; IAF Su-30MKI escorting C-17 Globemaster III during the fly-past

PHOTOGRAPHS: SP Guide Pubns, IAF

(Top, left-right) IL-76-based AWACS aircraft; Jaguar deep penetration strike aircraft; (above, left-right) Pilatus PC-7 Mk II turboprop trainer; Mi-17V5 helicopter

jumped from a high-flying An-32 tactical transport aircraft of the IAF and displaying their colourful parachute canopies carried out some impressive manoeuvres as they descended to the ground right before the enthralled audience. This was followed by a fly-past by three Mi-17V5 helicopters in a V-shaped formation carrying the Air Force ensign under slung. The Chakra formation consisting of three Mi-35 attack helicopters was next in the sequence. Fly-past by fighter aircraft of the IAF after the parade was led by three Jaguars in Vic formation, closely followed by three MiG-21Bison aircraft. The C-17 Globemaster III escorted by two Su-30MKI aircraft also took part in the fly-past. Vintage aircraft such as the Harvard and the de Havilland Tiger Moth helped revive memories of the past.

The Surya Kiran Aerobatic Team (SKAT) was back in the sky re-equipped with four brightly painted Hawk 132 advanced jet trainer (AJT) aircraft. The HJT-16 Kiran Mk II equipped SKAT had been disbanded four years ago on account of shortage of intermediate jet trainer (IJT) aircraft. This was the highlight of the aerial display as formation aerobatics by SKAT has always enthralled audiences both in India and abroad! The grand finale was a thrilling display by the Sarang Helicopter team with their heart-stopping manoeuvres.

The static display included the latest IL-76 based Airborne Warning and Control System aircraft, a multi-role French fighter Mirage 2000, Jaguar deep penetration strike aircraft and Russian fighters MiG-21, MiG-29 and the Su-30MKI which carries the BrahMos supersonic cruise missile. Apart from fighter aircraft, the IAF also displayed helicopters, the Hawk AJT, Pilatus PC-7 Mk II turboprop trainer, the indigenously developed radars.

Women to the Fore

But perhaps the most interesting feature of the Air Force Day celebrations this year was the announcement by the CAS that plans are afoot to induct women pilots into the fighter stream of the IAF. So far, the 94 women pilots and 14 women navigators in the IAF are restricted to fly transport aircraft and helicopters. Women pilots and navigators have been operating transport aircraft to forward bases and flying helicopters even in remote areas and over inhospitable terrain of the Siachen Glacier. In no way have they proved to be less capable than their male counterparts. Apparently, as per a statement from Defence Minister Manohar Parrikar, the government is in favour of this proposal which indeed is clear departure from the position held last year. In fact, the government is looking at combat role for women in all the three services and the IAF is in the lead in this regard. This will indeed be inspiring as well as challenging for the future generations of women and a positive development in respect of their emancipation and fulfilment of their aspirations!

Introspection

While the anniversary of the IAF is certainly an occasion to celebrate, it is also the time for introspection, to reminisce over the past and to prepare for the challenges that lie ahead. SP

PHOTOGRAPHS: SP Guide Pubns

W. James (Jim) McNerney, Jr., Chairman, The Boeing Company at "India's Time to Fly" aerospace innovation summit in New Delhi

India's Time to Fly

[By **Ranjeet Kumar**]

India's time to fly has indeed arrived and Boeing justified the title of its Summit organized on 16th October, 2015 in New Delhi in collaboration with Indian Institute of Technology (IIT) Bombay. When W. James (Jim) McNerney, Jr., Chairman of The Boeing Company, said that the company is looking into the possibility of assembling and producing its Chinook and Apache helicopters in India, the world defence manufacturers will take note of it and will feel encouraged to invest in defence manufacturing in India and not only become principal suppliers to Indian armed forces but also use the platform to make for other armed forces around the world.

Indian market for the next decade in defence acquisitions is expected to be in the range of $150 billion as officially disclosed by Indian officials. And if any company has to become competitive and win the contracts, not only for Indian armed forces, but for the rest of the world, it has to come to India and mark its actual footprints on the soil. Boeing is going to take the lead. Jim McNerney announced during the summit that they are in negotiations with the Government of India for local assembly and supply of the Apache attack helicopters and Chinook heavy lift helicopters, a deal worth $ 3.1 billion that was announced on the eve of Prime Minister Narendra Modi's departure to New York for a tete-a–tete with President Barak Obama. Boeing acknowledged that according to India's offset clause, at least 30 per cent of the entire deal will have to be outsourced from India, so why not make a hundred per cent in India itself!

Jim McNerney said that local assembly of the Apache and Chinook helicopters is in active consideration at the Company headquarters. Boeing has already sold India ten C-17 Globemaster, eight P-8I maritime reconnaissance planes and many other defence systems and weapon platforms. Boeing facility in India will be in collaboration with a local private player in the defence sector. According to Jim McNerney, "This is our strategy. The Indian market is too important for anybody to ignore. Indian capability is very high. Manufacturing in India is the commitment we have expressed to Indian government".

Not only in defence platforms, Boeing is eyeing India's civil aviation sector as well, which is likely to expand at a phenomenal pace in the country in the coming years. According to estimates, Indian aviation sector will need around 1800 new passenger aircraft in the coming years and to become a competitive player in the civil aviation market. Also, companies will have to take advantage of the skilled manpower and raw materials of the country. According to Jim McNerney, Boeing is manufacturing low cost and highly fuel efficient passenger aircraft that will definitely attract the Indian airlines.

Boeing expects billions of dollars in offsets to India and "We will be happy to do it," said the Chairman. "India today has become an investment destination. The civil nuclear deal unlocked a lot and the ground reality is changing fast in India". He also had high praise for Prime Minister Narendra Modi mentioning his business meetings in USA that attracted the who's who of the US corporate world. According to Jim, there was not a single US CEO who was not there. The discussions in the meetings were real and everybody talked assuringly. Commenting on India, in his last statement, Jim said, "Things are changing fast and we are very optimistic". SP

"The Indian market is too important for anybody to ignore. Indian capability is very high. Manufacturing in India is the commitment we have expressed to Indian government."

PHOTOGRAPH: Boeing PR Agency

Rolls-Royce to invest $600 million to transform Indianapolis facilities

Rolls-Royce announced the company will invest nearly $600 million to modernise its manufacturing operations in Indianapolis and to conduct technology research, ensuring that Indiana remains a leader in the aerospace industry for decades to come.

The modernisation plan will enable the company to become more competitive by replacing outdated facilities and accelerating the introduction of new and advanced manufacturing methods. The investment was made possible by the state of Indiana, the city of Indianapolis and the United Auto Workers (UAW) union. Rolls-Royce produces engines for a wide range of military and commercial aircraft, as well as marine propulsion systems.

This investment – the largest by Rolls-Royce in the United States since the company bought the former Allison Engine Company in 1995 – will include a major renovation of the existing facilities at Tibbs Avenue and Raymond Street. Upgrades will include new manufacturing and assembly operations that will match the advanced standards already present in many other Rolls-Royce facilities in Indiana and around the world. The five-year modernisation plan, which is in line with the Group's ongoing investment plans, will also consolidate operations and significantly reduce utility costs.

"Our new facility will be a state-of-the-art manufacturing centre that combines modern production systems and machinery with a highly skilled workforce. This investment ensures that we can increase our competitiveness in the market, which will benefit both our customers and Rolls-Royce," said Marion Blakey, President and CEO, Rolls-Royce North America.

"We want to express our sincere appreciation to the state of Indiana, the city of Indianapolis, the UAW, and our employees for helping us make this investment in our future possible," said Phil Burkholder, President of Rolls-Royce Defense Aerospace, North America. SP

Lockheed Martin upgrades its Electronics Manufacturing Facility

As part of the celebration of National Manufacturing Day, Lockheed Martin cut the ribbon on a newly renovated Electronics Manufacturing Facility (EMF) at its Space Systems Company campus in Littleton, Colorado. The October 2 opening marks the completion of the facility's significant two-year revamp.

The 28,000-sq-ft Electronics Manufacturing Facility provides development, fabrication and environmental test of spacecraft electronics and is a sign of Lockheed Martin's momentum in the manufacturing technology space.

"It's really fitting that we're hosting this event on Manufacturing Day," said Brian O'Connor, Vice President of Production Operations for Lockheed Martin Space Systems. "Today's manufacturing is a lot different than it was in the past – especially here at Lockheed Martin. We mostly work in clean room environments with the latest technology," he offered, referring to the added clean room capacity in the new facility. SP

The Second International Fleet Review ...continued from page 12

Indian Navy has organised fleet reviews 10 times earlier and this would be the 11th one. However, this would be Indian Navy's second International Fleet Review, the first was held in 2001.

According to the Naval Chief Admiral Dhowan, "While showcasing our navy to the nation and the Supreme Commander of the Armed Forces, the Honourable President of India, we also celebrate the time-honoured principles of friendship across the seas, which are intrinsic to the seafaring community."

The maritime events like the International Fleet Review are organised by leading navies of the world and Indian Navy also participates in them by sending leading warships, which are made in India. Recently Indian Navy had participated in the International Fleet Reviews organised by the Japanese and the Chinese navies. The IFR serves to provide a platform for participating navies to interact with each other, strengthen bridges of friendship towards developing a common appreciation of maritime challenges and the potential for addressing them through a united approach, said Admiral Dhowan.

Indian Navy seeks to move ahead on the concept of the global maritime family with the theme 'United through Oceans.' Over a period of time Fleet Reviews in India have seen participation by ships, submarines and aircraft to emphasise the three-dimensional nature of the Indian Navy. During IFR-2016 also Indian Navy will parade the two serving aircraft carriers INS Viraat and INS Vikramaditya along with other leading warships, reconnaissance planes and naval fighter aircrafts.

The last fleet review was organised on December 20, 2011. The first ever IFR held in 2001 saw large participation from Indian and foreign ships. The second IFR will be much larger in scale. Along with President Mukherjee and Prime Minister Modi, the Vice President Hamid Ansari and Defence Minister Manohar Parrikar will also grace the occasion. The extravaganza planned for the IFR includes an Operations Demonstration (Op Demo) by the major combatants of the Indian Navy, illumination of anchored ships off the Ramakrishna Mission Beach, a fly-past, an international City Parade, an International Maritime Conference, symphonic band concerts, etc. The President of India would review the Fleet in the morning of February 6, INS Sumitra, an indigenously built naval offshore patrol vessel would be the presidential yacht. SP

PHOTOGRAPHS: Rolls-Royce, Lockheed Martin

Actress Kelly Carlson explains why she bought a gun

After a frightening security breach, actress Kelly Carlson knew she never wanted to feel uneasy about her personal safety ever again. Carlson, who gained national fame starring on the hit show 'Nip/Tuck,' explained why she felt the need to arm herself. Carlson revealed that she purchased a gun for protection after multiple scary run-ins with stalkers.

"All my technology was compromised, I was ambushed in the car, you name it," Carlson said. She added that her home's security cameras were turned off remotely and even her Medeco locks were bypassed.

Carlson said she recognises that firearms are dangerous and are designed to kill, and gun ownership comes with a tremendous amount of responsibility. SP

Man shoots himself at Rajiv Chowk metro station

In a major security breach, a 22-year-old man allegedly shot himself with a country-made gun at the crowded Rajiv Chowk metro station in New Delhi, recently. The person, identified as Sridesh Adhikari, a native of a village in Uttar Pradesh, was rushed RML Hospital, where he was operated upon. The incident, which took place around 9:45 p.m., raised serious concern over security in the Delhi Metro network.

Both Delhi Police and CISF, which secures Metro premises, have initiated separate probe into the incident. It is being looked into how he could manage to enter the metro station with a gun, a police officer said.

According to police, Sridesh boarded a train from Chandni Chowk station (on Yellow Line) and was on his way to Noida (on Blue Line). While changing train at Rajiv Chowk, he went to a secluded corner and allegedly tried to shoot himself in the head but he missed and the bullet grazed past his shoulder. Hearing the gunshot, CISF personnel rushed to the spot and called up the police control room. SP

Data breaches picking up steam

It seems like every day there's news of another large-scale data breach, as cyber criminals mine for financial information, or utilise 'hacktivism' in order to send a message, making biggest data hacks of 2015 seem worse and worse. While large-scale breaches such as the Ashley Madison and Planned Parenthood hacks were done to lash out at a specific organisation, some of the alarming breaches in 2015 so far have resulted in the personal and financial information of millions of Americans being exposed. And breaches of this nature are picking up steam.

According to *The Washington Post*, in 2014 there were 780 data breaches, and between May 2013 and May 2014, 110 million Americans were victims of a data breach. But while identity theft is worrying to think of, the Ashley Madison and Planned Parenthood hacks are equally concerning in that they weren't done for financial reasons — these hackers released personal information and data simply because they could.

These hacks and cyber attacks come from criminals, foreign countries and bored Americans. These hacks are picking up and will likely blow the 780 breaches from 2014 out of the water. SP

Sea-Tac Airport lockdown

Seattle-Tacoma Airport was put on lockdown after a security breach recently. Airport officials confirmed that Port of Seattle police responded to a breach alarm. All entrances were closed and all trams were stopped after a man entered an area the wrong way. The man was taken into custody for questioning and the breach was cleared and the lockdown was lifted after about 45 minutes. But the lockdown caused a back-up at security checkpoints. SP

PHOTOGRAPHS: fansshare.com, Wikipedia

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