

ROTOR INDIA

CIVIL & MILITARY

VOL 21 ISSUE 2

NEWSLETTER

30 JUNE 2021



INDIAN ULTRA LIGHT HELICOPTER



WILL BE AVAILABLE AT ATTRACTIVE COMPETITIVE PRICE WITH LOW OPERATING AND MAINTENANCE COST

IS THE CIVIL HELICOPTER INDUSTRY IN NEGATIVE GROWTH? **06**

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ROTOR INDIA

Civil & Military

Quarter Ending 30 June 2021
for
The Rotary Wing Society of India

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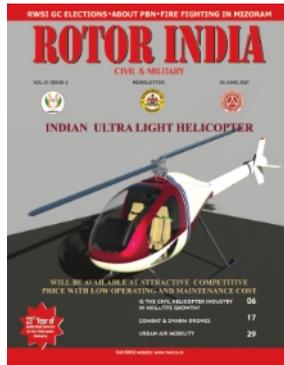
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RWSI is a professional Society registered with Govt. of NCT Delhi (Registration No.S-33154 of 1998) for the growth of civil & military helicopter industry. Its membership includes nearly **187** Corporate and over **1270** aviation professionals who have made major contribution to Indian civil & military aviation. Many of them are gallantry award winners. Majority of them are in active flying. RWSI is dedicated to the promotion of helicopter as a safe, effective method of commerce and to the advancement of Helicopter Industry

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Congratulations to all the Members of the 23rd Anniversary of RWSI on 18 June 2021

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Our Deep Gratitude to CORPORATE MEMBERS

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Andhra Pradesh Aviation Corporation
Air Works India Engg. (P) Ltd.
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JMD Consultant (P) Ltd.
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PENDING ISSUES ARE AFFECTING THE INDUSTRY

1. In India, the total number of civil helicopters has come down to 239 as on 31 Mar 21. While the numbers in a few countries are much more (approximate numbers USA - 11,000, Brazil, Australia, and Canada - 2000 each), the helicopter strength in India is comparable to much smaller countries (in size and population) like Norway, Sweden, and Venezuela.

2. Most of the civil helicopters in India are being used in communication role, both onshore and offshore, in the energy sector. It is very disheartening to see that the Civil Helicopter Fleet does not presently have a role in HEMS, Law Enforcement, Fire Fighting and under slung operations.

3. What do you think is the reason for the domestic helicopter industry failing to take off in a big way even after 60 years? And has the 2016 National Aviation Policy failed to address inherent issues grappling the industry? These questions are addressed at page 6.

4. RWSI has been continually taking steps to get the concerned civil aviation authorities to address issues affecting the industry. The issues raised are discussed in detail at various meetings with concerned civil aviation authorities. We are thankful to DGCA for resolving the following issues: -

- a) For recurrent training is allowed now in India for validity of 1 year after on helicopters, instead of simulator.
- b) Timeline is being set in writing by DGCA to dispose of files of NSOPs.
- c) DGCA has started working for all pilots and operators.
- d) Issuance of separate CAP 3400 for helicopters has streamlined rules applicable to helicopters in getting endorsement on NSOP of helicopters imported into India.

5. However, RWSI is not aware of the follow up action taken by concerned civil aviation authorities on decisions taken at the Meeting on 30 Sep20 under the Chairmanship of Smt.Usha Padhee Jt Secy MoCA on some of the other long pending issues. The issues such as (1) Rising cost of Airport charges in terms of hangar and land rentals, (2) Night Parking permission, (3) Offshore IFR Operations, (4) Create Heliport Division within AAI, (5) Simultaneous Non-Interfering Operations, (6). Permissions for operations to temporary helipads to be made simple and practical, (7) Create Helicopter Cell within DGCA, (8) Make FOIs available for use by the industry for the purpose of carrying out various checks of pilots as was done in the past.

6. It is unfortunate that many of the decisions taken at the meeting are yet to be implemented. Hopefully, MoCA will introduce a system of sharing Action Taken Reports with the stakeholders who participated in the meeting.

With warm regards,

AVM K Sridharan VM (G)
Editor-in-Chief

ON TAKING OVER AS PRESIDENT RWSI



Dear Life Members

Greetings from the Rotary Wing Society of India

It is an honour for me for being elected president of RWSI by the governing council. I am fully aware of the challenges ahead and would endeavour to carry forward the legacy of our predecessors. I would like to assure all members that every possible effort will be made to enhance the image and professional standing of the society.

I look forward to increased participation by all life members and would request them to regularly interact with the appointment holders at RWSI. Issues being faced by the industry which need to be pursued with various organisations need to be flagged. I assure all members that sincere efforts will be made to seek redressal for the same. Please feel free to contact me anytime 0120 6870878 or email me at asbutola@gmail.com.

I once again thank all the members for having shown trust in me. I am sanguine that together we will be able to change the face of the helicopter and drone industry in India.

With Regards

Air Marshal AS Butola PVSM VM VSM
President RWSI

Air Marshal AS Butola was commissioned in the Indian Air Force in June 1982. He has served all over India and abroad and has about 7000 hrs to his credit. He is a graduate of Defence Service Staff College and National Defence College and holds a M Phil Degree in Defence Studies.

He is a qualified Flying Instructor and an experimental Test Pilot. He served as an instructor in the basic stage training of both fixed wing and helicopters. He was Senior Flying Instructor in the Nanibian Defence Force between 1997-99. As an experimental Test Pilot he was involved in prototype testing and certification of ALH and Chital between 2001-2005. He also served as a Experimental Test Pilot with Mil Design Bureau, Moscow during 2009-10 for Mi-17 V-5 project.

After successful operational tenures. He served as Principal Director Administration in the Strategic Forces Command, Senior officer Administration and Senior Air Staff Officer of Central Air Command, Assistant Chief of Air Staff (Ops : T&H) at Air HQ and Commandant of Air Force Academy before taking over as Air Officer Commanding-in-Chief of the Training Command. He superannuated from the Indian Air Force on 30 Sept 2020 after more than 38 years of service.

Air Marshal AS Butola was awarded Commendation Card by the Commander-in Chief and Chief of Air Staff in 1985 and 1988 respectively. For His distinguished service to the nation he was awarded by the President of India with Vayu Sena Medal in 2002, Vishisht Seva Medal in 2005 and Param Vishisht Seva Medal in 2021.

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UTair India (P) Ltd.
UTC Aerospace Systems (P) Ltd.
Varman Aviation (P) Ltd.
VELTech Dr.RR & Dr.SR Technical University
Woodstock Helicopters Pvt Ltd.

DRONE TERROR ATTACK ON JAMMU AIRPORT



Jammu: On 27 Jun 21, in a first-of-its-kind attack in India, two low-intensity improvised explosive devices (IEDs) were dropped from a drone at the Indian Air Force (IAF) base in Jammu. They exploded “close to the helicopter hangar. The explosion did not cause any damage to any equipment, but two IAF personnel

received “very minor” injuries. The first explosion occurred around 1.30 am. “One caused minor damage to the roof of a building while the other exploded in an open area.” It added that “there was no damage to any equipment. Investigation is in process along with civil agencies”. The IAF did not mention about the drones but did point out that the roof was damaged.

J&K DRONE ATTACK: NARENDRA MODI GOVT TO UNVEIL POLICY TO DEAL WITH EMERGING SECURITY THREATS

New Delhi: In the aftermath of the first-of-its-kind drone attack in the country, the Govt of India is expected to soon unveil its policy to deal with the emerging security threats and futuristic challenges facing the country.

According to sources, expeditious framing of a broad-based policy to deal with such security challenges was broadly discussed during a crucial meeting chaired by Prime Minister Narendra Modi on 29 Jun 21, which was also attended by Home Minister Amit Shah, Defence Minister Rajnath Singh and National Security Advisor Ajit Doval.

The meeting took place two days after explosives-laden drones were used to carry out an attack on the Jammu Air Force station in the first such instance of suspected Pakistan-based terrorists deploying unmanned aerial vehicles to strike at vital installations.

“The government is coming out with a policy to collectively deal with the emerging challenges. It was decided to expedite the framing of the policy,” a source was quoted as saying by PTI.

Various ministries and departments are working on the policy to effectively counter the new and emerging non-traditional security challenges facing the country.

The Defence Ministry and the three services will play a leading role in the formulation of the policy as well as in its implementation by coordinating with all the leading stakeholders and security agencies. It has also been learnt that the three forces are being told to

adequately focus on bridging the gaps in effectively dealing with new-age challenges such as drone attacks and go for the procurement of the necessary hardware to contain those.

The meeting also discussed various other aspects, including equipping the security forces with modern equipment and involving more youngsters, start-ups and the strategic community in the field.

The Army has already been working on incorporating artificial intelligence, cognitive sciences, robotics, drones, quantum computing, nanotechnology and cyber capabilities as part of the efforts to deal with future challenges.

The people said the three services as well as key national security planners will have a series of meetings in the next few weeks and months to speed up the work on the policy.

They said the services have already been told to focus on acquiring anti-drone technologies to deal with attacks by unmanned aerial vehicles. Following the Jammu attack, the Indian Air Force has enhanced the security at all its bases located in the border areas.

The Defence Research and Development Organisation (DRDO) has developed anti-drone technology to shoot down hostile drones in the range of two to three kilometres.

It is expected to conduct more research on extending the range. A day after the attack on the Jammu Air Force station, fresh attempts to target the Ratnuchak-Kaluchak military station in Jammu with drones were thwarted by alert soldiers.



THE ROTARY WING SOCIETY OF INDIA

(Registration No. Govt. of NCT Delhi D-33154 of 18 June 1998)
Participating Society of Aeronautical Society of India (AeSI), Affiliated to Helicopter Association International (HAI), American Helicopter Society (AHS), International Federation of Helicopter Association (IFHA) and Business Aircraft Operators Association (BAOA)

23RD
ANNIVERSARY

Congratulations to all the Members on the 23rd Anniversary of RWSI on 18 June 2021

PATRONS

Chief of the Army Staff
General Manoj Mukund Naravane
PVSM, AVSM, SM, VSM, ADC

Chief of the Naval Staff
Admiral Karambir Singh
PVSM AVSM ADC

Chief of the Air Staff
Air Chief Marshal RKS Bhadauria
PVSM AVSM VM ADC

Shri Ratan N Tata
Chairman
TATA Trusts

Honorary Air Commodore
Dr. Vijaypat Singhania
Chairman Emeritus
Raymond Ltd.

President
Air Marshal
A S Butola PVSM VM VSM (Retd.)

Vice President
Wing Cdr
B S Singh Deo VM (Retd.)

Secretary General
Air Cmde Ashutosh Lal (Retd.)



Dear Colleagues,
Greetings

RWSI celebrates its 23rd Anniversary on 18 June 2021 towards its "Service to Indian Helicopter Industry" as the nodal agency.

It was formed to serve the Helicopter community's needs and promote the industry. The Management has been sharing the progress of its activities with its members through ROTOR INDIA qly and E-MONTHLY and through periodical reports published by it. For nearly 23 years, RWSI has been the primary forum for interchange of information on Civil & Military Helicopter Industry in India.

A major objective of RWSI being Safer Skies through Education, it is the first organization in the country to start ground training courses for civil helicopter pilots in September 2004. Since then, a total of 6598 candidates which includes pilots, engineers and other aviation professionals have benefitted from various courses conducted by RWSI. Some of the courses were attended by serving pilots from the three services. RWSI has also conducted SMS Training at Kathmandu & Singapore.

This day, 23 years back Rotary Wing Society of India was registered in NCT, New Delhi to promote helicopter as a safe and effective mode of commerce and development of civil helicopter industry. Since then, RWSI has been able to make significant contribution to remove many ops & fiscal bottlenecks faced by the Operators by playing a supportive role to Civil Aviation Authorities in finding solutions to common issues faced by the Operators.

Growth of Membership is a key indicator of the contribution made by RWSI to the rotary wing aviation community. Since over 1270 aviation professionals and 187 Corporates have joined RWSI since it was established in 1998. RWSI has been fortunate to get endless number of member volunteers who through their trust, discipline, and selfless devotion to duty made huge contribution to activities aimed at achieving the objects of the Society. The entire Team deserves salutation for their dedicated support and contribution to RWSI activities.

I, on behalf of the Governing Council Members, thank every Corporate & Life Member for their unstinted support to RWSI over the years and look forward to a bright future for the Society & Indian Helicopter Industry.

Lastly, on behalf of all members of RWSI, I wish to extend our hearty Congratulations to the newly elected Governing Council Members of RWSI and its President Air Marshal Arvind Singh Butola PVSM VM VSM (Retd)

Our best wishes to the new Team as they begin their new journey in managing the affairs of RWSI.

Thanking You,

With warm regards,

AVM K Sridharan VM(G)
Chairman

HELICOPTERS SAVE LIVES

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HOW LONG DO WE NEED TO WAIT FOR THE CIVIL HELICOPTER INDUSTRY TO RECOVER FROM NEGATIVE GROWTH?

1. What is the current size of the industry and the potential?

As per Rotor India Qtly (QE 31 Mar 21), the fleet strength of civil helicopters (both turbine and piston) available for commercial use with Operators who are permitted to operate non-schedule commercial flights has dropped to 176 as on 31 Mar 21 in comparison to 214 as on 31 Mar 11, reduction of 38 helicopters.

On 03 Feb 21 while addressing through video conference in a seminar organized by industry body FICCI at Aero India 2021 exhibition, the Civil Aviation Minister Hardeep Singh Puri lamented, “Currently, the helicopter operations in India are well below the potential of a country as large as ours”.

The total number of helicopters in India is around 239, which is extremely low as compared to other developing nations. The fleet strength has been steadily declining from 299 in FY 2011-12 to less than 239 in the FY 2020-21. The decline is likely to continue unless the GOI takes steps to address the issues affecting the Industry.

2. What do you think is the reason for the domestic helicopter industry failing to take off in a big way even after 60 years?

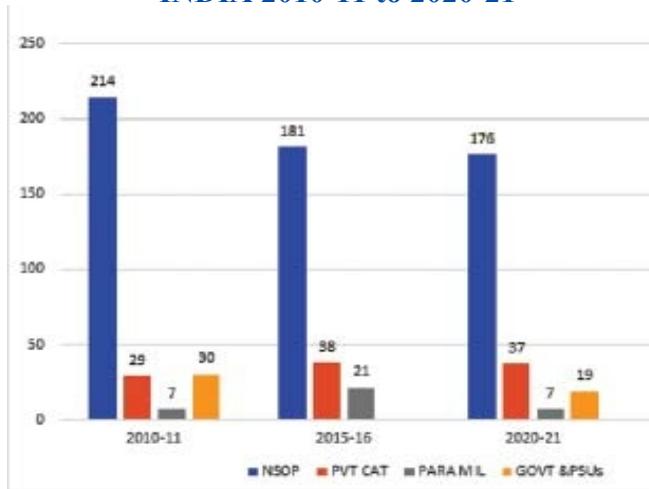
Lack of effort on the part of the Regulator (DGCA) to evolve separate regulations for helicopters to be used as VTOL machines. Instead, they are made to comply with Regulations made for fixed wing aircraft.

AAI has also been guilty of not evolving procedures for simultaneous operation of helicopters with airline traffic at Metro Airports. The tariffs levied on these machines for flight operations are same as fixed wings in similar weight category. The country does not have any heli-hubs to promote regional connectivity.

Despite the helicopters versatility to be used in many roles for public good, helicopters in India are mostly used in communication role, rather than in roles such as Helicopter Emergency Medical Services (HEMS), Airborne Law Enforcement (ALE), carriage of underslung load in remote areas, firefighting, Powerline washing etc., owing to regulatory issues.

3. Has the 2016 National Aviation Policy failed to address inherent issues grappling the industry?

GROWTH OF CIVIL HELICOPTERS IN INDIA 2010-11 to 2020-21



No, it is not true. The NCAP 2016 on Civil Helicopter Operations was a well-conceived policy. Unfortunately, following is the status related to its implementation: -

a) Separate regulations for helicopters will be notified by DGCA, after due stakeholder consultation. Not implemented yet.

b) The government will facilitate the development of at least four heli-hubs initially, across the country to promote regional connectivity. Not implemented yet.

c) MoCA will coordinate with MOF, MHA, NHAI, Indian Railways, insurance companies, hospitals, Pawan Hans Limited and other helicopter operators to facilitate Helicopter Emergency Medical Services (HEMS). HEMS launched by one operator turned out to be a failure. No operator is keen to venture in HEMS as this role is commercially uneconomical.

d) Helicopters will be free to fly from point to point without prior ATC clearance in airspace below 5000 feet and areas other than controlled airspace i. e. Prohibited and Restricted Areas, Temporary Segregated Areas (TSAs) and Temporary Restricted Areas (TRAs) after obtaining Air Defence Clearance, wherever required and intimating the following information to the nearest ATC: Point of Origin, Destination, Level, Expected Time of Departure (ETD), Expected Time of Arrival (ETA) and the duration of flight. For this Ministry of Defence and MoCA will set up web-based platforms. Not implemented yet.

--Continue on page 7

REFORMS FOR HELICOPTER OPERATIONS IN INDIAN ENVIRONMENT

Indian helicopter operations following beaten tracks of yesteryears, had limited growth vis-a-vis fixed wing (aeroplanes) businesses. A major contributor to this handicap lies in lopsided scope of operations between helicopters and aeroplanes. Implementation of indigenous technological developments to reorient scope of helicopter operations is submitted through succeeding paras:

1. It is intended to capitalise on fundamental capability of helicopter to operate from limited spaces, away from airports, using ISRO launched GAGAN (GPS Aided Geo Augmented Navigation System).

2. **Problem Statement:** Core competency of a helicopter lies in air connectivity to locations where runway operations are either inconvenient or uneconomical. Since operational regulations at airports widely differ from heliports, resulting options wrt heliports are adversely impacted.

2.1. Aeroplanes operate efficiently under 'Instrument Flying Rules (IFR)' between airports while helicopters operate under 'Visual Flight Rules (VFR)' from/to/between heliports.

2.2. Heliport VFR operations are limited to 'Daylight only' and are 'weather dependent,' thus emerging as unreliable, inconvenient modes of transfer. Such operations therefore bear unjustifiable higher costs otherwise related to economy of passenger volume compared to aeroplanes.

3. This paper provides solutions to enable helicopter operations under IFR at heliports without the need of 'expensive to install and maintain' navigation aids. It needs emphasis that all disadvantages of mentioned at para 2.2 above shall be liquidated with submitted proposal. Said capability

is feasible through ISRO's GAGAN system that also furthers our 'Atmanirbhar' commitment.

4. **Solutions:** Present day advancements in technology and development of regulations permits IFR operations at heliports under PBN (Performance Based Navigation) concept using GPS and GAGAN signals only, without the need of 'expensive to install and maintain' navigation aids.

4.1. Such operations at heliports are covered under PinS (Point in space) procedures developed exclusively for helicopters. Regulations to support these have already been released by DGCA.

4.2. AAI (Airports Authority of India) has already designed procedures based on PBN concept for runways. However, for heliports, the organisation awaits an opportunity.

4.3. Suitably equipped helicopters are already operating in India, though restricted to conventional operations (non PBN based) owing to lack of a prospect.

5. Helicopters operating under IFR offer safer, round the clock, reliable mode of transfers. PBN based operations are already underway in the West. In India, existing/planned heliports at Noida are viewed as an 'opportunity rich' environment for implementation of said reformist technology. A similar scope also exists at Juhu airport, Mumbai, with intensive helicopter operations servicing offshore platforms.

6. **Recommendations:**

6.1. A 'pilot' project to implement 'PBN based PinS procedures for helicopters', at selected heliports be ordered.

6.2. A team of suitable DGCA, AAI and operator representatives may steer said initiative(s) to comply with stated timelines.

--Continued from page 6

e) AAI may provide or earmark / lease land for helicopter operations at AAI airports on appropriate commercial terms from where helicopters can operate without interfering with fixed wing traffic. Not implemented yet.

f) Airport charges for helicopter operations will be suitably rationalized. Not implemented yet.

g) A separate helicopter cell will be created in DGCA. Notional cell has been established.

4. What outlook do you have on the industry for the next 3-5 years in terms of demand, growth, and fleet size?

Unless there is a concerted effort made by GOI to implement the Policy declared by it for growth of civil helicopters in 2016 National Civil Aviation Policy, the present trend of negative growth in the Industry will continue.

BLADE INDIA SET TO EXPAND PRESENCE, INCREASE FLEET

BLADE India, an aggregator for helicopter services, is set to expand its presence to Goa, Uttarakhand and Karnataka among other regions. The firm will also add five more helicopters to its services in this fiscal year.

Amit Dutta, Managing Director of BLADE India said that the firm, which had to temporarily shutdown its operations due to Covid-19 in 2020, was able to restart its services in November. It has then witnessed a 60 per cent rise in leisure travel compared to pre-Covid levels.

About the company's plan for the fiscal, Dutta said: "We are making aggressive plans, and spreading across India using the short-haul segments and tourism. Over the next 12 months, apart from the expansion in Maharashtra, we are looking to operate in at least three new states including Karnataka, Goa and Uttarakhand." Routes in Karnataka are likely to start services by June 2021.

Last month, the company also announced the signing of an MoU with Airbus to spread awareness about helicopter rides and expand BLADE's fleet. Currently, BLADE operates with eight helicopters. Dutta said that for this fiscal, it plans to add at least four more helicopters to its operations.



Speaking about other plans, Dutta pointed out that the firm is aggressively partnering with five star and luxury hotel chains to offer packages. In the next fiscal, it also plans to offer air ambulance services.

Post Covid-19, there has been a rise in air ambulance services in India. Recently, Civil Aviation minister Hardeep Singh Puri said that India has a lot of potential, especially in the helicopter segment, which was underutilized. The government has also made policy reforms in order to make the services better.

UNPRECEDENTED ESCALATION OF CHARGES FOR NIGHT PARKING OF HELICOPTERS AT CIVIL AIRPORTS

RWSI has received information from some civil helicopter operators that there has been an unprecedented escalation of charges for night parking of helicopters at civil airports.

Recently, AAI at Rajahmundry and Udaipur Airports have started imposing a new rule that any operator asking for parking permission for a period of 5 days or more will be required to pay an amount of Rupees one lac plus 18% GST.

As helicopter operators are suffering due to widespread pandemic, President RWSI has written

to Smt.UshaPadhee,JtSecyMoCA, to review the matter with Chairman AAI.

This unprecedented escalation of charges for night parking of helicopters at civil airports by AAI is bound to escalate the cost of helicopter charter services and will adversely impact its usage for public good.

We understand that airlines have been exempted from this escalation. The MoCA is therefore requested to extend the same concession to those operating helicopters in the NSOP category.

PERFORMANCE BASED NAVIGATION (PBN) IS THE FUTURE OF AIR SPACE MANAGEMENT

PBN is undoubtedly the corner stone of future Air Space Management the world over. In India, AAI has already published numerous RNAV/RNP routes; RNP SIDS/STARS and RNP approaches are being published for Indian airports at a fast pace. With GAGAN, the indigenous SBAS, already in place, PBN precision 3D approaches down to 250' minima without the use of ILS is now a reality. ICAO and DGCA regulations pertaining to PBN operations specific to helicopters are also already in place. However, as always, presently in India the existing PBN network is fixed wing centric. It goes without saying that helicopter operations can benefit immensely from the seamless Area Navigation capability provided by PBN based on GNSS(GPS). Flow of traffic on low level PBN routes designed for helicopters particularly from helipads in remote areas/offshore flowing into PBN 0.3 Point In Space Approaches down to SBAS based LPV minima can optimally exploit the versatility of the rotary wing machine thereby increasing its utility manifold. There is thus an urgent need for AAI and DGCA to consider specific requirements of helicopters while designing RNP routes/approaches.

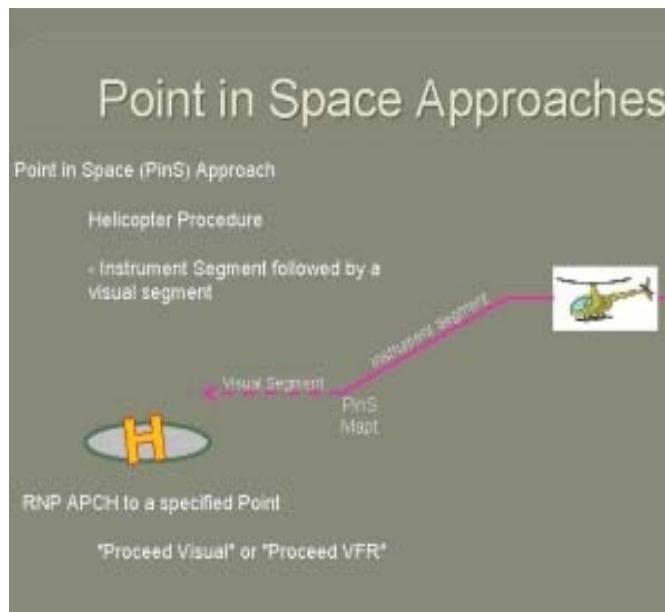
While onboard PBN equipment on helicopters in India at large needs to be surveyed. Several helicopters operating offshore in Mumbai High and in the onshore Mumbai-Pune belt already have this capability. We can thus start with a pilot project to have a PBN route for the high-density route from Pune to Mumbai

culminating in a PinS approach to a MAPt from where the helicopters can “proceed visually”/ “proceed VFR” to respective destination helipads. Similarly, a PBN route from offshore oil fields to Juhu, the sector that experiences the heaviest helicopter traffic in our country, should be constructed culminating in a PinS approach with “proceed visually”/ “proceed VFR” instructions. This would go a long way to address the challenges offshore pilots face during the four months of monsoons.

We understand that some Mumbai/Pune based operators have already been interacting with GM (ATM) AAI (Western Region) to introduce this facility for Pune-Juhu RNP route and offshore RNP routes as a test case. This initiative needs the support of all concerned Civil Aviation Authorities at the highest level till its successful culmination.

As Operators need to have specific approval from DGCA for PBN. Some operators are already in the process to apply for PBN to be included in their Operational Specifications (Op Specs).

The VAPO-VAJJ and Mumbai High-VAJJ RNP 0.3 route with a ‘PinS approach to LPV minima shall serve as a countrywide template on which we can build for other areas. Let us not delay the process as many helicopters have PBN capabilities and all new helicopters coming in shall be compliant not only with GNSS based PBN but also SBAS.



PROHIBITION OF FLYING NON CONVENTIONAL AERIAL OBJECTS INCLUDING RPAS

Flying of non-conventional aerial objects (drones/ UAVS) are prohibited within 03 kms of (INS HAMLA, MARVE ROAD, MALAD (W), Mumbai-400 095) being a defence installation. Any non-conventional aerial objects including RPAS (drones/ UAVS) found violating this prohibition, will be destroyed/confiscated without any liability and actions may be intimated under sections 121, 121a, 287, 336, 337 and 338 of ipc against the operator. If drone flying is deemed necessary, the operator/agency should obtain an approval from director general civil aviation (DGCA) through digi sky website and copy of the approval letter to be submitted INS Hamla, Marve Road, Malad (W), Mumbai 400 095 at least one week prior to scheduled flying operation

UNMANNED AIRCRAFT SYSTEM (UAS) RULES, 2021

Ministry of Civil Aviation (MoCA) and Directorate General of Civil Aviation (DGCA) have granted conditional exemption to Survey of India (Sol) from Unmanned Aircraft System (UAS) Rules, 2021. The drone deployment permission has been granted for large scale mapping of inhabited areas of villages under the central government scheme - Survey of villages and Mapping with Improved Technology in

Village Areas (SVAMITVA). This exemption is valid for a period of one year from the date of approval or until further orders, whichever is earlier and shall be subject to the terms and conditions of the SOP (issued by DGCA).

The SVAMITVA scheme aims to provide an integrated property validation solution for rural India. The demarcation of Abadi areas (the Abadi area includes inhabitant land, inhabited areas contiguous to Abadi and wadis/basties in rural areas) would be done using Drone Surveying technology, with the collaborative efforts of the Ministry of Panchayati Raj, State Panchayati Raj Department, State Revenue Department. This permission grant will allow Large Scale Mapping (LSM) by Survey of India using drones. The aerial surveillance would generate high resolution and accurate maps to confer ownership property rights. Based on these maps or data, property cards would be issued to the rural household owners.

The digital spatial data/maps created under drone survey will be leveraged for the creation of the spatial analytical tools to support preparation of the Gram Panchayat Development Plan (GPDP). The images captured through Drones would be processed by Survey of India in its Geographic Information System lab.

INDIA GETS 8 NEW FLYING TRAINING ACADEMIES

India is set to get 8 new Flying Training Academies under the liberalised Flying Training Organisation (FTO) policy of the Airports Authority of India (AAI). These academies will be set up at Belagavi, Jalgaon, Kalaburagi, Khajuraho and Lilabari. The set-up of these 8 FTOs is aimed at making India a global flying training hub and to prevent the exodus of Indian cadets to foreign FTOs. Additionally, these FTOs will also be designed to cater the flying training requirements of cadets in India's neighbouring countries.

Attesting to the perseverance and determination of the team of the Airports Authority of India (AAI) is the fact that they successfully managed to finalise the bidding process amid the challenging period caused due to the second wave of COVID-19. These five airports have been carefully chosen since they have

minimal disruption due to weather issues and civil/military air traffic. This initiative will help the Indian flying training sector in becoming more self-sustaining under the Atmannirbhar Bharat initiative. Airports Authority of India had invited bids for the same in November 2020. The award letters were issued on 31 May 2021 to winning bidders: Asia-Pacific, Jetserve, Redbird, Samvardhane and Skynex. The parameters set for prospective bidders included familiarisation with aviation safety aspects, regulatory mechanisms, experience in the field of training pilots on manned aircraft, the availability of equipment, trainers, etc. To make FTOs attractive for bidders, AAI reduced the minimum annual rental significantly to Rs.15 lacs. Furthermore, the concept of airport royalty was scrapped to make these ventures business friendly.

Non Scheduled Operators

Sl. No	Company (Location)	Aircraft Type	No	Reg. No.	Capacity / Year	Sl. No	Company (Location)	Aircraft Type	No	Reg. No.	Capacity / Year						
33.	Pawan Hans Helicopters New Delhi /Mumbai	Dauphin 2	15	VT-ELB	13/	46.	Universal Airways Pvt Ltd. (New Delhi)	Agusta A109E	1	VT-JPA	06/						
				VT-ELD	13/1986												
				VT-ELE	13/1987												
				VT-ELI	13/1986												
				VT-ELK	13/1986												
				VT-ELL	13/1987												
				VT-ELM	13/1987												
				VT-ELN	13/1986												
				VT-ELP	13/1987												
				VT-ELR	13/1986												
				VT-ELT	13/1986												
				VT-ENW	13/1987												
				VT-ENZ	13/1986												
				VT-PHA	07/1993												
				VT-PHD	07/1995												
		VT-PHE	07/1996														
		Bell 206 L4	3	VT-PHI	07/							47.	UT Air India (P) Ltd	AS 350B3	1	VT-UTC	06/
				VT-PHN	07/												
				VT-PHQ	07/												
		Bell 407	3	VT-PHJ	13												
VT-PHL	13																
VT-PHM	13																
Dauphin AS365 N3	15	VT-PHO	13	Non Scheduled Operators Piston Engine Helicopter													
		VT-PHR	11/2007														
		VT-PHS	11														
		VT-PHW	12/														
		VT-ENX	11/														
		VT-PHX	12/														
		VT-PHY	12/														
		VT-PHZ	12/														
		VT-PWB	12/														
		VT-PWC	12/														
		VT-PWD	12/														
		VT/PWE	12/														
		VT-PHV	05/														
		VT-PHU	05														
		MI 172	3	VT-PHG	26/												
Dhruv	2	VT-PWG	26/1996														
		VT-PWH	26/														
		VT-HAQ	14/														
		VT-HAR	14														
34.	Poonawalla Aviation Pvt. Ltd.	H145	1	VT-NAP	07/	1.	Aman Aviation & Aerospace Solutions Pvt. Ltd.	Robinson R-44	1	VT-CNJ	03/						
35.	Raymond Ltd. (Mumbai)	AS355N Agusta A 109S	1 1	VT-MML VT-GHS	05/1993 06/	2.	Jet Serve Aviation Pvt. Ltd.	R-44 Raven II	3	VT-ZJM VT-OJS VT-HNC	03/ 03/ 03/						
36.	Reliance Commercial Dealers Ltd.	Sikorsky S76C++ AS 365 N3	2 1	VT-NMA VT-NIT VT-JIO	05/2008 08/2009 05/	3.	Maharaja Aviation (P) Ltd.	Robinson R-66	3	VT-MAL VT-BAM VT-SDD	04 04 04						
37.	SAR Aviation Services Pvt Ltd Mumbai	Bell 206	1	VT-TBB	04	4.	Mandke and Mandke Infrastructure Pvt Ltd	Robinson R-66	3	VT-MAN	04						
38.	Simm Samm Airways Pvt. Ltd (Mumbai)	MD 900	1	VT-SSE	07/	Total Piston Engine Helicopter =10											
39.	Suhan Aviation Pvt Ltd Mumbai	S-76 C++	1	VT-DBH	06/	Total NSOP =176											
40.	Skyone Airways (P) Ltd (New Delhi)	MI-172	3	VT-JJA VT-SKB VT-SKC	26/2006 26/ 26/	 <h3 style="margin-top: 20px;">RWSI MEMBERSHIP BENEFITS</h3> <ul style="list-style-type: none"> F Exclusive Membership of the only Rotary Wing Aviation Society in the country. F Opportunities for professional development. F Opportunities to network with top professionals in the field during all Seminars. F Co-partner in building the future of the industry. F Empanelment as a consultant & free employment services through Rotor India. F Get opportunities to interact with top professionals in the field. F Recognition of excellence. F Receive “Rotor India” qly newsletter for life. F Receive invitation for RWSI Seminars. F Many other Benefits as the Society grows. 											
41.	Span Air (New Delhi)	Bell 429 Bell 407 GX	2 1	VT-NKL VT-JSH VT-NAL	06/2010 06/ 06/2013												
42.	Simm Samm Airways Pvt. Ltd (Mumbai)	MD900	1	VT-SSE	07/												
43.	Thumbby Aviation Pvt. Ltd.	Bell 412 EP	2	VT-ASL VT-KNG	13/ 13/												
44.	Trans Bharat Aviation (New Delhi)	Bell 407	2	VT-TBC VT-TBF	06/1996 06/2007												
45.	United Heli Charters	Bell 412EP	1	VT-HGF	13/2007												

Private Category				
Sl. No	Company (Location)	Aircraft Type	No	AUW Kgs
1.	ACE Air Service Ltd	EC 130 B4	1	2427
2.	Arki Aviation (Pune)	Agusta 119A Koala Bell 427	1	
3.	Bajaj Auto	A109S	1	
4.	BG Shirke (Pune)	Bell 206 L4	2	2018
5.	Bharat Forge (Pune)	Bell 206 L4	1	2018
6.	Essar Power (Mumbai)	Bell 430	1	4218
7.	Chemplast Sanmar Ltd. (Chennai)	Bell 429	1	3402
8.	Garware Wall Ropes (Pune)	Bell 206 L4	1	2018
9.	Garware Bestrich	Bell 505	1	
10.	HAL	Dhruv	3	5500
11.	Hindustan Construction (Mumbai)	Bell 407 Bell 427	1	2268
12.	Kalyan Jewellers	Bell 429	1	3402
13.	Kiaan Airways	Bell 230 Bell 206L Robinson44	1	2018
14.	Indian Metals & Ferro Alloys (Bhubaneswar)	Robinson R44 VT-ILA R-66	1	
15.	Navyuga Engineering Co Ltd.	Bell 412 EP	1	4398
16.	Orissa Stevedore Ltd. (BBN)	Enstrom 480B	1	1900
17.	Poonawala Aviation	EC-145	1	
18.	Pushpaka Aviation (Mumbai)	Bell 47G5 Bell 47G2 Bell 47G3 B2	1	1293
19.	Reliance (Mumbai)	Bell 412 EP	2	5398
20.	Tata Power Co. Ltd. (Mumbai)	MD902 MD520N	1	2954
21.	Tata Iron & Steel Co. (Jamshedpur)	Bell 429 VT-TSJ Bell 429 VT-TSL	1	3402
22.	Vedanta Aluminium Ltd (Bhubaneswar)	EC 130B4	1	2427
23.	Vshad & Co. (Mining) Bangalore	Bell 407	1	2268
24.	Varva Aviation	Agusta 109 New Grand	1	3000
Total Private = 37				

Para Military				
1.	BSF	Dhruv (New Delhi) VT-BSJ/VT BSK VT-BSS/VT BSP VT-BSM/VT-HAA Cheetah VT-EBA	6	5500
			1	2200
Total Para Military = 7				

Govts/PSUs				
Sl. No	Company (Location)	Aircraft Type	No	AUW Kgs
1.	Govt. of Bihar (Patna)	AS 365 N	1	4000
2.	Govt. of Gujarat (Ahmedabad)	AS 365 N	1	4000
3.	Govt. of Haryana	EC 145	1	3585
4.	Govt. of J&K (Srinagar)	A 109 E Bell 407	1	3000
5.	Govt of Chhattisgarh (Raipur)	A109E Power	1	3000
6.	Govt. of Madhya Pradesh (Bhopal)	Bell 430 Bell407 EC155P2	1	4082
7.	Govt of Punjab	Bell 429	1	1925
8.	Govt. of Tamil Nadu (Chennai)	Bell 412 EP	1	5398
9.	Govt. of Uttar Pradesh	Bell 412 EP A 109S	2	
10.	Govt. of Uttarakhand (Dehradun)	EC 135	1	2835
11.	Govt. of Jharkhand (Ranchi)	Dhruv	1	5500
12.	Geological Survey of India	Dhruv	1	5500
13.	HAL	Scweizer 330	2	1025
Total Govt/PSUs = 19				

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IAF HELICOPTER OPERATIONS

05Apr 21. An Indian Air Force (IAF) helicopter with a bucket carrying around 3,500 litres of water from Tehri lake was deployed to douse the forest fire in Gaja, Pokhri and Quili in the district.

IAF helicopters on 05 Apr 21 began firefighting operations in Uttarakhand, conducting several sorties over the burning forests in Garhwal region of the state to spray water over the raging flames and extinguish them.

The helicopter made around four sorties on 05 Apr 21 to extinguish the fires in these forests located in Narendra Nagar area of the district, he said.

Similar sorties will also be conducted by the IAF helicopter on 06 Apr 21 to pour water over the burning forests of Thauldhar block of the district, Tehri DFO Koko Rose said.

Boating activities in the Tehri lake were kept suspended during the day so that the IAF helicopter can collect water from the lake in an uninterrupted way.

Meanwhile, another IAF helicopter stationed in Kumaon for the purpose could not undertake sorties

due to low visibility caused by a thick cover of smoke emanating from the smouldering forests, Kumaon DFO Tejaswini Patil Dhakate said.

There are 40 active fire spots in the forests of Garhwal and Kumaon regions with Nainital, Almora, Tehri and Pauri districts being the worst-hit, forest officials said.

Since January this year, there have been 983 incidents of forest fire in the state affecting 1,292 hectares of land, they said.



MIZORAM FOREST FIRE SPREADS TO TOWNS, IAF JOINS RESCUE OPERATION



26Apr 21. Lunglei (Mizoram), April 26 (ANI): For more than 32 hours now, a forest fire has been raging in the hills of south Mizoram, spreading to towns and villages of two neighbouring districts Lunglei and Lawngtlai. Indian Air Force helicopter equipped with Bambi Bucket was deployed on April 26 to douse forest fire in Lunglei district. The fire reportedly started at 7 am on Apr 23 in the forested hills near Lunglei town. So far, no injuries or casualties have been reported.

FIRST ALL-WOMEN IAF CREW FLIES MI-17 HELICOPTER

The pilots had undergone basic flight training at the Helicopter Training School at Air Force Station, Hakimpet followed by advanced training at Air Force Station, Yelahanka. In yet another achievement by women officers, an all-woman crew on Monday flew a medium-lift helicopter for the first time in India, the Indian Air Force (IAF) said.

The crew, comprising Flight Lieutenant Parul Bhardwaj (Captain), Flying Officer Aman Nidhi (co-pilot) and Flight Lieutenant Hina Jaiswal (flight engineer), flew a Mi-17 V5 helicopter for a Battle Inoculation Training Mission, taking off and landing from restricted areas at a forward air base in the South Western Air Command.

Flight Lieutenant Bhardwaj hails from Mukerian in Punjab and is incidentally also the first woman pilot to fly the Mi-17 V5. Flying Officer Nidhi hails from



Ranchi and is also the first woman IAF pilot from Jharkhand while Flying Officer Jaiswal hails from Chandigarh and is the first woman Flight Engineer of the IAF.

IAF COVID AIR SUPPORT MANAGEMENT CELL (CASMC) OPERATIONS

Sunday, 09 May, 2021

The IAF is operating a Covid Air Support Management Cell (CASMC) at Palam Air Base since 27 Apr 21. The primary task of the cell is to efficiently coordinate for the distribution of all the relief aid coming from foreign countries.

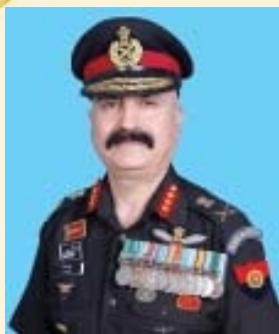
The cell is operational round the clock. Resources have been coordinated to cater for surge operations which include manpower, ground handling and loading eqpt and vehicles like flat top trailers and fork lifters. One C-130 and two AN-32 transport aircraft are operating at Palam from 28 Apr 21 to air lift load on short notice across the country. A mock drill for such an emergency airlift was also carried out on 29 Apr 21, to streamline coordination

amongst various stakeholders.

Communication links with all important stakeholders like MoHFW, Secy COVID, Hindustan Latex Limited (HLL) and the Indian Red Cross Society (IRCS) have been established for seamless flow of information and to reduce time delays. A meeting with Delhi International Airport Limited (DIAL), Air India SATS and Air Force Movement Liaison Unit was held to streamline custom and warehousing related issues.



Lt GEN AJAY KUMAR SURI DG AND COLONEL COMMANDANT ARMY AVIATION, INDIAN ARMY



1.The last two decades have witnessed the emergence of Army Aviation Corps as an important component of land forces, always at the forefront of all operations by Indian Army. Whilst the ageing, albeit reliable single engine fleet of Cheetah/ Chetak continues to render

yeoman service, the indigenous Advanced Light Helicopter fleet is rapidly emerging as the backbone for future 24 x 7 operations. The recent induction of Advanced Light Helicopter (Weapon System Integrated) has provided the desired operational teeth to the arm and the arrival of indigenous Light Combat Helicopters and Apaches in the near future will further augment the offensive capability. The transfer of Remotely Piloted Aircraft Systems to Army Aviation will be the final step in establishing control of all aerial assets with Army Aviation Corps and will shift the entire paradigm of third dimensional operational planning and execution. The youngest arm of Indian Army is thus in the midst of rapid modernisation and transformation with a wide array of state of art equipment in various stages of induction. The appointment of Lieutenant General Ajay Kumar Suri as the Director General & Colonel Commandant of Army Aviation thus comes at a crucial juncture when the Corps needs resolute, dynamic, visionary and decisive leadership to usher in the new era of third dimension battlefield dominance.

2.An alumnus of Saint Edwards School, Shimla and National Defence Academy, Pune, the General Officer was commissioned in Regiment of Artillery in June 1985 and was subsequently absorbed in the permanent cadre of Army Aviation in February 1999. An erudite and accomplished officer, he has rich experience and knowledge in the operational domain as well as in the field of military aviation. The General has qualified on all the mandatory army courses with distinction and has also attended the prestigious career courses, which include the Qualified Flying Instructors

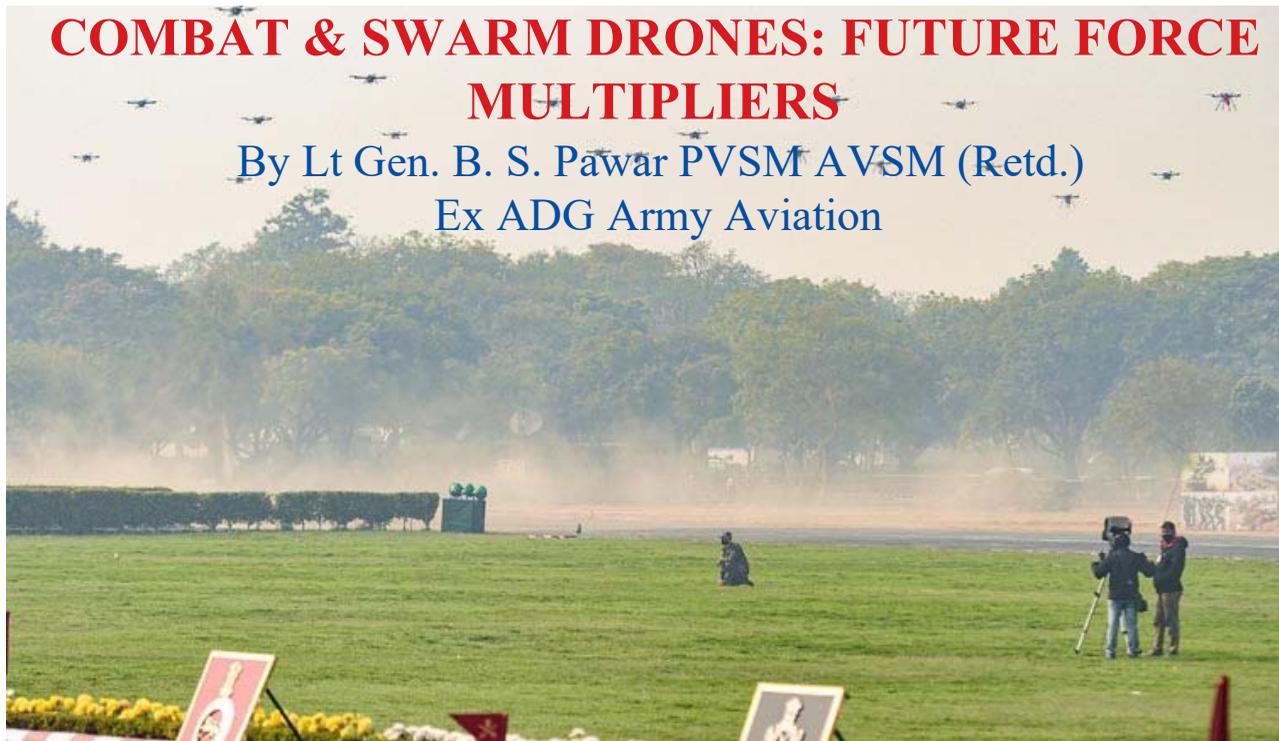
Course at Tambaram, Defence Service Staff College, Wellington, Higher Command Course, Mhow and National Defence College, New Delhi.

3.In his illustrious career spanning more than three and a half decades, Lieutenant General Ajay Kumar Suri has held several key command, staff and instructional assignments and has served in all theatres and actively participated in Operation Meghdoot, Operation Vijay and Operation Parakram. He has commanded a Reconnaissance & Observation Squadron affiliated to a Strike Corps where he was also instrumental in establishing the Basic Aviation Training School (BATS) for abinitio flying training for aspiring Army aviators. He also has the unique distinction of being entrusted with second command of an Aviation unit, wherein he raised an Advance Light Helicopter (ALH) Squadron equipped with the glass cockpit and seamlessly inducted and operationalised the Squadron in Super High Altitude Area of Northern Command. The officer has also been Commandant of Combat Aviation Training School at Nasik. His significant staff and instructional appointments include Air Operations Officer in Sierra Leone, General Staff Officer (GSO-1) of Gradation and Evaluation Board, Colonel General Staff (Operations/Air) in HQ Northern Command, Brigadier Aviation in Eastern Command and Southern Command, and Senior Aviation Instructor in Combat Army Aviation Training School, Nasik.

4.Having earned his flying badge in June 1990, the General is as on date the most experienced army aviator with more than 6000 hrs of total service flying. He also has the unique distinction of having flown all helicopters in inventory of Indian Army viz Cheetah, Chetak, ALH and ALH (WSI) in all types of terrain in India as well as abroad. He is the first Army Aviator to be awarded Senior Aviation Instructor Class-I (A2 Instructor) and Master Aviation Instructor (MAI) status and holds the Advanced Flight Safety Badge

COMBAT & SWARM DRONES: FUTURE FORCE MULTIPLIERS

By Lt Gen. B. S. Pawar PVSM AVSM (Retd.)
Ex ADG Army Aviation



General

Conflicts in Ukraine, Syria and Yemen as well as areas of geopolitical conflict like Persian Gulf and South China Sea are seeing an increased use of UAVs of varying size and sophistication especially combat. Closer home we have seen a major increase in employment of UAVs by both India and China in the current standoff in Eastern Ladakh. Drone warfare has become a crucial element of modern war with armed drones being used extensively in military operations, the latest being their widespread use in the conflict between Armenia and Azerbaijan in Nagorna-Karabakh region last year. The targeted killing of the Iranian Revolutionary Guards General Suleimani by an American drone in Iraq in Jan 2020 and recent attack on the Saudi oil facilities, by the Iranian backed Houthi Rebels in Yemen this month are other areas where the armed drones are now being used as an accepted norm. Even their usage by 'Non State Actors' does not raise eyebrows anymore, a very dangerous trend indeed. In India too there have been numerous instances of small drones foraging from across our western borders and dropping weapons like AK-47 Rifles and Grenades in the border areas of Punjab and J&K, the acts no doubt of 'Non-State Actors' supported fully by the security establishment of Pakistan.

Current technologies make UAVs more sophisticated than ever and are expanding their role in military operations with 'Drone Swarms' emerging as a real game changer in future conflicts - a number of

countries having already demonstrated their capabilities in this emerging technology. India too has taken baby steps in this direction with the Indian Army demonstrating an 'Offensive Drone Swarm System', consisting of 75 indigenously designed and developed rotary drones that executed an array of Artificial Intelligence (AI) enabled simulated offensive missions and close air support. A beginning has been made and as per reports the Army along with the New Space Research and Technologies Company (a Start-up based in Bangalore) is looking at a Swarm of 1000 rotary drones in the near future.

Today technologically advanced militaries across the world have incorporated UAVs as a new critical and combat enhancing component of their inventory. While Israel and USA have been the pioneers in UAV development and employment, at least 24 other countries are currently developing new military unmanned aircraft for all types of Intelligence Surveillance & Reconnaissance (ISR) missions including combat. Currently China appears to have the most active ongoing UAV development programs, but Turkey is fast emerging as new dynamic entrant in this area. The Bayraktar TB2 combat UAV designed and developed by Turkey's drone manufacturer 'Baykar Defence' has been extensively used in Syria, Libya and in the Azerbaijan-Armenia conflicts. As per reports Baykar Defence is currently working on a top priority project for the development of an AI powered combat drone which would be used

in close air support and strategic assault missions. UAVs are no doubt the future war horse and the country with the best drone technology would certainly have an advantage in any future conflict- India unfortunately has lagged and has a lot of catching up to do in this crucial domain.

India, China & Pak Capabilities

In the recent years China has unveiled a variety of UAVs with enhanced capabilities, including armed versions some of which have parallels to foreign equivalents. Majority of the units are equipped with the Caihong (CH3, CH4 & CH5) and Wing Loong (Wing Loong I&II) types of UAVs in the MALE category and the WZ-7 also known as the 'Soaring Dragon' in the HALE category. The WZ-7 is known to have been operating in the current India-China standoff in Eastern Ladakh. What is of interest and concern is the display of two highly technologically advanced UAVs during the National Day Parade last year, the GJ-II and the WZ-8 for the first time by China. While the GJ-II is stated to be a Stealth UCAV with long range strike capability, the WZ-8 is a supersonic reconnaissance UAV. It will also be worthwhile to mention that China today stands as the third largest exporter of UAVs after USA and Israel - Pakistan is a major beneficiary of these exports from China. Pakistan unlike India, holds and operates many indigenously developed UAVs, prominent among them being the Uquaab, Jasoos, Vector and the Burraq UCAV. The Burraq has been extensively used for conducting operations in its Federally Administered Tribal Areas (FATA) against terrorists- this is most likely the Chinese Caihong (CH3/CH4) UCAV assembled/manufactured in Pakistan. What is of concern is the reported proposed sale of 48 Chinese Wing Loong-2 high end armed drones to Pakistan by China – some reports have also hinted at a joint venture to manufacture in Pakistan - The Wing Loong II is considered in the class of American MQ-1 Predator.

India presently is the largest importer of UAVs and currently has an inventory of 200 plus UAVs/ Drones like the Searcher II, Heron (MALE) and a limited number of armed Harop self-destruct drones, all of Israeli origin. The Indian military is acutely aware of this chink in its armour and is addressing the issue on priority in its modernization plans. The Airforce has already acquired 10 Heron TP UAVs from Israel which is an upgraded and armed version of Heron (Israeli Eitan), capable of carrying bombs and missiles – this acquisition was facilitated after India became a signatory to the Missile Technology Control Regime (MTCR). As per reports in a very significant development the Army is also acquiring four Heron-TPs on lease from Israel under the emergency

procurement procedure. India is also likely to go ahead with 'Project Cheetah' which involves the upgrade of existing Heron fleet to include its arming by the Israel Aerospace Industries. Also of great strategic significance is the acquisition of two Sea Guardian drones, the naval version of the MQ-9B Predator-B drones on lease by the Navy. These were acquired directly from the American firm 'General Atomics' last year under the 'emergency procurement' of Defence Procurement Procedure-2020 and were also operationally employed in Eastern Ladakh – the MQ-9B is one of the deadliest surveillance and armed drones in the world. Reports indicate that India is looking at prospects to acquire 30 such drones in the land and sea variants, 10 each for its three services. These are very significant developments indeed and will give a major boost to Military's capabilities on our Northern and Western borders.

The progress and development on the indigenous front has been a mixed bag. While DRDOs Nishant tactical UAV project (catapult launch and parachute recovery) for the army has been a failure, due to a faulty design in the recovery phase, India is in the process of developing a UAV in the Heron / Predator class of MALE UAVs, called 'Rustom' - a 1100 - 1300 Kg UAV, with a maximum altitude of 35000 feet and 300 km range. It has three versions, the Rustom I being the tactical UAV, the Rustom H to replace the Heron in the long run and the Rustom-II the combat version. The Rustom-II has been re-designated as Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon 201('Tapas 201') and is similar to the American Predator with capability of reconnaissance, combat and support missions. Presently undergoing developmental tests it will provide capability enhancement to the military once inducted into service. However, India's most prized indigenous drone program is the development of the Autonomous Unmanned Research Aircraft (AURA). With the AURA having accomplished its stated mission of research into future Indian UCAVs, the DRDO has embarked on the development of Ghatak, which will be a high speed stealth UCAV, capable of autonomously seeking, identifying and destroying targets, with missiles, bombs and precision guided munitions. Reports reveal that this new combat drone will be powered by the indigenous Kaveri derivative engine (dry variant) without the after burner and will feature flying wing design similar to the US 'B-2 Spirit' a stealth bomber. As per DRDO the project is futuristic and is likely to take about 5-6 years to fructify.

Drone Swarms in Future Conflict

Drone Swarms have already seen combat though in a limited context and numbers involved. The attack on two Russian bases in Syria in Jan 2018 by suspected

<<INDIAN DEFENCE FORCES >>

Islamist rebels and the subsequent attack on two major oil facilities in Saudi Arabia in September 2019 by the Houthi rebels causing substantial damage are illustrative of the use of drone swarms effectively. Drone swarm technology basically involves the ability of a group of very large number of Micro/Mini Drones / UAVs to autonomously make decisions based on shared information and has the potential to revolutionise the dynamics of conflict, with the world inching ever closer to seeing this potential unleashed. Swarming technology is likely to introduce changes in structure of drones by installing mission payloads on multiple mini drones. The US, UK and more recently China have successfully tested this technology, with China demonstrating a swarm of 1000 drones at the Guangzhou air show during the Lantern Festival in 2018 setting a new Guinness World Record. The US has an entire research program dedicated to the development of autonomous swarms called 'Low Cost Unmanned Aerial Vehicle Swarming Technology' (LOCUST). In fact, swarms will have significant military applications in almost all areas of national security. These include ISR missions over air, land and sea, identification and destruction of hostile surface to air missiles and other air defences, act as anti-drone weapon systems, detection of nuclear, biological and chemical radiations when equipped with suitable equipment, etc – a single swarm can be used for multiple purposes and is a far cheaper option than conventional, larger weapon systems. Therein lies the danger of Non-State Actors and Terrorist Entities using this technology for their own narrow aims, thereby posing a grave threat to Nation States due to the low cost and easy access to acquire and arm these small drones.

India has made a modest beginning in this arena but has a long way to go. There is no dearth of Startups in the country who are capable of design and development of mini and micro drones. The establishment of a Drone Directorate in the Ministry of Civil Aviation and setting up of a regulatory framework will no doubt give a fillip to these startups- there are more than 30 startups which are already active in the design and development of mini/micro drones. HAL along with NewSpace

Research & Technologies is currently working on the design and development of swarm drones prototype the ALFA-S (Air Launched Flexible Asset-Swarm) which can be packed in containers and launched from aircraft.

Conclusion

Technology is driving the military application of UAVs into remarkable areas, with the possibilities seemingly endless. A crucial piece of technology that is required to take UAVs to the next level is a robust 'sense and avoid' system allowing unmanned planes to fly safely in a congested airspace. Future UAVs may be able to perform a variety of tasks moving beyond their present roles in ISR and strikes to re-supply, combat search and rescue, aerial refueling and air to air combat. The future combat arena may well see both the manned aircraft and the UAVs/UCAVs in complementary roles enhancing the overall combat potential of the force. Swarm Drones Technology is the new player off the block and will be a game changer in any future conflict especially in the Indian context. The Indian military along with the industry both public and private needs to work on these technologies on priority or else risk preparing to fight a 20th century war against a 21st century army.



<<INDIAN NAVY>>

RAKSHA MANTRI SHRI RAJNATH SINGH REVIEWS PROGRESS OF CONSTRUCTION OF FIRST INDIGENOUS AIRCRAFT CARRIER AT KOCHI

<<Focus On Civil Aviation>>

The Union Minister for Defence, Shri Rajnath Singh at Kochi Naval Base during the review of construction of first Indigenous Aircraft Carrier, in Kochi on June 25, 2021. The Chief of Naval Staff, Admiral Karambir Singh is also seen.

Raksha Mantri Shri Rajnath Singh reviewed the progress of construction of first Indigenous Aircraft Carrier (IAC) built by M/s Cochin Shipyard Ltd., at Kochi on June 25, 2021. Shri Rajnath Singh was accompanied by Chief of the Naval Staff Admiral Karambir Singh and Flag Officer Commanding-in-Chief, Southern Naval Command Vice Admiral AK Chawla. The Raksha Mantri visited the construction site and was briefed about the successful Basin Trials completed during November 2020. He was also appraised of the progress achieved on integration of a number of other navigational, communication and operational systems since then, as it prepares for its maiden Contractor Sea Trials (CST) which is expected in the forthcoming months.

The IAC would be commissioned as INS Vikrant in the first half of 2022, which would be the most potent sea-based asset. The ship shall operate MiG-29K fighter aircraft, Kamov-31 Air Early Warning Helicopters, the soon to be inducted MH-60R multi-role helicopter and the indigenously manufactured Advanced Light Helicopters. It would offer an incomparable military instrument with its ability to project Air Power over long distances, including Air Interdiction, Anti-Surface Warfare, offensive and defensive Counter-Air, Airborne Anti-Submarine Warfare and Airborne Early Warning.

During the visit, an exhibition showcasing Indian

Navy's various ongoing innovations, indigenisation and operations aligning with the nation's fight against the COVID-19 pandemic was also organised for the Raksha Mantri. The major exhibits included the Oxygen Recycling System (ORS), which is currently under clinical trials at Sree Chitra Tirunal Institute for Medical Science and Technology; Navrakshak PPE and masks currently being used in PM CARES Hospitals; Remote Patient Monitoring System and several such other innovations which had provided affordable, effective and user-friendly medical solutions. The Raksha Mantri was also apprised about the assistance rendered to civil agencies such as the Fire Safety Audit of hospitals and specialised training on PSA Oxygen Plants in addition to an overview of the Samudra Setu II and Oxygen Express Operations. The Raksha Mantri also interacted with 10-year-old Veer Kashyap, a student of Navy Children School Kochi, who had won the Pradhan Mantri Bal Puraskar 2021 for developing an innovative board game 'Corona Yuga' for educating and creating awareness about the pandemic among the public at large.

The Raksha Mantri was also informed about the activities being conducted and planned by Indian Navy towards 'Swarnim Vijay Varsh' being celebrated by the Armed Forces to commemorate the victory of 1971 war and 'Azadi Ka Amrit Mahotsav' to commemorate the 75th anniversary of India's Independence.

Shri Rajnath Singh also visited some of the training establishments under Southern Naval Command and appreciated the efforts of the Indian Navy for continuously providing professional training not only to the Officers and Sailors of Indian Navy but also to friendly foreign Navies even amidst the COVID-19 pandemic. He interacted with the officers and sailors of the Kochi area over lunch traditionally called 'Barakhana'.

The Raksha Mantri expressed satisfaction at the progress of construction of Indigenous Aircraft Carrier, describing it as a shining example of 'AatmaNirbhar Bharat' envisioned by Prime Minister Shri Narendra Modi. He stated that IAC has nearly 75 per cent indigenous content - from design to steel used in construction to key weapons and sensors. He recalled a recent approval accorded by the Defence Acquisition Council for RFP of Project 75-I under the Strategic Partnership model, which will give further fillip to indigenous development of niche manufacturing technologies.

Shri Rajnath Singh highlighted the combat capability, reach and versatility of the aircraft carrier, saying that it will add formidable capabilities in the defence of the country and help secure India's interests in maritime domain. Appreciating the fact that significant progress was made on the construction of IAC despite COVID-19, he said the commissioning of IAC will be a befitting tribute to 75 years of India's independence.

The Raksha Mantri reaffirmed the Government's commitment towards a strong Indian Navy, saying that "IAC and Project Seabird at Karwar, which will be

the Asia's largest Naval Base, as the examples of our unwavering focus". He listed out the measures being taken by the Government to modernise the Indian Navy, with emphasis on indigenisation, which will enhance the Navy's operational reach and prowess. He assured all possible support to the Navy for bolstering their operational preparedness, saying that a strong Naval force is crucial for peace, security and prosperity.

On the Galwan incident, Shri Rajnath Singh said Indian Navy's proactive forward deployment signalled that the country wants peace but is ready for any eventuality. "Indian Navy remains poised and combat ready to tackle any challenge," he said. The Raksha Mantri reiterated the Prime Minister's vision of SAGAR (Security and Growth for All in the Region) and the wider goal of a free, open and inclusive Indo-Pacific to ensure peace and stability in the region.

The Raksha Mantri lauded Indian Navy for its contribution in the fight against COVID-19 - from bringing back Indian citizens from overseas during Operation Samudra Setu I and ferrying in Liquid Medical Oxygen from abroad during Operation Samudra Setu II - despite the danger of spread of the virus onboard warships. He also commended the Search and Rescue (SAR) efforts by Navy during Cyclone Tauktae and Cyclone Yaas.

On June 24, 2021, Shri Rajnath Singh had visited the Karwar Naval Base and reviewed the progress of ongoing infrastructure development under 'Project Seabird', as part of his two-day visit to the Southern Naval Command.

WHY IS INDIA DEVELOPING A FLEET OF AIRCRAFT CARRIERS?

At present, India has two aircraft carriers - INS Vikram Aditya and INS Viraat, while it is planning to develop the third - INS Vishaal by 2030. The rationale behind India's carrier force development has three reasons: -

The first is the support of a conventional war against Pakistan, which would involve strikes against Pakistan naval assets and land bases.

Second, the carriers make the Indian Navy the preeminent force in the Indian Ocean, better able to command the area than any foreign competitor.

The third prong involves geopolitical competition with China.

INAS 323 COMMISSIONED AT GOA AS FIRST UNIT OF INDIGENOUSLY BUILT ALH MK III ENTERS NAVAL SERVICE

Indian Naval Air Squadron (INAS) 323, the first unit of the indigenously built ALH Mk III aircraft, was commissioned into the Indian Navy in the presence of Hon'ble Raksha Rajya Mantri Shri Shripad Naik and Vice Admiral R Hari Kumar, Flag Officer Commanding-in-Chief of Western Naval Command, at INS Hansa, Goa on 19 Apr 21. Addressing the gathering, Hon'ble Raksha Rajya Mantri said that the commissioning of INAS 323 marked yet another milestone in the efforts towards enhancing maritime security and safeguarding maritime interests of the nation, as also embodying the spirit of Atma Nirbhar Bharat.

The squadron will operate three state-of-the-art ALH Mk III, a multirole helicopter with Shakti engine manufactured by Hindustan Aeronautics Limited (HAL). The Mk III version of the ALH has an all glass cockpit and will be used for Search and Rescue, Special Operations and Coastal Surveillance. 16 aircraft are under procurement and the aircraft are being delivered in a phased manner to the Indian Navy.

INAS 323 is commanded by Cdr Samik Nundy, an accomplished and experienced ALH pilot with extensive operational experience.



MOD SIGNS CONTRACT TO PROCURE 11 AIRPORT SURVEILLANCE RADARS FOR INDIAN NAVY & INDIAN COAST GUARD

Posted On: 03 JUN 2021 3:50PM by PIB Delhi

Ministry of Defence signed a contract with M/s Mahindra Telephonics Integrated Systems Ltd., Mumbai for procurement of 11 Airport Surveillance Radars with Monopulse Secondary Surveillance Radar for Indian Navy and Indian Coast Guard on June 03, 2021. The procurement, at a cost of Rs 323.47 crore, will be made under the 'Buy & Make' category. The installation of these radars will increase the air domain awareness around airfields and enhance safety & efficiency in flying operations of Indian Navy and Indian Coast Guard.

The signing of this contract is an achievement of the Government towards 'AtmaNirbhar Bharat Abhiyan' and the objectives envisaged in the



programme. This would enable absorption of technology, skill development and indigenous manufacture, boosting employment opportunities.

INDIAN COAST GUARD SUCCESSFULLY CONDUCTS SWIFT MEDICAL EVACUATION OFF GOA

Posted On: 06 JUN 2021 8:08PM by PIB Delhi

Indian Coast Guard (ICG) successfully conducted a swift sea-air coordinated medical evacuation off Goa on June 06, 2021. Information was received at 0430 hours at Maritime Rescue Coordination Centre (Mumbai) that the captain of a ship, MT ELIM, a 50-year old South Korean national needed emergency medical assistance. The Marshall Island flag vessel, that was about 109 nm south west of Goa at that time, was directed to proceed towards Goa, while a swift operational plan was drawn by Coast Guard District HQ Goa for safe evacuation of the patient.

At 0530 hrs, ICG ship C-158 sailed out from Goa, maintaining continuous communication with MT ELIM. For speedy evacuation of the patient, ICG Chetak helicopter was deployed from Coast Guard Air Enclave (Goa). Braving gusting monsoon winds, the helicopter reached the vessel and airlifted the patient with the help of aircrew diver. The patient was safely brought ashore and shifted to SMRC hospital in Vasco, Goa where his condition is reported to be stable.



INDIAN NAVY - US NAVY CARRIER STRIKE GROUP PASSAGE EXERCISE

Indian Naval Ships Kochi and Teg along with P8I and MiG 29K aircraft are participating in a Passage Exercise with US Navy Carrier Strike Group Ronald Reagan during its transit through Indian Ocean Region on 23 and 24 Jun 2021. The Indian Naval warships along with aircraft from Indian Navy and Indian Air Force will be engaged in joint multi-domain operations with the Carrier Strike Group comprising Nimitz class aircraft carrier Ronald Reagan, Arleigh Burke class guided missile destroyer USS Halsey and Ticonderoga class guided missile cruiser USS Shiloh.

The two-day exercise aims to strengthen the bilateral relationship and cooperation by demonstrating

the ability to integrate and coordinate comprehensively in maritime operations. High tempo operations during the exercise include advanced air defence exercises, cross deck helicopter operations and anti-submarine exercises. The participating forces will endeavour to hone their war-fighting skills and enhance their interoperability as an integrated force to promote peace, security and stability in the maritime domain.

Indian Navy and US Navy regularly undertake a host of bilateral and multilateral exercises which underscore the shared values as partner navies, in ensuring commitment to an open, inclusive and a rule-based international order.

IAF AND USN IN IOR

As a strategic outreach exercise with the defence forces of friendly foreign countries in the Indian Ocean Region (IOR), Indian Air Force will participate in operational engagements with the US Navy in an exercise to be carried out with Ronald Reagan Carrier Strike Group (CSG) on 23 and 24 Jun 21. The CSG is currently deployed in the IOR.

The Exercise in the AoR of Southern Air Command will see the IAF forces operate from bases under four operational commands and will include Jaguars & Su-30 MKI fighters, AWACS, AEW&C and Air to Air Refueller aircraft. The US CSG is expected to field F-18 fighters and E-2C Hawkeye AEW&C aircraft. The exercise will be carried out south of Thiruvananthapuram, on the western seaboard, over two days.

IAF has extensive experience in maritime operations in the IOR. This has been consolidated over the years by conduct of exercises from the country's island territories, including participation in International exercises. The multi spectral capability of the IAF in IOR also includes HADR missions and logistics support undertaken in support of friendly nations in the region. This engagement with the US CSG offers one more opportunity to undertake joint operations in the maritime domain with a friendly foreign power.

The exercise with the US CSG will focus on multiple areas including enhancing aspects of interoperability, nuances of international integrated maritime SAR operations and exchange of best practices in the maritime airpower domain.





**DRONE INDIA
PUBLISHED BY
RWSI DRONE
GROUP**

TIME TO INVOLVE VERTI LIFT SOCIETIES IN RULE MAKING OF UNMANNED AERIAL PLATFORMS IN INDIA



Dear Readers

It is well known that the global drone market is predicted to grow to over \$43 billion in 2024 at a Compound Annual Growth Rate (CAGR) of 20.5%. We are also aware that India has more than 6 lakhs Drones of various sizes and projected to touch 21 lakhs by 2025. We are glad that MoCA and the Regulator are doing their best to evolve suitable policies to encourage usage of Drones in multiple industries and areas.

In view of these developments, RWSI amended its Rules to include a separate Drone Group in its Corporate Membership on 14 Jul 20. Since then, it has held several Drone Group meetings with its vibrant and highly professional members.

As brought out in the last publication, Vert Lift Societies across the world are of the opinion that they must play a positive role in sharing their experience with the Regulators so that the Rules made for verti lift unmanned platforms consider the lessons learnt in safe flight operations. Unfortunately, RWSI has not been able to contribute to Rule making. This question was raised in the Q & A session at the Urban Air Mobility webinar organized by RWSI Drone Group. The details of the Q & A Session are at page 31.

A word about the keynote address made by Dr. Arvind Sinha Fello Melbourne University at the event (please see page 29). He proposed a well informed and holistically analyzed study of the UAM be launched by the MoCA as being done by many Developed Countries. In handling the Study, he cautioned the Civil Aviation Authorities in being marketed by an available technology and the fancies that come with it. It is time that MOCA launches such a study with the help of professional institutions like RWSI.

We also welcome the initiative taken by Shri. Amber Dubey to participate in the Webinar on Urban Mobility: Prospects and Challenges in India and share his views on various common issues of the industry raised by the Drone Group. The Group also proposed that outstanding issues such as, (a) DGCA publish its guidelines for developing drones before demanding design approval prior to developing a prototype, (b) Publish the syllabus for drone pilot training, (c) DGCA consider classifying UAVs as per weight, configuration, and application.

It is time, the Civil Aviation Authorities include RWSI Drone Group to share its suggestions in evolving policies especially related to Training of Drone Pilots and Rule Making of verti lift aerial platforms.

AVM.KSridharan
Editor, Drone India Publications

TELANGANA GOVERNMENT GRANTED EXEMPTION TO CONDUCT BEYOND VISUAL LINE OF SIGHT (BVLOS) EXPERIMENTAL FLIGHTS OF DRONES

07 MAY 2021. The Ministry of Civil Aviation (MoCA) & Directorate General of Civil Aviation (DGCA) have granted conditional exemption to the Government of Telangana for conducting experimental Beyond Visual Line of Sight (BVLOS) drone flights for delivery of vaccines.

Exemption from Unmanned Aircraft System (UAS) Rules, 2021 has been granted as part of government's constant endeavour to enhance the scope of drone usage in the country and assist the nation to fight the COVID-19 pandemic.

Last month, the Government of Telangana was granted conditional exemption for conducting experimental delivery of Covid-19 vaccines within Visual Line of Sight (VLOS) Range using drones. To accelerate the drone deployment process to formulate application-based models, the grant has been extended to Beyond Visual Line of Sight (BVLOS). The trials may commence by end of May 2021.

This exemption shall be subject to complete adherence to the conditions as stated in Annexure 1 and the directions/ exemptions issued (or to be issued in future) by the Ministry of Civil Aviation (MoCA). This exemption shall be valid for a period of one year from the date of approval of the SOP or until further orders, whichever is earlier.

Earlier this month, 20 consortia were also granted permission to conduct Beyond Visual Line of Sight (BVLOS) experimental flights of drones. BVLOS trials will help create the regulatory framework for drone deliveries and other major applications.

Annexure 1

Conditions for conducting experimental BVLOS drone flights for delivery of vaccines by Government of Telangana.

1. Before the commencement of BVLOS trial flights, each Consortium shall develop and submit the following documents to DGCA for approval:

a) Standard Operating Procedures (SOP) for BVLOS operations

b) SOP for coordinating with Air Traffic Control (ATC) and Indian Air Force (IAF) in normal situations and contingencies such as Command and Control (C2) lost-link.

2. Security clearance of the entities involved (other than Government entities), personnel involved and the proposed airspaces, shall be obtained from the Ministry of Home Affairs (MHA).

3. The maximum permitted height for drone operations is 400 feet Above Ground Level (AGL). Energy reserve of 15% of flight time should be provisioned for.

4. Before the commencement of BVLOS trial flights, each Consortium should conduct a hazard identification and risk management (HIRM) workshop involving all stakeholders. BVLOS trials should be attempted only after all risks are mitigated to an acceptable level of safety.

5. Drone pilots shall hold a valid certificate of training and have sufficient experience in drone operations. A safe VLOS record of the drone operator and the remote pilot are mandatory requirements.

6. Before commencement of the trials, clearance from IAF and local administration shall be obtained.

7. The Government of Telangana shall post a Single Point Coordinator (SPC) at Shamshabad ATC for the entire duration of the trial flights to ensure smooth coordination with ATC.

8. A Flight Plan should be filed for each trial BVLOS flight with Shamshabad ATC; and Flight Information Centre (FIC) number and Air Defence Clearance (ADC) number shall be obtained.

9. The Government of Telangana shall initiate a Notice to Airmen (NOTAM) in coordination with General Manager (ATM), AAI, Shamshabad.

10. Drone operations shall be limited between local sunrise and local sunset. Visual Meteorological Conditions (VMC) should prevail at take-off and landing sites. Weather limitations stipulated by the drone manufacturer shall be complied with.

11. The drones used for BVLOS trial flights should satisfy the following requirements:

a) Type - Micro or Small category rotary wing drone

b) Valid Drone Acknowledgement Number (DAN).

c) Sufficient endurance for long-range operations

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EXEMPTION TO CONDUCT BEYOND VISUAL LINE OF SIGHT (BVLOS) EXPERIMENTAL FLIGHTS OF DRONES

05 MAY 2021. Ministry of Civil Aviation has granted conditional exemption from Unmanned Aircraft System (UAS) Rules, 2021 to 20 entities to conduct Beyond Visual Line of Sight (BVLOS) experimental flights of drones. The preliminary permission grant is envisioned to assist the supplementary framework development of subsequent UAV rules pertaining to Beyond Visual Line of Sight (BVLOS) drone operations.

BVLOS trials will help create framework for future drone deliveries and other major applications using drones.

The Central Government had constituted the 'BVLOS Experiment Assessment and Monitoring (BEAM) Committee' to invite Expression of Interest (EOI) to undertake BVLOS experimental flights of drones. An EOI notice (27046/70/2019 -AED-DGCA dated 13 May 2019) was issued by the Directorate General of Civil Aviation (DGCA) for the aforementioned purpose. The BEAM Committee evaluated the 34 EOIs received and selected 20 consortia ('Selected Consortia') for the experimental flights.

These exemptions are subject to complete adherence to the requirements stated in the said EOI notice and the

directions/ exemptions issued (or to be issued in future) by the BEAM Committee. This conditional exemption shall be valid for period of one year, or until further orders, whichever is earlier.

List of Selected Consortia for experimental BVLOS drone operations 1. Aerospace Industry Development Association of Tamil Nadu (AIDAT),2. ANRA Consortium A, 3. ANRA Consortium B, 4. Asteria Aerospace Pvt. Ltd.,5. AutoMicroUAS Aerotech Pvt. Ltd.,6. Centillion Networks Pvt. Ltd.,7. Clear Sky Flight Consortium, 8.Daksha Unmanned Systems Pvt. Ltd.,9. Dunzo Air Consortium,10. Marut Dronetech Pvt. Ltd. ,11. Sagar Defence Engineering Pvt. Ltd.,12. Saubika Consortium,13. Skylark Drones & Swiggy,14. ShopX Omnipresent Consortium,15. Spicejet Ltd.,16. Terradrone Consortium B,,17. The Consortium,18. Throttle Aerospace Systems Pvt. Ltd.,19. Value Thought IT Solutions Pvt. Ltd. And 20. Virginia Tech India

--Continued from page 27

- d)Capability to withstand adverse weather
 - e)Capability to transmit identity and live trajectory information
 - f) Carriage of a barometric sensor on-board
 - g)Capability to carry out geo-fencing, Return to Home (RTH) and Automatic Flight Termination.--
 - h)Capability to conduct autonomous operations
 - i)Conspicuous with bright colours and flashing strobe lights
 - j)360-degrees Collision avoidance system to avoid terrain and obstacles
 - k)Detect and Avoid System (DAA) to detect and avoid manned and unmanned aircraft
 - l)Display of drone pilot to provide live trajectory, manned aircraft information, DAA information and FirstPerson View (FPV), with visual/ audio alerts
- 12.Payload should be restricted to the proposed use-case. During the trials, drone shall not drop or discharge substances and shall not transport any hazardous material.
- 13.Each Consortium engaged in BVLOS trial operations should establish basic UAS Traffic

Management (UTM) infrastructure for real-time management of the flights and provide situational awareness data to ATC and IAF units, as required.

14.Each Consortium shall ensure that the UAS operations are insured against any accidents leading to injury/ death of uninvolved persons or damage to property.

15.Government of India and its entities shall not be held liable for any loss or damage to any entity whatsoever, during the conduct of such trials.

16.Each Consortium shall indemnify Government of India and its entities from any loss on account of any claim by third party (including but not limited to cost of litigation) which may arise due to any act of the Consortium during the conduct of such trials.

17.This permission for BVLOS trial flights shall not be used for any commercial purpose.

18.Upon completion of the trials, the Government of Telangana shall submit a detailed Proof of Concept to MoCA and DGCA. It is expected that the level of documentation and supporting justification would be proportionate to the level of complexity of the proposed BVLOS drone operation.

RWSI DRONE GROUP HOLDS URBAN AIR MOBILITY IN INDIA: PROSPECTS AND CHALLENGES WEBINAR ON 26 MAY 21

As part of its study, the Drone Group of RWSI hosted a webinar on Urban Air Mobility in India with an objective to assist Govt in evolving suitable policies to create suitable policies for the growth of Urban Air Mobility in India keeping in view the lessons learnt by Vert Lift Operators.

Amongst the members invited were DGCA representatives ,Mr. Amber Dubey, Joint Secretary MOCA,Capt. Amit Garg FOI DGCA,Mr Rajeev Mehta GM AAI (WR), members of RWSI GC. AVM K Sridharan President RWSI,Wg Cdr Singh Deo Vice President RWSI,Mr. R N Johri Chairman RWSI Drone Group ,Members of RWSI Governing Council including Lt. Gen B S Pawar,Air Cdr Ravi Krishan,Wg Cdr Unni Krishna Pillai , Wg Cdr C D Upadhyay,Gp Capt R N Joshi,Capt. Uday Gelli,Wg Cdr Ramesh Mallik ,Gp Capt R S Malhari,Members of RWSI Drone Group including Mr. Aman Johari,Mr. Anil Puri,Mr. Pranjal Mehta,Prof Satya Chakravarthy and Mr.Suriya Narayanan.Other Special invitees were Dr. Arvind Sinha,Mr. Somen Chowdhary,Cdr Surinder Dhir,Dr.Rajan Srikanth,Capt. Arpit Manshani,Prof Dr KSK Anna University, Capt Pargat Singh and Mrs Kalpana Dhar



AVM K.Sridharan President RWSI extended a warm welcome to the esteemed guests and RWSI Drone Group Members to the Webinar on Urban Air Mobility in India.He stated that the objective of the event was to assist Govt in evolving suitable policies for the growth of Urban Air Mobility in India keeping in view the lessons learnt by

Vert Lift Operators.

He further said that the proposal came during the Helicopter Association International (HAI) International Partnership Program (IPP) on 08 Apr 21. VTOL industry leaders who took part in the meeting including Japan, Australia, New Zealand, Canada, UK, European Union, USA, South Africa, Chile, and India believed there is growing international Interest and investment in Urban Air Mobility and several areas of UAM have the potential to either replace legacy helicopters or, at least, have overlap with current operations. It was therefore felt by the VTOL industry leaders that they are in a unique position to shape this future segment of our industry. As an example of an on-going project, they cited the example

of EU-funded “AiRMOUR” Project.

The EU-funded AiRMOUR project focuses on the research and validation of novel concepts and solutions to make urban air mobility safe, secure, quiet, and green, yet also more accessible, affordable, and publicly accepted. As the airspace opens for new transportation systems, new forms of Urban Air Mobility (UAM), such as passenger drones, are gaining more attention. (Similar to the adaptation process of electric cars, there are challenges to overcome related to technology regulations).

To tackle these challenges, a great deal more research is needed, and cities need to integrate air mobility into their urban planning processes and acquire suitable tools for this. The AiRMOUR project aims to advance the understanding of necessary near-future actions – not only by urban communities, but also by operators, regulators, academia, and businesses. The object of the RWSI Drone Group webinar on Urban Air Mobility is to convince the Civil Aviation Authorities in India to look at launching similar project to advance the understanding of necessary near-future actions – not only by urban communities, but also by operators, regulators, academia, and businesses.

He further said that RWSI has a vibrant Drone Group and it has some valuable suggestions. He looked forward to an opportunity for the Group to share its suggestions with the Civil Aviation Authorities.

Next to speak was Dr.Arvind Sinha Fello Melbourne University .



Dr Arvind Sinha thanked President RWSI for the invite to present the ‘Keynote Address’.

The Address commenced with brief insight on the drivers of Urban Air Mobility (UAM) resulting from urban growth and its impact on ground mobility of the citizens. The traffic congestion/density though addressed to a certain degree by Underground rail/ roads (Urban Underground Mobility - UUM) and Elevated/Flyover (Urban Elevated Mobility - UEM) tier roads network; has now reached the threshold in several cities globally, including India.

Hence, the only alternative is mobility though air, referred as UAM.Well, “Usage-of-Airspace” to address mobility of people in urban area, opens “Issues and Challenges” of a different dimension that need be

addressed. Air domain has no room for errors be it manual or automated, for results are more than often, catastrophic. This is “NOT” the domain of handheld device operators relaying pictures in real time of sports/mishappens event and alike, by micro cameras aloft a hand liftable vehicle, flying above tree-top/building levels – the Drone Operators. These drones are hand-held class of vehicles and beyond the UAM vehicles scope – Manned or Unmanned. This need be understood and acknowledged by the city drone operators of today. When we talk of UAM it refers to Aircraft that transports passengers/cargo and cruises at designated heights through designated air corridors.

To address UAM a clear understanding (knowledge & experience) of an “Air Transportation System” and “Aerospace - Technologies & Aviation - Operations”, is obligatory. In absence of this, the implementation of UAM will be a disaster. Additionally, one need watch and caution from the “Opportunity Seekers”, be it the Urban Developers, Designers & Manufacturers” and above all the Business Investors. One needs to safeguard from being wrongly marketed the UAM product, which I consider as premature presently, from a holistic perspective.

The “Issues and Challenges” of UAM Implementation dwells around; a) Urban Mobility Status and Growth Pattern; b) Potential Stakeholders of UAM System; and c) Platform and Systems Technologies.

To gain an understanding of urban mobility status and growth pattern, a data base of the urban vehicle occupants/movements covering timings/start and end points/ density need be created. This will further need to be modelled and simulated to gain an understanding of movement and identify the commuters and sections that could be potential UAM candidates.

The next is identification of the stakeholders required in planning and building a UAM System and categorizing them as operators and supporters in a tier set-up. To illustrate stakeholders’ range, it is from urbanists to sociologists (for public confidence & acceptance), city architects, aerospace technology developers, aviation operators/ regulators/ certifiers/ accident investigators, airspace managers, legal advisors to insurance agencies. The operational set-up of these stake holders will need to be understood and built from an UAM System perspective, inter and intra.

The third is the platform and systems technologies (on-board and off-board). Being urban mobility, the platform need be with vertical take-off and landing capability, hence a rotary wing configuration – the domain of an institution like Rotary Wing Society of India (RWSI). This may be varying combinations of multi rotors and with pusher propeller for high cruise

speeds, depending on the payload, flight performance requirements and operation bases (single/multi landing/ take-off pads atop buildings or elsewhere). The Urban Aerial Platform may be a mix of “Manned and Unmanned”, depending on the commuter requirements and this will drive the fleet inventory and its class of vehicles. Hence, the requirement of “Ground Control Stations - ATC” to monitor and provide manual override capability to the unmanned.

component, governed by the “Degree-of-Autonomy” technologies incorporated in the platform. Aerial platforms and systems (unlike drones referred above) “Airworthiness and Crashworthiness” standards and its certification have its own unique challenges. The Operational and Technical Regulations, need to be in pace with Operational Concepts and

Technology Developments, globally. This needs to address both indigenous products and of import origin through reciprocal regulatory arrangements with countries of origin. UAM product development has gained momentum and regulatory authorities need take cognizance to support local over imported products, for reasons well understood –Atmanirbhar Bharat. So, with this insight on UAM and its associated issues and challenges, what is the way forward.

“The Pathway”. A National Level Steering Committee (Board-of-Directors) be established with Tier 1 Stakeholder representatives. The Steering Committee need take stock of the present status and update themselves to be current with the issues and challenges for planning and implementing an USM System as a subsystem of the existing Air Transportation. System of the country. An independent, impartial and a non-profit professional institution like RWSI is best placed to lead such a Steering Committee, with huge operational, technical. and corporate knowledge and experience base of its members.

“Specialist Working Groups” be established for investigating the various issues and challenges. and developing a methodology to address it. To illustrate, these groups need cover, operational concept, technology developments & availability, airworthiness & certification of indigenous and imported products, integration in air transportation system, infrastructure. requirements and financial implications to the exchequer.

Based on the inputs from the working groups a “UAM System Implementation Feasibility Report” need be developed.

A Report that concludes if a UAM System in India is timely – “Operationally acceptable and integrable, technologically available and certified, and Financially viable”. If not, recommendations on how it be

QUESTION AND ANSWER SESSION WITH MR. AMBER DUBEY JOINT SECY, MOCA AT RWSI WEBINAR ON URBAN AIR MOBILITY ON 26 MAY 21



Question 1: With Urban Air Mobility, what can be different, because these aircrafts are not going to follow conventional rules. So, what difference can be expected here with respect to personnel training and manpower required?

Responses from Mr. Amber Dubey: Over the last few years a lot has changed. Flying clubs and training organizations for example have improved their track records. We found that most students in India prefer going abroad for their flight studies, so we needed to improve that. From having just one chief flying instructor who would approve a flight, the Indian flying clubs are now adding more flight instructors. In fact, one of the biggest flying clubs in India just crossed 1600 hrs. flying per month last month and we want to increase that to 2300 hrs. by increasing the fleet and getting students interested.

Question 2: For organizations building a new plane or aircraft from scratch, how can regulatory clearances and technological approvals be obtained in the shortest possible time?

Responses from Mr. Amber Dubey: This Govt has realized that we need a giant like Airbus or Boeing in India. To achieve this dream soon we need to start today. We are looking to make the whole process of manufacturing easier. In fact, a big part of my responsibility is to ensure defense and private sectors

hold hands in aerospace projects. We are getting retired servicemen and officers involved with private industries. Some supply chain projects also need strong synergy between the two as it is common practice in the West. This is how we hope to scale up the process of manufacturing and licensing in India.

Question 3: Are any steps being taken by MOCA to ease the process to get permits and licenses for drones in Indian airspace ?

Responses from Mr. Amber Dubey: The input received from industry, Dept of Science & Technology and other bodies clearly shows that there needs to be improvements in the current UAV CARs. we are there working to add modifications to the current CAR by this year itself as opposed to waiting one more calendar year for changes. In just 8-12 weeks, the industry will see positive changes come into effect. We have heard your feedback and we want to make the process much easier now by liberalized rules and simplified policy for all.

Question 4: Helicopter Societies across the world are of the opinion that they must play a positive role in sharing their experience with the Regulators so that the Rules made for verti lift unmanned platforms consider the lessons learnt. in safe flight operations. Unfortunately, RWSI has not been able to contribute to Rule making. How do we ensure that our voice is heard to help shape this future segment of our industry?

Responses from Mr. Amber Dubey: RWSI must continue its efforts to be heard in all the forums.

[Continue on page-32](#)

addressed. The report be tabled to the decision makers for further advise/direction. Once it is so, a “National UAM Road Map” be developed that serves as a “Guideline” to stake. holders on the planning and implementing a UAS System and its subsystem and components. To demonstrate the usage of the Road Map, a City in India be identified for limited. implementation of a UAS System, as the nation’s pilot project. The implementation outcomes be studied for its effectiveness and efficiencies and accordingly the Road Map be updated. continually, as the operation and support experience grow.

Lastly, “Safety and Security” of operating an aircraft from city-based landing/take-off pads. over urban airspace at low levels need be prime, under the prevalent security scenario. Adequate measures be in place on ground and once airborne, as a regular air traffic. A well informed and holistically analyzed study of the UAM need be the way forward than get. oneself marketed by an available technology and the fancies that come with it. Thanks, and any clarifications please if none - Cheers from Melbourne, long live our nation “Bharat” and the citizens in good health with utmost happiness. Enjoy.

..Continued from the page-31

Question 5: Since the revised DGCA guidelines make it compulsory for all Drone owners, including those of Nano and Micro categories, to get license / UIN from DCGA these categories of Drone owners find it difficult to take licenses and insurance companies do not issue policies without DCGA license/UIN No. Can you think of giving some relaxations for these categories of owners so that they can take the insurance without licenses?

Responses from Mr. Amber Dubey: The Government is aware of this problem and the GOI has already received requests for the waiver for these two categories. These are under active consideration of GOI, and one can expect announcements shortly.

Question 6: The DCGA has mandated taking the Third- Party Liability insurance compulsory for all drone owners. However, there is no specific Limit of Liability prescribed by the DCGA for such policies. Hence, different companies are having their own limits. Some companies have a minimum of Rs. 5 lakhs and a few have a minimum of Rs. 20 lakhs. This adds to the cost. Can the Govt consider uniform Limit of Liability for all the Drones Third Party Liability Insurance?

Responses from Mr. Amber Dubey: This has been discussed at length by all the Govt Agencies. The Third-party loss cannot be pre-determined by anyone. The actual loss can vary from one incident to another. Hence, after due deliberation, the Govt has decided that the compensation payable for such losses should be as per the model for TP losses under Motor Vehicles Act. It is up to the insurance companies to decide upon the Limit of Liability based on their experiences. However, the compensation payable should be determined as per the formula for the TP losses under the Motor Vehicles Act.

Question 7: There is disconnect between DCGA guidelines and the insurance products from several insurers. Can the Govt give suitable guidelines to IRDAI for uniformity and simplicity of taking policies and claim settlements?

Responses from Mr. Amber Dubey: The IRDAI is a different Regulatory body. Ministry of Civil Aviation does not interfere with the Regulatory authorities. Any specific instances of hardship should be referred to IRDAI directly for resolutions.

Question 8: If there are uniform TP Limit of Liability for all insurers then the premium would also be same everywhere. Now different companies are quoting different premium and there are price differences which can be resolved.

Responses from Mr. Amber Dubey: As explained earlier, the DCGA has prescribed that the loss should be compensated on the similar lines of TP claims under Motor Vehicles Act. All the insurance companies are making losses. Still the insurance companies are underwriting the Motor policies. It takes time for evolution. Drone insurances would also get clarity on the subject in due course of time.

Question 9: Can the DCGA make it mandatory to get Comprehensive Insurance for the Drones too to cover the loss to the Drones and Equipment apart from the TP insurance.

Responses from Mr. Amber Dubey: We cannot give such guidelines. It is up to the individual owners to take appropriate cover to protect their Assets. No one is preventing them to take Comprehensive insurance policies.

Question 10: There is absence of policies like Product Liability Insurance, Cyber Crime policies for Drones. Can the Govt think of making these policies compulsory and allow the clients to take the policies from outside India?

Responses from Mr. Amber Dubey: We need to approach IRDAI for suitable guidance. MOCA cannot interfere in such matters.

Question 11: Certification Standards and Criteria for certification of small drones and passenger carrying drones are quite different as the latter will be an aircraft as well as a drone. Is MOCA going to set up an agency for certification of passenger carrying drones?

Responses from Mr. Amber Dubey: Let the OEMs of UAM vehicles write to MOCA with details of their products and timeline envisaged for certification and we will start the process of setting up an agency for certification of passenger carrying drones.

Mr. Amber Dubey Jt Secy MOCA Concluded his Q & A session by stating that Rules for drone operations were published without delay. There has been a lot a feedback, mainly negative, but we are addressing all the issues and observations and will continue to refine the rules. Initially rules were rather stringent but with experience and feedback, many changes have been made. He asked the participants to write to him if there is any issue. About a question related to the establishment of Drone Certification Agency, he opined that small Drones certification and passenger carrying drone certification issues are quite different. So let the UAM OEMs write to us about their plan and expected date of readiness of their vehicles so that MOCA and DGCA can start working on setting up a group for certification of passenger drones.

DRONES TO FLY BEYOND VISUAL RANGE FOR DELIVERIES, TO BE TESTED THIS MONTH

It is reported that the first experimental long-range drone flights in India are due to take off later this month in parts of Karnataka, Tamil Nadu, Rajasthan, and Punjab, said government officials and company executives, who expect successful trials to pave the way for drone-based deliveries of medicines, e-commerce orders and food. These drones that are permitted to fly up to around 20 kms at one stretch, mark a first for the country which currently permits only drone flights within the visual line of sight (VLOS) or 450 meters from the operator.

Later, a consortium of companies led by global drone services provider ANRA Technologies will pilot deliveries of medicines in tie-up with the Indian Institute

of Technology Ropar and experiment with delivery of food orders along with Swiggy in Jawra, Rajasthan. Separately, teams led by Throttle Aerospace and Daksha Unmanned Systems will pilot deliveries of medicines in Gauribidanur in Karnataka and Thiruvalluvar outside Chennai, respectively.

In May 2019, the Directorate General of Civil Aviation had released an expression of interest to conduct experimental BVLOS (beyond visual line of sight) drone flights to gather learnings ahead of framing regulations to govern drone-based deliveries and other long-range drone use cases. “We hope to release the draft guidelines for public feedback by Dec 31, 2021, and the final guidelines by Mar 31, 2022,” said Amber Dubey, joint secretary at the Ministry of Civil Aviation.

STRATEGY PROPOSED BY DR. ARVIND SINHA FOR URBAN AIR MOBILITY IN INDIA

Urban Growth and Ground Traffic Congestion

- Urban Under Mobility - UUM
- Urban Raised Mobility – URM
- Urban Air Mobility – UAM

Urban Air Mobility

- Air transportation system
- Aerospace and Aviation

Urban Mobility Status and Growth

- Data base and analysis
- Identification of potential commuter sectors

Stakeholders

- Identification of organisations
- Inter and Intra operational set-up

Platform and Systems Technologies

- Platform configuration
- Systems – Onboard & Offboard

UAM Steering Board-of-Directors

- Stakeholder representation
- Strategic guidance

UAM Working Groups

- Specialised domains
- Advisory report development

Reference Document Development

- UAM System Feasibility – Issues/Challenges/Opportunities
- National UAM Roadmap – Planning and Implementation

Practical Approach

- Holistic consideration
- Strategic growth

Implementation mode

- Singular and limited
- Analysis of success and failures

Safety and Security

- Prime
- Operational and Technical

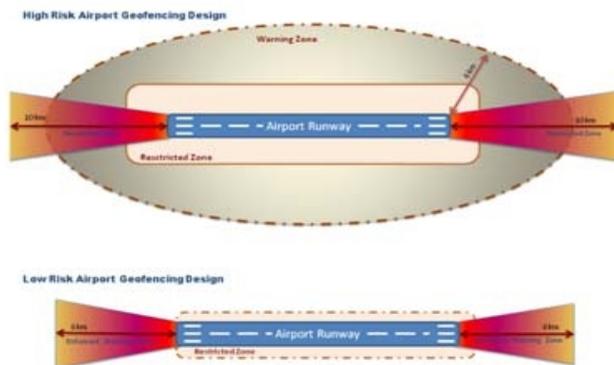
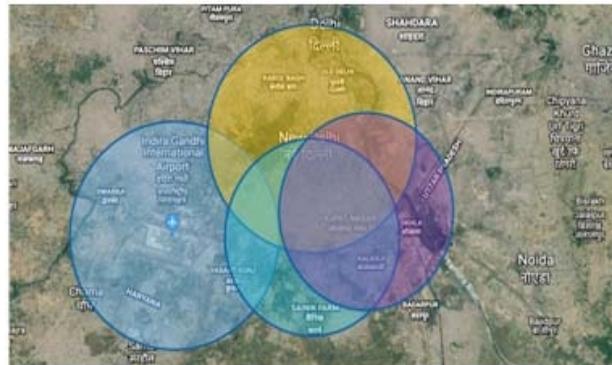
CITIES OF THE FUTURE: PROTECTION OF AIRSPACES BY COUNTER DRONE SYSTEMS

Counter Drone technology is finding its place worldwide in the protection of airspaces in the civil and military domain. The basic working principle, however simple poses challenges for airspace regulators and traffic controllers. Using RF Jammers, UAV Radars and other soft/hard kill neutralization technologies can complicate airspace classification and flight operations.

that give long range protection up to 10 kilometres in an airspace. When paired with Radars, an accuracy of up to 2 mm on target can be achieved. Neutralization is split into soft-kill and hard-kill where the latter involves firing capture nets or proximity explosives onto rogue UAVs to neutralize/ destroy their airframe and disable their ability of flight.



The airports of tomorrow need to be protected especially in the approach and departure funnels on either side of the runways they house. A radius of 6-



10 km is typically classified as top priority protection layer where rogue drones are either jammed out of flight or sent back to their home point. The diagram below shows the protection regions of an active runway. Most commercial off-the-shelf UAVs operate on fixed frequency bands and standard ISM modular frequencies. The installed GPS also operates between L1 and L2 bands, both of which have a narrow width and can be easily detected. Detection technology can include high-efficacy radars, RF detectors and so on. Between mapping a given airspace and detecting foreign activity on it, a lot of headway has been made into this space, including low power, low cost solutions

The following case studies take typical examples of Tier-1 cities like Mumbai and Delhi. The highlighted circles show protection ranges from some active Counter Drone systems in an airspace. Establishments including police stations, government buildings, airports, nuclear power plants, etc. all will have their own individual Counter Drone systems in place. Conventional traffic patterns will need to be remodified to accommodate the changes in airspace that Counter Drone Systems are about to bring forth. In the aforementioned scenario, for an aircraft to travel from one corner of Delhi city to another, it might have to go through multiple protected airspaces before reaching the airport. This poses both a technology challenge and a policy challenge. Although modern counter drone systems offer robust Friend/Foe detection, it is all set to have a deeper impact on OEMs and technology used onboard an aircraft for basic weather/met navigation. To meet the needs of the future, it is important to begin a deep thought process today.

Aman Johri

CEO, Jatayu Unmanned Systems.,

Robinson Helicopter Pilot

URBAN AIR MOBILITY CHALLENGES AHEAD

R Suriya Narayanan, CEO

Hitech Insurance Broking Services Ltd

INDIAN DRONES SOAR HIGH

- The global drone market will grow from **\$14 billion in 2018** to over **\$43 billion in 2024** at a **CAGR of 20.5%**.
- **India is the fastest growing drone market** in the world, having increased in size exponentially since legalisation of drones in **2018**.
- India is poised to become the **3rd largest Drone Industry** in the world.
- India has more than **6 lakhs Drones** of various sizes and projected to touch **21 lakhs by 2025**.
- India is **5th largest importer** of Drones in the world.
- India is becoming **Drone Hub** of the world.

PUSH FACTORS

- Indian Regulations are now round and robust.
- Indian Government encouraging Drone usages in multiple industries and areas.
- Indian Government extending incentives to start-ups and facilities investments.
- Presence of highly skilled engineers and technocrats in India.
- Young India willing to develop new technologies to new challenges.
- Indian Commercial Drone market is growing at **12.5% year on year**.

DRONES AND UTILITIES

- Disaster Relief.
- Agriculture.
- Fire Fighting.
- Weather Forecasting.
- Maritime.
- Power & Energy.
- Construction Planning.
- Riot controlling.
- Health Care.

RISKS FACED BY DRONES

- Collisions: (Mechanical failures, human errors, lack of trained pilots.
- Systems failures: (Loss of control, unable to sight/spot other objects.)
- Loss of signal: (Weak signal areas, frequency interferences)
- Malicious Use. (Targeting power plants, airports, railway stations, ports.
- Terrorism.

- Spoofing /Cyber Attacks (leading to misguidance of manned aircrafts, crashing and diverting)
- Nuisance/Privacy/Tresspass.

RISKS FROM DRONES

- Flights Operations Interference: Drones trespassing flight paths/air space.
- Infrastructure damages: Drones damaging buildings and towers.
- Facility Trespassing: Drones crossing over fences, security establishments.
- Information Gathering: Collects sensitive information and exploit cyber risks.
- Chemical/Biological Dispersal: Wrongful use disperse chemicals, gases and poisonous materials.
- Personal attacks: Tresspasses the secured areas and attacks with fire arms, bombs and explosives.

SUGGESTED Insurance SOLUTIONs

- Aviation Hull policies for Drones, Sensors, Control systems, cameras.
- Liability policies for third party properties and injuries.
- Product Liability Policy for manufacturers.
- Cyber Crime policy for data theft etc.
- Employee Protection Policies.
- Professional Indemnity/Errors and Omissions Policies.

INSURANCE CHALLENGES

- All types of Drones now need to be licenced. Nano and Micro Drone owners are affected.
- Long Delays in getting Regulatory approvals.
- Lack of knowledge of Drone industry and operations on the part of insurers.
- Only Hull and TP Policies are available. Other policies like Product Liability, Cyber Risk policies are not available.
- No standard proposals.
- Insurance companies are asking for invoices even for assembled Drones.
- Claims Settlement data not available.
- Insured are not comfortable with the underwriting norms.
- Deductibles are high.
- Electronic and mechanical breakdown are not covered

NASA ENTERS SPACE AGREEMENT WITH LONGBOW TO DEVELOP DRONE FLT RC CORRIDORS

A new agreement between NASA and aviation services company, The Longbow Group, is expected to result in the establishment of beyond visual line-of-sight (BVLOS) flight corridors for Advanced Air Mobility (AAM) drone flight tests in Hampton Roads, Virginia.

The partnership, a part of the Space Act Agreement, will see NASA's Langley Research Center collaborate with the Tennessee-based company on the development of an operational concept and assess the requirements for supporting infrastructure, data sharing, and other factors needed to conduct BVLOS operations.

The test flights, meanwhile, will be conducted between Langley Research Center's CERTAIN (City Environment for Range Testing of Autonomous Integrated Navigation) facility and Longbow's Unmanned Systems Research and Technology Center (USRTC) in Virginia.

Longer, more complex flight routes

Using smaller drones as surrogates for passenger air taxis, this High Density Vertiplex (HDV) project plans to test the feasibility of drone taxis in urban environments. As such, the collaboration will put emphasis on flight testing, safety risk assessments, documentation, and collaboration with the Federal Aviation Administration to enable routine BVLOS flights. Lou Glaab, NASA's HDV tech lead, says: When



implemented, these efforts will enable the UAM ecosystem prototype assessment with longer, more complex flight routes, within the HDV subproject for AAM along with establishing operational credit for an array of advanced NASA technologies.

Building a community for BVLOS drone research in Virginia

In addition to testing BVLOS drone flight corridors, other collaborative research areas could include Unmanned Traffic Management (UTM), supplemental data service providers, surveillance radars, meteorological systems, data networks, as well as command and control communications. For this, aerospace company Raytheon Technologies and researchers and students from Hampton University are also expected to participate.

NEW PARTNERSHIP TO BRING ADVANCED AIR MOBILITY TO IRELAND UPDATED / FRIDAY (28 MAY 2021)

Plans have been announced to set up Ireland's first passenger and cargo vertiport - a platform used by electric aerial vehicles. Skyports, Future Mobility Campus Ireland, Avtrain and Shannon Group have signed a memorandum of understanding (MoU) to establish the vertiport. The partnership will work towards launching an operational vertiport at Shannon's Future Mobility Campus Ireland campus in 2022.

The companies said this will encourage participation and investment in the country's Advanced Aerial Mobility (AAM) industry, adding that the long-term goal is the establishment of Ireland's first air taxi service and routine beyond visual line of sight (BVLOS) drone operations.

Skyports is a global passenger air taxi and cargo drone vertiport provider, while Future Mobility Campus Ireland (FMCI) is Ireland's first testbed for future mobility located next to Shannon Airport.

Avtrain is Europe's leading drone training and certification body and Shannon Group's International



Aviation Services Centre supports and promotes one of the country's largest aviation clusters located at Shannon.

To be contributing at this early stage demonstrates the criticality of vertiport infrastructure to the success of the industry. Participating alongside a group of such high calibre organisations puts us in a strong position to kick-start the project, providing the perfect mix of expertise to make our AAM plans a reality," he added.

ISRAEL MOD SUCCESSFULLY COMPLETES ITS FIRST-EVER SERIES OF INTERCEPTION TESTS EMPLOYING AN AIRBORNE, HIGH-POWER LASER SYSTEM

The Directorate of Defense R&D in the Ministry of Defense (MoD), together with Elbit Systems and the IAF, has successfully intercepted several UAVs using an airborne High-Power Laser Weapon System (HPL-WS). The UAVs were intercepted at various ranges and flight altitudes.

Defense Minister, Benny Gantz: "I would like to congratulate the Directorate for Defense R&D, Elbit Systems and the IAF on the technological breakthrough they have achieved. Today you have brought us closer to yet another important milestone in the development of the multi-tier defense array of the State of Israel and it is significant both in terms of cost-effectiveness and defense capabilities. The laser system will add a new layer of protection at greater ranges and in facing a variety of threats – securing the State of Israel while saving the costs of interception. I am confident that Israel's defense industry will succeed in this important development program, and I will personally work together with the entire defense establishment to ensure its success."

The test series was conducted under the leadership of the Directorate of Defense R&D in the Israel Ministry of Defense. During this series, a High-Power Laser system was installed on an aircraft and was tested in a number of scenarios. It successfully intercepted and destroyed all of the UAVs that were launched throughout the test. The ability to intercept and destroy airborne threats in the air is groundbreaking and offers a strategic change in the air defense capabilities of the State of Israel. This game-changing series was conducted in a testing field in the center of Israel, in close cooperation with the IAF and the "Yanot" unit.

Israel is among the first countries in the world to achieve and demonstrate such capabilities employing an airborne, High-Power Laser system. This test series is the first phase in a multi-year program led by the Directorate of Defense R&D and Elbit Systems to develop a laser system against a variety of long-range threats.

This method of airborne interception has many advantages, including a low cost per interception, the ability to effectively intercept long-range threats at high altitudes regardless of weather conditions, and the ability to defend vast areas. The airborne, High-Power Laser System will complement Israel's multi-tier missile defense array, which include the Iron Dome, David's Sling and Arrow missile interceptor systems. This system will increase the effectiveness of air defense against existing and future threats in the region.



RWSI DRONE GROUP INTERACTION WITH HAI DRONE GROUP (16TH JUNE 2021)



Aman Johri
CEO,
Jatayu Unmanned Systems.

On 16th June 2021, RWSI Drone Group got an opportunity to interact with the Helicopters Association International (HAI) Drone Group. A presentation was made by the RWSI Drone Group core members (Mr. Aman Johri from Jatayu Unmanned Systems and Mr. Pranjal Mehta from ePlane Company) to HAI on topics covering progress of RWSI in India and Urban Air Mobility. After a fruitful interaction

with the team, the agenda for the next meeting to be held in August was decided. A timeline chart of RWSI Drone Group's achievements and objectives was presented as follows:

Technical partnership with IIT Madras for futuristic tech development (ePlane company).

- Included unique OEMs that develop UCAVs and logistics UAVs (Jatayu Unmanned Systems).
- National level seminar on UAV Operations and Safety held at Mumbai during a mega RWSI event.
- Technical seminar held at IIT Madras with operators, OEMs and academia to discuss the future of UAVs and possible collaborations.
- Technical visit to NCCRD- Next Generation Combustion Lab at IIT Madras which has undertaken several incubations.
- Emergency Medical Service UAV expertise with HEMS personnel as lifetime members of RWSI.
- In process to become India's leading FTO for UAVs (pilots, crew, maintenance and R&D experts).
- Looking to build India's official policy position for Urban Air Mobility with Government of India.

inputs and discussion points between HAI and RWSI set the tone for the future technologies. Some discussion arenas that were touched upon were:

- Merging of UAV EMS operations with existing HEMS-policy, technology, operations, maintenance and fleet sustenance.

- Success stories of helicopter organizations who have merged UAV in their existing fleets.
 - Disaster Management- how to include UAVs to be an official segment under a regional, local, national and international disaster management plan.
 - Examples of Federal Emergency Management Agency (FEMA) and their National Incident Management System (NIMS, 2017) into integrating UAVs as asset operation during a disaster/emergency.
 - Integrating UAV into FEMA's Incident Command System (ICS) in Operations Section, Air Operations branch and the FAA Management Plan for disasters.
 - FAA's Air Operations summary and how we can include UAVs to be an aviation resource in policy.
 - Creation of management positions like UAV Base Manager, UAV Coordinator, etc. in the FEMA Resource Typing Definition for Response under the Air Operations branch.
 - How to include UAV into the National Wildfire Coordinating Group to use UAS in wildfire and firefighting operations.
 - Discussions into Urban Air Mobility- creation of helipads, drone ports, etc. in the middle of Tier-1 and Tier-2 cities (cited examples of New York and Los Angeles).
- RWSI looks forward to such fruitful interactions with our international partners. It lays down a solid foundation of mutual cooperation and learning. Meetings like these helps build a strong consensus in global standards and SOPs for both helicopter and UAV Operations.

DRONE PILOT TRAINING CAMP AT SHAKHANPUR DIST NAINITAL DURING FIRST WEEK OF NOVEMBER 2021

RWSI Drone Group is scheduled to hold Drone Pilot training camp at Shakhapur Dist. Nainital during first week of November 2021 to motivate RWSI Members to familiarize them in handling the role of Drone Pilot.

If you a Member of RWSI, you may please indicate your interest to join the Drone Pilot orientation camp at Shakhapur Dist. Nainital during 3 days in the first week of November 2021. The orientation training will be helpful to opt for Drone Pilot Training to earn a license for getting a flying assignment with RWSI Drone Group Members. As on date, the Drone operators in India need Drone Pilots.

If you are desirous to undergo the Drone Pilot orientation training camp at Shakhapur Airfield, please forward your name to RWSI by 15 July 2021 by e mail (office@rwsio.org). After receiving the response, RWSI would be able to indicate the Training Fee and boarding and lodging cost.



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(A Government of India Enterprise)



AS ON 30
JUNE 2021
TOTAL NUMBER
OF AVIATION
PROFESSIONALS
TRAINED BY RWSI
IS 6421

RWSI EMERGING AS LEAD ON-LINE AVIATION TRAINING INSTITUTE FOR RECURRENT TRAINING IN INDIA

- ÿ CRM TRG-RECURRENT (ON-LINE)
- ÿ SGT FOR HELI. PILOTS (ON-LINE)
- ÿ MONSOON TRAINING (ON-LINE)
- ÿ HILL OPERATION TRAINING (ON-LINE)
- ÿ SPL. VFR TRAINING & TEST (02 DAYS)
- ÿ EXTENDED SAFETY MANAGEMENT 1 (FIVE DAYS SMS)
- ÿ SAFETY MANAGEMENT TRG (ONE DAY SMS)(ON-LINE)
- ÿ SMS RECURRENT TRAINING (ON-LINE)
- ÿ HUMAN FACTOR TRAINING (ON-LINE)
- ÿ ACCIDENT PREVENTION (ON-LINE)
- ÿ ACCIDENT INVESTIGATION



- ÿ HELICOPTER OPERATORS (NSOP)
- ÿ PRIVATE HELICOPTERS
- ÿ PARA MILITARY
- ÿ GOVT/PSUs

SAFETY EDUCATION Highly Qualified & Experienced Training Faculty



Wg Cdr B S Singh Dep VM was a Production Pilot and Qualified Flying Instructor- Category A1, he has flown over 8,000 hours in Onshore and Offshore in 14 types of Helicopters and 5 types of aero planes. He was an Indian Air Force and DGCA examiner. Holds Indian Commercial Pilots License and FAA PPL He was MD of Bell Helicopter for India and South Asia for 21 years and retired in May 2018.



Wg Cdr V.P. Mathur, was commissioned as a Fighter Pilot in the I A F in 1968. He is a Q F I with 41yrs of teaching experience. He is also a TEST PILOT with testing Experience both on Fixed Wing and Rotary Wing Aircraft.

He has an A T P L {H} from FAA Washington DC. He has 14000 hours of flying experience spread over three continents. He has served the DGCA as a Chief Flight Operations Inspector {H}. He has served the prestigious H.A.L. & allied Testing setups for over 10 yrs. Over the last Eight years he has been serving the RWSI as the Head of Training Faculty.



Gp Capt. MK Labroo, an Aeronautical Engineer, Fellow of Institute of Engineers and a Chartered Engr (Aero Space). Former Air Force Chief Engr is an Avn Management & Q.A specialist and functioned as CEO,

GM (Engineering), Accountable Manager, COFS and Head of Engg respectively, of various Civil Helicopter Operating Companies. An active Engg Expert Member of AAIB has also been a Safety Audit Member of DGCA & RWSI. Dealt with Maintenance of Chetak/Cheetah, Mi-172, Enstrom-480B, AW-109, AS350B3. Lead Trainer of SMS, SEP, DGR, AAAL, AAP and HF Courses in RWSI.



Gp Capt. Raghvinder Nath Joshi VM is an experienced helicopter pilot and was an A2 QFI, Air Force Examiner and served in the VIP Squadron of IAF. He commanded a helicopter unit and was the Chief Flying Instructor in Helicopter Training School before retiring from the IAF.

He flew MI-8 and Cheak helicopters in the IAF and flew Bell 412, MD 902 and MD 520 Helicopters in the corporate sector. He is passionate about safety in helicopter operations and is RWSI trainer of safety related subjects.



Capt. Sanjay Mittal is an experienced ex IAF helicopter pilot and an A2 QFI with vast instructional and operational experience on both rotary and fixed wing aircraft.

Employed as Chief Pilot of a helicopter Company, he has over 12,000hrs of accident and incident free flying on helicopters and fixed wing. Capt. Mittal is a DGCA approved TRE on AW 139 and Bell 412 helicopters has also cleared him as facilitator for CRM classes conducted by Rotary Wing Society of India.



Air Cmde M. M. Ali VM is a helicopter pilot and A2 QFI. He has over 8000 accident free hrs both on fixed and rotary wing. He was an Air Force Examiner on helicopters. While on HATSOFF employment the Air Officer was cleared by DGCA to conduct CRM classes which he continues to do now with RWSI



Cdr Surinder Dhir is Indian Navy veteran. A Post Graduate in Aeronautical Engineering with over 35years of extensive experience across Repair, Maintenance, Overhaul and Training in both Defense and Civil Aviation.

Possess comprehensive technical knowledge and understanding of regulatory framework. Since Nov 2018, he has supported RWSI in all its activities.



Air Cmde (Retd) Ravi Krishan VM (G) is an experienced helicopter pilot with over 6900 hours of accident free flying in all types of terrain, during peace and war. He has commanded a Mi-8 flying unit in Gujarat and a Mi-17 helicopter base in the North East in the IAF. After retiring from the IAF, Joined the MHA and flew Mi-17 1V helicopters in support of Central Par Military forces.

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VERTI LIFT PRODUCTS UPDATE

LEGEND TECHNOLOGIES (INDIA) PVT. LTD BENGALURU TO PRODUCE ULTRA LIGHT HELICOPTER BY NEXT YEAR



M/s Legend Technologies's CMD Dr. Enti Ranga Reddy had worked with a PSU Aerospace industry for 6 years. Dr. Reddy is an Engineer & Entrepreneur with a great business acumen and professional brilliance. He started Legend Designers at Mysore in 1992 and undertook Design and Fabrication of Special Purpose Machines (SPM's) for Process Industry that includes Auto & Food Industries. They also undertook Projects for Aerospace components for Lakshya Pilotless Vehicle as turnkey Partner. They shifted to Bangalore in 2000 since then they have been contributing towards Design and Fabrication of Aerospace tooling, Manufacture and assembly of Aerospace structures, Design and fabrication of high precision slip rings.

Being a perfectionist, Dr. Reddy has pursued the manufacturing of Products that demand perfection and precision through his companies and experience, M/s Legend Technologies has the knowledge to ensure their tools meet stringent Aerospace accuracy needs.

Their versatility and diversity allowed them to design and manufacture multiple types of Aerospace tooling. For more than three decades, they have been known for their ability to uncompromisingly identify and meet the needs and requirements of the leading Aircraft, Helicopter, Engine and space industry. In fact, they as a supply chain are second to none. They made effort to design and build tools that will ensure safety, proper function, and usability. Legend ensured only high-quality tooling reaches their customers by utilizing a detailed AS9100D Certified quality management system.

During the Covid-19 pandemic, Our Country has demonstrated how it has risen to challenges and unfolded the opportunities. Due to this Pandemic, governments all over the world are focusing efforts on making their economies more self-sustained. Our

Honourable Prime Minister Sri Narendra Modi has announced a special economic package worth 20 lakh crore rupees for an 'Atma-Nirbhar Bharat' or self-reliant India, saying that self-reliance is the only way to ensure that 21st Century belongs to India.

This is equivalent to almost 10 percent of India's GDP. It will cater to various sections including cottage industry, MSMEs, labourers, middle class, and industries, among others. The states were allowed to increase their borrowing limit unconditionally by 0.5% of their Gross State Domestic Product (GSDP).

As a leading supplier of tooling to Fixed Wing Military Aircraft, Helicopters, Transport Aircraft, , unmanned aerial vehicles (UAVs), M/s Legend Technologies which is enabling country's Aerospace sector to improve reliability and enhance operational performance, now started focussing on the things that matter to the Country.

The Indian civil Helicopter numbers account for less than one per cent of the world's civil chopper fleet of over 34,000. Although the first civil helicopter in India was flown in November 1953, the commercial use of choppers was limited. Smaller Countries like Japan, Newzealand, Italy, France and UK have more than 750 helicopters. Brazil uses more than 2000 Choppers the total number of civil helicopters that were registered and operational in India stood at less than 250.

Dr. Reddy has seen that India has got a tremendous potential for growth of helicopter-based logistics services for moving men and materials. This machine can be deployed for multiple tasks. With slowdown in Fixed Wing Pilot jobs, it is possible that perspective pilots may seek the option of CPL(H). There are two types of licenses issued for the Helicopter pilots in India. These are PPL (H) i.e., Private Helicopter Pilot License and CPL (H) i.e., Commercial Helicopter Pilot License. For Aspirants who wanted to pursue a Private Pilot License (H), it became practically exceedingly difficult in India as there are only couple of academies. So, PPL aspirants are visiting foreign flying clubs. Others are getting a PPL on a Fixed wing in India, and later get it converted to PPL(H) abroad.

In our country M/s Hindustan Aeronautics is the only Company that undertakes Design and Development of Helicopters. Other Private firms are manufacturing detail parts and Assembly (Built to print). Dr Ranga Reddy analysed all these aspects and came out with the concept of deriving benefits with the availability of natural and skilled human resources, expertise in manufacturing, Analysis, Testing of Helicopter products in home country by Sharing strong synergies with Industry, Academia and Professional Societies there by judging the domestic demand.

M/s Legend Technologies, Bengaluru has undertaken extensive study with the technologies and expertise available in the country and came out with the decision that Design and development of Two-Seater Indian Ultra-Light Helicopter (IULH) is very much feasible with the support and hand holding of all organizations.

Accordingly M/s Legend Technologies, Bengaluru has signed MoU with Govt of Karnataka for design, development and manufacturing of Two-seater Light Helicopter for Civil & Naval application in the presence of Honourable Raksha Mantri Shri Rajnath Singh on 05/02/2021 at Aero India Exhibition. Dr.G Satheesh Reddy, Secretary, Department of Defence R&D and Chairman, Defence Research and Development Organisation (DRDO), Shri Gaurav Gupta IAS Additional Chief Secretary – Commerce and Industries, Commissioner for Industrial Development, Government of Karnataka, Shri Gunjan Krishna IAS Commissioner for Industrial Development and Director, Department of Industries & Commerce, Government of Karnataka and Managing Director Karnataka Udyog Mitra, Shri Revanna Gowda and other Civil, and Military Dignitaries were present.



Legend Technologies (India) Pvt Ltd signed MoU with Government of Karnataka to Design and Development of two seater ultra-light helicopter in the presence of Hon'ble Ministry of Defence Shri Rajnath Singh, DRDO, Navy Dignitaries, and Government of Karnataka Representatives. Aero India – 2021, Bengaluru (05.02.2021)

LEGEND TECHNOLOGIES (INDIA) PVT. LTD BENGALURU TO PRODUCE ULTRA LIGHT HELICOPTER BY NEXT YEAR

Proposed Helicopter IULH (Indian Ultra-Light Helicopter) is a Twin Seater Helicopter with single crew, can carry a payload of 350 kg (Fuel + Useful Load, including passenger), with a range of 300 km for a take-off weight of 850 kg. Fuel, useful load, and range are to be managed based on the requirement and role within the defined scope of this helicopter.

IULH will be designed to meet the requirements of FAR 27 standards appropriate to small rotorcraft category adapting any exclusions along with Certification agencies. Helicopter will be certified for Day/night all weather capability with VFR requirements.

It is prudent to include advanced technologies to sustain this product for longer period be it propulsion Turboshaft engine with FADEC (Full Authority Digital Engine Control), Integrated Cockpit Displays, Composite materials and most suitable Avionics to present certification and airworthiness requirements.

Shri P.Jayapal – Retired Outstanding Scientist and Director (Aircraft) CEMILAC – DRDO; Shri D B Chalwade – Retired Executive Director Hindustan Aeronautics Limited (HAL); Shri K M Bhat – Retired Chief Designer Rotary Wing Research and Design Centre (RWRDC); Shri S.V. Rama Rao Retired Additional General Manager, Aircraft Research and Design centre Hindustan Aeronautics Limited (HAL); Ms sanjana K – Designer from Legend; Mr M Surya Teja – Post Graduated from Italy working as a IULH Project Engineer and the Team have collaboratively working and focusing in the areas of Preliminary design and participated in the Project Definition Stage.

Crew	Two (1+1)
Engine	Turboshaft Engine
Horsepower	200 hp (150 kW)
Maximum Gross Weight	850 kg
Approximate Empty Weight	450 kg
Pay load (Including Pilot, Passenger and Standard fuel)	350 kg
Fuel capacity	160 l
Max speed	201 kmph
Cruise Speed	177 kmph
Max Range	300 kms
Ceiling	3 kms (10,000 ft)

Salient features...

① New Design using state of the art technologies such as Turboshaft engine with Full Authority Digital Engine Control (FADEC), Integrated Glass cockpit, Advanced navigation, and communication systems.

① Use of Composites for lower weight, better life and use of advanced Manufacturing technologies for quality of detail parts and assemblies.

① Comfortable seating with crashworthy aspects.

① Removal of left seat (passenger seat) for additional utility.

① Adjustable pedals for comfortable reach of pilot and trainee.

① Auxiliary fuel tank for enhanced range.

① Baggage compartment.

Applications/Roles:

Major application of this product comes under civil platform only.

① Training -Photography - Aerial survey - Media

① Emergency services — Organ Transportation

① Air Tourism — Charter Service — Courier services

① Rescue operation — Police patrolling

① Election campaigns — Flag Towing

Advertising banners — Flower dropping — VIP flights etc.



Legend Technologies (India) Pvt Ltd

(ABOVE AND BEYOND AEROSPACE TECHNOLOGY)

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Legend : TREND SETTER FOR OWNING HELICOPTERS AT AN AFFORDABLE COST WITH STATE OF THE ART TECHNOLOGIES.

SAF ORDERS THREE H145 S FOR EMS MISSIONS IN FRANCE

MARIGNANE, 16 JUNE 2021 – SAF group will be operating three more five-bladed H145S for Emergency Medical Services (EMS) in France. These three aircraft will be based in Grenoble, Valence, and Montpellier. They will complement the three H145S already ordered by SAF in 2018 and 2020, the first of which was delivered recently and will be deployed for EMS missions in Belgium.

SAF CEO Tristan Serretta says: “introducing six new H145s in France and Belgium in just twelve months is in line with our strategy to increase the capacity of the growing number of EMS services that place their trust in us. This increase of our positioning is made possible by the level of performance and the versatility of this successful helicopter. SAF is determined to help demonstrate, together with the heads of emergency services, that having the right performance and at the right cost is key to saving lives”.

Airbus Helicopters CEO, Bruno even declared: “we are delighted that SAF has once again renewed its trust in Airbus Helicopters. This new contract highlights the lasting partnership between our two companies that has spanned more than two decades. The H145 is an ideal platform for EMS with the largest cabin in its class and unbeatable payload, it is capable of undertaking the most demanding missions. We are happy that the five bladed H145 is gaining momentum in France and playing a key role in the modernization of the EMS fleet in the country.”

SAF is a key actor of EMS in France and Europe. This French company already operates 55 Airbus Helicopters. SAF’s fleet includes a Super Puma, H135s and H125s. The H145 will bring increased capabilities for the EMS missions.

The new version of airbus’ best-selling H145 light twin-engine helicopter was unveiled at Heli-Expo 2019 in Atlanta in March. This latest upgrade adds a new, innovative five-bladed rotor to the multi-mission H145, increasing the useful load of the helicopter by 150 kg. The simplicity of the new bearingless main rotor design



will also ease maintenance operations, further improving the benchmark serviceability and reliability of the H145, while improving ride comfort for both passengers and crew. The helicopter’s high-mounted tail boom and wide opening clam-shell doors facilitate access to the H145’s spacious cabin.

Today, Airbus has more than 1,470 H145 family helicopters in service around the world, logging a total of more than six million flight hours. For EMS alone, there are more than 470 helicopters of the H145 family conducting air rescue missions worldwide.

VERTEX Demonstrating simplified mission preparation and control for Vertical Take Off and Landing (VTOL) aircraft, reducing pilot workload using intuitive devices on the Airbus helicopter FlightLab

- Technologies will be transferred to future VTOL
- Focus on mission by reducing pilot workload
- Disruptive IRL for mission preparation and in-flight monitoring & control
- Main control systems detect low altitude low speed obstacles
- Automatic taking take off, navigation and landing

Onboard Technology

- 2-axis camera
- Infrared camera
- LiDAR sensor

Computing Capabilities

- High Power CPU
- High Power Avionics
- Fly-by-wire Helicopter

Pilot Interfaces

- Handheld tablet
- Head worn Display

AIRBUS

FOLLOWING HISTORIC DEVELOPMENT AND FLIGHT TEST PROGRAM BELL V-280 VALOR FOCUSES ON FLRAA COMPETITION

Fort Worth, Texas (June 24, 2021) – Bell Textron Inc., a Textron Inc. (NYSE: TXT) company is advancing Bell's flight-proven V-280 Valor program to meet requirements for the Future Long-Range Assault Aircraft (FLRAA) program of record. The competition is expected to begin with the Army releasing a Request for Proposals this summer. The optimized design for a fleet of next-generation tiltrotors builds on the exemplary flight-test results and programmatic execution during the Joint Multi-Role Technology Demonstrator (JMR TD) program and Competitive Demonstration and Risk Reduction (CD&RR) efforts.

Bell and Team Valor are transitioning focus to the critical next phase of the competition supporting Army Modernization. The V-280 Valor marked the completion of its three-year flight-test program with a series of demonstrations to highlight its revolutionary performance during more than 214 hours of flight. The V-280 completed all planned Key Performance Parameters including low-speed agility, long-range cruise, 305 knot high-speed flights, and rapid mission systems integration during this thorough test period. Five Army Experimental Test Pilots have flown the V-280 over 15 sorties. Additionally, Bell hosted "Soldier Touchpoint" events enabling critical feedback from pilots, mechanics, and infantry squads for the Army program office to inform their requirements. This feedback provided critical data that decreased risk and rapidly advanced the maturation of technology for a FLRAA weapons system to meet warfighters Joint All-Domain Operational requirements.

"The FLRAA challenge presented by the U.S. Army was unattainable using helicopter configurations. They have been clear about the need to modernize and field transformational capabilities. We assessed several vertical lift technologies and determined the tiltrotor to be the only solution to the agility, range, and speed requirements of a Long-Range Assault Aircraft that can meet the cost, timeline, and risk profile required for a successful acquisition program. Bell and our

Team Valor teammates could not be more proud of the V-280's record of performance in close collaboration with the U.S. Army throughout the JMR TD and CD&RR to date," said Keith Flail, executive vice president, Advanced Vertical Lift Systems at Bell. "Our team is committed to providing the Army the highest performance and flight-proven option to move into the FLRAA program of record."

In addition to flight-testing, Bell and Team Valor delivered extensive data explaining how the program will deliver an affordable program by developing a weapons system built with efficiency in mind. The V-280 incorporates a Modular Open Systems Approach and relies on simplified and inherently reliable designs to increase lifecycle affordability and sustainment using a holistic view of digital models, processing and analysis to improve operations and maintenance.

"We have come a long way since we started our journey eight years ago. We made commitments, we safely executed our program on time, and we validated our performance claims and the accuracy of our digital models through flight demonstrations. Ultimately, the Army doesn't send warfighters into battle riding in the back of digital models and so we thought it was important to bring that physical proof," said Ryan Ehinger, vice president and program director, FLRAA at Bell. "This next-generation aircraft technology provides a proven foundation, the 'truck', for the employment of our open architecture digital backbone to provide maximum flexibility for the Army to sustain their mission systems in a way that makes sense for them. It also empowers them to ensure their long-term interoperability in future Joint All-Domain Operations."

As the FLRAA competition moves towards a program of record, Bell will continue CD&RR Phase II efforts to provide initial preliminary designs for major subsystems and the conceptual weapons system, based on data-proven performance that ensures transformational capabilities will be delivered in line with the Army's schedule.

<<BELL HELICOPTER>>

BELL V-280 VALOR



BELL V-280 VALOR



BOEING TO BOOST UK ROYAL AIR FORCE CHINOOK FLEET

Philadelphia, June 22, 2021 — U.S. Special Operations Command awarded Boeing [nyse: ba] a \$578 million foreign military sales contract approved by the U.S. department of state to deliver 14 extended-range Chinook helicopters to the UK Royal Air Force (RAF). The extended range Chinook gives the RAF fleet more versatility to execute the domestic and international heavy-lift missions that only the Chinook can facilitate. “these chinooks are the future of heavy-lift, built on an existing foundation of advanced capability and life cycle affordability,” said Andy Builta, Boeing Vice President and H-47 program manager. “this contract for block ii aircraft sets the stage for the next 60 years of Chinook excellence on the battlefield.” Boeing and the RAF recently celebrated the 40th anniversary of the first Chinook delivery to the UK. Boeing will also celebrate the 60th anniversary of the Chinook’s first flight later this year.

The United Kingdom will be the first international operator of a block ii Chinook. Deliveries are scheduled to start in 2026. Boeing has more than 4,600 employees in Pennsylvania supporting the Chinook, the V-22



Osprey, the MH-139A Grey Wolf and a number of services and engineering efforts. Including suppliers and vendors, Boeing’s activities support an estimated 16,000 jobs in Pennsylvania.

The Chinook fleet for the UK Ministry of Defence (MOD) supports more than 450 highly skilled jobs across the UK. Boeing colleagues provide maintenance and services support at Gosport, MOD Boscombe Down, and are embedded alongside the military at RAF Odiham. View more information about the recent 40th anniversary celebration



H-47 Chinook Block II



542 aircraft coming to Philadelphia for upgrades that will increase payload, drive commonality and create a foundation for affordable future upgrades.

F-Model carries **20,000 lb**
Block II will carry **22,000+ lb**

Brings **15-20 years of production** to Philadelphia site

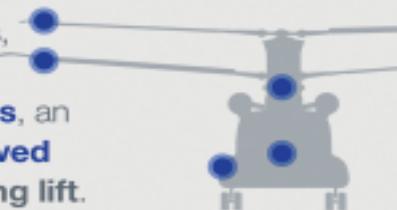
CHINOOK TO **2060** and BEYOND

TODAY’S HEAVY-LIFT HELICOPTERS MUST HANDLE **HEAVIER** EQUIPMENT, **HIGHER** ALTITUDES, AND **HOTTER** TEMPERATURES.

Block II combines new technologies, including the Advanced Chinook **rotor blades**, redesigned **fuel tanks**, an **enhanced fuselage** and an **improved drivetrain** – all aimed at increasing lift.

First Block II aircraft test flight in **2019**

First MH-47G aircraft to be delivered in **2020**



BOEING LOGISTICS CONTRACT BUILDS ON DECADES OF SUPPORT FOR ISRAEL APACHES

TEL AVIV, Israel, April 20, 2021 - Boeing [NYSE: BA] today announced a contract to provide the Israeli Air Force (IAF) with integrated logistics support for Israel's AH-64A-model and D-model Apache helicopters.

The direct commercial sale, awarded in December 2020, is a five-year follow-on contract that builds on Boeing's current IAF Apache support. Boeing will deliver logistical, program, engineering and technical support, A- and D-model technical publications, D-model unique repairs, an in-

country field service representative, and overhaul material kits for various drivetrain systems, including transmissions and gear boxes. "This tailored support package and Boeing's decades of vertical lift experience bring superior global sustainment expertise to our Israeli customer and elevates the capability of their Apache fleet to support key missions," said Indra Duivenvoorde, director of Europe and Israel services for Boeing.

Boeing has been delivering support for the IAF's fleet of Apache helicopters for decades and currently provides transactional spares, A-model repairs, support and test equipment, and engineering project support for the IAF. A Boeing field service representative has been co-located with the customer since 1991 to provide on-site technical support.



In addition to the U.S. Army, Israel is one of 16 partner nations around the globe operating the Apache as its primary attack helicopter, with multiple global defense forces expressing high interest. More than 2,500 helicopters have been delivered worldwide.

Boeing is the world's largest aerospace company and leading provider of commercial airplanes, defense, space and security systems, and global services. As a top U.S. exporter, the company supports commercial and government customers in more than 150 countries, leveraging the talents of a global supplier base. Building on a legacy of aerospace leadership, Boeing continues to lead in technology and innovation, deliver for its customers and invest in its people and future growth.

DEFENCE SECRETARY INDUCTS HAL MANUFACTURED ALH MK-III HELICOPTERS INTO INDIAN COAST GUARD

Bengaluru June 12, 2021: In a major boost to the ALH MK-III indigenous coast guard programme, three Advanced Light Helicopter (ALHS) manufactured by HAL were inducted into the stables of Indian coast guard by Dr Ajay Kumar, Defence Secretary, on 12 Jun 21. These helicopters which are part of ALH MK III Programme will be positioned in Bhubaneswar, Porbandar, Chennai and Kochi and will be part of different coast guard aviation squadrons.

A virtual program was held simultaneously at the Indian coast guard (ICG) headquarters in Delhi and at helicopter MRO division of HAL in Bengaluru. The director general, Indian coast guard, Mr k Natarajan, PTM, TM and Mr R Madhavan, CMD, HAL, were present on the occasion.

Speaking on the occasion Dr Ajay Kumar said “the state-of-the-art helicopters with advanced sensors will enable ICG to take up challenging tasks. This is for the first-time performance-based logistics is being introduced in Indian aviation sector which is a modern management practice and will increase operational and maintenance efficiency. The sophisticated helicopters being handed over today will be a game changer for the operational capability of ICG in the times to come”.

Shri k Natarajan said ICG has been a torch bearer in promoting and inducting indigenous products since

formative years of the service. Induction of ALH MK III is a testimony to the ICG’S commitment towards “Atma Nirbhar Bharat”. HAL has been the most trusted partner in the growth of ICG aviation fleet delivering multi role and highly capable platforms. The induction of ALH MKIII in challenging times bears a testament to the resilience of HAL and ICG. These helicopters will usher a paradigm shift in the capability in ship borne operations and enhance coastal surveillance. Indian coast guard is also the first service to have performance-based logistics management system introduced in aviation to ensure helicopter availability at four bases, he added.

Speaking on the occasion, Mr R Madhavan said with this contract, HAL is embarking on a new journey of performance-based logistics (PBL). The PBL will assure desired levels of availability of ALH MK III fleet of ICG for six and half years, a unique feature of this contract and a first of its kind in HAL.

These helicopters are equipped with state-of-the-art equipment like surveillance radar, electro optic pod, medical intensive care unit, high intensity search light, SAR homer, loud hailer, machine gun and can perform other key roles. Helicopter mro division is the nodal agency for execution of PBL contract along with engine division and other sister divisions of HAL.



ALH DHRUV DEMONSTRATES DECK OPERATIONS CAPABILITIES IN SHIP-BORNE TRIALS

ALH Dhruv Demonstrates Deck Operations Capabilities in Ship-borne Trials

Bengaluru, April 29, 2021: HAL's Advanced Light Helicopter Dhruv Mk III MR has successfully demonstrated its deck-operations capabilities that include landing on deck, folding of blades and storing the helicopter inside the onboard hangar. The recently concluded ship-borne trials off Chennai coast in collaboration with the Indian Coast Guard also covered maintenance activities inside the hangar and on the deck, hot refueling with engines running on the deck. The helicopter is equipped with the most modern and reliable Shakti engines and an advanced glass cockpit. HAL had recently delivered ALH Dhruv Mk III MR to Indian Coast Guard as part of its 16 ALH Contract. "These trials have proven the capability of ALH Dhruv to carry out extended operations from ships. Some of the missions that were successfully executed were surveillance, search and rescue, antipollution to address oil spillage, etc. With the successful demonstration of these capabilities like blade folding, stowage, the helicopter is now ready to be fielded for operations," said Mr. R. Madhavan, CMD, HAL.

Dhruv Mk III MR is equipped with the most modern surveillance radar that can detect and identify ships and boats up to a range of 120 nautical miles to enable the Indian Coast Guard in its duty to secure the nation from threats. Coupled with an electro-optical sensor that can closely monitor even the smallest of the vessels at distances as far as 30 nautical miles, ALH Dhruv will boost the capabilities of the Indian Coast Guard.



LEONARDO DELIVERS HH-139B HELICOPTER TO THE ITALIAN AIR FORCE

On 25 Jun 21. The HH-139B is a dedicated Air Force variant of the Aw139 type. The aircraft will be used for a wide range of missions including SAR – search and rescue, firefighting, slow mover interceptor.

Italian minister of defence Lorenzo Guerini said: National Sovereignty, from a military and technological point of view, is preserved today also thanks to this level of excellence and to the synergies among institutions, defence and industry. Italy has prime industrial capabilities and Leonardo symbolises a nation, which can leverage a top world-class aerospace, defence and security industry.”

Alessandro Profumo, CEO of Leonardo, said: “we are proud to provide our capability so that the Italian air force’s major duties such as supporting the national community and homeland security are guaranteed. The HH-139B is an iconic product fully representative of national industry’s technology excellence and international competitiveness. The facility in Vergiate - the largest Leonardo helicopter final assembly line with more than 1,000 employees - shows outstanding rotorcraft capabilities in terms of products, manufacturing processes, and professional skills, and is able to maintain Leonardo and Italy at the forefront of innovation in an increasingly strategic and highly competitive sector.”

Over 1,200 AW139s have been sold to more than 280 customers in over 70 countries, including more than 80 for Italian government operators (air force, Guardia di Finanza, state police, coast guard, national firefighting department and carabinieri), plus emergency medical service operators. This helicopter model benefits from advanced digital technology solutions, for both flight and missions as well as training (pilots and maintenance technicians) and support. The helicopter’s state-of-the-art satellite navigation and synthetic vision system has 3D representations of the external environment on cockpit displays even in poor



visibility conditions, advanced collision avoidance and proximity systems, mission sensors and an automatic flight control system, which is able to assist the crew during sar and hoisting in harsh environmental and weather conditions. The AW139 also features modern predictive maintenance and diagnostics solutions allowing accurate, rapid assessment and data processing on the health and usage of aircraft components. This allows more efficient maintenance activities increasing operational effectiveness and safety. Both flight and maintenance training are extensively delivered in virtual environments and simulation. Crews can therefore maximise their ability to use equipment and leverage the best performance of the product during missions. Maintenance technicians can leverage virtual training therefore increasing technical assistance quality and reliability. All of these capabilities bring greater safety to operations.

The majority of Leonardo helicopters that are manufactured, and the largest number of its helicopter types in the product portfolio, are assembled at Vergiate facility. Components from Leonardo’s centres of excellence in Italy and abroad (airframes, dynamics, avionics, equipment), in addition to the wider supply chain, are gathered and then enter the production process to build the complete helicopter. This is customised, tested, and delivered to Italian and international customers. A major logistics centre is also based in Vergiate for spare parts storage and management and for technical support assisting Leonard

ROSTEC TO PRESENT MODERNIZED KA-32A11M AT MAKS



Ka-32 modernization program includes a glass cockpit with an avionics system, more powerful VK-2500PS-02 engines and a new fire extinguishing system.

“Ka-32 is recognized all over the world as one of the best helicopters for firefighting work. Nevertheless, even the best models need timely modernization. We have managed to preserve the outstanding flight performance of the model, supplementing it with modern avionics and a new, more efficient and multifunctional fire extinguishing system. A prototype of Ka-32A11M will be present at the MAKS-2021 air show and we are planning to start supplying the aircraft as early as next year”, stressed Director General of Russian Helicopters Andrey Boginsky.

The technical solutions used in the new glass cockpit of Ka-32A11M have already been tested on Ansat and Mi-38 civil multipurpose helicopters, and will facilitate the work with additional navigation, optoelectronic and search equipment that can be installed on the helicopter. Pilots will also be able to use night vision goggles.

With the new VK-2500PS-02 engines, the rotorcraft will perform significantly better in hot and

mountainous environments. According to design calculations, its load capacity in such conditions will increase by 1600 kg.

The new SP-32 fire extinguishing system, developed by specialists from the National Helicopter Center IIL&Kamov and KAPE, has received a number of significant advantages over foreign counterparts. The new tank holds 4 tons of water and is divided into 4 compartments. The patented digitally controlled discharge system allows the flaps to be opened in pairs or alternately, and to adjust the opening angles, thereby increasing the water discharge time.

The system automation allows to accurately take in 4 tons of water in 60 seconds, as well as add up to 400 liters of foam agent. It has also been adapted to use a water cannon. In addition, all SP-32 systems are electrically heated, which allows it to be used in unprecedented winter conditions at temperatures as low as -20 degrees Celsius.

Serial production of Ka-32 machines is carried out by JSC Kumertau Aviation Production Enterprise (KAPE). Currently, over 240 machines have been built, which are operated in over 30 countries all over the world.

U.S. NAVY AWARDS SIKORSKY CONTRACT TO BUILD NINE MORE CH-53K™ HEAVY LIFT HELICOPTERS IN CONNECTICUT

Stratford, Conn., June 25, 2021 – Utilizing proven advanced manufacturing techniques and continuing to drive down unit price, Sikorsky will build nine more CH-53K™ heavy lift helicopters under a new contract for the US Navy. This production award also includes an agreement for the next production contract at an even lower unit price which will decrease further if additional quantity options are exercised, resulting in significant savings for the US Government and taxpayers.



The nine helicopters are part of a 200 aircraft program of record for the US Marine Corps for a total of 33 production aircraft under contract with 3 of the 33 already delivered to the US Marine Corps. Sikorsky will begin deliveries of the nine additional aircraft in 2024.

Sikorsky and the US Navy also agreed to an even lower aircraft price for the next production contract of nine helicopters, to be exercised no later than February 2022.

Up next: CH-53K Flying in fleet environment

Since October 2020, Sikorsky has delivered three operational Stratford, Conn., June 25, 2021 – utilizing proven advanced manufacturing techniques and continuing to drive down unit price, Sikorsky will build nine more CH-53K™ heavy lift helicopters under a new contract for the US Navy. This production award also includes an agreement for the next production contract at an even lower unit price which will decrease further if additional quantity options are exercised, resulting in significant savings for the US government and taxpayers.

The marine operational test & evaluation squadron 1, VMX-1, has begun flying the CH-53K aircraft as they prepare for the next phase of assessment known as initial operational test and evaluation, (IOT&E). Marines will evaluate how the CH-53K™ helicopter performs in fleet operating conditions at sea, in sand and lifting external loads.

“the delivery of three CH-53K king stallion helicopters is significant in that it continues the training process for the marines, ensuring a smooth entry into service for this intelligent aircraft that offers dramatic improvements in performance, survivability, reliability and maintenance for the Marines 21st century missions,” said Falk.

The CH-53K will further support the US. Marine Corps in its mission to conduct expeditionary heavy-lift assault transport of armoured vehicles, equipment and personnel to support distributed operations deep inland from a sea-based centre of operations, critical in the Indo-Pacific Region.



LOCKHEED MARTIN – EXPANDING ITS FOOTPRINT IN INDIA

The S-76D is Sikorsky's latest version of the S-76 family of helicopters, with pedigree that started in 1978 when the S-76A was first civil certified. The S-76 possesses an excellent reputation throughout the world, with superior safety and performance records and a vast array of available optional equipment to address most any unique customer requirement. It is a helicopter that services many various missions including, Head of State, VIP, corporate executive transport, offshore oil and gas, search and rescue including shipboard operation, emergency medical service, utility, law enforcement, aerial surveillance, sightseeing/leisure travel, television news, and highway patrol. The S-76 family has accumulated over 7.5 million flight hours and is among the safest in the world. Superior reliability results in a best in class availability, with fleet availability of 95%.

The S-76C++ variant has been utilized in India for several years in support of VIP/ executive transportation as well as support of the offshore oil industry and is soon expected to be joined by the S-76D, for which FAA certification of 50 degrees C ambient temperature was granted in January 2021 and DGCA approval is expected within Q1 2021. The S-76D brings an integrated all glass cockpit, advanced all composite blades and fuel efficient engines. Aircraft noise and vibration levels allow working meetings in the cabin while being friendly to the neighbors. Sikorsky is very excited to offer the S-76 in a SAR Naval variant to meet the requirements of the India Navy Utility Helicopter program.

Sharing the stable with the S-76 is the venerable S-92 helicopter, produced by Sikorsky since 2004 and sought globally by Head of State, VIP, utility and search and rescue operators for its formidable safety and performance capabilities as well as its cabin height of 1.83 meters / 6.0 feet, max gross weight of 12,565 kilo / 27,700 pounds, an available lavatory with or without a shower, and comfortable accommodations for 19 airline passenger seats or up to 14 executive seats. The S-92 cabin has been produced in India for several years by TATA Industries at the Hyderabad facility. The S-92 is now DGCA approved and is expected soon to contribute to the growing needs of India's aviation sector, be that for VIP or utility or search and rescue missions



FIRST RESCUE HELICOPTER FLIES ON SUSTAINABLE AVIATION FUEL

7 June 2021, Munich A rescue helicopter has flown on sustainable aviation fuel (SAF) for the first time, achieving a new milestone in international aviation. Operated by the German non-profit organization ADAC Luftrettung, the Airbus H145 rescue helicopter has its Arriel 2E engine s ceremonially refuelled with biofuel, a type of SAF, at the air rescue station at Munich's



Harlaching Clinic in the presence of the ADAC Foundation's board of directors, as well as the managing directors and top management of ADAC Luftrettung, the engine manufacturer Safran Helicopter Engines, the helicopter manufacturer Airbus Helicopters, and the energy company Total Energies. Together, these companies will be a driving force in the decarbonisation of helicopter flight by moving away from fossil fuels.

The biofuel fuelling the H145 is a second-generation biofuel - the SAF of choice of the aviation industry - which significantly reduces CO2 emissions because they are produced from residual and waste materials, usually from the food industry, such as used vegetable oils and fats. As a result, the fuel has no negative impact on agricultural food production. The fuel used for the first rescue helicopter flight in Munich was produced by Total Energies at its refinery in Normandy from used cooking oil. With this SAF, the ADAC Luftrettung fleet could achieve a 33 percent reduction in CO2 emissions, which, with more than 50,000 rescue missions and more than 3.3 million kilometres flown per year, equates to a reduction of around 6,000 tons of CO2.

ADAC Luftrettung and engine manufacturer Safran Helicopter Engines share the same ambition to contribute to the development of SAF usage including up to 100%. To this effect they are launching a project with one ADAC rescue helicopter in Cologne. The project will study all aspects of biofuel usage on the H145, with an operational campaign to start as early as summer 2021.

Following the biofuel premiere, the managing directors of the two companies, Frédéric Bruder, Managing Director of ADAC Luftrettung, and Franck Saudo, CEO Safran Helicopter Engines, signed a long-term agreement on SAF, which envisages increasing the blending ratio of biofuel to up to 100 percent in the coming years and subsequently also promoting the use of synthetic e-fuel, also known as Power-To-Liquid kerosene (PTL), another drop-in alternative to fossil fuels, which along with the use of biofuel will allow aviation to get closer to climate-neutral aviation. PTL refers to the generation of liquid fuels produced using electrical energy from renewable sources.

Biofuel is currently certified and approved for aviation use in a maximum blend of 50 percent with conventional kerosene of the JET-A1 type. The ADAC rescue helicopter was flown on a 40 percent blend.

HELICOPTER OPERATOR COMMISSIONS USE OF UV-C SANITIZATION DEVICE FOR AIRCRAFTS



All over the world, innovators from the Aviation industry are coming up with solutions to make air travel safer. A step in this direction is using Ultraviolet-C lamps to safely sanitize workspaces and aircraft cabins/cockpits. Airlines and international MROs like Qatar Airways, United Airlines, etc. have deployed these systems to be safely integrated into their day-to-day operations. These innovations bring in an important aspect of safety and comfort for the crew, maintenance and operations personnel of an airline/MRO. Aman Aviation & Aerospace Solutions Pvt. Ltd. is an Aviation MRO company and an NSOP Helicopter Operator based in Mumbai and Delhi that is following global aviation norms in Covid protection. As an effort to make industry operations smooth in the middle of the pandemic, Aman Aviation has commissioned a fully indigenous Remote Sanitization Device that uses UVC Mercury Light to sanitize workspaces, vehicles and aircrafts in under 10 minutes. The product, **ZeroVir** is a light-based smart disinfection solution which is 99.9% effective against **COVID** and other harmful pathogens, while maintaining complete safety for humans. The sanitization device can be mounted on office ceilings, walls, aircraft cockpits, vehicle cabins, etc. Aman Aviation has also customized a wheel-mounted solution that can be pushed around on the outside of aircrafts sanitizing external touch surfaces. Aman Aviation runs a 10-minute sanitization cycle with the portable Zero Vir device before and after their flights to cover all internal and external surfaces in a Robinson R44 cockpit. Key features of ZeroVir are:

- ① Proximity Sensors: switches off the unit within 1 second of detecting human presence
- ① Operational buzzer: for alerting few seconds before sanitization starts/stops
- ① Automatic operation: remotely schedule sanitization cycles



- ① Smart controls: using Bluetooth/Wi-Fi app on a smartphone
- ① Safety compliant reporting: Exception reports that can be easily obtained from the app
- ① Chemical free: Zero chemical residue after the sanitization
- ① Certified by approved DRDO Research lab
- ① CE certified: highest quality engineering
- ① EPA registered: international certification for quality & protection
- ① 100% Make in India product. Interested operators can reach out to Aman Aviation for more details regarding their aircraft sanitization needs. Email: info@amanaviation.in/ Contact: +91-9920913091.

RWSI MEMBERS ARE REQUESTED TO NOTIFY THEIR CHANGE OF ADDRESS TO HELP RWSI ENSURE YOUR COPY OF ROTOR INDIA QTLY REACHES YOU. SEND YOUR CORRECT ADDRESS BY E MAIL TO office@rwsio.org



RWSI ELECTS MEMBERS TO ITS GOVERNING COUNCIL FOR 2021-24

As scheduled, Gp Capt. DC Kaushik Founding Member RWSI and Wg Cdr B S Nijjar successfully completed the process of the RWSI Governing Council Election 2021. The Original copy of their Report including the results of the election were handed over to RWSI HQs, Sector -62, NOIDA on 10 Jun 21. Of the 25 Life Members who contested the GC Election 2021, the 15 Members who qualified to fill the vacancies are listed below: -

LM-001 AVM K Sridharan (Retd) VM (G), LM-002 Wg Cdr B S Singh Deo (Retd) VM, LM-020 Capt. Uday Gelli, LM-026 Wg Cdr Ramesh Mallik (Retd), LM-130 Wg Cdr VS Pundir (Retd), LM-285 Wg Cdr Unnikrishnan Pillai, LM-286 Air Marshal A S Butola (Retd) PVSM VM VSM, L-503 Wg Cdr Sanjay Mittal YSM VM, L-575 Dr. G. Sairamanan, L-585 Air Cmde Ashutosh Lal, L-1139 Wg Cdr Shriram Ghatpande, L-1143 Dr. M Vijaya Kumar, LM-1209 Air Cmde T A Daya Sagar, L-1223 Smt.Kalpana Dhar, L-1265 Mr. Harsha Gopal Lanka

All the postal ballots and e-ballots were placed in a sealed envelope and were handed over by Gp Capt. D C Kaushik to RWSI Hqs for retention.

During the 61 GC Meeting held on 17 Jun 21, the new Governing Council of the Rotary Wing Society of India took their oath before assuming their responsibilities. The Council nominated Air Marshal A S Butola (Retd) PVSM VM VSM as President RWSI. Then, the Council sought AVM. K. Sridharan VM(G) to take over as the Chairman RWSI (His career profile is covered in the next page)

During the 62nd GC Meeting held on 25 Jun 21, the appointment of the Office Bearers was announced by Air Marshal A S Butola (Retd) PVSM VM VSM President RWSI. In his welcome address, he thanked the elected GC members for their active participation in RWSI activities and requested them to continue their support to the RWSI activities to help it to achieve its

objectives. The President then requested the Council to consider approving Mr. Rajinder Johri CEO Aman Aviation Pvt Ltd and Capt. Jitendra Harjai as Co-opted Member of the Governing Council. The proposal was agreed unanimously.

He then went on to nominate the following Office Bearers for various appointments and duties to handle RWSI activities in pursuit of its objectives :-

AVM K Sridharan VM G (Retd) Editor Rotor India Publications, Wg Cdr B S Singh Deo VM (Retd) Vice President, Chairman International Relations and Disciplinary Committee and Member Screening Committee, Wg Cdr Ramesh Mallik (Retd) Member Offshore Safety Committee & Training Team, Capt. Uday Gelli President RWSI (WR), Chairman Offshore Safety Committee and Member Audit Team, Wg Cdr Sanjay Mittal (Retd) Secretary (WR) Member Offshore Safety Committee, Training Team and Audit Team, Wg Cdr Unnikrishnan Pillai (Retd) President (SR) Chairman Aviation Industry Group and Member Screening Committee, Air Cmde T A Daya Sagar (Retd) President (NR) Member Screening Committee, Dr. G. Sairamanan Chairman HEMS Group & Aviation Medicine Group, Mr. Harsha Gopal Lanka Chairman Business Development Group, Dr. M Vijaya Kumar Secretary (SR), Member Aviation Industry Group, Wg Cdr Shriram Ghatpande (Retd) Member Organization Development Group and Regulatory Group, Smt. Kalpana Dhar Treasurer and Head of Administration Group, Air Cmde Ashutosh Lal (Retd) Secretary General, Chairman Policy Concepts and Seminars and Organization Development Group, Wg Cdr VS Pundir (Retd) Stand by Secretary General, Member Policy Concepts and Seminars and Member Organization Development Group, Mr R N Johari, Chairman Drone Group and Chairman Engineering Committee, Capt Jitender Harjai Secretary (NR) Chairman Regulatory Group, Air Cmde BC Talukdar (Retd) President (ER) and Wg Cdr V P Mathur (Retd) Chief Ground Instructor.

OFFICE BEARERS OF RWSI

President RWSI



Air Marshal Arvindra Singh Butola PVSM VM VSM (Retd) LM -286. He joined NDA in 1978 and was commissioned in the helicopter stream in Jun 1982. He is a QFI, an Experimental Test Pilot and a graduate of Defence Services Staff College and National Defence College. He has

flying experience of over 6900 hours on 24 different types of aeroplanes and helicopters. He commanded an operational Helicopter Unit in Leh. He was sent on deputation to Namibia as Senior Flying Instructor between 1997 and 1999 and as a Test Pilot to HAL Bangalore between 2001 and 2005 and to Mil Design Bureau, Moscow in 2009-10. He also flew with IAI, Tel Aviv and Nepal Defence Force at Kathmandu to train their pilots on Dhruv helicopter. In higher ranks he has served as Station Commander, PD Adm SFC, SOA HQ CAC, ACAS Ops (T&H), SASO HQ CAC, Commandant Air Force Academy and finally AOC-in-C Training Command, before retiring on 30 Sep 20. After retirement he has been associating with RWSI.

Vice President, Chairman International Relations, Member Screening Committee



Wg Cdr B S Singh Deo VM (Retd) LM-002. He is a Founding Member of RWSI. He holds distinction of being an A-1 QFI and a Production Test Pilot in Indian Air Force. He was posted to Aircrew Examiners Board (2 tenures) and Aircraft and Systems Testing Establishment (Staff TP and Instructor in Test Pilots School). He

was also the Founding Member of Pawan Hans and was O I/C Operations and Training. He has been a DGCA Examiner on R-22, Chetak, Cheetah, Westland-30, Bell-206, Bell-407 and Bell-430 helicopters. He has flown offshore in Bombay High (Mi-8, W-30, AS-365N) and in South China Sea (S-76C). He was MD of Bell Helicopter (India), covering South Asia, from January 1997 till May 2018. He is a graduate from National Defence Academy and as an Academic, though not a Business Graduate, but has lectured MBA Students in a B-School in Canada. He is a Certified Six Sigma Green Belt and has done “Managing Change” course in U. K. and “Growth

Leadership” course in Ohio State University, USA. He has been devoting time to help the younger generation in Safety through Education. He brings his global experience and relationships to the Governing Council.

Secretary General, Chairman Policy Concepts and Seminars



Air Cmde Ashutosh Lal VM (Retd) LM -585 is working as an offshore pilot on AW139 with Heligo Charters Pvt Ltd Juhu, Mumbai. He was born on 8th Oct 1966 at Lucknow, graduated from National Defence Academy and was commissioned in IAF as a Helicopter pilot in June 1987.

He has 6300 hrs of Military Flying experience on 17 different platforms including rotary and fixed wings. He is a Qualified Flying Instructor, an Experimental Test Pilot and is also a Post Graduate and M Phil from National Defence College, New Delhi. He has served as the Air Attache at Indian Embassy in Kiev, Ukraine and has flown helicopters for the UN in Congo. Starting out in civil flying now he believes that RWSI holds innumerable possibilities for revamping and synergizing the Rotary Wing Aviation in India. As a professional and a current rated helicopter pilot with 360 degree exposure, he plans to research and table practical roadmaps and solutions for the immediate issues and the aspects concerning Indian civil helicopter landscape in foreseeable future.

Stand by Secretary General, Member Policy Concepts and Seminars, Member Organization Development Group



Capt VS Pundir LM -130 was born in Hisar in 1969 and was Commissioned in the IAF in June 1990. He took premature retirement as a Wg Cdr in January 2012. In the IAF he flew Chetak, Cheetah, Mi-17, and Mi-25/Mi-35 helicopters. Most of his flying was in

the Attack helicopter Squadrons. He has flown in

almost all roles including 2 UN tenures; at Sierra Leone and Congo. His last appointment was as Chief Instructor, Institute of Flight Safety. He is an alumnus of NDA and a Post Graduate (M.Sc.-Def Studies) and holds PGDBM. He has been in commercial flying for eight years and has flown Bell 407 and is now flying AW 139 helicopter. He is Director of Operations at IFSAL, New Delhi. He has been an RWSI member since 2000. His Raison d'être for serving in the Governing Council is to do his bit for the helicopter industry. He feels that the need of the hour is to unify each member of the fraternity and translate that into change for the better with a lot of groundwork.

President RWSI (Northern Region), Member Screening Committee



Air Cmde T A Dayasagar (Retd) LM-1209 is Executive Director (OPS&TECH) / BD&MKTG, Pawan Hans Limited. Born on 15 Aug 1964 at Nagarjunasagar he is an NDA graduate and holds a CHPL. He has

been keen to join the RWSI Governing Council which comprises of best of aviation minds in the helicopter fraternity and proposes to work towards the interest of the helicopter industry. He has already been part of numerous initiatives of this august professional body for safe and effective mode of commerce and development of civil helicopter industry.

President RWSI (Western Region) Chairman Offshore Safety Committee, Member Audit Team



Capt Uday Gelli (Retd) LM -020 served the IAF as a pilot with distinction for 11 years. Subsequently, from 1984 till 2017 he worked with CHC of Canada, Heli Union of France, Gulf Helicopters of Qatar (India Head), was MD of United Heli charters and CEO of Heligo Charters Pvt Ltd. Since 2017

he has been Aviation Advisor to the Board of Heligo Charters. He has held Indian CHPL, Canadian CHPL, French CHPL and Qatari ALTP. He has logged over 5500 hours of accident-free flying. He has received

RWSI awards for his outstanding contribution to the Helicopter Industry and Igor Sikorsky award for his contribution to the propagation of safety in the Helicopter Industry. He was also honored by Bell Textron of USA for highest safety standards in operations. Since 1999, he has served as a member of the RWSI Governing Council and has been the President RWSI (Western Region). He is a life member of AeSI and is also a founder member of the MRO Association of India. He has very actively participated in various international seminars and presented papers at these seminars. He is deeply passionate about the helicopter industry and has worked selflessly for improving the working environment in Juhu Airport and for changes in the regulations governing helicopter operations.

Secretary (Western Region), Member Offshore Safety Committee, Member Training Team, Member Audit Team



Wg Cdr Sanjay Mittal YSM VM (Retd) LM - 503 is Chief Pilot, Heligo Charters Pvt Ltd and is Type Rating Examiner for Bell 412 and AW 139. He was born on 09 Jul 1961 at Varanasi and is a Post Graduate (MSc-Madras University). An A2 Category QFI he has over 13,000 hours of flying experience in fixed and

rotary wing aircraft. He has vast instructional experience having flown in the Indian Air Force and in civil aviation in India and abroad. While in the IAF he served a two and half years' tenure in Mauritius as CO of Police Helicopter Squadron. He has made significant contribution to RWSI as Secretary Western Region.

President RWSI (Southern Region) Chairman Aviation Industry Group, Member Screening Committee

WgCdr Unni Krishna Pillai (Retd) LM- 285 is a graduate from the National Defence Academy and was commissioned into the Indian Air Force in 1984.



He was trained on helicopters and has flown close to 8000 hours on 26 different types of aircraft till date. A large share of his operational flying was on MI-8 / MI – 17 helicopters and he has flown in all operational areas of the country. He is a Qualified Flying Instructor with more than 2000 hours of instructional flying and is a DGCA Approved Flight examiner. He is also an Experimental Test Pilot and has been actively involved in the flight testing of Dhruv (ALH), LCH and LUH helicopters. He has also been involved in the flight testing of various systems for the Indian Air Force and for HAL. He has also taken part in a number of international Air shows in Paris, Farnborough, Ankara, Chile, Malaysia, Bangalore, and has trained pilots of Ecuador, Nepal, Mauritius, Maldives, Israel, Chile and Afghanistan on Dhruv. He was appointed the Chief Test Pilot (Rotary Wing) of HAL in February 2009.

Secretary RWSI (Southern Region), Member Aviation Industry Group



Dr M Vijaya Kumar LM No. 1143 is a former Executive Director, Retired from RWRDC, HAL, Bengaluru. He was born on 26 May 1957 at Tirthahalli, Shivamogaa District, Karnataka. He did his M.Tech and Ph.D. in Engineering, from Department of Aerospace Engineering, Indian Institute of Science, Bangalore. He is a Member of American Helicopter Society, USA. He has presented technical papers related to Helicopter Research/Technology in conferences held in India, USA, Netherlands, Singapore, UK and Canada. He has also published technical papers in National and International Journals related to Helicopter Research/Technology. He has over 37 years of experience in various roles in Rotary Wing Research and Design Centre (RWRDC), HAL. He was involved in design of ALH, LCH, LUH helicopters. Two projects Rotary UAV and Indian Multi Role Helicopter (IMRH) were launched when he was head of RWRDC. He has been honoured with “Igor Sikorsky” award by Rotary Wing Society of India (RWSI), and Platinum Jubilee award by Aerospace Engineering Department of Indian Institute of Science, Bengaluru. He brings his experience in Design and Development of helicopters and his close association with Academia, which would help him serve RWSI.

Member Organization Development Group and Regulatory Group



Wg Cdr Shriram Ghatpande (Retd) LM-1139 is presently the Business Development Director (India & Nepal), Bell Textron Inc (Textron India Pvt Ltd). He holds a Master of Science-Defence and Strategic Studies from Chennai University. He is a QFI and is a graduate of DSSC. Being an employee of M/s Bell Textron Inc, he has been attending the International Air Shows in Singapore, Dubai and USA. He decided to serve as a RWSI GC member because he would like to use his 38 years of Rotary Wing aviation experience of Military and Civil Aviation for the overall betterment of Rotary Wing Industry in India. Due to his international exposure, he hopes to be of help to the Indian Regulatory authorities in development of better and safer rules for the overall safety in rotary wing operations in India. Having the commercial experience of helicopter and fixed wing operations, he can use it for development of cost effective and safe procedures for any air operations and advise the concerned stake holders accordingly.

Chairman Business Development Group



Mr Harsha Gopal Lanka, LM-1265 has recently been appointed as Head of Region, South Asia for Leonardo Helicopters. Having completed his schooling from Sainik School Korukonda, he went on to pursue Aerospace Engineering from IIT Bombay. He joined Leonardo Helicopters (LH) in 2007 after spending some time in National Aerospace Laboratories, Bangalore and Max Planck Institute of Astrophysics, Munich. Long before he joined LH, he was an active member of RWSI, providing support to RWSI seminars and conferences whenever possible. In his last 14 years with Leonardo Helicopters, he has been instrumental in expanding the presence of LH from just 2 helicopters to over 80 helicopters in the region, with an astounding presence in the Corporate/VIP segment along with significant presence in the offshore segment. Under his leadership LH hopes to achieve greater heights, with market penetration in Heli-Pilgrimage, Charter and Utility segments. With his vast

Helicopter sector background and active engagement in the industry, Harsha can add a lot of value to the continual growth of RWSI and also promote the organisation to new heights in the Domestic as well as International aviation community.

Chairman HEMS Group, Chairman Aviation Medicine Group



Dr G Sairamanan LM-57 is a Sr. Medical Consultant in General Medicines, Critical Care, Maritime Medicine and Aero medical transport medicine and Consultant Physician at Apollo Hospitals, Chennai, Kauvery Hospital, Chennai; St. Isabel's Hospital, Chennai. He is also a Founder of Global 999 EMS, Jaya Corporate Clinic, Admiralty Medical Officer, Govt. of India & Vice President-Helicopter Emergency Services Foundation of India, a not for Profit Trust at Chennai and Coopted Governing Council Member, RWSI. He is a Post Graduate Diploma holder in Aero Medical Transport Medicines / Medical Retrieval, UK and certified Helicopter Flight Medical Crew, UK. He is promoter of Raksha Designs – Designing of Low-cost interior Helicopter (HEMS), Helicopter medical flight crew under Prof. Terry Martin at London Air Ambulance, CCAT, and University of Surrey, UK. (Rotational), HEMS Committee Member, RWSI since 2006 & Governing Council Member RWSI from June 2015, Operating Ground Ambulance for L& T in National Highways, Kudukulam Atomic Energy Project, Karwar Naval Base, Engine Factory Avadi & Chennai International Terminal. Has is personally been involved in over 200 medical transfers (National & International).

Treasurer and Head of Administration Group



Smt Kalpana Dhar LM-1223, was born on 16 June 1958 at Srinagar. She is a Post Graduate in Economics and has 40 years of experience in banking industry. She has retired from Canara Bank as Senior Manager and is now supporting RWSI since September 2018 and is handling finance and accounts. She wishes to serve RWSI to effectively contribute to the organization.

Member Offshore Safety Committee, Member Training Team



Wg Cdr Ramesh Mallik (Retd) LM No - 026, has been Aviation Advisor ONGC (JuhuHeli Base). He is a graduate from NDA, and has held CHP License with Instrument Rating issued by DGCA India; held ALTP (H) issued by FAA, USA; held ALTP (H) issued by CAA (UK); held ALTP (H) issued by CAA (Malaysia). In the field of Rotary Wing Aviation, he has operated extensively in offshore operations at North Sea, South China Sea and Mumbai High. As he is well-versed in offshore operation practices followed universally by helicopter operations abroad, he will help in formulating best practices to be followed by operators in India. As a Governing Council member of RWSI, he is keen to assist the Society in maintaining the link with regulatory authorities, such as DGCA, MoCA etc.

Co-opted GC Members

Chairman Drone Group & Engineering Committee



Mr. Rajinder Johri L-372 is presently the CMD, Aman Aviation & Aerospace Solutions Pvt Ltd at Juhu. Holder of AME Licence No 3286 and an MBA from S.P Jain College of Management he has represented RWSI at HeliExpo 2020, USA. He has won several awards including from RWSI, Skoch India and from MRO Association. He is keen to assist in development and aid in growth of Vertilift industry in India.

Secretary Northern Region, Chairman Regulatory Group



Capt Jitender Harjai LM - 1205 is an Ex-Army Aviator. He is currently flying Robinson 44 helicopter for Jet Serve Aviation and holds appointment of Director Operations and Chief Pilot. He was born in Delhi and has served in Army for 13 years. Since 2010 he has been flying in civil.

Being involved in business development for fixed wings as well as rotary wings, he played an active role in two regional schedule airlines towards initial planning and licensing. He is also an inventor and a researcher in various fields including medical boxes, eddy current devices etc. used in various industries. He firmly believes that RWSI can play a big role in the growth of Helicopter industry in India and is ready to take on the responsibilities bestowed on him by the Society.

Other Office Bearers

President (Eastern Region)



Air Commodore BC Talukdar LM-695 was commissioned in the Fighter stream of the IAF and later changed over to Helicopters. He commanded a helicopter unit at Jaisalmer and two premier Helicopter Bases at Sarsawa and Leh. He served as Head of Faculty at College of Defence Management (CDM) and College of Air Warfare (CAW). He also served in the Personnel Branch at Air HQs and Strategic Planning department at IDS HQs. He was selected to undergo prestigious course at National Defence College (NDC). Academically, he has attained three masters' degrees namely MSc, MMS and M Phil. After retirement, has

been providing consultancy and advisory services to many state governments and business houses, mostly in Eastern Sector. Presently he is a Promoter Director at Orchid Aviation Pvt Ltd.

Chief Ground Instructor



Capt VP Mathur (WgCdrRetd), LM -465 is a graduate of DSSC, Wellington and holds a Master of Science (MSc) degree. He is a Production Test Pilot (Helicopters) and has served for 8 years in HAL and No. 2 Base Repair Depot, Test Flying both Helicopters &

Fixed Wing Aircrafts. As a QFI, he trained pilots on Kirans (HJT-16) for 3 years at Air Force Academy Hyderabad. He has also served with Pawan Hans Limited for 18 years, out of which 15 years were at Juhu, flying Offshore for ONGC oil production.

He holds a current ATPL from Washington DC USA and has attended the Train the Trainers course at IFSA Paris, France. He has got a flying license in France. He has served as CFOI (H) at DGCA and has a total of 14000 hrs. of accident-free flying experience, on both fighters and helicopters? After retirement he has been serving as Head of Training with RWSI since 2013 to "enhance safety through training". With great dedication and hard work he has brought the training setup of RWSI to a very high standard.

GROUND TRAINING EFFORTS BY RWSI DURING THE QUARTER

RWSI steps up its Ground Training Efforts during the quarter ending 30 June 2021. A total of 113 candidates went through safety related Training Courses at RWSI during the period. The details of training carried out by RWSI are outlined below :-

01-30 April 2021- Total of 16 candidates.

a) Special VFR Training (2 days) - 4 candidates at Noida through Distance Learning Program by Wg Cdr VP Mathur. b) SMS Training - 12 candidates at Noida through Distance Learning Program by Wg Cdr VP Mathur.

01-31 May 2021 - Total of 43 candidates.

a) SMS Training (5 days) - 3 candidates at Noida through Distance Learning Program by Mr. PS Ganapathy, Gp Capt RN Joshi, Capt Rajat Kaura and Wg Cdr VP Mathur, 6 candidates at Noida by Wg Cdr VP Mathur. b) SGT Training - 7 candidates at Noida through Distance Learning Program by Wg Cdr VP Mathur, 2 candidates at Pune by Gp Capt RN Joshi, 9 candidates at Noida by Wg Cdr VP Mathur.

c) HUMAN FACTOR Training - 6 candidates

at Mumbai through Distance Learning Program by Mr. PS Ganapathy, 5 candidates at Mumbai by Mr. PS Ganapathy. d) CRM Training - 1 candidate at Pune through Distance Learning Program by Gp Capt RN Joshi, 4 candidates at Noida by Wg Cdr VP Mathur.

01-30 JUNE 2021 - Total of 54 candidates.

a) AWO Training - 10 candidates at Noida through Distance Learning Program by Wg Cdr VP Mathur. b) CRM Training - 8 candidates at Pune through Distance Learning Program by Gp Capt RN Joshi, 7 candidates at Noida by Wg Cdr VP Mathur, 1 candidate at Pune by Gp Capt RN Joshi. c) SGT Training - 8 candidates at Pune through Distance Learning Program by Gp Capt RN Joshi, 7 candidates at Mumbai by Cdr Varindar Sharma, 3 candidates at Noida by Wg Cdr VP Mathur. d) CAR -145 Training - 6 Candidates at Noida through Distance Learning Program by Commandant Vipin Sharma. e) SMS Training (2 days) - 2 candidates at Noida through Distance Learning Program by Wg Cdr VP Mathur, Mr. PS Ganapathy and Capt. Rajat Kaura.

<< PEOPLE >>

LIEUTENANT GENERAL MANOJ PANDE, AVSM VSM, TAKES OVER EASTERN COMMAND



He took over the reins of Eastern Command as its General Officer Commanding-in-Chief on 01 June 2021. Prior to this, he was Commander-in-Chief Andaman & Nicobar Command, the only Tri-services Operational Command in India from 01 Jun 2020 to 31 May 2021.

The General was commissioned in the Bombay Sappers in December 1982. In his distinguished service career, he has held several prestigious command and staff assignments in Conventional as well as Counter Insurgency Operations in all types of terrain.

He commanded an Engineer Regiment along Line of Control during Operation PARAKRAM in J&K, an Engineer Brigade in Western Sector, Infantry Brigade along Line of Control in J&K, Mountain Division in High Altitude Area of Western Ladakh & a Corps in North East. The General is a graduate of Staff College Camberley(UK) and has varied experience in staff appointments .

VICE ADMIRAL RAJESH PENDHARKAR AVSM VSM ASSUMES CHARGE AS DIRECTOR GENERAL NAVAL OPERATIONS



He has assumed charge as Director General Naval Operations on 07 Jun 21. An alumnus of the National Defense Academy, Khadakwasla, Pune, he was commissioned into the Indian Navy in Jan 1987. He is a graduate of the Defence Services Staff College, Wellington, Naval War College, Karanja, and Naval Command College, Newport, Rhode Island, USA.

The Flag Officer is a specialist in Anti-Submarine Warfare (ASW) and has served on frontline warships of the Navy as ASW Officer and later as the Executive Officer and Principal Warfare Officer of Guided Destroyer INS Mysore. He has commanded the missile corvette INS Kora, the missile frigate INS Shivalik and the aircraft carrier INS Viraat.

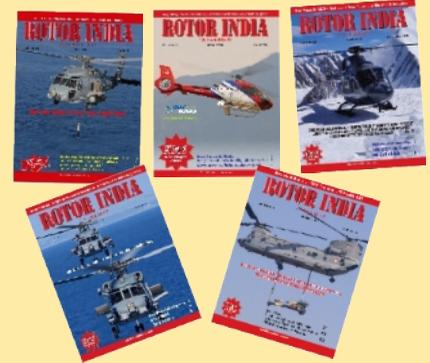
Vice Admiral Rajesh Pendharkar is a recipient of the Ati VishishtSeva Medal and VishishtSeva Medal for distinguished service.

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Quarterly Journal ROTOR INDIA CIVIL & MILITARY MEDIA KIT



ROTOR INDIA is the only helicopter journal published in India for news, views and activities in the Indian Helicopter scene. It is being published by Rotary Wing Society of India (RWSI) since March 1999. The objective of the journal is to promote and diffusion of knowledge of Rotary Wing Aviation.

The magazine is circulated in India to Members, Regulators, Operators, Govt. Officials, Defence Service Officials, Subscribers & CEOs of corporate houses owning Helicopters & Special Subscribers in Army, Navy, Air Force & Para Military Organizations. The magazine is also sent to USA, UK, Australia, New Zealand, Israel, Nepal, France, Singapore and Malaysia. The readership of Rotor India is over 80,000

Technical Specifications :

Final size of magazine
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