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ONLY FORTNIGHTLY ON **MILITARY AEROSPACE INTERNAL SECURITY**



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Narendra Modi, Hon'ble Prime Minister of India (*message received in 2014)



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[**SP's @ 53** PURSUING EXCELLENCE OVER FIVE DECADES SINCE 1964]

Prime Minister Modi celebrates Diwali with jawans

Prime Minister Narendra Modi celebrated Diwali with the jawans of Indian Army and BSF, in the Gurez Valley, near the Line of Control, in Jammu and Kashmir on October 19, 2017. The Chief of the Army Staff, General Bipin Rawat was also present at the occasion.



Cover:

Defence Minister Nirmala Sitharaman with the French Minister for the Armed Forces, Florence Parly in New Delhi on October 27, 2017.

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PUBLISHER AND EDITOR-IN-CHIEF

Jayant Baranwal

ASSISTANT GROUP EDITOR

R. Chandrakanth

DEPUTY MANAGING EDITOR

Neetu Dhulia

SR TECHNICAL GROUP EDITORS

Air Marshal B.K. Pandey (Retd)

Lt General Naresh Chand (Retd)

Lt General V.K. Kapoor (Retd)

R. Adm S.K. Ramsay (Retd)

SPECIAL CONTRIBUTOR

Lt General P.C. Katoch (Retd)

CHAIRMAN & MANAGING DIRECTOR

Jayant Baranwal

PLANNING & BUSINESS DEVELOPMENT

Executive Vice President: Rohit Goel

ADMIN & COORDINATION

Bharti Sharma

ASST - ADMIN, HR & INFRA

Pooja Tehlani

DESIGN & LAYOUT

Creative Director: Anoop Kamath

Designers: Vimlesh Kumar Yadav,

Sonu Bisht

Research Assistant - Graphics:

Survi Massey

SALES & MARKETING

Director: Neetu Dhulia

General Manager Sales: Rajeev Chugh

SP'S WEBSITES

Sr Web Developer: Shailendra P. Ashish

Web Developer: Ugrashen Vishwakarma

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E-mail: subscribe@spguidepublications.com

subscribe@spsmai.com

LETTERS TO THE EDITOR

editor@spsmai.com

FOR ADVERTISING DETAILS, CONTACT:

advertise@spsmai.com

neetu@spguidepublications.com

rajeev.chugh@spguidepublications.com

SP GUIDE PUBLICATIONS PVT LTD

A-133 Arjun Nagar

(Opposite Defence Colony)

New Delhi 110003, India.

Tel: +91 (11) 24644693,

24644763, 24620130

Fax: +91 (11) 24647093

E-mail: info@spguidepublications.com

REPRESENTATIVE OFFICE

204, Jal Vayu Vihar

Kalyan Nagar

Bengaluru 560043

Tel: +91 (80) 23682204

MOSCOW, RUSSIA

LAGUK Co., Ltd, Yuri Laskin

Krasnokholmskaya, Nab.,

11/15, app. 132, Moscow 115172, Russia.

Tel: +7 (495) 911 2762,

Fax: +7 (495) 912 1260

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Indo-French ties deepen for the good

That France has always stood by India and provided moral support on crucial moments when India faced international isolation, especially in the aftermath of the 1998 Pokharan nuclear explosion and supplied crucial timely assistance during the Kargil conflict with Pakistan is testimony to the long-standing strong relationship between the two countries. These ties are getting deepened and the first defence ministerial visit under the Macron Presidency has prepared the ground for the forthcoming first visit to India of the French President later this year.

The French Minister for the Armed Forces, Florency Parly had a series of discussions with the Prime Minister, Defence Minister and other senior defence officials to further widen the cooperation in production of various armaments in India. In his analysis of the Indo-French relations, Ranjit Kumar writes that the joint venture between Dassault Aviation and Anil Ambani-led Reliance Group is a classic example of cooperation. The joint venture — Dassault Reliance Aerospace Limited (DRAL) — is a 100 million Euro project in Mihan near Nagpur and will manufacture components for the Legacy Falcon 2000 series of business jets manufactured by Dassault Aviation and will become part of the French major's global supply chain. The Dassault investment marked the largest commitment in foreign direct in one location in the defence sector.

Similarly, the ties with the United States is on the rise. With India-US economic relations deepening to the level of over \$100 billion and as both the countries aim to expand this trade to the level of \$500 billion within next five years, the two countries are on a strong wicket to further deepen bilateral defence and strategic partnerships. The road laid by previous Obama administration, was further cemented during the visit of the US Secretary of State, Rex Tillerson.

The Defence Minister Nirmala Sitharaman is on her best in the job egging the armed forces to continue giving their best. After the commission of INS Kiltan she said the Navy's relentless pursuit of self-reliance through indigenisation is highly appreciable and this

has helped the Indian Navy to seamlessly transform from a Buyer's to a Builder's Navy.

Rear Admiral Sushil Ramsay (Retd) reports that in consonance with the ongoing momentum Defence Acquisition Council (DAC), chaired by Defence Minister on October 30, 2017, has accorded Acceptance of Necessity (AoN) for the procurement of 111 NUH worth ₹21,738 crore (\$3.2 billion). Indian Navy has been making its proposals under the Strategic Partnership model to give a major boost to indigenous defence manufacturing capabilities in the country, especially in the Naval Aviation segment.

Meanwhile, the Indian Air Force displayed versatility and capability of IAF platforms by landing aircraft on the Agra-Lucknow Expressway. Complimenting the IAF, Air Chief Marshal Fali H. Major (Retd) said the spectacular display by the IAF not only enthralled all Indians, but also sent out a very clear message of IAF's capabilities and combat edge.

In this issue, we have a curtain raiser by Bikram Vohra on the 15th exhibition of Dubai air show, to be held from November 12 to 16 at the Dubai World Central, which will have more than 1,200 exhibitors — including 100 taking part for the first time — and over 160 aircraft on display.

Happy reading !

Jayant Baranwal
Publisher & Editor-in-Chief

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ROSOBORONEXPORT
Russian Defence Export

27 Stromynka str., 107076,
Moscow, Russian Federation

Phone: +7 (495) 534 61 83
Fax: +7 (495) 534 61 53

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Tillerson cements India-US strategic bonds

The Tillerson visit has laid the ground work for this evolving strategic partnership which will have a significant bearing on the changing strategic equations of the 21st century.



The US Secretary of State Rex Tillerson with Prime Minister Narendra Modi in New Delhi on October 25, 2017

[By **Ranjit Kumar**]

Though the Donald Trump administration took more than nine months to finalise the South Asian strategy, the road laid by previous Obama administration, for a comprehensive and solid strategic partnership with India has further been cemented by the new US Secretary of State, Rex Tillerson. His visit to India on October 25 to 26, 2017, the first by a Secretary of State of the new Administration, attracted media attention because of his strong message to Pakistan on demolishing

terrorist infrastructure on the Pakistani soil, has helped clear many cobwebs in India-US relationships. Taking advantage of the Obama administration decision to declare India as a Major Defence Partner Tillerson pressed for more defence sales from US companies to Indian armed forces. He especially pleaded for the F-16 fighter sales to India, which are competing with Swedish Grippen. India wants to produce the selected fighter in India under its 'Make In India' policy. The US Secretary also pleaded for F-18 fighter jets supplies to India. Before his departure for five nation tour including India, the US administration had already cleared the sales of Predator drones

to India. India wants these drones, which will help in keeping a close watch over the Indian Ocean where the Chinese naval ships have been frequenting off late.

Besides Pakistan promoted terrorism in South Asia, his intimate conversations with top Indian interlocutors focused deeply on strengthening long term strategic partnerships. This will further broaden and lengthen the India-US strategic highways and sea lanes of not only South Asia but also the Indo-Pacific region.

After giving a final shape to the South Asia strategy the US Secretary of State Rex Tillerson landed in New Delhi with a much comprehensive agenda for a strategic partnership, which is expected to last beyond this century. The partnership will not only be confined to bilateral one, but will be expanded to quadrilateral group, which is now beginning to unfold with the Japanese foreign minister statement regarding the proposal for quadrilateral talks between US, Japan, Australia and India.

At the bilateral level, though, Tillerson talked of building a 100 years partnership, there are too many issues between the two nations which needs to be resolved to move towards a wrinkle free ties. India's relations with Iran and American sweet and sour relations with Pakistan still are the major hindrances. Indian interlocutors very well understand, that the US has strained relations with Pakistan not because of India, but Afghanistan, which has caused the return of hundreds of body bags to US. Besides, the policy of appeasement of Pakistan has caused a huge financial drain to the US economy. When Donald Trump took over the US administration he raised this issue and warned Pakistan to desist from causing harm to US interests in Afghanistan. When the US authorities talk of terrorism it is focused more on Afghan based terror groups and Indian concerns are raised only in general terms. Still, the Tillerson visit hogged the limelight because of his open warning to Pakistan to take action against Pak based terror groups. These words are music to Indian ears, but the action on ground will tell to what extent US will go to pressurise Pakistan.

However, since the two nations share common strategic concerns regarding China and Indian Ocean, both the countries have been coordinating and discussing these in various bilateral and multilateral forums along with other like minded countries like Japan and Australia. It has often been said that US wants to deepen strategic ties with India in order to contain China. For this the US has opened its defence industry for Indian forces. Indian armed forces have in fact received arms and defence systems worth \$15 billion in last one decade, Now the US wants more to sell and bag contracts for all the major requirements of Indian armed forces, which plans to acquire weapons and systems worth more than \$200 billion in next one decade. India thus provide a huge defence market for the US defence companies. Hence, US emphasis on stronger defence relations between the two countries.

Keeping this in mind, Tillerson went beyond his mandate and talked like a defence minister to urge Indian leaders to acquire the US fighters like F-16 and F-18. The US administration has already cleared the Guardian drones for Indian navy, but these will not be armed and meant only for surveillance, US wants to strengthen Indian capabilities in regional security. Tillerson, addressing the media said, "The US backs India's emergence as a leading power and will continue to help Indian

capabilities in providing security for the region. We are ready to provide the best technology for India's military modernisation."

With India designated as a Major Defence Partner, way has been cleared for US arms industries to easily transfer major high tech sensitive defence equipments to Indian armed forces. With rising security challenges from India's neighboring countries, India also needs these systems, as India plans to extend its strategic reach beyond the Pacific seas, which China wants to dominate and control.

Before leaving for India, Tillerson had remarked, "US and India are increasingly global partners, with growing strategic convergence. Indians and Americans don't just share an affinity for democracy, we share a vision for future, The emerging Delhi-Washington strategic partnership stands upon a shared commitment upholding rule of law, freedom of navigation, universal values and free trade."

To further strengthen India-US strategic partnership and to counter China's rising clout with its ambitious One Belt One Road connectivity project, Tillerson suggested that US and India partner to build road connectivity in the Indian subcontinent and port connectivity in the Indo-Pacific. This can be construed as an alternative to Chinese OBOR. He wanted the two biggest democracies to join hands in providing a rule based and transparent financing mechanism for the connectivity projects.

There are many issues of common strategic concerns to India and US, which will be discussed in depth during the 2+2 dialogue to be held shortly in New Delhi, as revealed by Indian External Affairs Minister Sushma Swaraj after meeting with Tillerson. The 2+2 dialogue envisages the simultaneous meetings of Indian Defence and External Affairs Minister with the US Secretary of State and Defence along with the top officials of both the ministries. This kind of 2+2 dialogue India presently conducts with Japan.

Political and strategic partnerships will not achieve depth unless the people to people relationship between the two nations are also strengthened. Hence, Tillerson was told in clear terms that issues relating to H-1B visa and totalisation must be resolved at the earliest. Swaraj advised Tillerson publicly, "people-to-people contacts have played a critical role in the development of India-US relations. This is in part -

this is most evident in our mutually beneficial digital partnership, driven by our skilled professionals. Secretary Tillerson has very correctly pointed out that no two countries encourage innovation better than the US and India. In this regard, we discussed the very significant contribution to the US economy of Indian-skilled professionals who travel and work under H-1B and L-1 visa programmes. Swaraj also said, "I have also sought Secretary Tillerson's support for resolution of the long-pending issue of totalisation, and I have asked that nothing by the US should be done which will affect or adversely affect India's interests. Innovation, entrepreneurship, and economic partnership have been an important foundation of our relations.

With India US economic relations deepening to the level of over \$100 billion and as both the countries aim to expand this trade to the level of \$500 billion within next five years, the two countries are on a strong wicket to further deepen bilateral defence and strategic partnerships. The Tillerson visit has laid the ground work for this evolving strategic partnership which will have a significant bearing on the changing strategic equations of the 21st century. **SP**

The writer is a Strategic Analyst.

With India-US economic relations deepening to the level of over \$100 billion and as both the countries aim to expand this trade to the level of \$500 billion within next five years, the two countries are on a strong wicket to further deepen bilateral defence and strategic partnerships.

India and France to deepen security partnership



The Minister for the Armed Forces of France, Florence Parly calling on the Prime Minister Narendra Modi in New Delhi on October 28, 2017

[By **Ranjit Kumar**]

The first visit by the French Minister for the Armed Forces, Florence Parly from October 26 to 28, 2017, to New Delhi signified the sincere wish of the two strategic partners to further strengthen defence and security relations. Besides discussing ways and means to further boost defence equipment and security cooperation, the French minister had two important wish list, which was conveyed to the Indian Defence Minister Nirmala Sitharaman. The first was the additional procurement of 36 Rafale fighter jets and the second was the French desire to extend the Scorpene manufacturing programme in India.

Since India urgently needs additional fighters in large numbers for the Indian Air Force (IAF) and more submarines for the Indian Navy, Ms Parly suggested the continuation of the fighter and submarine programme currently under way. The Indian Navy is shortly to issue tender for six additional submarines under the strategic partnership model of the Ministry of Defence. According to sources the French side has conveyed to India that the present joint manufacturer of the Scorpene submarines DCNS can continue the collaboration with Mazagaon Docks Limited under the Strategic Partnership model.

Thus the first defence ministerial visit under the Macron Presidency has prepared the ground for the forthcoming first visit to India of the French President later this year. Defence is one of the strongest pillars of India-France cooperative relations, which has deep-



(Left) The French Minister for the Armed Forces, Florence Parly meeting the Flag Officer Commanding-in-Chief, Western Naval Command, Vice Admiral Girish Luthra in Mumbai; (right) Ms Parly with Cmde Rakesh Anand, Chairman & Managing Director, Mazagon Dock Shipbuilders Limited, Mumbai.



ened over the years. France has always stood by India and provided moral support on crucial moments when India faced international isolation, especially in the aftermath of the 1998 Pokaran nuclear explosion and supplied crucial timely assistance with required spare parts and aviation components during the Kargil conflict with Pakistan. The high level of confidence both the countries have reposed in each other promises to further widen the cooperation in production of various armaments in India.

France has provided India with sensitive technological assistance not only in defence, but also in space and nuclear technologies, which has helped India attain self-sufficiency in these two high-tech sensitive sectors. In this backdrop, the French Defence Minister discussed with the Indian Defence Minister ways and means to further assist India in attaining self reliance in the defence sector under the 'Make in India' initiative of the Prime Minister Narendra Modi. Ms Parly promised to strongly support projects for defence manufacturing under the 'Make in India' initiative as well as promote defence technology and research and development cooperation.

As an example of this, the foundation stone of an advanced facility to produce several components of offset obligation for the 36 Rafale aircraft was laid in the presence of the French Defence Minister. The French aviation giant Dassault Aviation in a joint venture with Anil Ambani-led Reliance Group will invest Euro 100 million in Nagpur. The Dassault Reliance Aerospace Limited (DRAL) is being set up in the Rs 6500 crore-Dhirubhai Ambani Aerospace Park in Mihan near Nagpur. This joint venture is expected to start production by the end of year. DRAL will manufacture components for the Legacy Falcon 2000 series of business jets manufactured by Dassault Aviation and will become part of the French major's global supply chain. The officials of the joint venture have claimed that this is probably the first step of the final assembly of the Rafale and Falcon aircraft. The French side wants to impress India with its offer of manufacturing the future Rafales in India for the IAF. The Dassault investment marked the largest commitment in foreign direct investment in one location in the Indian defence sector.

Dassault Aviation has over 65 years long association with India and the latest venture signifies a new era of defence manufacturing cooperation between India and France

According to Anil Ambani, the Reliance-Dassault partnership will bring high levels of technology transfer and make India a major supplier in the global aviation chain. Encouraged by Dassault's decision to invest in India, other leading French aviation companies have decided to set up production bases in the park. Dassault Aviation has over 65 years long association with India and the latest venture signifies a new era of defence manufacturing cooperation between India and France.

For the Indian Navy, the French submarine manufacturer DCNS is helping India produce very advanced Scorpene submarines in India in the Mazagaon dockyard. Giving details of the discussions between Nirmala Sitharaman and her French counterpart, the defence ministry spokesperson said that both sides reviewed the ongoing initiatives to further strengthen bilateral defence cooperation as a key pillar of the strategic partnership between India and France. They also discussed regional international developments of mutual interest.

A range of measures to expand military to military ties, including the scope of the bilateral exercises in particular Varuna exercises scheduled early in 2018 was discussed. In addition to the joint maritime exercises, both the defence ministers also okayed the plans to explore additional measures to facilitate operational level interactions between the two armies and the air forces also. Recognising the growing significance of maritime security in the Indo-Pacific region and the need for greater maritime domain awareness, India and France will further expand information sharing arrangements, building upon the 'Technical Arrangement on Exchange of White Shipping' information signed earlier this year. Both the ministers also had detailed exchange of views on growing significance of maritime security in the Indo-Pacific and the need for greater maritime awareness. Since both the countries share similar security concerns in the Indian and Pacific Oceans, France and India seem to have taken a conscious decision to jointly strengthen each other's capabilities in the maritime domain. **SP**

The writer is a Strategic Analyst.



Airbus Helicopter's AS565 Panther

Thumbs up for the Rotary Wing – Indian Navy

The Indian Navy is facing acute shortage of the Naval Utility Helicopters (NUH) for replacing its aging fleet of Chetak helicopters for the frontline frigates and offshore patrol vessels with small-decks and aircraft carriers, as also for the shore based flights to extend support out at Sea for the smaller ships not designed to carry NUH.

[By **Rear Admiral Sushil Ramsay (Retd)**]

With the induction of the first aircraft carrier, INS Vikrant, the Search and Rescue (SAR) Alouette helicopter was also inducted in 1961. The survey ship INS Darshak, which had been designed to embark a helicopter, first embarked an Alouette in 1970 to help survey the Gulf of Kutch. Likewise, Alouette flight was assigned to the fleet tanker INS Deepak for 'Logistic Support' in addition to SAR role. The Leander class frigates were designed to embark Multi-Role Anti-Submarine Torpedo Carrying Helicopters (MATCH).

It is an open secret that the biggest threat to India's maritime interests and its surface fleet comes from enemy submarines. While every warship has hull-mounted sonar for tracking submarines below the surface, the potency of ASW helicopters to counter the sub-surface threats is unmatched.

Adverse hydrological conditions and currents in the Arabian Sea, Bay of Bengal and the Indian Ocean impinge on the detection capability of the hull-mounted sonar. Conversely, the ASW helicopters with its dunking sonar capability prove far more effective and accurate under such conditions. ASW helicopters prove a better platform as these can not only hunt a submarine, its own detection and hunting down by a submarine is very high impossible.

After the decision had been taken for the army, navy, and air force to have a common helicopter, the French Alouette III was chosen for indigenous manufacture at the Hindustan Aeronautics Limited (HAL). The Navy's first three helicopters were imported from France. The remainder were supplied by HAL as Chetak.

In the early 1980s, HAL indicated that they were considering discontinuing the production of Chetak helicopters. Since the production of the replacement Advanced Light Helicopters (ALH) would take considerable time, HAL continued production of Chetaks.

The Indian Navy received its first ALH, Dhruv on March 28, 2002. It was expected to receive a total of 120 units to replace Chetak helicopters. The naval variant, Dhruv is fitted with the Super Vision-2000 maritime radar, capable of detecting targets with low radar cross section at a range of 200 km. The anti-submarine version of the helicopter is fitted with dunking sonar, torpedoes, and depth charges. The helicopter may also be fitted with the missiles for anti-ship roles. Considering that it is a single-engine helicopter and had certain issues with its wing folding mechanism, in 2008 Indian Navy pronounced Dhruv unsuitable as an ASW platform. However, Indian Navy continued to procure Dhruv as a multi-role utility platform.

Naval Utility Helicopters

In 2012 the Indian Navy launched a \$1 billion global tender for the purchase of 56 light Naval Utility Helicopters (NUH) to be acquired by 2016 to replace the ageing HAL Chetak. The tender was issued to AgustaWestland, Bell Helicopter, Boeing, Eurocopter, Kamov and Sikorsky. However, within short span of two years the tender was cancelled in August 2014.

The Indian Navy is facing acute shortage of the Naval Utility Helicopters (NUH) for replacing its aging fleet of Chetak helicopters for the frontline frigates and offshore patrol vessels with small-decks and aircraft carriers, as also for the shore based flights to extend support out at Sea for the smaller ships not designed to carry NUH.

It is learnt that Defence Minister Nirmala Sitharaman in a systematic manner has been reviewing all ongoing and pending projects over delays in specific defence acquisition projects. In consonance with the ongoing momentum Defence Acquisition Council (DAC), the highest decision-making body for defence procurement, chaired by Defence Minister on Monday, October 30, 2017, has accorded Acceptance of Necessity (AoN) for the procurement of 111 NUH worth ₹21,738 crore (\$3.2 billion). Indian Navy has been making its proposals under the Strategic Partnership model to give a major boost to indigenous defence manufacturing capabilities in the country, especially in the Naval Aviation segment.

The Ministry of Defence (MoD)-Indian Navy combine will now issue the formal Request for Proposal (RFP) to original equipment manufacturers (OEM) for the first 16 helicopters to be imported in flyaway condition, with the balance 95 to be manufactured in India by an Indian manufacturer in partnership with the selected global OEM. RFP for the NUH is expected to be issued by mid-2018. Going by the stipulated provisions of the Defence Procurement Procedure, it could take two years, or more before the main contract is signed.



(Top) Sikorsky's S-76B; (above) Leonardo's AW109.

Specification/Contours of NUH

The specifications/contours of the approved scheme of NUH signal a path-breaking amalgamation of roles of ASW and light-attack missions which were earlier the sole preserve of heavier Westland Sea King fleet. This initiative will provide a kind of force multiplier capabilities to not just the frontline warships, but also to the medium and minor war vessels through the shore based flights.

The twin-engine helicopter will be flown by two pilots and have wheeled landing gear and blade-fold capability. India wants NUH to be indigenously built with 40 per cent indigenous content. Indian Navy requires OEMs to offer NUH that can operate in adverse weather day/night conditions for SAR and conduct casualty evacuation and logistics and communication roles with under slung cargo. Other tasks include limited electronic-intelligence gathering, ASW with a light torpedo or depth charge, dynamic response during aid to civil authorities, and anti-piracy missions with small arms. Indian Navy wants to operate NUH from small-deck of frigates and off-shore patrol vessels, as well as from aircraft carriers.

Likely OEMs to participate in the tender are Airbus Helicopter's AS565 Panther and Sikorsky's S-76B. Bell Helicopter, Leonardo and Russian Helicopters could also offer own product. The RFP stipulates a wheeled helicopter with an all-up weight that does

not exceed 4.5 metric tonnes, powered by twin turbo-shaft engines with an electronic engine-control mechanism. The NUH is to be capable of deploying at least one lightweight ASW torpedo or two depth charges, with the ability to mount 12.7mm machine guns or rocket launchers on either side.

Naval Multi-Role Helicopters

Indian Navy has been facing shortage of multi-role helicopters for deployment on warships for more than a decade. On a long-term perspective Indian Navy has a plan for acquiring 123 more Naval Multi-Role Helicopters (NMRH) to be used as ship borne flights of two helicopters each for its frontline destroyers and frigates to form integral air for critical operations out at sea.

It is learnt that the RFI for NMRH has been floated by MoD globally on August 22, 2017. Indian Navy is also finalising an RFP for a follow-on NMRH to acquire 75 more helicopters as part of a fresh bid. The NMRH will progressively replace India Navy's Westland Sea King Mk. 42B fleet. Apart from the NH90, contenders for the NMRH bid could include the Lockheed Martin/Sikorsky MH-60R (which was dropped from the original NMRH competition since MoD did not want a single-vendor foreign military sale on which the Pentagon had insisted) and Airbus Helicopters H225M. **SP**



Defence Minister Nirmala Sitharaman at the commissioning ceremony of INS Kiltan into the Indian Navy, at Naval Dockyard, Visakhapatnam on October 16, 2017. The Chief of the Naval Staff Admiral Sunil Lanba and other dignitaries are also seen.

INS Kiltan ASW stealth corvette commissioned

During her address post commissioning, Defence Minister emphasised that the Navy's relentless pursuit of self-reliance through indigenisation is highly appreciable and this has helped the Indian Navy to seamlessly transform from a Buyer's to a Builder's Navy. She highlighted that the addition of INS Kiltan to the naval fleet is a reaffirmation of this transformation.

[By **Our Special Correspondent**]

INS Kiltan (P30), third anti-submarine warfare (ASW) stealth corvettes built under Project 28 (Kamorta Class) was commissioned into the Indian Navy by Defence Minister Nirmala Sitharaman at an impressive ceremony held at Naval Dockyard, Visakhapatnam on October 16, 2017. Admiral Sunil Lanba, the Chief of the Naval Staff, Vice Admiral HCS Bisht, Flag Officer Commanding-in-Chief Eastern Naval Command, Rear Admiral V.K. Saxena (Retd), CMD, Garden Reach Shipbuilders & Engineers Limited, Kolkata (GRSE), Kolkata, Commodore M.B. Kunte (Retd) first Commanding Officer of erstwhile Kiltan and a host of other dignitaries were also present during the commissioning ceremony. The event marked the formal commissioning into the Navy of the third of the

four ASW Corvettes, indigenously designed by the Indian Navy's in-house organisation, Directorate of Naval Design and constructed by Garden Reach Shipbuilders & Engineers Limited, Kolkata.

On arrival at the Naval Jetty, Defence Minister Nirmala Sitharaman was received by Admiral Sunil Lanba, the Chief of the Naval Staff. The Minister was presented with a Guard of Honour and was introduced to the dignitaries' present prior commencement of commissioning ceremony.

Welcoming the gathering, Admiral Sunil Lanba stated that this commissioning marks yet another milestone in our journey of indigenous warship building. The Indian Navy is deeply committed to the principle of indigenisation and the Government's thrust on 'Make in India'. Commissioning of four ships in the last year, all built in Indian shipyards, is a testimony of our resolve. Our commitment to

indigenisation also assumes special significance as we have steadily broadened our indigenisation efforts beyond ship building. We have achieved considerable success with indigenous sonars such as Abhay and HUMSA-NG as well as weapons such as Varunastra and BrahMos. These achievements are a result of the Indian Navy's proactive and integrated approach to achieve self-reliance said the Admiral.

This was followed by reading out the Commissioning Warrant of the Ship by the Commanding Officer, Commander Naushad Ali Khan. Subsequently, hoisting of the Naval Ensign onboard for the first time and 'Breaking of the Commissioning Pennant' with the National Anthem being played marked the completion of the Commissioning Ceremony.

During her address post commissioning of INS Kiltan, the Defence Minister Sitharaman congratulated the Indian Navy, GRSE, other Indian PSUs and a host of small and medium scale industries, which have contributed towards building this fine ship. She emphasised that the Navy's relentless pursuit of self-reliance through indigenisation is highly appreciable and this has helped the Indian Navy to seamlessly transform from a Buyer's to a Builder's Navy. She highlighted that the addition of INS Kiltan to the naval fleet is a reaffirmation of this transformation. She further exhorted that we need to benchmark our shipbuilding practices to international best practices and produce quality ships in a shorter time frame and at competitive costs. She further stated that the Government fully appreciates the nation's defence requirements and requisite finances for the armed forces and defence industry would be made available for the modernisation and development plans of the Navy. The Defence Minister later unveiled the Commissioning Plaque and dedicated the ship to the nation.

Regarded as a very prestigious acquisition, INS Kiltan is one of the most potent warships to have been constructed in India. The ship's keel was laid on August 10, 2010, and launched on March 26, 2013. Her maiden sea trials commenced on May 6, 2017, and finally was handed over to the Indian Navy by GRSE on October 14, 2017. The sleek and magnificent ship is propelled by 'Combination of Diesel and Diesel (CODAD)' propulsion system of four diesel engines to achieve speeds in excess of 25 knots and has an endurance of around 3,500 nautical miles.

The ship has enhanced stealth features resulting in a reduced Radar Cross Section (RCS) achieved by X-form of hull and superstructure along with optimally sloped surfaces. The very low under water acoustic signature makes it a 'silent killer on the prow'. This

has been achieved by using advanced techniques for propeller design and mountings of main machinery. The ship's advanced stealth features make her less susceptible to detection by the enemy and help in effective employment of soft kill measure like the Chaff.

More than 80 per cent of the ship is indigenous with state-of-the-art equipment and systems to fight in nuclear, biological and chemical (NBC) warfare conditions. Also, P-28 weapons and sensors suite is predominantly indigenous and showcases the nation's growing capability in this niche area. INS Kiltan is the first major warship with superstructure entirely of composite material.

Weapons and Sensors have been installed/interfaced on this composite superstructure for the first time on a major warship. Composite superstructure fitted on INS Kiltan ushers the usage of advanced engineering materials on Indian Naval warships with significant improvement in weight and stability parameters.

Apart from her integral ASW capable helicopter, the formidable array of weapons include heavy weight torpedoes, ASW rockets, 76 mm caliber Medium Range gun and two multi-barrel 30 mm guns as Close-in-Weapon System (CIWS) with dedicated fire control systems. She is also fitted with indigenous missile decoy rockets (Chaff) and advanced ESM (Electronic Support Measure) system to detect and map enemy transmissions and direction finder equipment. The ship boasts of a highly advanced Combat Management System and a sophisticated Integrated Platform Management System.

The ship gets her name from old INS Kiltan (P79), a Petya class ASW ship that served the nation for 18 years before being decommissioned in June 1987. Named after the coral island belonging to the Lakshadweep group of islands in India, the ship has a total complement of 15 officers and 180 sailors. The sleek and magnificent ship spans 109 meters in length, 14 meters in breadth with a displacement of 3,300 tonnes and can rightfully be regarded as one of the most potent Anti Submarine Warships to have been constructed in India.

With the changing power dynamics in the Indian Ocean region, INS Kiltan will augment the Indian Navy's mobility, reach and flexibility whilst proudly flying the Indian Flag. The ship is manned by a team comprising 13 officers and 178 sailors with Commander Naushad Ali Khan at the helm as her first Commanding Officer. The commissioning of Kiltan will add a new dimension to the ASW capability of the Indian Navy and the Eastern Fleet in particular. The multifarious missions that can be undertaken by the ship truly reflect the enhanced multi-dimensional capability of the Indian Navy. **SP**

(Left) Defence Minister Nirmala Sitharaman unveiling the ship's plaque at the commissioning ceremony of INS Kiltan into the Indian Navy, at Naval Dockyard, Visakhapatnam on October 16, 2017; (right) The Minister inside the ship.





Defence Minister inaugurates Goa Maritime Conclave

Inaugurating the Goa Maritime Conclave (GMC), the Minister of Defence, Nirmala Sitharaman said that it aimed to bring together like minded nations to evolve and formulate collective responses to challenges in the maritime domain. It would also provide an opportunity to communicate India's viewpoints and collectively shape a favourable maritime environment for countries in the region.

The November 1 conclave on 'Regional Maritime Challenges' saw speakers such as Admiral Arun Prakash (Retd), Admiral Dr Jayanth Colombage (Retd) of Sri Lanka, Admiral Md Khurshed Alam of Bangladesh, Professor Ashley J. Tellis, Dr C. Raja Mohan, Professor Harsh V. Pant and Dr Christian Bueger.

The Minister said that the Indian Ocean region (IOR) has pro-

gressively gained centre-stage largely due to the political impact of its regional dynamics on international geo-politics. The future of the world will be shaped, to a large extent, by the political and economic interactions between the stake holders in the IOR.

She added "On land, the unresolved borders and riparian disputes which are predominantly a legacy of the colonial era are some of the key causes of conflict. Further, this impasse in international relationships, is a product of many causes such as ideological differences, political insecurities, economic dependency, technological dependencies, inequitable access to resources, geographical imperatives etc. The net impact of these differences is that trust deficit and tensions between nations continue to persist, on account of perceived challenges to sovereignty, despite positive economic interactions between them. As international behaviour in the maritime medium is influenced considerably by land based imperatives, cordially or latent hostility prevalent amongst countries on land tends to be reflected in the seas."

She said the GMC should evaluate the impact of emerging maritime security architectures on overcoming maritime security challenges; sort out differences; capitalise on commonalities; tap intellectual capital and evolve customised solutions rather than imported solutions.

Admiral Sunil Lanba, Chief of the Naval Staff said that there is a perceptible lack of formal arrangements with respect to engagement between littoral navies of the south and south eastern IOR and the GMC aimed at bridging this gap. There was need for creation of comprehensive infrastructure, equipping the force with technology and investing in quality training while exercising financial prudence. Making large and long term financial commitments to counter specific threats from perceived adversaries may not necessarily yield the desired results in the future, hence it would be wiser to adhere to long term plan which is underpinned by a clear assessment of desired capabilities. **SP**

Exercise Indra-2017 concludes

The Indo-Russian military Exercise Indra-2017 culminated on October 29, 2017 at Vladivostok after eleven days of joint training in counter-terrorism operations.

After intense and exacting military training, the joint exercise concluded with a closing ceremony, wherein both the contingents showcased their immense talents with unique traditional touches. The grand closing ceremony at Vladivostok which comprised of personnel of both contingents was witnessed by senior officials and dignitaries of both countries including Ambassador of India to the Russian Federation Pankaj Saran. Personnel from the Indian as well as Russian contingents were awarded medals of excellence for their outstanding performance during the exercise. Fighters and helicopters co-piloted by Indian and Russian pilots took part in the flypast along with an Indian Air Force IL-76 aircraft.

In the joint tactical exercise which began on October 19, 2017, the two countries conducted training focused on combating terrorism. In the series of bilateral exercises under this banner, the exercise this year focused on conduct of counter insurgency/counter terrorist operations under United Nations mandate in a joint service environment. The exercise also provided an opportunity to both the armies for greater cultural understanding, sharing experiences and strengthening mutual trust and co-operation.

Participants from both the armed forces expressed immense satisfaction at the conclusion of the training, in terms of the standards achieved in the validation phase of the training. The senior observers

from the Indian Army and the contingents are carrying back cherished memories of the warm bonhomie generated and the outstanding professional association established amongst the participants. **SP**

Indo-Kazakhstan joint exercise Prabal Dostyk 2017 begins

A 14-day joint training exercise Prabal Dostyk-2017 between the Indian Army and the Kazakhstan Army commenced on November 2, 2017, with the opening ceremony at Bakloh, Himachal Pradesh. The joint exercise is aimed at enhancing the military ties between the two countries as also at achieving interoperability between the two armies. The training contingents comprise of platoon strength from the 11th Gorkha Rifles of the Indian Army and a similar strength of the Kazakhstan Army. **SP**



Defence Minister addresses Naval Commanders' Conference

The Defence Minister Nirmala Sitharaman addressed the Naval Leadership the Naval Commanders' Conference which was held from October 24 to 27.

The Defence Minister complimented the Indian Navy for securing the maritime interests of the nation. Taking note of the recent developments in our maritime neighbourhood, she emphasised the need for the Indian Navy to be strong at sea, and be ever ready and vigilant to counter any challenges in the maritime domain.

The Defence Minister acknowledged the high operational tempo maintained by the Navy in the last one year through regular deployment of ships, submarines and aircraft from the South China Sea and Sea of Japan in the East to the Persian Gulf and the Atlantic Ocean in the West and the shores of Australia in the South including the focused efforts to deter piracy attempts off the Gulf of Aden. Participation in a number of bilateral exercises and the unprecedented success of the Exercise Malabar with the US and the Japanese Navy earlier this year were lauded by the Defence Minister.

She took note of the critical capability shortfalls that the Navy is facing in ship-borne multi-role helicopters, conventional submarines and mine counter measure vessels, which need urgent redressal to maintain the combat edge of the Navy. She assured the Commanders' that that these issues were being given due impetus and efforts were in hand to mitigate these shortcomings at the earliest.



The Minister also commended the efforts of the Navy to constructively engage with the Indian Ocean region (IOR) littorals to build their capacities and enhance their capabilities. She also mentioned the initiatives taken by the Indian Navy to impart practical training for naval personnel from IOR littoral nations on a regular basis. **SP**

Vice Admiral Karambir Singh takes over as the Flag Officer Commanding-in-Chief, ENC

Vice Admiral Karambir Singh, AVSM took over as the Flag Officer Commanding-in-Chief, Eastern Naval Command (ENC) from Vice Admiral H.C.S. Bisht at a ceremonial parade held at the Naval Base on October 31. Vice Admiral HCS Bisht retired after 40 years of service.

Commissioned into the Indian Navy in July 1980, Vice Admiral Karambir is an alumnus of the National Defence Academy, Khadakwasla, the Admiral earned his wings as a helicopter pilot in 1982 and has flown extensively on the Chetak and Kamov helicopters. He is a graduate of Defence Services Staff College, Wellington; College of Naval Warfare, Mumbai and has served as Directing Staff in both these Institutions.

On promotion to flag rank, the Admiral was appointed as Chief of Staff, ENC. His other important flag appointments include Chief of Staff of the Tri-Services Unified Command at Andaman & Nicobar Islands and as the Flag Officer Commanding Maharashtra and Gujarat Naval Area (FOMAG).

In the rank of Vice Admiral, he has been the Director General Project Seabird, in-charge of infrastructure development of the Navy's modern base at Karwar. He was also assigned higher responsibilities at IHQ MoD(Navy) as Deputy Chief of Naval Staff and Vice Chief of the Naval Staff, prior to the present appointment. **SP**



Vice Admiral Ajit Kumar P. assumes charge as VCNS

Vice Admiral Ajit Kumar P. AVSM, VSM has assumed charge as the Vice Chief of Naval Staff from Vice Admiral Karambir Singh who proceeds to Visakhapatnam to take over as Flag Officer Commanding-in-Chief Eastern Naval Command.

Vice Admiral Ajit Kumar P. is an alumni of the National Defence Academy. The Flag Officer was commissioned in the Indian Navy on July 1, 1981, and is a specialist in Missiles & Gunnery. The Flag Officer has had extensive operational tenures onboard frontline warships of the Indian Navy. He has had the distinction of having commanded six seagoing platforms which include the guided missile corvette Kulish (commissioning), the guided missile frigate Talwar, the guided missile destroyers Mumbai and Mysore. The officer has done the Naval Higher Command Course and is also an alumni of the Naval War College, Newport, Rhode Island, USA.

He was promoted to Flag Rank in September 2009 and as a Rear Admiral, his assignments included Assistant Chief of Personnel (HRD) at Naval HQ, Flag Officer Commanding Eastern Fleet (FOCEF) and Chief of Staff of Southern Naval Command. On promotion to the Rank of Vice Admiral on December 1, 2013, he was appointed as the Commandant of the Indian Naval Academy, Ezhimala and thereafter has completed two joint service tenures as Principal Staff Officer at Headquarters Integrated Defence Staff. **SP**



Defence Minister's maiden visit to CVRDE, Chennai

The Defence Minister Nirmala Sitharaman made her maiden visit to Combat Vehicles Research & Development Establishment (CVRDE), Avadi, Chennai, on October 15, 2017. Chairman DRDO & Secretary Department of Defence R&D Dr S. Christopher and Distinguished Scientist & Director, CVRDE Dr P. Sivakumar, made a brief presentation on the achievements and on-going national programmes of CVRDE in combat vehicles and technologies.

The dignitaries were taken to various technology centres by Director, CVRDE to witness the products and systems/technologies developed by CVRDE. The Defence Minister has evinced keen interest in the advanced systems like Arjun MBT Mk-II, Arjun Armoured Recovery and Repair Vehicle (ARRV), Arjun Catapult, unmanned ground vehicles, sub-systems of LCA Tejas, landing gear, 180 hp engine for Rustom-II, 1000 hp engine for T-72 and 400 hp for BMP-II. The respective project leaders highlighted the uniqueness and specialities of their systems to the dignitaries.

During this occasion, the Minister released a book namely *Arjun MBT - An Indian Success Story* that describes the entire project of Arjun MBT Mk-I. In the august presence of the Defence Minister Nirmala Sitharaman and the Chairman, DRDO, the first prototype of Arjun ARRV was handed over by CMD, BEMIL, Deepak Kumar Hota to Director, CVRDE; Director, CVRDE handed over one set of Landing Gear along with CEMILAC certification to Director, ADE; One set of Power Take Off Shaft to Director, GTRE; and Director, VRDE handed over 180 hp engine to Director, ADE.

Nirmala Sitharaman launched the website, 'DRDO Robotics & Unmanned Systems Exposition' (<https://rac.gov.in/druse>) for inviting the young and talented minds of engineering community



from all parts of the country to take part in Defence Challenging applications. She has also released a book titled *Achievements of CVRDE* during the ceremony.

The Defence Minister congratulated DRDO fraternity, in particular CVRDE, for its unstinted efforts and contributions for the defence self-reliance of the nation and expressed her confidence that DRDO will strive hard to empower the nation further with 'Make in India' concept. **SP**

MoS Defence says indigenisation vital in defence sector

The Minister of State for Defence Dr Subhash Bhamre has said that the quest for indigenisation must be the foremost concern of any organisation as it is even more important in Defence sector as it leads to self-reliance which is critical to national security.

Inaugurating a seminar on 'Indigenous Technological Empowerment of the Indian Army', here Dr Bhamre stated that significance of indigenisation must be fully absorbed by all stakeholders and must implement 'Make in India' in all future acquisition programmes. He appreciated that the Indian Army has not only organised a series of initiatives towards this objective, but also created the Army Design Bureau, which is a unique organisation to facilitate interaction and seek participation of the Indian industry and the academic community. Commenting that technology has permeated into all facets of daily existence, he said its relevance in warfare is most critical and always the side with access to better technologies will always win. "True self-reliance in Defence, therefore will flow out of fully home-grown technology", he said.

The Chief of the Army Staff General Bipin Rawat said that the Army has encouraged the academia and the industry in the country to come and understand the requirements with regard to equipment that is needed by the Army. The Secretary General, FICCI Dr Sanjaya Baru, CMD Bharat Forge Ltd Baba N Kalyani and Lt General Subrata Saha (Retd) also spoke on the occasion. **SP**

Navika Sagar Parikrama – Tarini enters Fremantle

INSV Tarini entered Fremantle (Australia) port during its maiden voyage to circumnavigate the globe. This is the first-ever Indian circumnavigation of the globe by an all-women crew. The vessel is skippered by Lieutenant Commander Vartika Joshi, and the crew comprises Lieutenant Commanders Pratibha Jamwal, P. Swathi, and Lieutenants S. Vijaya Devi, B. Aishwarya and Payal Gupta.

INSV Tarini was flagged-off from Goa by Defence Minister Nirmala Sitharaman on September 10, 2017. The vessel has covered 4800 Nautical miles from Goa, crossing the Equator on September 25, 2017 and the Tropic of Capricorn on October 6, 2017. The indigenously-built INSV Tarini is a 56-foot sailing vessel, which was inducted in the Indian Navy earlier this year, and showcases the 'Make in India' initiative on the International forum.

The vessel would return to Goa in April 2018, on completion of the voyage. The expedition is being covered in five legs, with stop-overs at 4 ports: Fremantle (Australia), Lyttleton (New Zealand), Port Stanley (Falklands), and Cape Town (South Africa).

The crew has also been collating and updating meteorological, ocean and wave data on a regular basis for accurate weather forecast by India Meteorological Department, as also monitoring marine pollution on the high seas. They would interact extensively with the local populace, during the port halt to promote ocean sailing and the spirit of adventure. **SP**

AIR CHIEF MARSHAL
FALI H. MAJOR (RETD)

Expressway landings

Air operations from expressways and highways have combat potential and other spin-offs

The recent Air Operations on the Agra-Lucknow Expressway by IAF fighter and transport aircraft was indeed a very well planned and executed operation to showcase the versatility and capability of IAF platforms, the flexibility of IAF planning and most importantly, the flying skills displayed by the aircrew. This spectacular display by the IAF not only enthralled all Indians, but also sent out a very clear message of IAF's capabilities and combat edge.

While it is common knowledge that Expressway/Highway landings and take offs by many air forces around the world as a runway denial/closure/damage contingency training by fighter aircraft is carried out often; it is the simulated Assault landing/takeoff by the IAF C-130 for infiltrating Special Forces and then exfiltrating them on completion of their assigned op task that has added an entirely new dimension to these air operations. Another advantage of dispersed area operations by military aircraft is to minimise losses, since regular air force bases are always on the target list of enemy air and missile forces. A dispersed launch of strike missions and airborne operations from identified stretches of expressways/highways will always have the advantage of surprise and flexibility of operations.

In our context, given the vast expanse of our Country and a paucity of airfields in the far corners, expressway/highway transport peace time air operations from such locations during natural calamities and disaster relief contingencies would help immensely in speeding up relief operations and flying in emergency supplies in the disaster zone. Given the versatility & capability of newly inducted IAF transport aircraft assets like the C-130 and C-17 aircraft with their considerable load/range capacity, large scale & speedy relief operations are a distinct possibility. The IAF, I am sure, must have factored in such contingencies in their interaction and planning process with

Highways Authority of India, State Governments & other agencies. These operations, coupled with Heliborne relief operations from there onwards, should become a SOP for all future HDR operations from earmarked stretches of expressways/highways in disaster areas where there are no airfields.

If we were to go beyond peace time expressway/highway transport air operations for HDR operations or recovery of stricken fighter aircraft, war time military aviation history is replete with other out-of-the-box operations which achieved extraordinary results and strategic effects. The 'Doolittle Raid' on Tokyo by twenty eight B-25 bombers, albeit launched from the narrow confines of an aircraft carrier changed the course of WW II, and is an important example of such unorthodox air operations! Given the availability of suitable stretches of expressways/highways in the vicinity of our borders & with requisite training, there is a distinct possibility to position/deploy combat troops and military equipment speedily and in large numbers in conflict situations for quick and easy transit by helicopters/vehicles to actual zones of conflict. The same could be achieved behind enemy lines in a benign air defence zone, if these special operations are planned and executed with precision. All such operations are fraught with dangers and the likelihood of losses, but distinctly possible under extraordinary circumstances. These would invariably be one-off operations, and difficult to be repeated.

Military aviation always demands innovations, unorthodox operations, grit and courage for any difficult air operation to be executed successfully. The IAF has made a fine beginning and in the days to come, will hone its skill levels to undertake and execute more complex dispersed operations. **SP**

The writer is former Chief of the Air Staff and former member, National Security Advisory Board, Government of India.



(Top to bottom) Su-30MKI, Mirage 2000 and Jaguar during a landing operation at Agra-Lucknow Expressway



A file photograph of the Al Fursan, the UAE Air Force aerobatic display team, flying in formation behind a USAF F-15E Strike Eagle at the 2015 Dubai Airshow

All systems go for 15th air show

The 15th exhibition of Dubai air show, to be held from November 12 to 16 at the Dubai World Central, will have more than 1,200 exhibitors – including 100 taking part for the first time – and over 160 aircraft on display during the show.

[By **Bikram Vohra, Dubai**]

It has come a long way from that first valiant effort in 1986. Those days the two names on the aviation marquee were Farnborough and le Bourget with Singapore bringing up the also ran position.

Today the Dubai air show ranks right up there with the best of them. In fact, it can be said that the four-day air-fest is now considered the benchmark for the industry's bi-annual get together.

The 15th exhibition, to be held from November 12 to 16 at the Dubai World Central, will have more than 1,200 exhibitors – includ-

ing 100 taking part for the first time – and over 160 aircraft on display during the show.

Among the new dimensions given to the show are the Space Conference and the display of the unmanned aerial systems.

Besides aircraft, the fresh emphasis is also on space exploration and keeping in mind the UAE involvement in the Mars mission this aspect is being given precedence this year. Between that new dimension and the airport solutions segment as well as the cargo conference things are certainly going to be exciting. This is the first time in the history of aviation exhibitions that the future is being made the theme of the four-day spectacle. Space exploration, travel

and the combination of wanderlust and scientific research will be of the essence.

Of great interest to fans of the Apollo missions will be the presence of Captain Al Worden who piloted Apollo 15 and will be addressing a select audience on his experiences along with an audio visual presentation. Adding another angle to the show is the Gulf Aviation Training Event (GATE) and Futures Day elements. These are designed to encourage the younger generation to step up to the plate and discover career options in the aerospace industry which are now opening up. In sharp contrast is the seminar slated to address the global shortage of flight crew and what needs to be done about it.

With a high of 75,000 visitors expected as against the 66,000 in 2015 the sales may not touch the high of 2013 when major orders fueled the bottom line but will probably rise higher than the 2015 edition which saw over \$37 billion in orders. If one recalls, the major carriers in the region had placed huge orders in 2013 and these are still being completed so there would be a natural slow down until the deliveries have been completed. Since these deliveries are still ongoing such repeat huge orders from the likes of Emirates, Etihad and Qatar are not likely. Also, with subdued oil prices, the political attrition between the GCC enclave and its isolation of Qatar and the general slowing down in air traffic the bottom line is relatively weak at present. Qatar Airways is hurting, Etihad is getting over its lost investments in Air Berlin and Alitalia which went belly up and Emirates is most concerned on being left out on a limb by Airbus failure to keep the A380 project in a positive frame. Even Emirates decision over the selection of either the A350 or the Boeing 787 is supposedly on hold if one goes by the statement made at Paris in September by the airline President Tim Clark. He said that the carrier would do what it feels is right for it and not necessarily see the Dubai airshow as the venue for any future announcement. Emirates is certainly expecting Airbus to man up on the A380 plus and also assure its best customer that there are others ready to go for the big babe although none of the other Mid East carriers seem so inclined.

By 2020, the region carriers will be flying an estimated 1,020 airplanes.

The highest growth market for the Middle East is projected to be to and from Southwest Asia (the Indian subcontinent area) at five per cent, followed by intra-Middle East travel at 4.3 percent. The most heavily travelled routes, in total passengers, will continue to be to and from European markets.

The Middle East is also expected to experience economic growth at higher than the world average during the next 20 years. In addition, the 5.7 per cent air travel growth projection provides a strong foundation for expansion by the region's airlines.

It was expected that the A329neo would ignite a spurt of interest but with the trials not yet over at Toulouse Blagnac it has to be given a pass for now. Attention will largely be on the high noon duel between the Airbus 350-900 and the Boeing 787 series as both battle for supremacy in the long haul wide-body twin engine category. With Thai Airways and Delta exulting over the introduction of the A350 XWB the future here looks good but the Boeing 787-900 is a lot cheaper at \$264 million than the tag on the Airbus 350-900 which is \$304 million.

Both aircraft are constructed carbon fibre reinforced polymer (CFRP) and capable of withstanding higher pressure. It should be fun to see the two big boys in the market fighting for a share of the market even though there has always been that lurking suspicion that both manufacturers are happy with a plus 50 per cent of the market share despite their public antagonism and the spice it adds to the airshows but don't really want to spool and invest that much more in their assembly lines. Where Boeing might have a thin edge

of the wedge (in a nice way) is to offer a package deal along with the top selling 787-900 and the under test 323 seat double stretched 787-10X which promises to up the ante considerably.

In the feeder single aisle aircraft we could see a continuation of the 321 family versus the 737 cluster but no major deal is on the anvil at this juncture though Saudi Airlines could be looking at an augmentation. flydubai has already brought in its 737 MAX and will have it on display thereby showing tangible evidence to provoke buyer interest.

One of the major points of interests will be the air taxi concept in which Dubai held a trial run in September. These autonomous air vehicles will be introduced into service sooner than one thinks and will transport passengers at will through short distances. Dubai has taken the lead in this respect and for sure unmanned vehicles will be the star of the show.

According to the official data from the organisers the "Unmanned Aerial Systems (UAS) Summit, a two-day dedicated conference taking place within the Dubai Airshow, has released its agenda for the event on the November 14 and 15, 2017. Covering the past, present and future of UAS within the aerospace industry, the conference will be moderated by Air Marshall Philip Sturley CB MBE RAF (Retd)."

While bizjets will likely constitute as high as 25 to 30 per cent of the static display at Dubai 2017 there is quite a boost being given the military sector from Boeing who are displaying their two advanced surveillance systems with the intent of making them region specific. The P-8 Poseidon successor to the Orion has already sold 8 systems to the US Navy but has been booked for a similar number each by India and Australia. It is mounted on a 737 and Boeing believes there is great potential in the Mid-East for this and for the Maritime Surveillance Aircraft which is in actuality a Bombardier Challenger 600 in its military avatar. Boeing is also looking for a wider market for the CH-24 Chinook choppers as it would be for its Apache Longbow gunships.

The usual gang of fighter aircraft are well represented. They include the Saab AB Gripen, the Dassault Aviation SA' Rafale, Russia's MiG-35 and Sukhoi Su-35, and the Eurofighter Typhoon made by a consortium of British, German, Italian and Spanish companies. The Russians are keen to market their Sukhoi range especially since it comes with an advanced trainer. Exports of Su-27 fighters enabled Russia to preserve its operational air force. This aircraft, considered the most capable fighter aircraft in its class, may well point the way to a fifth generation of air fighters

The Su-27 is a dogfighter's dream. It has dazzled pilots with its ability to attack in the middle of screaming dives and ascents, setting 36 world records and is a favourite in the air displays.

There will also be a search for a market for the naval version of the Rafale. This makes a certain sense because the self-sell underscores a specific capability. Catapulted from a carrier deck in less than 75 metres, the Navy Rafale instantly and automatically rotates to the correct angle of attack. This critical operation is made possible by the aircraft's innovative 'jump strut' nose landing gear.

In the trainer category the top contenders will be the BAE Hawk, the Dassault/Dornier Alpha Jet, the Aero L-39 and the Yakovlev Yak-130. Also in the reckoning is the supersonic the T-38 Talon designed to ostensibly augment the F-35 programme. Embraer had in 2015 put the Super Tucano in the Dubai airshow and will probably still be seeking Mid East markets. The Brazilian manufacturer is likely to present the Legacy and Phenom bizjet and the E-jet concept will also ignite interest in this region.

It is going to be quite the display of air power in various categories and the highlight will still be the predicted slanging match between Boeing and Airbus. That is always a given at an airshow. **SP**

WAC Station Commanders' Conference

The Western Air Command, Station Commanders' Conference was held on October 23-24, 2017 at New Delhi. The Chief Guest, Air Chief Marshal B.S. Dhanoa, Chief of the Air Staff (CAS) was received by Air Marshal C. Hari Kumar, Air Officer Commanding, Western Air Command.

The CAS emphasised the need to enhance mission capability of all platforms and weapon systems. He reiterated the need for development and upkeep of operational infrastructure and continuous orientation of human resource so as to absorb induction of new technologies for a smooth transition of the IAF into a potent Aerospace power. The Chief re-emphasised the importance and pivotal role of Western Air Command in all future conflicts and in humanitarian assistance and disaster relief missions. He appreciated the aerospace safety record of WAC and urged the commanders to continue the earnest efforts towards creating an environment for safe operations. He appreciated the rapid response and untiring efforts of Western Air Command in providing humanitarian assistance and disaster relief in recent times, which included numerous casualty evacuation and transportation of live organs. **SP**



Chief of the Air Staff Air Chief Marshal B.S. Dhanoa meeting the Commanders of Western Air Command during the WAC Station Commanders' Conference at HQ Western Air Command in New Delhi on October 23, 2017

Boeing, Air Force test team completes first KC-46 to KC-46 refuelling



Boeing-US Air Force test team recently refueled a KC-46A tanker from another KC-46A tanker for the first time. During the four-hour flight, the two aircraft successfully refueled each other and achieved the maximum fuel offload rate of 1,200 gallons per minute. The program's first and second tankers transferred a total of 38,100 pounds of fuel over the course of the flight. Both aircraft took off and landed at Boeing Field, south of Seattle.

The milestone flight helps pave the way for the next phases of certification and specification compliance testing.

The KC-46 will refuel US, allied and coalition military aircraft using both its

boom and hose and drogue systems. The boom allows the tanker to transfer up to 1,200 gallons of fuel per minute, while the plane's hose and drogue systems, located on both the plane's wing and centerline, enables the KC-46 to refuel smaller aircraft with up to 400 gallons of fuel per minute.

To date, the programme's test aircraft have completed 2,000 flight hours and more than 1,300 contacts during refueling flights with F-16, F/A-18, AV-8B, C-17, A-10 and KC-10 aircraft. **SP**

Indra develops a trainer for the A330 MRTT in-flight refuelling tanker

Airbus Defence & Space has entrusted Indra, one of the world's leading global consulting and technology companies, the development of a tactical and integrated procedures trainer (IPT) for training pilots who operate the A330 MRTT aerial refueling tanker. System delivery is scheduled for 2019.

With this new project, Indra strengthens its leadership position as one of the world's leading manufacturers of simulators. The company has supplied over 200 simulators to over fifty clients in 23 countries.

The trainer will be a key element for pilots to familiarise themselves with the systems of the A330 MRTT tanker. All of them must pass a mandatory training period before assuming control of the real aircraft,

which requires the completion of a number of flight hours onboard simulators and trainers. These types of equipment enable training on protocols to be applied in anomalous situations which are impossible to reproduce using a real plane, such as engine failure, stall of the aircraft, or emergency landings, for example.

The trainer replicates the cockpit's instrument panel with the aid of touchscreens. This reduces costs, in avoiding the need to use real equipment, and enables pilots to learn by 'putting their hands on the wheel' of the aircraft from the very beginning, to move on to 'flying' in the Full Flight Simulator during the final stage.

This preparation is intense and eminently practical. This results in pilots' having a faster and improved training process so that they're ready to fly an aircraft with maximum safety levels as soon as possible.

Indra's IPT may be connected to the Partial Training system (PTT) used by boom operators for refueling the A330 MRTT. This way, pilots can train to perform this complex operation in which they must coordinate with the boom operators and with the crew of the aircraft being refuelled.

Indra has also developed simulators of the Airbus commercial aircraft A320 and A330, and of the Airbus helicopters H135, H225, H175, H145 and AS350. Its systems fly in countries all over the globe, including among others the USA, Germany, France, United Kingdom, Japan, China, Malaysia and Brazil. **SP**



Dassault-Reliance Aerospace manufacturing facility inaugurated



(From L-R) Devendra Fadnavis, Chief Minister of Maharashtra, Nitin Gadkari, Union Minister for Road Transport and Highways of India, Florence Parly, Minister of Armed Forces, France, Anil D. Ambani, Chairman, Reliance Group and Eric Trappier, Chairman of Dassault Aviation.

[By **Our Special Correspondent**]

Eric Trappier, Chairman of Dassault Aviation and Anil D. Ambani, Chairman of the Reliance Group recently laid the Foundation Stone for the Dassault Reliance Aerospace Limited manufacturing facility in Mihan, Nagpur located in India's western state of Maharashtra.

The Foundation Stone was laid in the presence of Florence Parly, Minister of Armed Forces of the French Republic; Nitin Gadkari, Union Minister for Road Transport and Highways of India, who is also the Member of Parliament of the city of Nagpur; and Devendra Fadnavis, Chief Minister of the State of Maharashtra; and Alexandre Ziegler, Ambassador of France to India. Also present were over 200 dignitaries from the State and City administration and local industry.

The Dassault-Reliance manufacturing facility Dhirubhai Ambani Technology Park is located in the Mihan SEZ adjoining Nagpur International Airport. Under this Joint Venture (51 per cent Reliance Infrastructure and 49 per cent Dassault Aviation) the facility will manufacture several components of the offset obligation connected to the purchase of 36 Rafale Fighters from France, signed between the two Governments in September 2016.

DRAL will manufacture components for the Legacy Falcon 2000 series of civil jets manufactured by Dassault Aviation and thus will become part of its global supply chain. These first steps are expected

to achieve in the coming years the possible setting up of final assembly of Rafale and Falcon Aircraft.

The joint venture also represents a unequalled foreign direct investment (FDI) by Dassault Aviation of over 100 million euros, the largest such Defence FDI in one location in India.

The DRAL facility will train thousands of skilled workers in aviation assembly and integration, and lead to huge employment generation in Nagpur and its surrounding areas. It will also attract and house an organic ecosystem of over 200 MSME's to secure the component and avionics manufacturing needs of Rafale and Falcon jets.

Dassault Aviation Chairman, Eric Trappier, declared that "this Foundation Stone laying demonstrates Dassault's firm commitment to implementing Prime Minister Modi's 'Make in India' programme. It gives the 65 year-long strong association of Dassault-Aviation in India a new momentum and the will of future manufacturing developments."

Reliance Group Chairman, Anil D. Ambani, stated "this facility in Mihan, Nagpur within the Aerospace Park named after my Late Father Dhirubhai Ambani could not have happened without the strong and consistent support of Nitin Gadkari and Devendra Fadnavis. The Reliance Dassault partnership will bring high levels of Technology Transfer. It will make India a major supplier into the global aviation supply chain. It will be the endeavor of both Dassault and Reliance to fully support Prime Minister Modi's 'Make in India' and 'Skill India' policies and to accelerate India's pursuit of self sufficiency in the aerospace sector." **SP**



Mariah Carey's Los Angeles home burgled

Singer Mariah Carey became a victim of a burglary when thieves broke into her mansion here and took away \$50,000 worth of purses and sunglasses. Burglars gained access to Carey's residence around 3 a.m. recently and entered through a window or door on an upper floor, law enforcement officials told [tmz.com](#). Thieves didn't take any of the pricey jewelry, but instead stole Carey's sunglasses and purses.

Carey is currently in New York City and there was nobody at the mansion during the time of the burglary. Police has currently not made any arrests and are still investigating the matter. **SP**

Hijacker on board Jet Airways

A Mumbai businessman was recently arrested for carrying out a hijack threat on a Mumbai-Delhi Jet Airways flight. The flight was diverted to Ahmedabad, where it made an emergency landing. The businessman, identified as Birju Kishore Salla, who was also on the flight, left a note in Urdu and English in the lavatory of Jet flight 9W-339 warning that there would be a 'blast' if the aircraft landed in Delhi and claimed there were 12 hijackers on board with explosives in the cargo hold.

Investigators said the accused, a regular business class flyer, wanted to frame an airhostess, who had earlier spurned his advances. It was not clear if she was on the same flight. Officials said the flight, carrying 115 passengers and seven crew members, was put on hijack alert after one of the crew members found the type-written note at around 3.30 a.m.

The plane then made an emergency landing at the nearest airport, Ahmedabad, a Bureau of Civil Aviation Security official said. The Aerodrome Committee comprising police and CISF officials was assembled. The aircraft was taken to an isolation bay and thoroughly searched. National Security Guard (NSG) commandos were alerted and helped in the anti-hijack drill.

PTI correspondent Rajkumar Leishemba, who was on board, said the passengers were told the flight was diverted due to "security reasons". All passengers were deplaned and screened. They were photographed and questioned by security personnel on various details, including their last overseas visit, he said. After the search, the aircraft was allowed to fly to Delhi after a delay of seven hours. On the request of the airline, two marshals were put on the flight. "The aircraft landed at 3.48 a.m. and was thoroughly checked before being cleared for departure to Delhi at 10.46 a.m.," Central Industrial Security Force (CISF) spokesperson Hemendra Singh said.

Salla, was detained after crew reported that he had been the only person to use the restroom before the threat note was discovered. On interrogation, he confessed to having placed the note. Since he

did not know how to write in Urdu, Salla used Google to translate it. He then took a printout of the letter and dropped it into the aircraft washroom when the flight was in mid-air. **SP**

Heathrow Airport security USB on Queen found on street

A USB stick containing confidential details about Heathrow security— including the route the Queen takes when flying — has been found in a London street. Britain's biggest airport has launched an investigation into the leak amid fears data on the device could have been shared on the dark web, reports *The Sun*.

The shocking leak was revealed by the Sunday Mirror, which reports that the memory stick contained maps, videos and documents at a time when the UK terror threat is at severe.

Files are said to have revealed the route the queen takes when using the airport, as well as the extra security put in place to keep her safe, timetables of guards' patrols and the ID needed to access restricted areas. The routes used by cabinet ministers and details of radar systems used to monitor runways and security fences were also reportedly on the 2.5GB device — with some documents marked 'confidential' or 'restricted'.

It also contained maps showing the location of CCTV cameras around the airport as well as tunnels and shafts used for the Heathrow Express. The Sunday Mirror has said that the USB drive was not password protected and documents not encrypted.

It was reportedly found on by a member of the public amongst leaves in Ilbert Street, West London, with cops working with airport chiefs to discover how the device came to be there. The man got curious and so a few days later opened it on a library computer to have a look at its contents while he was using the machine to search for work. There are concerns the data could already have been shared on the dark web, used by criminals and terrorists to purchase information. **SP**



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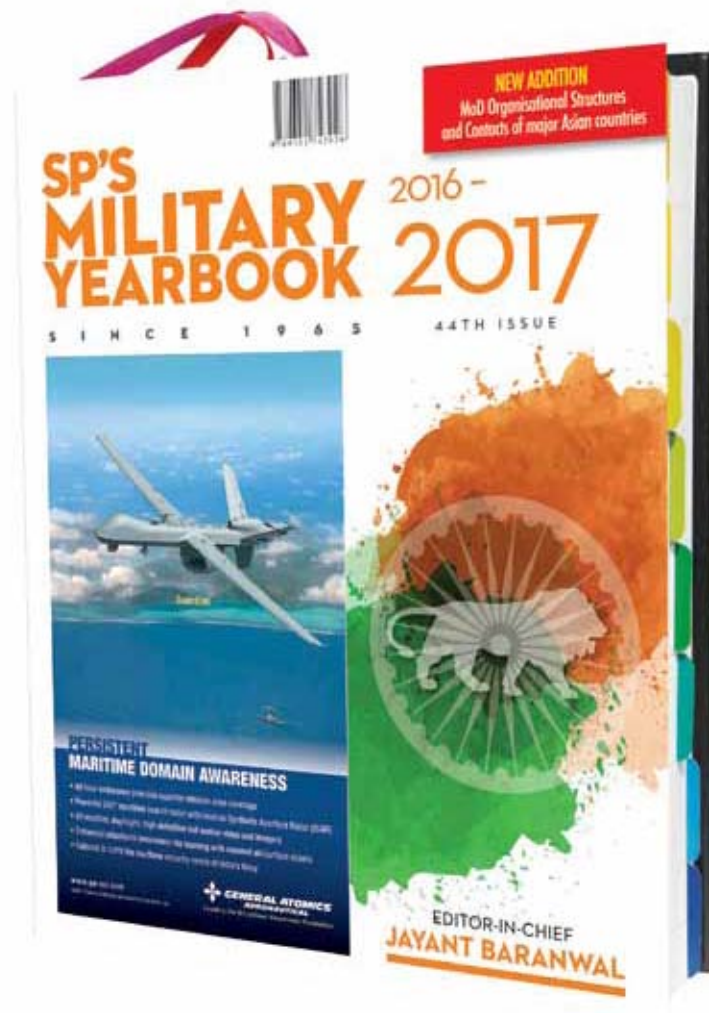


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