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PUBLISHER AND EDITOR-IN-CHIEF

Jayant Baranwal

ASSISTANT GROUP EDITOR

R. Chandrakanth

SENIOR VISITING EDITOR

Air Marshal (Retd) V.K. Bhatia

SENIOR TECHNICAL GROUP EDITORS

Air Marshal (Retd) B.K. Pandey

Lt General (Retd) Naresh Chand

SENIOR COPY EDITOR &

CORRESPONDENT

Sucheta Das Mohapatra

CONTRIBUTORS

INDIA

Air Marshal (Retd) N. Menon

Group Captain (Retd) A.K. Sachdev

Group Captain (Retd) Joseph Noronha

EUROPE

Alan Peaford

USA & CANADA

LeRoy Cook

CHAIRMAN & MANAGING DIRECTOR

Jayant Baranwal

ADMIN & COORDINATION

Bharti Sharma

Survi Massey

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DESIGN & LAYOUT

Senior Art Director: Anoop Kamath

Designers: Vimlesh Kumar Yadav,

Sonu Singh Bisht

DIRECTOR SALES & MARKETING

Neetu Dhulia

SALES & MARKETING

Head Vertical Sales: Rajeev Chugh

SP'S WEBSITES

Sr Web Developer: Shailendra Prakash Ashish

Web Developer: Ugrashen Vishwakarma

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Email: subscribe@spguidepublications.com

LETTER TO EDITOR

editor@spsaviation.net

expert@spsaviation.net

FOR ADVERTISING DETAILS, CONTACT:

guidepub@vsnl.com

neetu@spguidepublications.com

rajeev.chugh@spguidepublications.com

SP GUIDE PUBLICATIONS PVT LTD

A-133 Arjun Nagar,

(Opposite Defence Colony)

New Delhi 110 003, India.

Tel: +91 (11) 24644693,

24644763, 24620130

Fax: +91 (11) 24647093

Email: guidepub@vsnl.com

POSTAL ADDRESS

Post Box No 2525

New Delhi 110 005, India.

REPRESENTATIVE OFFICE

BENGALURU, INDIA

534, Jal Vayu Vihar

Kammanhalli Main Road

Bengaluru 560043, India.

Tel: +91 (80) 23682534

MOSCOW, RUSSIA

LAGUK Co., Ltd., (Yuri Laskin)

Krasnokholmskaya, Nab.,

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

Tel: +7 (495) 911 2762

Fax: +7 (495) 912 1260



Moving away from corrupt practices and the impending deal, the issue looks at the uprising in Libya and the effects it has had on geopolitical considerations and also on movement of oil prices

SOcial activist ANNA HAZARE has taken the fight against corruption to the Capital and the nation has rallied behind him in a spontaneous manner. The disease of corruption has infected all systems of the Indian polity and bureaucracy and is so deep-rooted that it is threatening the very fabric of the nation. Around the same time, the sunrise sector of aviation has had some shocking revelations—how “fake pilots” were churned out in real quick time. In cahoots have been the powers that be.

In this issue, we are highlighting the malaise and the urgency to find remedial solutions. Heads rolling is fine, but there needs to be a system of checks and balances. Air Marshal (Retd) B.K. Pandey mentions that some 14,000 pilots are likely to come under the scanner, but the root of the problem is the Directorate General of Civil Aviation (DGCA), especially its licensing and vigilance departments. Suggesting that serving officers from the Indian Air Force should be deputed to the DGCA for effective controls, the author at the same time calls for improved facilities for civil aviation training which at the moment are at pathetic levels.

Echoing similar concern, Air Marshal (Retd) V.K. Bhatia wonders what is happening on the Indian civil aviation scene and if “fake pilots” were the norm then the sound of falling apples would certainly be confused with engine trouble and a jetliner could land on its nose gear. While the cleansing of DGCA has been recommended, he advocates that the DGCA should be enthused with a sense of probity and excellence similar to that of the Central Medical Establishment of the IAF.

The focus in this issue is also on the fast closing medium multi-role combat aircraft (MMRCA) deal. Air Marshal (Retd) Pandey states that unless the Ministry of Defence is able to formulate a template for offset investment, the tendering process may not progress to the next level of opening commercial bids. Meanwhile, the grapevine has it that the number of contenders may be downsized from six to two or three and senior Boeing officials confirmed that they too had heard these rumours. Now whether the government is

going to downsize or not, the urgency to close the deal has never been so important, considering the armed forces have been on a modernisation drive.

Moving away from corrupt practices and the impending deal, the issue looks at the uprising in Libya and the effects it has had on geopolitical considerations and also on movement of oil prices. As the price of aviation turbine fuel (ATF) has gone past the \$100 per barrel mark (partly due to the unrest in Libya and Egypt), the airlines are squeezed majorly for margins. In India, the ATF price is much more than in South East Asia and the Middle East and R. Chandrakanth talks about high taxation driving prices up further north.

In another article, Chandrakanth writes about the economics of regional jet as the nation is going through the throes of pan-India connectivity, calling for a right mix of aircraft. There is a lot of euphoria on how the aviation industry is growing in India and *SP's Aviation* continues to capture the growth story.

Jayant Baranwal
Publisher & Editor-in-Chief

Fuel Mix

USAF F-22 Raptor flown on synthetic biofuel



An F-22 Raptor successfully flew at supercruise 50/50 fuel blend of conventional petroleum-based JP-8 and biofuel derived from camelina, a weed-like plant not used for food.

The flight was the capstone of a series of ground and flight test events conducted by members of the 411th Flight Test Squadron of the United States Air Force (USAF) using the biofuel blend. The USAF selected the F-22 weapons system to be the biofuel blend flight test pathfinder for all fighter aircraft.

The overall test objective was to evaluate biofuel fuel blend suitability in the F-22 weapons system, officials said. The testing consisted of air starts, operability, and performance at different speeds and altitudes throughout the flight envelope.

The F-22 Raptor performed several manoeuvres including a supercruise at 40,000 ft, reaching speeds of 1.5 Mach. Supercruise is supersonic flight without using the engine's afterburner.

Officials said that the overall flight was a success and another milestone completed for the Alternative Fuels Certification Division in support the Air Force's 2016 acquisition goal to cost-competitively acquire 50 per cent of the domestic aviation fuel requirement via alternative fuel blends in which the component is derived from domestic sources produced in a manner that is 'greener' than fuels produced from conventional petroleum.

The camelina-derived synthetic fuel falls into a class of hydro processed blended biofuels known as hydrotreated renewable jet (HRJ) fuels. The HRJ fuel can be derived from a variety of plant oil and animal fat feed stocks.

USAF officials in February certified the entire C-17 Globemaster III fleet for unrestricted flight operations using the HRJ biofuel blend. SP

PHOTOGRAPH: USAF



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DISCOVERY'S FINAL SPACE FLIGHT

The US Space Shuttle 'Discovery' landed back on Wednesday, March 9 after its final space flight. The shuttle cruised onto the runway at Kennedy Space Center at 1657 GMT, wrapping up a rich, 27-year career in space flight that has spanned more distance and endured longer than any of the remaining three US shuttles. "This legend has spent 365 days in space," NASA mission control in Houston said. Discovery's last trip to the International Space Station was initially scheduled to last 11 days but was extended to 13 days so that astronauts could work on repairs and install a spare room to accommodate more supplies and provide more work space for the living-in crews.

VIEWS

IT WAS A HISTORIC end to the Discovery's space missions—undoubtedly the most reliable of the US space shuttles—which by its last mission had flown 148 million miles (238 million km) in 39 space outings, completed 5,830 orbits, and spent a full year (365 days) in orbit over 27 years of operational life. Designated as OV-103, Space Shuttle Discovery first flew into space on August 30, 1984 becoming the third operational orbiter of NASA's space shuttle programme. STS-133 was Discovery's last and 39th mission making it the most travelled spaceship in the world. It was the third flight aboard Discovery for Commander Steve Lindsey who said he was amazed by the craft's great condition. "And if you think about a vehicle that is 26-27 years old, been able to fly for that long and with perfection. I have never seen an airplane able to do that."

There was indeed something special about the Discovery. During its illustrious operational career, it achieved many glorious milestones. For example, Discovery was the shuttle that launched the 'Hubble Space Telescope'. The second and third Hubble service missions were also carried out by Discovery. It was also the vehicle that launched the Ulysses probe and three TDRS satellites. So great was the faith placed on it by the space shuttle programme managers that it was chosen twice as the return to flight orbiter, first in 1988, after the 1986 Challenger disaster, and then for the twin return to flight missions in July 2005 and July 2006 after the 2003 Columbia disaster. Discovery also carried Project Mercury astronaut John Glenn back into the space during STS-95 on October 29, 1998, making him the oldest person to go into space at 77 years of age.

The wheels may have stopped for the final time for the space shuttle. Discovery after a smooth touchdown on its last landing, but impressed with the spacecraft's overall condition, even senior NASA magnates concede that the ship could fly again and again. But that is not to be so, as under a US Presidential decree, Discovery's arrival back on Earth

marks the beginning of the end for the three-decade-old US 'Shuttle' programme which will formally end after the remaining two shuttles 'Endeavour' and 'Atlantis' take their final spaceflights in the coming months. But is the Shuttle programme coming to an end too soon?

The Shuttle programme—awesome as it has been in showcasing the technological prowess of the US—has had a mixed bag of excellent successes coupled with some unforgettably tragic disasters. This coupled with over a billion-dollar price tag per mission may have led the US Administration to shut down the

programme prematurely and search for better alternatives. However, closing down the programme would cause inescapable voids in the US in-house ability to launch manned space missions/service to the International Space Station (ISS). The shuttle's planned successor was to be Project Constellation with its Ares I and Ares V launch vehicles and the Orion Spacecraft, but these are not likely to be operational till 2014. In other words, for the next three years at least, the US will have to depend on Russia to carry men and material to the ISS onboard the Soyuz spacecraft; the thought of which is not only unpalatable to a large proportion of the US space community, even its viability is being questioned in the aftermath of the 2008 South Ossetia war. However, conscious of the budget deficits and mounting national debt, Obama Administration

has not only stayed firm on its decision but has gone a step ahead by asking the US Congress to endorse a scaled-back plan with heavy reliance on the private sector.

Be that as it may, at this stage the global space community can do little but pay homage to the great workhorse of the Shuttle programme, which incidentally is yet to go on its last flight—piggyback on a Jumbo 747 orbiter carrier—destined for one of the national aerospace museums in the US. Adios Discovery! SP

—Air Marshal (Retd) V.K. Bhatia



CIVIL AVIATION AUTHORITY IN THE OFFING

The process of setting up a Civil Aviation Authority (CAA), an administratively and financially autonomous body, which will regulate all civil aviation safety issues in India, is now in the final stages and a cabinet note on it is likely to be soon formalised. The CAA may be tasked with keeping a tab on the entire range of civil aviation activities—from supervising air traffic services and licensing to auditing the financial fitness of airlines. According to the Director General of Civil Aviation (DGCA), E.K. Bharat Bhushan, a cabinet note is being prepared based on all the facts collected by his organisation. According to the DGCA, the CAA would be able to recruit professionals directly instead of having it routed through the UPSC.

VIEWS

IN APRIL 2000, THE Ministry of Civil Aviation (MoCA) circulated via their website a 5,500-word draft of the new Civil Aviation Policy inviting comments. The draft document was indeed comprehensive and progressive in content and covered every conceivable aspect of civil aviation in the country including the proposal for the constitution of a Civil Aviation Authority (CAA). The preamble to the concept described the purpose of the proposed organisation as “In the context of a multiplicity of airlines, airport operators (including private sector), and the possibility of oligopolistic practices, there is need for an autonomous regulatory authority which could work as a watchdog, as well as a facilitator for the sector, prescribe and enforce minimum standards for all agencies, settle disputes with regard to abuse of monopoly and ensure level playing field for all agencies. Therefore, a statutory autonomous Civil Aviation Authority will be constituted.” The basic objectives of setting up of the Authority will be to ensure aviation safety, security and effective regulation of air transport in the country in a liberalised environment.” All that the Directorate General of Civil Aviation (DGCA) is supposed to do and more while functioning at a higher level of authority.

Nine years later in October 2009, in technical cooperation with the International Civil Aviation Organisation (ICAO), a feasibility study to set up a CAA in the DGCA was commissioned to improve financial and administrative autonomy to discharge safety oversight functions more effectively. Thereafter, following the disastrous crash of an Air India Express aircraft in Mangalore on May 22, 2010, there was a sudden revival of concern for aviation safety and security as also of the need for effective regulation of air transport in the country. The proposal for the creation of CAA was then transferred to fast track.

At this point in time, while the news report quoted above says that the proposal is in the final stage, there are other reports that suggest that this is unlikely to happen any time

soon. The process is undoubtedly not very simple as the government will be required to introduce appropriate legislation for the establishment of the CAA.

It appears that the feasibility study ordered in October 2009 has been received by the government but falls short of its expectations as the study recommends nothing more than cloning of models already in existence internationally. As in the opinion of the government this will not improve matters substantially, the Ministry of Civil Aviation is looking for a model to cater to the requirements of the civil aviation industry, specific to India. Also, since the primary objective of establishing a CAA is to enhance safety, the issue is regarded as a serious one and the government is apparently in no hurry to rush through with the process as it would like to obviate the possibility of the need for a spate of amendments soon after the law is enacted. The time frame for the proposal to set up a CAA, therefore, will continue to remain uncertain.

In the last few years, in the wake of the unprecedented boom in the civil aviation industry, the government has taken a number of innovative steps to strengthen the DGCA and to bring about an overall improvement in the management of the industry. One such measure is the establishment of the Airport Economic Regulatory Authority (AERA) in May 2009 with the primary mandate to “create a level playing field and foster healthy competition among

all major airports (government-owned, public partnership based, private) encourage investment in airport facilities, regulate tariffs of aeronautical services, protection of reasonable interest of users, operate efficient, economic and viable airports at notified airports”. However, little meaningful change in the civil aviation domain is likely unless and until the powers to carry out investigations particularly into aircraft accidents, is vested in an agency outside of not only the DGCA but even the Ministry of Civil Aviation. ^{SP}

—Air Marshal (Retd) B.K. Pandey



NO FLY ZONE & BEYOND

Destruction of an adversary's air defences becomes the first priority in the process of imposing a 'no fly zone' over its airspace as it ensures freedom of friendly aircraft to carry out their missions without the danger of being engaged by its ground-based weapon systems

ARMED WITH THE UNSC Resolution 1973 adopted on March 17, 2011, the coalition forces led by the United States lost little time to intervene militarily in Libya. Within 48 hours of the adoption of the 'resolution,' military action was well on its way to impose a 'no fly zone' over the Libyan airspace. First on the scene were the hundred plus Tomahawk cruise missiles unleashed on the very first day by the coalition naval warships and submarines already patrolling in the Mediterranean waters off the Libyan coastline. These largely targeted the Libyan air defence radars and weapons such as its large arsenal of Soviet-built surface-to-air missile (SAM) sites. Destruction of an adversary's air defences becomes the first priority in the process of imposing a 'no fly zone' over its airspace as it ensures freedom of friendly aircraft to carry out their missions without being engaged by its ground-based weapon systems. While the Destruction of Enemy Air Defence (DEAD) missions were still on, a trio of B-2 stealth bombers, operating from the US homeland bases had carried out devastating counter air attacks peppering Libya's major air bases, successfully grounding the Libyan Air Force aircraft under Gaddafi's control. French warplanes were next to secure the Libyan air space, shooting down a Libyan aircraft which ventured to get airborne. The frisk air action continued and by March 22, almost full-fledged 'no fly zone' had been established over the entire Libyan air space.

A large number of nations contributed their air resources for the effort under different code names for air operations such as Operation Mobile for Canada, Operation Harmattan for France and Operation Elammy for the UK. The US in combination with Italy, Denmark and Norway named it Operation Odyssey Dawn. A list of the countries with their commitments for imposition of the UNSC 'no fly' resolution is given in the box.

The list clearly illustrates the combined resolve of the par-

ticipating countries and a formidable force of more than 200 combat jets and other ISR/AWACS platforms fielded against Libya to neutralise its air power. While the Libyan Air Force was known to have approximately 400 aircraft before the allied intervention started, its combat fleets mostly consisted of obsolescent Soviet-supplied aircraft such as the Su-22, Su-24 attack aircraft and, MiG-21, MiG-23, MiG-25 fighter aircraft. It also had a few TU-22 bombers (mostly moth-balled) on its inventory. Even under the best of circumstances, Libyan Air Force could hardly have been a match to the mostly modern inventories of the Allied air forces—it is worth noting that different models of four out of the six different types of aircraft competing for India's prestigious medium multirole combat aircraft (MMRCA) programme are participating in the Allied air action against Libya. In the prevailing scenario, with a sizeable chunk of its fleets and airbases in the eastern parts of the country falling in the hands of the rebel forces, it had little chance of standing up to the allied onslaught. In the event, it took less than three days for the allies to establish an effective 'no fly' zone over the entire Libyan air space and selectively grounding that portion of the Libyan Air Force which remained under Gaddafi's control. On March 23, British Air Vice Marshal Greg Bagwell was quoted by BBC saying that the Libyan Air Force "no longer exists as a fighting force". But the punishment being meted out by the coalition has not stopped there. Under the garb of protecting civilian lives, its warplanes have attacked Gaddafi's ground forces as well to support the rebel forces. Are such actions legal and legitimate or do they violate the UN mandate? Which way is the military action heading and what would be the likely outcome of Libyan crisis? Turn to Forum for some crystal gazing, opinions and answers. SP

—Air Marshal (Retd) V.K. Bhatia

Belgium	6 X F-16	Norway	6 X F-16
Canada	7 X CF-18, 2 X C-17, 2 X C-130, 2 X CC-150	Qatar	6 X Mirage 2000-5EDA, 1 X C-17
Denmark	6 X F-16	Spain	4 X F-18
France	Up to 20 Rafale and Mirage 2000-5, C-160 SIGIN	UAE	6 X F-16, 6 X Mirage 2000
Greece	Super Puma Hptrs, Embraer 145 AEW&C	UK	4 X Tornado, 10 X Typhoons
Italy	4 X Tornado, 4 X F-16 etc.	USA	A large force comprising B-2 Stealth Bombers, AV-8B Harrier, EA-18 Growler, F-15, F-16, U-2 Spy planes, AC-130 and E-8C aircraft
NATO	E-3 AWACS		
Netherlands	6 X F-16		

On a Path Towards Democracy

The aid provided to the rebel forces could rid Libya of Colonel Gaddafi and his long abhorrently dictatorial rule, a sentiment which is increasingly finding global acceptance. But once achieved, would it also engulf Libya in the wafting fragrance of a flourishing democracy?

THE DEMOCRATIC FRAGRANCE OF 'Jasmine Revolution' having engulfed both its western and eastern borders, how could 'sandwiched' Libya, also reeling under the four decade despotic rule of Gaddafi, remain unaffected? But unlike the largely peaceful protests which resulted in the ouster of Tunisian President Zine El Abidine and the Egyptian President Hosni Mubarak, the street protests in Libya quickly turned into an armed struggle owing to the high-handed treatment meted out by the Libyan security forces.

Though Libya, one of the largest oil producers of Africa gained independence from colonial rule as Kingdom of Libya in 1951, it is being ruled from 1969 till date by Colonel Muammar al Gaddafi who rose to power in a military coup. Gaddafi is one of the longest serving rulers in history. After abolishing the monarchy of King Idris, he created a new regime based on Arab nationalism and a welfare state, combining various roots of his political philosophy in his personal manifesto called "The Green Book". In 1977, he proclaimed that Libya was changing its form of government from a republic to a 'Jamahiriyah', meaning government by the masses. But in reality, the one-man rule has continued till the present day. And as it usually happens, his autocratic iron-fisted rule resulted in suppression of the masses, large-scale corruption and his family amassing billions of dollars worth of ill-gotten public wealth.

The protests and confrontations began in earnest on February 15 in Benghazi which was brutally suppressed by the police. The protests quickly spread like wildfire in other towns inviting the wrath of the security forces. By February 20, more than 200 people had been killed in Benghazi alone. Next day, the

Libyan Air Force aircraft attacked civilian protesters in Tripoli itself. The Libyan Government shut down the Internet and mobile phone network to hide the brutal violence. Gaddafi had declared war against his own people forcing some of his own Ministers and high officials to either step down or distance themselves from him declaring his regime to be illegitimate. But when Gaddafi roared to quash his opposition like rats and cockroaches, the international community woke up to the possible reality of an impending genocide. In 2005, the United Nations approved a new doctrine called the "responsibility to protect", nicknamed R2P, declaring that world powers have the right and obligation to intervene when a dictator devours his people. The UN Security Council's Resolution 1973 authorising military intervention to prevent casualties to civilian population in Libya is like putting teeth into the fledgling concept. At the time of passing the UNSC resolution, BRIC countries i.e. Brazil, Russia, India, China and Germany abstained, generally stressing reasons such as lack of full information, unintended consequences of military action and the need to address the problem through a political process rather than through military intervention. However, abstention tantamounted to passive negation of the resolution which revolved around the issues of infringement of a country's sovereignty in solving its internal problems. Russian Prime Minister Putin went to the extent of calling the coalition air strikes to ensure no fly zone (NFZ) over Libya, interference akin to medieval crusades, officially, the remark was withdrawn later on. But the other world powers spearheaded by France and UK and supported by Obama's Administration were unanimous for the need of military intervention to avert looming mass-scale

sequences of military action and the need to address the problem through a political process rather than through military intervention. However, abstention tantamounted to passive negation of the resolution which revolved around the issues of infringement of a country's sovereignty in solving its internal problems. Russian Prime Minister Putin went to the extent of calling the coalition air strikes to ensure no fly zone (NFZ) over Libya, interference akin to medieval crusades, officially, the remark was withdrawn later on. But the other world powers spearheaded by France and UK and supported by Obama's Administration were unanimous for the need of military intervention to avert looming mass-scale



PHOTOGRAPH: US NAVY

annihilation of civilian population by Gaddafi's forces.

A senior White House aide suggested that while critical national security and national interest reasons must have played a crucial part, it were the humanitarian arguments which proved to be decisive for President Obama to support the UN resolution for military intervention. "The President was well aware of the risks of military action, but he also feared the cost of inaction," the official said. While agreeing in principle with some Congressional critics' who complain that Obama should have consulted Congress more thoroughly, the *New York Times* noted that the time factor was too crucial for the President to indulge in political niceties. It went on to suggest that, as it is, the intervention was almost too late because forces loyal to Gaddafi were already in Benghazi and any delay would have resulted in a major bloodbath and perhaps the collapse of the rebel government. The enforcement of the NFZ, therefore, couldn't have come sooner. With Gaddafi's air defence system and air force effectively out of the equation, and a maritime embargo in place, the ground situation was not only retrieved but it also enabled rebel forces' westward offensive push.

However, now with the see-saw ground battle continuing between Gaddafi loyalists and the rebel forces, the coalition finds itself in a parallel situation to that encountered during NATO's 1999 Operation Allied Force against the Serbian leadership. Air power has delivered on its initial goals, but without the participation of ground forces, uncertainty surrounds the campaign's future progress. This could hinge on more effective opposition activities staged from Benghazi towards the capital Tripoli or on the armed forces turning against Gaddafi. But what needs to be done for such a thing to happen? While the Allies appear determined to maintain their action for as long as it takes, they are equally conscious of avoiding the risk of a stalemate where the adversary somehow clings on to power. There is general aversion to committing ground troops in Libya as part of now NATO-led 'Operation Unified Protector' under the newly appointed Commander, Lt General Joseph Jacques Charles Bouchard of Canada. Such an action would also be against the mandate of UNSC Resolution 1973, which is already under fire from countries like Russia, criticising the excessive use of air power.

The big debate going on in the US and elsewhere is whether or not to arm the rebel forces sufficiently to effectively take on Gaddafi's loyalists. While some arms are already trickling in through the eastern border supplied by the Egyptians, the French Government which has led the international charge against Gaddafi continues to place mounting pressure on the US to provide greater assistance to the rebels. The question of how best to support the opposition also dominated an international conference about Libya, held on March 29, in London. But while Obama Administration is seriously considering

If the present internal struggle in Libya is to be prevented from degenerating into a protracted civil/tribal war, the NATO air effort against Gaddafi's forces would have to be stepped up manifold



providing arms to the Libyan Opposition, there is also a nagging doubt of Al-Qaida having links with some rebel fighters. These fears surfaced publicly on the Capitol Hill recently when military commander of NATO Admiral James Stavridis, told a Senate hearing that there were 'flickers' in intelligence reports about the presence of Al-Qaida and Hezbollah members among the anti-Gaddafi forces.

But do the rebel forces really need the big-ticket weapons from the West? It is a known fact that during the uprising, a substantial number of army units stationed in the east had joined hands with the rebels. The number of air force bases and their combat assets which had fallen in the hands of the rebels were large enough to be able to create a 'Free Libyan Air Force'. It may be recalled that one MiG-23 was erroneously shot down by the rebels that had taken-off to provide them close air support against Gaddafi's forces. Then there

is the case of a Free Libyan Air Force aircraft piloted by Muhammad Mukhtar Osman who on March 20 carried out a suicidal attack—'kamikaze' style—against Gaddafi's compound at Bab al-Azizia in Tripoli, in which one of Gaddafi's sons, Khamis al Gaddafi was reportedly killed. This could be an indicator that the rebels have recourse to the weapons held by Gaddafi's armed forces units which defected to their side. What the rebels really lack could be capable military leadership and combat cohesiveness.

However, with all their shortcomings, the rebels were on the ascendance against Gaddafi's loyalists when the allied air strikes were being provided to them in real earnest. Their recent reverses on the ground may be attributed to a lull in the allied air action caused perhaps during the transitory period of NATO taking over the responsibility for the military mission from the US. But if the military experts are to be believed, the transition period may already be over with Gaddafi's forces being subjected to renewed air attacks. Putting aside the 'ethics' factor in international behaviour, if the present internal struggle in Libya is to be prevented from degenerating into a protracted civil/tribal war, then, it becomes clear that the NATO air effort against Gaddafi's forces would have to be stepped up manifold. It would also have to be in direct support of the rebel forces. In addition, with covert aid being provided to the rebel forces by external agencies such as Central Intelligence Agency—having been cleared by a presidential 'finding' by the US President Barack Obama—the 'boots' on the ground could be strengthened sufficiently to force, in all likelihood, a quick outcome of the battle in favour of the Opposition. This could also rid Libya of Colonel Gaddafi and his long abhorrently dictatorial rule, a sentiment which is increasingly finding global acceptance. But once achieved, would it also engulf Libya in the wafting fragrance of a flourishing democracy? Only time will tell. ^{SP}

— *Air Marshal (Retd) V.K. Bhatia*

RIGHT FOCUS:

EMBRAER OFFERS A CHOICE OF AIRCRAFT, BOTH TO THE LOW COST CARRIERS AND THE FULL-SERVICE CARRIERS



Right Size Matters

There indeed is potential and a growing appetite from airline operators in India to connect routes previously considered unviable. This transformation has come about as regional jets have positioned the economic viability of operating jets with capacities ranging from 70 to 150.

GLOBALLY, LOW COST CARRIERS (LCCs) are emerging stronger by the year and one of the attributes has been the judicious mix of aircraft.

Regional aircraft, both jets and turboprops, form part of their fleet, and that seemingly has proved a winner. It is not that regional jets are made only for LCCs. They do form part of the full-service carriers which have used them effectively as feeder service. And there are LCCs which have gone laughing to the banks with narrow-body aircraft and the shining example is that of Air Asia which operates the Airbus family.

The script in India is also similar—LCCs outperforming the full-service carriers, thanks to the opportunities it finds from trunk and non-trunk routes, calling for “right sizing” of fleet. With the passenger growth forecast showing enormous promise in the emerging markets, India leads the way with the opening up of new routes, particularly connecting

By R. Chandrakanth



tier II and III cities. Airlines are announcing route expansion plans and in accordance, aircraft purchases are reaching phenomenal levels.

India's growth will be low-cost fare driven, contributing over 70 per cent of the passenger traffic. In 2009, of the

44 million passengers on domestic routes about 27 million passengers (over 60 per cent) were on the low-to-medium density markets (Tier II and III destinations), thus throwing open enormous business opportunities for regional jets. About 17 million passengers were from 24 city pairs across seven major metro cities (Tier I).

Gurgaon-based budget airline SpiceJet has announced that it would tap considerably into the growing regional market with an order of 15 Bombardier Q400 turboprop aircraft that can seat up to 80 passengers. The deliveries are expected to commence sometime this year. SpiceJet has options of buying 15 more of the aircraft. SpiceJet which has a fairly strong route network in the north intends now to focus

on the south, most probably keeping Hyderabad as a hub. Neil Mills, CEO of SpiceJet has said that the airline would use the regional operations to carry the feeder traffic for the onward journeys including international legacy carriers.

Mills quoting in the media said, “Low cost airlines have already taken over the feeder traffic passenger chunk for onward journeys. Legacy carriers cannot deliver at the prices at which low cost airlines can on the smaller city network.”

Not just SpiceJet, almost all the LCCs in India understand the routing strategy of connecting non-metro, tier II and III cities to the metros. Unless the mix is worked out, the airline will run into turbulence as in the case of Paramount Airways which operated two Embraer jets between non-metro cities. Troubled airline Paramount Airways which is expected to resume operations this year has also placed orders for eight Q400. Meanwhile, Jet Airways has also strengthened its regional operations, while IndiGo which made history with order of 180 Airbus aircraft intends to start a regional airline.

There indeed is potential and a growing appetite from airline operators in India to connect routes previously considered unviable. This transformation has come about as regional jets have positioned the economic viability of operating jets with capacities ranging from 70 to 150. There is a growing mix of aircraft capacities as airlines discover that there are over 200 routes having low-to-medium density of traffic which need to be tapped. Operating narrow-body aircraft on low-to-medium density routes have largely been unviable, leading to closure of some destinations. As per the Ministry of Civil Aviation, there are 62 regional aircraft with scheduled operators and this number could go up as and when the new players take off.

Regional jets have proved to be ideal with their seating configuration of 50 to 100 for airlines which are looking at tapping newer and virgin markets. The regional jets are ideal for flying on routes that are too thin to support service by narrow-body jets and with their cost-effectiveness, score with both the price-sensitive customers and the LCCs.

Commenting on the forecast of regional aircraft in India, Trung Ngo, Vice President, Asia Pacific Sales, Bombardier



TAPPING THE MARKET:

SPICEJET HAS ORDERED 15 BOMBARDIER Q400 TURBOPROP AIRCRAFT THAT CAN SEAT UP TO 80 PASSENGERS

Commercial Aircraft said that from a small 20-149 seat fleet base of 120 units, India's fleet will grow to 650 units by 2029. JetLite operates six Bombardier's CL-600 aircraft with 50

seat capacity. India is predicted to take 600 deliveries, representing 36 per cent of total deliveries within the Asia/Pacific region. The 60-99 scheduled seats grew by 45 per cent in 2009 from a small base in 2008. In total, Asia Pacific including India will yield 1,640 deliveries of 20-149 seat aircraft. About 43 per cent of deliveries (700) will be 60-99 seat aircraft and 920 units or 56 per cent will be 100-149 seat aircraft.

Forecast International has projected that 4,016 regional aircraft, valued at some \$123 billion (₹5,45,600 crore), will be produced from 2010 through 2019 with the leaders being Bombardier, Embraer, and ATR. Bombardier's product line includes both jet-powered and turboprop-powered aircraft, while Embraer currently specialises in jets and ATR builds turboprops exclusively.

ATR, a joint venture between Alenia Aeronautica and EADS, which has 48 aircraft plying with scheduled operators here, has predicted a market for 300 units in the long run. By 2011 end, ATR is expected to deliver more ATR 72-500 aircraft. “India will become the country where the maximum number of ATR aircraft will fly in the world soon—65 per cent of our orders are from Asia. Though there is a crisis affecting the order books of aircraft manufacturers globally, we expect to meet our delivery targets,” said David Vargas of ATR.

The larger regional jets which many original equipment manufacturers (OEMs) are working on, will offer higher fuel-efficiency and cost-effectiveness to an industry which is looking for margins coming from any quarter. Embraer is already working on a 130-seat jet configuration that is expected to give a superior customer experience. SP

EMBRAER'S MARKET POSITIONING

Globally airlines are looking at newer markets—connecting smaller cities, metros, international destinations—to grow their business. Brazilian aerospace major Embraer has positioned itself to address these markets by offering a choice of aircraft, both to the low cost carriers and the full-service carriers.

Embraer forecasts a requirement of 6,875 new jets in the 30 to 120-seat capacity segment over the next 20 years with a total market value estimated around \$200 billion. “Nearly half of the predicted volume of new aircraft will be needed to satisfy expected traffic growth and address right-sizing opportunities in established markets,” Paulo Cesar, Executive Vice President, Commercial has said.

The profiles of global operators that include E-Jets in their fleet solution are as diverse as the areas they serve. Whether it's a new airline in South America or India providing nonstop flights from secondary markets, a lowcost carrier or full-service operators in Europe, Asia and North America, Embraer E-Jets offer new opportunities in the 70 to 120-seat segment.



FAKED WINGS

Submitting forged documents pertaining to basic educational qualifications or marks sheet are not the only malpractices in the process of acquiring flying licences by fraudulent means. The bigger and the more serious problem is the quality and authenticity of civil flying training in India and somewhat surprisingly in some flying training institutions abroad as well.

ON JANUARY 11 THIS year, a bungled landing at Goa by an IndiGo Airlines pilot set off a chain of events which for the Indian civil aviation industry was akin to the tsunami that devastated parts of Japan in March 2011. The pilot in question, a Commander on an Airbus A320 aircraft, was taken into custody after preliminary investigation into the accident revealed that she had obtained an Airline Transport Pilot Licence (ATPL) on the basis of documents that were not genuine.

FLYING LICENCE

Issued by the Training & Licensing Department of the Delhi-based Directorate General of Civil Aviation (DGCA) under

By **Air Marshal (Retd),
B.K. Pandey**



the Ministry of Civil Aviation (MoCA), a basic flying licence is called the commercial pilot licence (CPL). It is only issued to an individual who possesses the requisite educational qualifications; has undergone ground training as per the prescribed syllabus and has successfully completed the stipulated number of flying hours as well as the licence-related examinations conducted by the DGCA. The candidate has also to be certified medically fit by a competent authority. It is mandatory that the ground and flying training syllabi be completed at a DGCA-certified training establishment. Those who obtain a CPL abroad are required to pass an examination conducted by the DGCA before the foreign licence is converted to its Indian equivalent.

On account of the sudden and huge spurt in demand for

pilots since the boom in civil aviation that began by the end of 2003, till date, thousands of young boys and girls trained in certified institutions in India or abroad have obtained their CPLs hoping to cash in on the avalanche of lucrative employment opportunities as First Officer (also referred to as Co-Pilot or Second Pilot) in the Indian airline industry. Several First Officers serving with the airlines, who have met with the requirement of stipulated flying hours and having passed all other examinations, have successfully upgraded to the next level, to that of Commander, also referred to as Captain or First Pilot. For a First Officer to upgrade to the status of Commander, it is necessary to clear a written examination as well as flying tests to be eligible for the grant of ATPL. This is believed to be a major hurdle and the First Officers aspiring to be Commanders, are generally able to do so only after several attempts. A First Officer clearing this hurdle in the first attempt is indeed an extremely rare feat. Repeated attempts involve their being away from active airline duty which consequently leads to monetary loss. There is, therefore, powerful motivation for these aspirants to meet all stipulated requirements and pass the examinations both written and flying, by any means, fair or foul.

WIDESPREAD FRAUD

A quick survey carried out in the wake of the incident pertaining to the faulty landing technique cited above, indicated the possibility of there being other cases wherein fraudulent means could have been employed to obtain flying licence.

Concerned with the implications of this pernicious practice on air safety, the Ministry of Civil Aviation has ordered a review of pilot licences issued by the DGCA. It is understood that around 10,000 holders of CPL and 4,000 ATPL are likely to be under the scanner. Simultaneously, audit of the 40 civil flying training institutions in the country has also been ordered by the MoCA.

The phenomena is not unique to Indian civil aviation as around the time of the discovery of the malaise in India, a 41-year old Swedish pilot flying for Turkey's Corendon Airlines was arrested at Amsterdam as he was about to operate a flight to Turkey with over 100 passengers onboard. As per the Dutch police, in spite of having 10,000 hours of flying logged over 13 years, the individual was in possession of an expired licence, that too with the endorsement to fly only



SAFETY IS OUR HIGHEST PRIORITY AND WE ARE TREATING THIS MATTER EXTREMELY SERIOUSLY. WE ARE WORKING WITH THE DGCA IN THE INVESTIGATION AND PROVIDING EVERY ASSISTANCE THAT WE CAN. INTERNALLY, A SENIOR GROUP OF EXECUTIVES ARE FOCUSING ON THESE ISSUES. WE ARE REVIEWING ALL OUR INTERNAL RECORDS AND PROVIDING THEM TO THE DGCA TO HELP THEM WITH THEIR INVESTIGATION.

—ADITYA GHOSH,
PRESIDENT, INDIGO

small aircraft and not heavy jets such as airliners.

CIVIL FLYING TRAINING

Submitting forged documents pertaining to basic educational qualifications or marks sheet are not the only malpractices in the process of acquiring flying licences by fraudulent means. The bigger and the more serious problem is the quality and authenticity of civil flying training in India and somewhat surprisingly in some flying training institutions abroad as well. Usually equipped with the minimum number of aircraft required under the rules for start up, a large number of private flying training schools have mushroomed in the country with the sole aim of exploiting the situation created by the rising demand for pilots. These schools are usually inadequately staffed as experienced, qualified and competent flying and ground instructors were and continue to be in short supply. All that the private flying training institutions could do was to somehow assemble the numbers stipulated by the DGCA for headcount during inspections. As a result, quality of training has been the biggest casualty. Incidentally, afflicted by shortages of qualified manpower and dismally low emoluments for the staff, the government-run flying training establishments have been in no better state. The state government-owned Rajasthan Flying Club in Jaipur, where a number of cases of acquisition of flying licences by fraudulent means have been discovered and several arrests already made, typifies the infirmity that afflicts the flying training institutions in India. The only exception perhaps is the Central Government owned Indira Gandhi Rashtriya Uran

Academy (IGRUA) at Rai Bareilly in UP, which is now under the management of CAE, Canada. This institution has generally been headed by a retired senior officer of the Indian Air Force (IAF) with proven credentials and staffed by a high percentage of instructors with background of military aviation both for flying and ground training. Hopefully, the second Central Government-owned institution similar to IGRUA, the National Flying Training Institute at Gondia in Maharashtra will follow in its footsteps and maintain respectable standards.

Apart from serious deficiencies in the quality of human resource, the more serious fraud perpetuated by some of the private flying training institutions on civil aviation is that of overlogging of flying hours or even logging flying hours without the aircraft actually having left the ground. Thus,



in many cases, graduating trainee pilots would be of much lower experience than that reflected in their flying logbooks. The fact that the record of flying hours has been certified by the Chief Flying Instructor would tantamount to criminal offence that is punishable under the law. It is understood that such cases came to light at Carver Aviation in Maharashtra in 2007, on account of which the school lost its licence. However, the fact that no follow-up action was taken and the licence restored very soon, is a clear indication of complicity at the level of the regulatory authorities or even higher. Possibly, there was political patronage as well. However, the institution is once again making headlines.

THE REGULATORY AUTHORITY

The DGCA which is the regulatory authority for civil aviation has comprehensive regulatory provisions in place with policies and procedures defined to cater to all foreseeable contingencies. These are periodically reviewed and refined as also new regulations introduced as and when required. The regulatory framework is flawless as evident from the fact that the DGCA has sailed through inspections and audit by the US Federal Aviation Administration with ease. It is another matter that the staff at DGCA have perfected, streamlined and institutionalised practices that have managed to completely subvert the regulatory framework. So powerful is the lure of money that even expatriate pilots, as stated in a television

interview which was broadcast on March 25, have not been spared from remitting huge sums as illegal gratification.

Currently, the DGCA is staffed by bureaucrats and clerical staff commonly referred to as 'babus', and not professionals from the field of aviation. The practice of employing appropriately qualified serving officers from the armed forces as examiners in the DGCA was discontinued since the mid-1980s possibly because the individuals with service background found it difficult to function in the prevailing environment or perhaps the organisation found their presence inconvenient.

Today, driven by the imbalance in demand and supply of pilots, the licensing system at the DGCA has been reduced to the status of a 'money spinner'. As reported in the media, an individual pursuing a CPL or ATPL has to shell out substantial sums of money. The precise amount is in direct proportion to the deficiencies that are required to be concealed or the number of documents that require falsification. The illegal business potential has led to the emergence on the scene of a band of touts who facilitate matters for both parties with remarkable ease and finesse. Given the overpowering glamour of a career in the civil aviation industry, the individuals aspiring for flying licences are in a state of desperation and hence have no alternative but to oblige. Even though forums are available, they dare not complain against any individual or the organisation as the flying career of the hapless souls is held to ransom for a lifetime by the 'babus' at DGCA. An instance that demonstrates the insensitivity of the staff is that of a senior retired officer from the IAF with bags of flying experience. With the intent to undertake hobby flying on light sports aircraft, the officer had appeared for a private pilot licence (PPL), which is lower than a CPL. Frustrated by the inordinate delay in the issue of a PPL despite having fulfilled all requirements, the officer approached the concerned department where, after hours of wait, he was told that the file pertaining to his case was not traceable. Somewhat disturbed by the response, he approached the staff dealing with the subject and noticed that the file in question was indeed lying on his table, right in front of him.

In most government controlled organisations in India, every point of control tends to become a point of corruption and the DGCA is no exception. Corruption in government organisations is so rampant that the public at large has over a period of time psychologically reconciled with the phenomena and tragically it no longer generates any serious concern. There is also a feeling of debilitating helplessness. While there is little doubt that the DGCA has been afflicted by this malady for a long time, it has now reached staggering proportions in the last six years. While the new head of the organisation may describe the phenomena as an 'aberration', the nation can no longer be misled. Corruption is deeply entrenched in the DGCA and the clean image and cloak of honesty

**It is clear
that while
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is a way**

at the top levels of management can no longer mask the rot that has set into the organisation. The issue now being investigated by the police with the possibility of the CBI stepping in followed by a number of arrests, would certainly be a source of considerable discomfiture for the 'babus' at the DGCA, unless of course the investigating agencies themselves are compromised.

CORRECTIVE ACTION

Since the implications of corruption in DGCA and its impact on the civil aviation industry as well as the air traveller could be horrendous, resolute action will be required to pull the organisation out of the morass it has slipped into. In order to achieve significant qualitative change in civil aviation, first and foremost it will be necessary to focus on civil flying training. Aspiring candidates need to be screened for academic standards achieved as also for aptitude by a selection process on the lines followed for recruitment of trainees for the flying branch in the IAF. There must be minimum standards laid down during flying training and it would be desirable to filter trainees who are weak, display unsatisfactory progress, fail to achieve the laid down minimum standards or are attitudinally deficient. Currently, civil pilots are appointed as flying instructors based on experience. However, it is felt that there is an imperative need to introduce formal training for civil pilots to be indoctrinated in instructional techniques both on the ground and in the air to qualify as flying and ground instructors. The pattern followed in the IAF could serve as a guideline to develop a model tailored to meet the requirements of civil aviation.

With as many as 40 flying training schools in the country, the majority functioning at the minimum levels of equipment and manning, it will not be possible to achieve or maintain meaningful quality standards. What is required is just four to five large institutions similar to IGRUA with comprehensive infrastructure and a self-contained fully residential campus. A fixed percentage of the staff must be drawn from amongst appropriately qualified professionals with a background of military aviation. To eliminate the possibility of over logging of flying hours or falsifying the logging of flying hours, the flight operations centre of the training institution; the Air Traffic Control and the maintenance control centre be networked with a centralised agency at the DGCA using

appropriate software to maintain continuous tally of flight timings for each pilot and aircraft, fuel consumed and maintenance schedules. This concept would have to be developed de novo as no such automated arrangement exists currently.

Notwithstanding the assurances from the new DGCA, corrective action may not be forthcoming for the conniving officials at the DGCA. To begin with, it is difficult to assess the extent of involvement of senior functionaries or political patronage that has allowed the scam to spiral out of control and reach the dizzying heights it has. Though they deny, it is difficult to believe that the top echelons of the DGCA and the MoCA have not been aware of the nefarious activities of the staff behind the scenes.

It will be in the interest of the nation to allow the investigating agencies a free hand and those found guilty of criminal offence must be made to bear the full weight of the law irrespective of their position in the organisation. For the future, written examinations as also the application for issue of a fresh CPL must be handled by the institution where the individual is trained. Similarly, the process of upgradation of licence to an ATPL ought to be handled by the airline in which the individual is employed. These measures will shield at least some individuals from exploitation by the babus. Also, the DGCA needs to lay down inflexible timeframes for processing of such applications with information on progress or lack of it appearing on its website. Applicants for conversion of licence as well as those unemployed and applying for upgradation of licence will be required to interact directly with the DGCA. Such individuals ought to be asked for anonymous feedback on their experience with the process and comment on any demand by any official for bribe or any other favour in return for the licence. Agencies acting as intermediaries must be registered with the DGCA and formally authorised to facilitate the process for a specified fee payable by the applicant for the services rendered.

THE FINAL WORD

It is clear that while eliminating corruption may be a Herculean task, it is also not an impossible one, for where there is a will, there is a way. As former Union Minister Rajesh Pilot once said in a talk at the National Defence College, New Delhi that cleaning a system of corruption is like cleaning a staircase. One has to begin at the top. **SP**

KINGFISHER AIRLINES IS WORKING CLOSELY WITH THE REGULATORY AUTHORITY IN DEVELOPING PROCESSES FOR IDENTIFYING SUCH CASES, IF ANY, AND HAS ALREADY UNDERTAKEN WHATEVER INITIAL SCREENING IS POSSIBLE GIVEN THAT WE ULTIMATELY HAVE TO DEPEND ON THE DOCUMENTATION ISSUED BY THE RELEVANT AUTHORITIES CONCERNED. BESIDES A THOROUGH SCRUTINY OF MARKSHEETS AND CERTIFICATES, KINGFISHER AIRLINES HAS A VERY STRINGENT FOUR-STEP HIRING PROCESS THAT INCLUDES A WRITTEN TEST; VIVA WITH THE SELECTION BOARD; PSYCHOMETRIC ANALYSIS DESIGNED BY EUROPEAN PILOT SELECTION AND TRAINING (EPST); AND SIMULATOR TESTING WHICH ENSURES THAT ONLY THE MOST QUALIFIED PILOTS GET SELECTED.

—KINGFISHER AIRLINES
SPOKESPERSON



DGCA's FAILING ETHICS

Air Marshal (Retd) V.K. Bhatia

THE SOUND OF FALLING apples being confused with engine trouble and panicky reaction of aborting take-off at an alarmingly late stage; landing a jetliner on its nose gear—one suffering blown undercarriage tyres; the other miraculously escaping a nose wheel collapse—what exactly is happening on the Indian civil aviation scene? That there must have been a protecting hand of the Almighty in the above cases can hardly be doubted, as contrary to the wildest dreams of their designers, both aircraft survived the unwarranted punishment meted out by their callous/undertrained commanders and the passengers coming out of the ordeal largely unhurt.

LICENSING SYSTEM

The fake pilot licence scam has hit the civil society and the media in India with the force of a dreadful tsunami not dissimilar—though on a different plane—from the one that recently hit the shores of north-east Japan. Still reminiscent of the Flight Cadet days, I am reminded of a plethora of flight safety slogans displayed all over the base one of which read, “Flying is inherently safe but most unforgiving of errors caused by violations of rules and regulations.” Proper training both on the ground and in the air are hallmarks of making safe and competent pilots. In India, flying training for civilian pilots is carried out in a mix of state-run/sponsored flying academies/clubs and privately run flying training institutions. But the onus of granting civil licences rests solely with the Directorate General of Civil Aviation (DGCA). The DGCA not only carries out a thorough scrutiny of flying training but also conducts a set of stringent written tests covering different subjects connected with aviation such as aerodynamics, navigation, meteorology and aircraft knowledge for sought type-endorsement, etc. before awarding the appropriate licence to the concerned applicants—the difficulty level of the question papers increasing proportionately with the type of flying licence applied for; starting from private pilot licence (PPL), commercial pilot licence (CPL), SCPL (private, commercial, senior commercial pilot licence), highest being the ultimate Airline Transport Pilot Licence (ATPL), which is required as basic qualification for the airlines’ commanders or pilots.

WELL-OILED RACKET

The recent boom in India’s civil aviation has thrown open many high-end career opportunities in this sector like never before. Lucrative emoluments coupled with perks, a suave lifestyle and a sense of adventure attracts many young men and women to take up this profession. But are all aspirants up to mark to stand up to the rigours of training? Secondly, flying training is only one side of the coin to get the coveted flying licences; sound knowledge of ground subjects with testing fully controlled by the DGCA, being the other. While

it is conceded that some dubious institutions both abroad and in India may have fudged a few flying hours in the past to cut costs and earn higher profits, the latest scam involving two IndiGo, one MDLR and one Air India commander converges on fudged marksheets which enabled them to procure their respective ATPLs. Their arrests indicate that a well-oiled ‘racket’ is at work within DGCA that helps co-pilots, who have failed to clear exams to become commanders. But does this come as a surprise?

CORRUPT PRACTICES AT DGCA

DGCA has long been suspected of indulging in corrupt practices such as charging sizeable amounts for handing over even the genuine licences to the first timers in the past. The lure of the lucre has pushed unscrupulous personnel within the organisation to climb another step on the ladder of corruption for greater financial considerations.

HOW TO STEM THE ROT?

While the entire episode would be a matter of great embarrassment to the DGCA, the very regulatory body which was to act as a watchdog against such malpractices, it would be futile to create another body to watch the DGCA itself. Rhetoric apart, the need of the hour for the apex body is a thorough inside out self-cleansing programme to regain its self-respect and mandate. For starters, the DGCA should submit itself to a full-fledged probe to nab the culprits who should be given severe and exemplary punishments to act as deterrence for the future. Second, DGCA should not remain within the domain of civil bureaucracy alone. The services, especially the Indian Air Force, have the necessary wherewithal to provide competent leadership to the organisation. It is a well-known fact that there is no dilution of standards as far as the regular medical checks of the ‘ATPL’ pilots are concerned, a responsibility discharged most meticulously by the Air Force’s Central Medical Establishment (CME) continuously, year after year. It is time the DGCA is enthused with a similar sense of probity and excellence. SP

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REVAMP THE SYSTEM



Air Marshal (Retd) B.K. Pandey

THERE ARE NO PROCEDURAL flaws as far as the procedure laid down for the issue of civil flying licence is concerned. The problem arises when individuals deliberately subvert the system and function outside the procedural framework. The malaise that afflicts the Directorate General of Civil Aviation (DGCA) licensing department is similar to other government-controlled departments such as the road transport, customs and excise, income tax, sales tax, police, etc. A notable feature in the functioning of both Central and state government departments is that every point of control degenerates into a point of corruption. Thus there is the incentive for the bureaucracy to introduce additional points of control to enhance raking in of illegal revenue which could be shared by many in the organisational hierarchy.

DRIVERS ENABLING SUSTAINABILITY OF SUCH FLAWS

The unprecedented boom in civil aviation led to serious imbalance on account of demand outstripping supply. Flying schools mushroomed around the country with little respect for quality of training and churned out inadequately trained pilots. Hordes

What is needed for foolproof licensing is that the system be managed by persons of integrity, high morals and immaculate track record

of boys and girls went to flying schools abroad to obtain foreign licences that were required to be converted to Indian licence by DGCA. This came as a windfall for the staff at DGCA who saw clear opportunities for making money and did so without any concern for air safety. The process was facilitated by agents and student pilots desperate to obtain flying licence paid up to ₹25 lakh. Individuals managing the licensing process expect and demand substantial sums from hapless indi-

viduals for the work they are legally required to do. Unbridled greed for money leads to the insidious practice of subversion of the rules and regulations resulting in issue of licences to those who do not qualify. This is evident from the cases that are recently in the limelight. The other factor that contributes deliberate subversion of rules is on account of nepotism especially if the candidate is a relative of a senior functionary in the DGCA or in the Ministry of Civil Aviation (MoCA). The case of pilot Garima Passi falls in this category.

FOOLPROOF LICENSING SYSTEM

The licensing system cannot be faulted and does not require any radical change. What is needed is that the system be managed by persons of integrity, high morals and immaculate track record. Black sheep who manage to infiltrate the system should be weeded out and exemplary punishment meted out to those defaulting. The vigilance department needs to be empowered and made to play a more effective role. At present, the Directorate General of Civil Aviation is all powerful and highly insular. The organisation needs to introduce an effective system of internal checks and balances, greater transparency and external scrutiny. Trainee pilots applying for licence must be asked by the vigilance department to submit anonymous feedback on their experience and should be asked to indicate demand from functionaries in DGCA for payments under the table. This exercise must be undertaken immediately after the individual has obtained his licence.

RECOMMENDATIONS

Now that the scam has come to light, there is an imperative need to examine the problem in its entirety and revamp the system building checks and balances. To begin with there is a need to understand and assess the magnitude of the problem. For this, a comprehensive survey needs to be carried out through a written and anonymous poll amongst the pilots who have obtained flying licence from DGCA since 2003 soliciting information on difficulties experienced including demand for bribe to get even bona fide work done. Pilots should be asked for names and appointments of functionaries in DGCA and the MoCA as also of agencies active in the market working on their behalf. This task should be entrusted to a competent organisation outside the zone of influence of the DGCA and the MoCA.

While some of the 4,500 pilots could have obtained flying licence by means that are not fair, the focus of attention ought to be the DGCA itself especially its licensing and vigilance departments. One possible solution could be to insert at appropriate levels serving officers from the IAF on deputation for two to three years. There is also an urgent need to improve the quality of civil flying training which to say the least is pathetic. While pilots from the Army, Navy and the Air Force should be laterally inducted into general aviation or the airline industry, ex-armed forces pilots with the appropriate qualification as flying instructors be inducted into civil flying training institutions. Though provided for in the regulations for military pilots to fly trainer aircraft under civil registration without a civil licence, the DGCA has decided not to accord such sanction thus denying civil aviation from benefiting from the vast pool of experience in the country. Incidentally, Malaysia is inducting ex-IAF pilots to run their civil flying training establishments. SP

India **Finally** Stands Up To Russian Blackmail

Issues Global Tenders For Spares

By Vishal Thapar

PUSHED TO THE BRINK by the unreliability of Russian after-sales support, India, for the first time, has hit the international market for spares for Russian-made aircraft and missile systems operated by the Indian Air Force (IAF). Traditionally, these vital spares are sourced from original equipment manufacturers through the Ros-boronexport interface.

The UPA Government has given the go-ahead to the IAF to approach vendors in Europe, US and Israel to urgently replenish its stocks of spares for Russian-made equipment. At last count, 47 global tenders have been floated to source equipment ranging from spares for the MiG-29 engines (R-29) to tubeless tyres for the Sukhoi-30 MKI and parts for the Pechora and OSA-AK surface-to-air missile (SAM) systems, and ground-based radars.

More tenders are on the way. The urgent spares calls extends to the An-32 transport fleet, for which additional tenders have been floated. Global tendering for spares is being done under the Defence Procurement Procedure (DPP).

Sources in the IAF concede that serviceability rates of Russian-made platforms are “unacceptably low” due to poor availability of spares and after-sales support. “This is hurting India’s battle readiness,” rues a senior Air Force officer. The concern extends to even the frontline Su-30 MKI fleet, a showpiece of Indo-Russian defence cooperation.

The position with regard to the availability and serviceability of IL-76 heavy lifters and the IL-78 tankers is “worrying,” says the officer. “This goes beyond a quarrel over cost,” he points out gravely. The MiG-29 serviceability, too, is a problem.

The trigger, sources reveal, are fresh Russian demands for price hike and new contracts. While the problem is not new, the move to approach the international market is India’s signal that it won’t always submit to arm-twisting and blackmail. The price escalation in the Admiral Gorshkov deal,

and the renegotiation of a settled contract to increase the price of refit from \$974 million (₹4,261 crore) to \$2.33 billion (₹10,485 crore)—with no penalty for a five-year-delay—stands out in the public consciousness as a seminal pointer to the unreliability of India’s traditional arms supplier.

The move to bypass Russians for a reliable, uninterrupted supply of spares follows the failure of repeated assurances provided to India at the Indo-Russian Inter-Governmental Commission for Military-Technical Cooperation, the highest body governing defence trade between New Delhi and Moscow.

Russia has a history of punishing arms buyers who seek to bypass it for spares and upgrades, and there are concerns in India about possible retribution. India’s decision to stand up to Russia comes in the middle of key upgrade programmes. An over \$2 billion (₹9,000 crore) contract has been signed for the upgrade of 50 Su-30 MKIs. A \$1 billion (₹4,500 crore) programme is under way for the upgrade of 62 MiG-29s, with an additional \$250 million (₹1,125 crore) earmarked for engines. A \$290 million (₹1,305 crore) contract has been signed for the upgrade of 160 Mi-17s while that for 28 Ka-28 naval helicopters is pegged at \$189 million (₹851 crore).

Sources close to the Russian arms industry point out that procuring spares for their equipment from external sources and third parties—and working out economies of scale—may not be easy. They warn that that such moves may boomerang on India, suggesting, instead, that “talking to sort out problems is the better option”. But with its new access to western suppliers and Israel, India is no longer willing to be taken for granted. It is demanding that its traditional arms supplier better shape up. **SP**

Note: The writer welcomes feedback from those who feel this step is not fair to Russia.

vishal.thapar@spguidepublications.com



ENOUGH IS ENOUGH: URGENT REQUIREMENTS

- SU-30 TYRES
- MIG-29 ENGINE SPARES
- MIG-29 TERMINALS & TRANSPONDERS
- IL-76/IL-78 SPARES
- AN-32 SPARES
- MI-17/MI-8 SPARES
- MI-17 VIBRATION DAMPER
- PECHORA PARTS
- OSA-AK SPARES
- P-18 RADAR SPARES
- ST-68 RADAR SPARES

Bullish on India: Eaton



Diversified industrial manufacturer Eaton Corporation has announced a sales target of \$500 million (₹2,250 crore) in India by the end of 2015, which would triple its current revenue in the country. In an interview with *SP's Aviation* team, Eaton Chairman and CEO, Alexander M. Cutler outlines the roadmap in India.

PHOTOGRAPH: EATON

SP's Aviation (SP's): Could you tell us about your aerospace business in India and how it is growing?

Alexander M. Cutler (Cutler): Eaton began operations in India in 1999 through the global acquisition of Aeroquip Vickers. We are basically into four aerospace product solutions—hydraulic, pneumatic, fuel and electrical systems. A substantial number of commercial and military aircraft in India are powered by Eaton solutions. With the aviation sector in India and also the region growing fast, we see enormous opportunities here. India will be an important part of our goal generating 30 per cent of our sales from emerging markets. We are excited and bullish about participating in the development of India's infrastructure including airports. I landed at Terminal 3 of the Indira Gandhi International Airport and must say that they have done a good job and not just because Eaton has provided electrical solutions here.

SP's: What is your strategy with regard to partnerships—do you partner with original equipment manufacturers (OEMs) and also the end-users such as airlines?

Cutler: Eaton has partnerships with both. There are many airlines which opt for our product solutions knowing our strengths and the OEMs go along with them. Our solutions are on most airlines and as we are known to provide cost-effective solutions, Eaton has a long clientele list. Our systems are on most of the Airbus and Boeing commercial aircraft and also on several of the US and European fighter jets. Our fuel systems on the single-aisle commercial aircraft have brought about 30 per cent fuel efficiency which the airlines recognise.


SP's: Where do you see the aerospace business coming for you in India?

Cutler: If you look at the passenger growth in India and also in China, both countries will require more aircraft and also improved maintenance infrastructure. At present, many airlines take their aircraft overseas for maintenance, but this is going to change in the next three-four years. Eaton has positioned itself to serve the opening up of the MRO business.

SP's: In India, the growth is coming from the low-cost carriers (LCCs) who are cost-conscious. How do your solutions address their needs?

Cutler: Not just India, we see the LCC model growing in many regions including the US. Our product solutions focus on two important aspects—reliability and cost-effectiveness. It perfectly makes sense for the LCCs to opt for solutions which gives optimised performance at lower costs. Eaton does that.

SP's: Could you spell out your expansion plans, mergers and acquisitions (M&As) in the aerospace business in India?

Cutler: Eaton continues to grow both in an organic and inorganic way. We always have some M&As in the pipeline. Importantly, we will expand our presence in India, both on the sales and the research and development fronts. The integrated research and development centre in Kharadi, Pune, will add 200 employees to its engineering and other professional services work. 



The RACE *is* ON

Will the number of MMRCA contenders come down before price negotiations?

By R. Chandrakanth

WILL THERE BE A down-select from the six contenders for the 126 medium multi-role combat aircraft (MMRCA) before the commercial bids are opened? There is some talk making the rounds that the Ministry of Defence may be “comfortable” taking two or three of the aerospace majors to the final stages of the over \$10 billion bid.

The six in the long-drawn race are—Lockheed Martin’s F-16IN Super Viper and Boeing’s F/A-18E/F Super Hornet from the United States, Russia’s Mikoyan MiG-35, France’s Dassault Rafale, Sweden’s Saab Gripen and the EADS Eurofighter Typhoon.

Boeing senior officials—Christopher M. Chadwick, President, Boeing Military Aircraft and Christopher Murray, International Business Development, Defense, Space and Security, in an informal chat with the media confirmed that they too had heard about a probable “down-sizing”. “We hope that we are in the down-select, if that happens, though I really do not know what legal issues it may entail,” said Murray.

Chadwick said that a fighter aircraft deal in any country is always “iconic” and Boeing’s focus has been to win the huge deal. “The request for proposal by the Indian Air Force (IAF)

has been clear and all the six contenders have been compliant in this aspect.” The two factors which would tilt in favour of any of the six would be – the price and political considerations, though the Defence Minister A.K. Antony has categorically stated that there will not be

any kind of political interference.

Around the same time, the relations between India and the US are strengthening and Boeing officials reiterated that the company’s commitment was for the long-term.

Clarifying on the reports that the 10 C-17 Globemaster III heavy transport aircraft for the IAF was “overpriced” compared to what Australia and other countries had paid, Chadwick said: “it is like comparing apples with oranges”. Besides the 10 aircraft there is a package which comes along with it for the IAF. Australia, he mentioned, had now bought one aircraft to its earlier purchase of seven along with the entire package. The C-17 Globemaster deal is happening through the foreign military sale (FMS) and it is a government to government transaction and everything is transparent, he remarked. Boeing is also awaiting India’s final clearance for the purchase of 22 AH-64D Block III Apache helicopters worth \$1.4 billion for which the US Defence Security Cooperation Agency has given the green signal for the FMS. SP



WHITHER MMRCA?

Unless the MoD is able to formulate a template for offset investment that the vendors would have to comply with, the tendering process may not progress to the next step of opening of commercial bids. Inordinate procrastination could lead to the validity of commercial bids expiring, in which case, revision of commercial bids would entail further delay.

WHILE ADDRESSING THE MEDIA during Aero India 2011 in February this year, Air Chief Marshal P.V. Naik, Chief of the Air Staff (CAS) had stated that short listing of the contenders in the race for the tender related to the medium multi-role combat aircraft (MMRCA), would take place in a matter of weeks. A few days ago, in another forum, he stated that price negotiations would begin by the end of April and that he expected the contract to be signed by July 2011 when he is due to retire. However, two months have gone by since the declaration by the CAS in February and there is neither any news of short listing nor of further progress in the eight-stage labourious tendering process enshrined in the Defence Procurement Procedure (DPP). In fact, apart from the occasional rumours and speculation that usually lack basis, the MMRCA tender appears to have gone out of media focus. What then could be the reasons that the issue so live in early February, has suddenly receded into oblivion?

One possible factor impeding the process could be the issue of "offset investment". As per DPP 2006 which is applicable to the MMRCA tender, it is mandatory for the selected vendor to invest in the Indian aerospace sector, 50 per cent of the value of the contract which in this case would be in the region of \$5 billion (₹22,500 crore) or even higher depending on the product selected and the total value of the contract. It is understood that the privilege to spread offset investments over three other sectors i.e. civil aerospace, homeland security and training under DPP 2011, would not be available to the contenders in the race for the MMRCA contract denying them the flexibility the new DPP offers.

The concept of mandatory offset investment for contracts worth ₹300 crore or more has added a completely

new dimension of complexity to the otherwise convoluted tendering process. As stated earlier, the offset investment of ₹22,500 crore or more in the case of the MMRCA tender is so large that it could well be outside the capability of the Indian aerospace industry to absorb. This can be better understood by the fact that the total turnover for Hindustan Aeronautics Limited (HAL) during the financial year 2009-10 was in the region of ₹11,000 crore. The Indian aerospace industry in the private sector is in a nascent stage and the public sector lacks the resilience to rise to the occasion quickly enough. The HAL virtually represents near total capacity of the aerospace industry and contribution by the private sector is still somewhat miniscule. Doubts in this regard have also been voiced by the original equipment manufacturers (OEM) from time to time in the past.

As implementation of the Offset Investment policy would undoubtedly be infinitely complex, it is doubtful whether the staff at the Ministry of Defence (MoD) would be able to finalise the issue without interminable delay. Being a new experience, one is unlikely to be well versed with the technicalities and nuances of the exercise more so because of its linkage with transfer of technology (ToT). This is another sensitive area where the MoD would have to tread carefully lest it be led

up the garden path. Unless the MoD is able to formulate a template for offset investment that the vendors would have to comply with, the tendering process may not progress to the next step of opening of commercial bids. Inordinate procrastination could lead to the validity of commercial bids expiring, in which case, revision of commercial bids would entail further delay. SP

—Air Marshal (Retd) B.K. Pandey, Bengaluru



RISING PRICES: AIR TRAVEL MAY BECOME OUT OF REACH FOR A SIGNIFICANT PORTION OF THE MARKET, WHICH WAS FUELLING ITS GROWTH

UNSUSTAINABLE High ATF Prices

Oil companies such as Indian Oil Corporation; Hindustan Petroleum and Bharat Petroleum are worried about their mounting losses, selling petrol, diesel, domestic LPG and kerosene way below their production cost, thus ruling out selling ATF at subsidised prices

AS ON APRIL 1, 2011, the price of aviation turbine fuel (ATF) in Delhi was ₹59,157 per kilolitre, up from ₹40,728 in October 2010. That is a whopping 30 per cent plus increase. And in the last six months, ATF price has gone north about a dozen times, continuing to squeeze airline profitability and bleeding them further.

As per the Economic Survey 2010-11, tabled by the Finance Minister Pranab Mukherjee in Parliament, high jet fuel prices will dampen the aviation sector. ATF accounts for 40 per cent of the operating cost of Indian carriers as against about 20 per cent for international airlines. Oil companies have been urging the government to reduce customs or import duty on crude oil from five per cent to zero, but

By **R. Chandrakanth**

the government has ignored the plea.

“There is a severe risk of dampening of passenger market growth by quickly making air travel out of reach for a significant portion of the market, which was fuelling its growth,” the survey said.

ATF prices in India have always been much higher than in South East Asia and the Middle East and analysts estimate it to be over 60 per cent higher, due to high taxation and duties. The basket of crude oil that India buys averaged \$110.66 (₹4,980) per barrel in March. There is not going to be any let-up in the upward movement as the crisis in the Middle East and North Africa are yet to be resolved. Meanwhile, the International Air Transport Association (IATA) has indicated that for 2011 the average fuel price would be \$122 (₹5,490) per barrel, impacting the airlines with addi-

tional outgo of \$52 billion (₹2,34,000 crore) on the fuel bill alone. The consolation, if at all, is that the price is well below the 2008 peak of \$180 (₹8,100) per barrel.

ATF AS 'DECLARED GOODS'

At present in India, the government levies an excise duty of eight per cent on ATF fuel and this is compounded by various state governments imposing value added tax (VAT) ranging from 20 to 30 per cent. Adding to the woes of the airlines has been the uncertain crude prices and the industry has been demanding that ATF be accorded 'declared goods' status, thus reducing the applicable VAT to four per cent or lower. The levies have resulted in the final selling price of ATF going up by nearly 50 per cent from the base price, whereas in Dubai, Singapore and Malaysia, it has been reported that the price is only one per cent higher than the base price.

Such regular hikes are passed on to the passengers and there are fears that passenger growth may get adversely affected. With profitability of airlines suffering, they have been trying to offset the same by passing it on to the passengers. "Kingfisher Airlines has sufficiently raised the fuel surcharge to meet the rising crude expenses," Chairman Vijay Mallya has said.

The case is so with other operators too. "We have not raised the fares but we have adjusted the fuel surcharge. We are forced to pass it on to the passengers as increasing fuel prices have squeezed our margins," said Sudheer Raghavan, Chief Commercial Officer of Jet Airways.

The low-cost carriers (LCCs) are in a much worse of spot on this. SpiceJet CEO Neil Raymond Mills has termed the high ATF prices as "unsustainable" for the survival of airlines. "We have already started passing the ATF burden on to the customer. We have started with an increase of a couple of hundred rupees per ticket. But to be very honest, this is only the beginning. It is getting really uncomfortable," he said.

OIL COMPANIES SEEK PAYMENTS

Meanwhile, oil companies such as Indian Oil Corporation; Hindustan Petroleum and Bharat Petroleum are worried about their mounting losses, selling petrol, diesel, domestic LPG and kerosene way below their production cost, thus ruling out selling ATF at subsidised prices. According to estimates, these three public sector companies are likely to end the fiscal with ₹68,361 crore revenue loss on account of selling fuel below the cost due to subsidies as mandated by the government.

As such some of the airlines owe huge sums of money to the oil companies. Cash-strapped Air India has dues of over ₹2,400 crore and full-service airlines Jet Airways and Kingfisher have reduced their dues to oil companies having come under tremendous pressure. Now they have provided bank guarantees to cover against any default.

What is worrying the airlines is that with unprecedented hikes in the fuel prices, the outstanding dues to the oil companies is going to slowly mount to unmanageable levels again. The competitiveness of airlines, due to the high cost of ATF, has been an issue that needs to be sorted out at the policy level.

PASSENGER GROWTH TO PARTIALLY OFFSET HIKE

However, some industry analysts are of the opinion that there is a new script on the Indian passenger growth mo-

mentum. The total domestic passengers carried by all the scheduled airlines for January 2011 touched 49.36 lakh, though a decrease from 52.13 lakh in December 2010, spurred by holiday season travel. Since there is a robust passenger movement, analysts point out that it becomes easier to pass on the ATF hike to the passengers. The demand is growing around 15 to 18 per cent and the supply is less than 10 per cent. The demand-supply situation being such, analysts believe that hike in airfares may not result in passenger load factors getting affected, placing the airlines in a position to adjust fares with greater autonomy.

The aviation economics are so determined by fuel price movement and a hike of 10 to 12 per cent is expected to



knock off profits by about 40 per cent. With such volatile movements, IATA has been revising its forecast for airline industry profitability on a regular basis. "We have cut our forecast for airline industry profits (net post-tax) in 2011 from \$9.1 billion (₹40,950 crore) to \$8.6 billion (₹38,700 crore) on the average fuel price of \$96 (₹4,320) a barrel this year." In April 2011, IATA further revised the forecast to an average of \$122 (₹5,490) a barrel for 2011.

IATA has said that stronger than expected economic growth has boosted current and expected demand for oil, an upward pressure on energy prices. The ability to offset high fuel price depends on a combination of strong economics, leading to strong demand for air transport and limited capacity growth. This produces the tight supply-demand conditions essential for airline profits to remain robust to high fuel costs. In 2010, passenger load factors have been encouraging.

The airline industry in India is just coming out of the trough, having had a combined loss of over ₹18,000 crore in the past two years. Riding on the crest of the passenger growth factors, the Centre for Asia Pacific Aviation had indicated that the airlines may end with net profit of \$300 million (₹1,350 crore) in 2010-11, but with the fuel bills rising, profitability certainly will be eroded. SP



Find, Fix & Strike

Speaking at the Special Forces Seminar, Chief of the Air Staff Air Chief Marshal P.V. Naik said that it was important for both the political and military leadership to understand that there would be “fewer wars and more conflicts” and only a well-trained and thinking force could deal with such threats

By Air Marshal (Retd)
V.K. Bhatia

A TWO-DAY SEMINAR ON “SPECIAL Forces: Challenges & Opportunities” was held in New Delhi on March 10-11. The event was organised jointly by SP Guide Publications and the Centre for Joint Warfare Studies (CENJOWS), a think-tank of Headquarters Integrated Defence Staff of India’s Ministry of Defence.

DELIBERATIONS

The very nature of multi-service integration required for the successful outcome of Special Forces operations was evident from the mixed array of speakers, both from India as well as abroad. It was in the fitness of things that Air Chief Marshal P.V. Naik Chief of the Air Staff (CAS) of the Indian Air Force (IAF) and Chairman, Chiefs of Staff Committee (COSC) was invited to inaugurate the seminar. During his inaugural address, Naik underlined the urgency of strengthening the Special Forces in the country as asymmetric warfare by transnational elements, both planned and rogue, was on the rise. Realities in today’s context were becoming more and more threatening and required special assets for specialised missions. Special Forces truly belonged to this category of being able to achieve disproportionately large outcomes with relatively much smaller forces, thus living up to the tenets of fourth generation warfare. He emphasised the need to preserve autonomy of such forces and their unconventional use as that was the essence of their employment. He stressed the need for the Indian armed forces to plan, equip and train for the full spectrum of challenges implying a wide range of capabilities to fight conventional wars under the nuclear hang on one hand to low intensity conflicts including counter-terrorism on the other. He said that it was important for both the political and military leadership to understand that there would be “fewer wars and more conflicts” and only a well-trained and thinking force could deal with such threats. Naik called for a national vision with regard to the deployment of Special Forces in different

**EMINENT SPEAKERS:**

CAS AIR CHIEF MARSHAL PV. NAIK ADDRESSING THE SEMINAR (EXTREME LEFT); MAJOR GENERAL (RETD) K.B. KAPOOR, DIRECTOR, CENJOWS, VICE ADMIRAL D.K. JOSHI, AIR CHIEF MARSHAL PV. NAIK, JAYANT BARANWAL AND LT. GENERAL (RETD) AMARJIT SINGH KALKAT, DIRECTOR EMERITUS, CENJOWS (LEFT); IAF'S C-130J

scenarios and for building the infrastructure for integrated joint operations.

Eminent speakers from all three services—serving and retired—and some from abroad recounted their experiences vis-à-vis Special Forces operations

and presented their views. There was categorical unanimity that terror threats were on the rise in India but the model to deal with such asymmetric threats would have to be devised in India itself while taking into account experiences of other countries. There was also a unanimous view that Special Forces operations are invariably joint operations and therefore call for the setting up of appropriate infrastructure to ensure detailed joint planning and exhaustive joint training for smooth and efficient execution of special operational tasks.

COMMENTS

In India, operations by Special Forces, is not a new phenomenon with each service having raised, equipped and trained their own respective Special Forces units. The Indian Army for example, has approximately 10 battalions of Para-Commando (SF) units distributed amongst its operational commands for special operations. Similarly, the Indian Navy has its Marcos (Marine Commandos) force. The Indian Air Force (IAF) has also raised its own para-commando force called Garuds albeit, arguably, with much greater multi-tasking capabilities. While all three services have equipped their Special Forces reasonably well, there is no case for overlooking the need for continuous upgradation of their equipment to be able to meet the challenges of ever emerging new threats. The IAF, in addition, has other specific roles such as air transportation and para-dropping of Special Forces of all three services as well as heliborne infiltration/extrication of Special Forces elements for special tasks in specific areas including behind the enemy lines.

The IAF has continued to strive for acquiring state-of-the-art platforms for the conduct of such operations. The recent

NATIONAL POLICY ON SPECIAL FORCES MUST

A national vision with regard to deploying the Special Forces in the country is imperative and the Indian model has to be its own. This was the outcome of the two-day seminar on “Special Forces: Challenges and Opportunities”.

Proposing the vote of thanks at the inaugural session, the Publisher and Editor-in-Chief of SP Guide Publications, Jayant Baranwal said that considering the unfolding threat scenario within the country from transnational elements, it was imperative to draft a national policy at the earliest.

Various speakers highlighted on how the Special Forces team had to be a “lean and hungry” team with all the lethality at its command. The Special Forces team should have high degree of interoperability among the tri-services.

Giving a perspective of how air elements were important in a Special Forces operation, Brigadier General Eyal Eizenberg, Commander, Gaza Division, Israel Defence Forces highlighted how the Special Forces used unmanned aerial vehicles (UAVs) in Israel. While dealing with terrorist and other outfits, intelligence gathering is a key and UAVs have been successfully deployed in Israeli operations.

Lt General (Retd) Sir Graeme Lamb, former Head of Special Air Services and Commander of the British Field Army said, “India’s needs are huge and diverse, considering the various threats that exist from outside and within. I understand that the Special Forces in India are good, dealing with various threat scenarios.” The maxim for Special Forces is a simple one—find, fix and strike.

Nicolas Miyilhe, Deputy Country Head, India, Sagem-Saf-ran underlined the need to equip the soldier with information and equipment for quick response at all times. Citing how air warriors were now used to the ‘hands off throttle and stick (HOTAS)’ concept, Sagem was bringing this concept to the soldier. Sagem was providing the French forces with inputs from UAVs. Mini-UAVs were used for remote survey of hills and villages and the data so collected have helped the French forces in several theatres of operation.

Lt General (Retd) P.C. Katoch, former Director General, Information Systems, Indian Army spoke about the growing asymmetric threats coming from across the Pakistani border and called for not just intense aerial, land and sea surveillance but also to deal with such threats squarely.

Lt General (Retd) H.S. Liddar, former Chief of Integrated Defence Staff; Air Marshal L.K. Malhotra, Deputy Chief of Integrated Defence Staff (Operations); Major General (Retd) O.P. Sabharwal, former GOC, 6 Mountain Division, Indian Army; Air Commodore Rajesh Isser, Principal Director, Operations (Helicopters), Indian Air Force; Vice Admiral Shekar Sinha, Deputy Chief of Integrated Defence Staff; Commodore R.S. Dhankhar, Principal Director of Special Operations and Diving, Indian Navy were among the speakers who underscored how Special Forces would play a key role in determining fourth generation warfare. •

induction of C-130J Super Hercules has raised its capability bar by many notches as far as Special Forces operations are concerned. The unique ability of the Super Hercules to not only para-drop but also land and take-off from short unprepared strips both by day and night makes it the ideal air vehicle for Special Forces. So impressed is the IAF with its C-130s that it is seriously considering placing a repeat order to acquire more of these aircraft. Similarly, planned acquisition of the mammoth C-17 Globemaster III and the successful hunt for a heavy-lift helicopter will greatly add to the IAF’s capabilities for Special Forces operations. **SP**

MILESTONE ATTAINED

Alenia Aermacchi announces the first flight of the Italian Air Force T-346A

THE FIRST M-346 AIRCRAFT manufactured for the Italian Air Force (ITAF) had a successful first flight on March 31. The ITAF has designated the plane as the T-346A.

"The first flight of the T-346A, soon to enter service with ITAF, is an important milestone for the M-346 programme, a milestone reached through the dedication of the entire work-force of the Venegono plant," said Giuseppe Giordo, CEO of Alenia Aeronautica in charge of the aeronautics sector of Finmeccanica Group.

Flown by Chief Test Pilot Quirino Bucci, the aircraft took off at 4 p.m. from Venegono, the home airfield of Alenia Aermacchi. The flight lasted 40 minutes and the T-346A reached a maximum altitude of 15,000 ft, covering the planned flight envelope in terms of speed, angle of attack and load factor. The flight also included manoeuvres to assess aeromechanical handling of the aircraft and systems functionality.

After landing, Captain Bucci expressed appreciation for the aircraft. "Once again, the aircraft demonstrated its excellent characteristics in terms of handling, energy and man-machine interface, all crucial points in training future pilots to fly new generation combat aircraft," he said.



The ITAF T-346A is the first M-346 series production aircraft completed. The Alenia Aermacchi site in Venegono now operates a leading-edge, highly-automated production line capable of delivering up to 48 aircraft per year with competitive cost and high quality in order to meet the highest programme requirements.

The remaining aircraft for the Italian Air Force are already being built on this new assembly line and the production of 12 aircraft ordered by the Singapore Air Force is also under way. **SP**



FINAL DELIVERY

Alenia Aeronautica delivers the third C-27J to the Bulgarian Air Force, unveils a logistics centre at Vrazhdebna military base of Sofia

AT THE VRAZHDEBNA MILITARY base of Sofia, Bulgaria, Alenia Aeronautica has delivered the final C-27J ordered by the Bulgarian Air Force in 2006, and unveiled a logistics support centre for the aircraft.

The delivery ceremony was attended by Boyko Borisov, Bulgarian Prime Minister, Anu Angelov, Bulgarian Defence Minister, Giuseppe Cossiga, Italian Defence Under Secretary, Stefano Benazzo, Italian Ambassador in Bulgaria, General S.A. Maurizio Ludovisi, Deputy Chief of Staff of the Italian Air Force and Giuseppe Giordo, Chief Executive Officer of Alenia Aeronautica.

"The unveiling of this logistics centre is evidence of Alenia Aeronautica's ability and willingness to offer its customers cutting-edge products and services while developing strategic and lasting relationships," said Giordo.

The Bulgarian Air Force's fleet now includes three C-27J tactical transport aircraft, compliant with the NATO standards and interoperable with heavier airlifters in service with other Atlantic Alliance countries and capable of operating also in the most complex operational scenarios, thanks to its active and passive self-defence systems.

The Bulgarian C-27Js are in fact equipped with self-defence systems that significantly improve the aircraft's capability of operating in the most difficult operational conditions.

Besides Bulgaria, the C-27J has been ordered by the air forces of Italy, Greece, Lithuania, Romania, Morocco and the US.

The C-27J Spartan is a twin-engine turboprop tactical transport aircraft with state-of-the-art technology in avionics, propulsion and systems. It provides high performances, high cost effectiveness, extreme operating flexibility, best performances for an aircraft of its category in all weather conditions and is the only aircraft of its class offering interoperability with heavier airlifters. **SP**

ARINC's Progressive Flight Path



In India, ARINC is a recent entrant in airports business, having garnered projects at the IGIA. In an exclusive interview with *SP's Aviation*, Jim Martin, Managing Director, Asia-Pacific along with Guruprasad Rao, Country Manager, India, spoke about the exciting opportunities that abound in India. Excerpts of the interview

PHOTOGRAPH: ARINC

SP's Aviation (SP's): ARINC is into aerospace/defence, airports, airlines and security business. Could you outline your presence in India?

Jim Martin (Martin): ARINC has been in the business of radio communications for the military, airline and the commercial aviation industry for a long time. It is now a \$1.1 billion (₹4,950 crore) company and a little over 50 per cent of the revenues come from the US military. We have been providing engineering services mostly for the US Air Force and the US Navy, related to avionics, guidance systems, GPS type technologies, etc. We participate in different countries through the foreign military sales (FMS) route.

SP's: What then is your focus in India?

Martin: We are focused on the aviation business including aircraft communications and airport systems. We have 80 per cent market share in America and globally we are about 70 per cent. In Asia, we have over 200 ground stations and we are approaching 1,000 stations around the world. There are four ground stations in India and within 18 months we will scale it up to 20. These stations will help us stage future solutions including the electronic flight path (EFP) which will be the next best thing. This technology not only benefits the crew while flying but also gives a new experience to the passengers who can use wireless technologies in the skies— it could be use of an iPad or a mobile phone.

For the business aviation segment, we have introduced ArincDirect in India and the product offers flight planning, international trip handling, fuel brokerage, weather services, personalised concierge for VIP travel, etc

Guruprasad Rao (Rao): We have signed ArincDirect contracts with Religare, Taj Air, Jindal, Grasim, Bharat Forge, Anil Ambani group, etc.

SP's: Could you tell us about the deployment of self-service check-in kiosks in India?

Rao: We have provided self-use kiosks at T1D and T3 at Indira Gandhi International Airport. We have deployed eight and 14 kiosks in the domestic and international terminals respectively. We (DIAL and ARINC) are talking to the airport operations club over here to figure out how many kiosks are needed.

Martin: Whether you are a mainline airline or a low cost, the airport management is always looking for optimal space and manpower utilisation. By putting up common use kiosks, we are speeding up the passenger facilitation process and as the facilities are commonly shared, the total cost of ownership is low for the airlines.

SP's: What are the solutions ARINC is pitching for in India?

Rao: The solutions include common use self-service, flight information display systems, resource management systems, baglink, etc. We are extremely bullish and committed to the Indian market.

Martin: At present, the investment in India is in excess of a million dollars and investments will increase in the region. In my personal estimation the business potential could be about \$500 million (₹2,250 crore) globally and India and China may account for half that opportunity in the next couple of years. For ARINC, Asia accounts for about 20 per cent of the overall business and this is going to go up. SP



Operation

1

Unified Protector



PHOTOGRAPHS: USAF, AVIANO USAF, US NAVY & NATO

1. WHITEMAN AIR FORCE BASE MO. 509TH AIRCRAFT MAINTENANCE SQUADRON, MAINTAINERS AND CREW CHIEFS, PREPARE B-2 STEALTH BOMBERS DURING OPERATION ODYSSEY DAWN. THE OPERATION IS NOW CALLED OPERATION UNIFIED PROTECTOR AFTER NATO STEPPED IN.

2. A TECHNICIAN OF 28TH AIRCRAFT MAINTENANCE SQUADRON WEAPON SYSTEMS STEADIES A GBU-31 JOINT DIRECT ATTACK MUNITION WHILE PREPARING TO LOAD IT ON A B-1B LANCER AT ELLSWORTH AIR FORCE BASE.

3. AIRMEN FROM THE 34TH BOMB SQUADRON WORK TO DE-ICE A B-1 IN PREPARATION FOR OPERATION. THIS MISSION MARKED THE FIRST TIME THE B-1 FLEET HAS LAUNCHED COMBAT SORTIES FROM THE CONTINENTAL US TO STRIKE TARGETS OVERSEAS.

4. AIRMEN LOAD PALLETS OF CARGO INTO A C-130J SUPER HERCULES IN SPANGDAHLEM AIR BASE, GERMANY.

5. US AIR FORCE F-16 FIGHTING FALCON FLIGHT CREW MEMBERS PERFORM POST-FLIGHT CHECKS ON AVIANO AIR FORCE BASE.

6. LOADMASTERS PREPARE TO UNLOAD AN R11 REFUELER TRUCK FROM A C-17 GLOBEMASTER III AT AVIANO AIR BASE, ITALY.

2



IN ACTION: A CREW CHIEF FROM THE 52ND AIRCRAFT MAINTENANCE SQUADRON MARSHALS AN F-16 FIGHTING FALCON OUT OF A HARDENED AIRCRAFT SHELTER; (BELOW FROM LEFT) THE ARLEIGH BURKE-CLASS GUIDED-MISSILE DESTROYER USS BARRY (DDG 52) LAUNCHES A TOMAHAWK CRUISE MISSILE; A QATAR EMIRI AIR FORCE DASSAULT MIRAGE 2000-5 FIGHTER JET FLIES ITS FIRST MISSION; CF-188 HORNET FIGHTER JET TAKES OFF TOWARD THE MEDITERRANEAN SEA FROM TRAPANI, ITALY



IN SUPPORT: A US AIR FORCE C-17 GLOBEMASTER III FROM MCCORD AIR FORCE BASE, WASHINGTON, LANDS AT AVIANO AIR BASE, ITALY



Unmatched Capability

Lockheed Martin rolls out first special operations MC-130J Combat Shadow II



LOCKHEED MARTIN HAS ROLLED out the first aircraft in a new fleet of MC-130J Combat Shadow II for the US Air Force's Special Operations Command (AFSOC). To mark the occasion a ceremony was held at Marietta, Georgia.

Speaking on the occasion, Lt. General Donald C. Wurster, Commander, Air Force Special Operations Command, said, "The MC-130J is one of the most versatile tactical airlifters in the world. Its multi-mission capabilities will increase the combat performance of special operations forces worldwide. The MC-130J's advanced sensors, expanded avionics and universal aerial refuelling capability will enable the highly skilled Airmen of AFSOC to operate under difficult conditions with unmatched speed and capability."

Lockheed Martin is contracted to build 15 MC-130Js to begin replacing the current aging fleet. The US Air Force is authorised to acquire up to 20 MC-130Js against an approved requirement of 37.

"As the most flexible airlifter in the world, the new Combat Shadow configuration demonstrates the unmatched platform capability of the Super Hercules," said Lorraine Martin, Vice President, C-130 programme, Lockheed Martin. "As recent events around the world have yet again shown us, the C-130 is the world's first responder. The C-130J is performing today and will be ready for whatever the future holds," he added.

The new aircraft is based on a KC-130J tanker baseline and will have the enhanced service life wing, enhanced cargo handling system, a universal aerial refuelling receptacle slipway installation (boom refuelling receptacle), more powerful electrical generators, an electro-optical/infrared sensor, a combat systems operator station on the flight deck and provisions for the large aircraft infrared countermeasures system. In-line production of this configuration reduces cost and risk, and meets the required 2012 initial operational capability. **SP**

BESIDES THE FAMOUS WRIGHT Brothers, there were many other enthusiastic aircraft designers whose immense contribution to the advancement of early aviation should not be forgotten. One of them was a Romanian inventor called Traian Vuia who designed, built and flew his own machines. This aviation pioneer's first flight at Montesson, France, had at least one major improvement over the Wright feat—it was the first time an aircraft was able to take off from a flat surface using an onboard engine without outside assistance, such as an incline, rails, or catapult.

Vuia was born on August 17, 1872, in the village of Surducul Mic, in the Austro-Hungarian Empire. The village was later renamed Traian Vuia after its most famous son, and lies in present-day Romania. Vuia became a French citizen in 1918 and only returned to Romania months before his death, due to heart failure, on September 3, 1950.

Around 1900, Vuia began to take a keen interest in the problem of powered flight. He tried to build an aircraft in Romania, but then decided to go to France in an effort to secure financial backing. On July 1, 1902, he arrived in Paris, which was then the centre of the aeronautical world. He wished to interest balloon enthusiasts in his pet project but met with considerable scepticism. They were convinced that a heavier-than-air machine could not fly. After all, the whole basis of balloon flight was Archimedes' principle of buoyancy. Next he presented his plans at the Académie des Sciences in Paris on February 16, 1903. His paper contained a description of an "aeroplane-automobile"—a lightweight monoplane, designed to take off from a normal road surface, fly cross country, and be easily piloted. The device had four wheels; it was powered by a single propeller in front; its climb and descent were controlled by changing the inclination of the wings; and a rudder, at the rear, was intended to help in horizontal control in the air. The academicians listened politely but then

got rid of him with the comment, "The problem of flight with a machine which weighs more than air cannot be solved and it is only a dream."

Not one to give up easily, Vuia decided to build the device himself. By December 1905, he completed construction of his first aircraft, the Vuia 1. It was a high-wing monoplane and has been called the first full-size conven-



TRAIAN VUIA
(1872 - 1950)

This aviation pioneer's first flight at Montesson, France, had at least one major improvement over the Wright feat—it was the first time an aircraft was able to take off from a flat surface using an onboard engine without outside assistance

tionally shaped monoplane in history. It was powered by a 25 hp carbonic-acid gas engine that could run for about three minutes. The liquid carbon dioxide fuel was vapourised in a Serpollet boiler. The weight of the aircraft was just 195 kg. Fortunately, Vuia weighed just 56 kg. So the engine had to lift only

251 kg into the air. Many well-known aviation personalities of the day (all biplane enthusiasts) were sceptical of his monoplane design. Vuia maintained that he was inspired by nature saying, "I have never seen a bird with more than two wings." The experts were also worried because Vuia's machine had only one propeller and its torque would make stability difficult to maintain.

However, he was confident that his large rudder would effectively overcome such problems.

At first Vuia used his machine only as a car, without the wings mounted, so as to gain experience operating it. On March 18, 1906, he made his first flight attempt. After accelerating about 50 m, the plane gently left the ground and flew about one metre high for about 12 m distance. Then the engine suddenly quit and the machine came down abruptly. A wing and the propeller were damaged but Vuia was unharmed. He built some more models, refining his design and carried out almost a dozen flights of a few metres distance. His final flight was on July 5, 1907, where he flew 20 m and crashed.

Having run out of funds, Vuia never attained further prominence in aeronautics, and made no further flights. Between 1918 and 1921, however, he built two experimental helicopters, contributing to the development of vertical take-off. This was the special tribute in *Flight* magazine, of March 30, 1956, to mark the 50th anniversary of his first flight, "Vuia has been described by those who knew him as a very modest man. Indeed, he never made any other claims for his own efforts than that they had contributed to the firm establishment in 1906-07 of powered flight as a practical proposition. His inventiveness has been shown, and another legacy is the design for a steam generator the possible use of which in the production of power is so promising that it is today under active testing in Romania. Vuia is a man who deserves the description of a very worthy pioneer, as much for his vision as for his part in the earliest development of the aeroplane." ^{SP}

—Group Captain (Retd)
Joseph Noronha, Goa

MILITARY

Asia-Pacific

IAF IL-76 brings home 181 Indians from Libya

An IAF IL-76 carrying 181 Indians from Alexandria in Egypt arrived at the IGI airport in New Delhi on March 10. The passengers were among those evacuated from Libya and brought to Alexandria. Chants of *Bharat Mata ki Jai* and Indian Air Force ki Jai were often repeated in the aircraft during the six-hour non-stop flight, informed the crew of the IL-76, upon arrival. Similar scenes were witnessed at the arrival lounge at the T2 terminal, where special arrangements were made for their reception.

Project Crossbow enhances capabilities

A collaborative US Air Force and UK Royal Air Force programme is making it easier for the two services to share information collected via intelligence, surveillance and reconnaissance (ISR) systems. The programme, dubbed Project Crossbow and modeled on the USAF's distributed common ground system was recently fielded in the UK for direct support of coalition war fighters in Afghanistan. The DCGS is a system of globally-networked ISR capabilities, produces intelligence information collected by platforms like the U-2, RQ-4



AIR CHIEF MARSHAL P.V. NAIK FELICITATED INDIAN CRICKET TEAM SKIPPER M.S. DHONI AND PRESENTED A SILVER SALVER ON BEHALF OF THE IAF AT AIR HOUSE IN NEW DELHI ON APRIL 4, 2011.

Global Hawk, MQ-9 Reaper and MQ-1 Predator.

HCL bags over ₹300 crore order from IAF

HCL Infosystems, India's premier hardware, services and ICT system integration company announced on March 17 the awarding of over ₹300 crore (approx \$66 million), from Indian Air Force to deploy the wideband CDMA-based portable wireless network covering many Air Force stations across India. This WCDMA network

will be integrated with the Air Force Network (AFNET).

Americas

Northrop Grumman submits proposal for NATO AGS

Northrop Grumman Corporation has submitted its final proposal for the NATO alliance ground surveillance (AGS) core capability—a trans-Atlantic cooperation that will meet the security challenges of the 21st century. Based on the Block 40 configuration of the RQ-4 Global Hawk high-altitude, long-endurance unmanned aircraft, the NATO AGS system will provide persistent intelligence, surveillance and reconnaissance to ground, maritime and air commanders.

CIVIL AVIATION

Asia-Pacific

Maharashtra Government to acquire Sikorsky S-76

On March 6 Sikorsky Aircraft Corporation announced the signing of a contract to sell an S-76C++ helicopter to the Maharashtra Government for VIP transport. The aircraft will join a growing fleet of Sikorsky helicopters operating in India or on order by Indian customers, ----->

QuickRoundUp

AGUSTAWESTLAND

- AgustaWestland has announced that the Qatar Armed Forces have signed a contract for three AW139 medium twin helicopters plus a comprehensive logistics support package. These aircraft will be operated by the Qatar Emiri Air Force to perform emergency medical service missions.

AIRBUS MILITARY

- The Airbus Military A400M has completed a challenging series of tests to determine the lowest speed at which it can take-off—known as minimum unstuck speed or Vmu. During the tests, performed at Istres in France, the aircraft's nose was raised until a special 'bumper' fitted to the rear fuselage struck the ground at the maximum pitch-up angle of 13 degrees.

AIRSCAN

- AirScan has been awarded a \$50 million firm-fixed-price indefinite-delivery/indefinite-quantity contract. The award will provide for procurement of real-time over-target full-motion video from commercial manned airborne surveillance platforms for Iraq-wide air surveillance support and estimated date of completion is December 31, 2011.

BAE SYSTEMS

- BAE Systems has completed work to upgrade the navigation and weapons system for the South African Air Force's fleet of Hawk jet trainers. The software and hardware upgrade, jointly developed with long-term South African partner Advanced Technologies and Engineering, enables the Hawk Mk120 to share simulated radar data across multiple platforms.

BOEING

- Boeing has received a \$15.5 million (₹70 crore) support services contract (SSC) from the Commonwealth of Australia for the modernised high frequency communications system (MHFCS). Under the SSC, Boeing will sustain and upgrade the operational capability of MHFCS, which the company also developed. The system is used to securely exchange information within the Australian Defence Force for the command and control of deployed forces.



ON MARCH 9, BOEING BEGAN FINAL ASSEMBLY OF THE FIRST US NAVY P-8A POSEIDON PRODUCTION AIRCRAFT IN THE COMPANY'S RENTON FACTORY. THE P-8A IS THE FIRST OF SIX LOW-RATE INITIAL PRODUCTION AIRCRAFT THAT BOEING IS BUILDING AS PART OF A \$1.6 BILLION CONTRACT AWARDED BY THE NAVY IN JANUARY. THE NAVY PLANS TO PURCHASE 117 OF THE BOEING 737-BASED P-8A ANTI-SUBMARINE WARFARE, ANTI-SURFACE WARFARE, AND INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE AIRCRAFT TO REPLACE ITS P-3 FLEET.

APPOINTMENTS

BOEING

Boeing has named Marc Allen President of Boeing China. He will be based in Beijing and report to Shep Hill, President, Boeing International and Senior Vice President Business Development and Strategy. The company has also announced that Dr Vivek Lall, Vice President, Boeing Defense, Space & Security, India is leaving the company to "venture something on his own".

NORTHROP GRUMMAN

David Ryan has been named Vice President and General Manager of its Intelligence Systems Division, one of five divisions within the company's information systems sector.

Kathy Warden has been named Vice President and General Manager of its cyber intelligence division, one of five divisions within the company's information systems sector.

Jeffrey D. Grant has been named Vice President and General Manager of the space systems division of the Aerospace Systems sector.

ETIHAD

Etihad Airways has announced the appointment of Kevin Knight as the airline's Chief Strategy and Planning Officer. He will also lead Etihad Crystal Cargo.

-----► including other S-76 family aircraft and light-weight S-300 and S-330SP helicopters.

Senior lady pilot of Jet Airways honoured

As part of the centenary celebrations of civil aviation in India, the Ministry of Civil Aviation honoured Captain Sonica Chhabra—a senior pilot with Jet Airways, for being the first Indian woman instructor and examiner on Boeing 737 aircraft.

Europe

Embraer and Alitalia to deliver 20 jets

Embraer and Alitalia have finalised an agreement for the delivery of 15 Embraer 175 and 5 Embraer 190 jets through a lease structure to be arranged by third parties. The delivery of the new E-Jets is scheduled to begin in the third quarter 2011.

INDUSTRY

Americas

TiaLinx launches mini-UAV Phoenix40-A

TiaLinx, a developer of remotely controlled mini-unmanned aerial and ground vehicles integrated with mm-wave miniaturised radars,

has announced the launch of the Phoenix40-A. The mini-UAV system is capable of performing dual functions as a motion detector as well as probing for breathing of a hiding person in a compound.

Sikorsky X2 Technology Demonstrator



The Sikorsky Aircraft Corporation X2 Technology demonstrator team has been named the winner of the 2010 Robert J. Collier Trophy, awarded annually to recognise the greatest achievements in aeronautics or astronautics in America. It is the 100th Collier Trophy to be awarded.

NetJets orders 20 Bombardier Global business jets



Bombardier Aerospace has announced the largest

business aircraft sale in the company's history with a firm order from NetJets Inc. for 50 Global business jets with options for an additional 70 Global aircraft. The transaction for the firm order is valued at approximately \$2.8 billion (₹12,600 crore) based on list prices. If all the options are exercised, the total value of the order will surpass \$6.7 billion (₹30,150 crore).

Europe

BAE and Dassault Aviation sign MoU to develop UAS

BAE Systems and Dassault Aviation have signed a memorandum of understanding (MoU) to collaborate exclusively on the preparation and submission of a joint proposal to the UK and French Ministries of Defence for the design, development, production and support of a medium altitude long endurance (MALE) unmanned aircraft system (UAS). The MoU will enable the two companies to establish a framework under which they may jointly pursue this long term business opportunity.

SPACE

Americas

P&W Rocketdyne boosts satellite into orbit

On March 11, Pratt & Whitney Rocketdyne successfully helped boost a satellite for the US Government from Cape Canaveral Air Force station, Florida. The satellite was onboard a United Launch Alliance Delta IV rocket, powered by Pratt & Whitney Rocketdyne's RS-68 booster engine and an RL10B-2 upper-stage engine.

Pratt & Whitney Rocketdyne also successfully completed a series of hot-fire tests of the Bantam demonstration engine for an innovative "pusher" launch abort system on the Boeing Company's CST-100 spacecraft.

2nd Boeing-built orbital test vehicle X-37B begins flight

Boeing has announced the successful launch of the second Boeing-built X-37B Orbital Test Vehicle -----►

QuickRoundUp

BOEING AND EL AL

- Boeing and EL AL have announced that the Israeli national carrier has completed a contract to order four Next-Generation 737-900ERs (extended range) and reserve options for future aircraft. The four-airplane order is valued at approximately \$343.2 million (₹1,544 crore) at current list prices.

BOMBARDIER

- Bombardier Aerospace has announced that fast-growing Porter Airlines of Toronto has placed a firm order for two Q400 NextGen turboprop airliners. Based on the list price for the Q400 NextGen aircraft, the order is valued at approximately \$61 million (₹275 crore).

ESTERLINE CORPORATION

- Esterline Corporation, a leading specialty manufacturer serving aerospace/defence markets, has announced that its Los Angeles-based Engineered Materials operation has been selected by Lockheed Martin Aeronautics Company to supply sealing and low observable products for the multirole F-35 Lightning II.

EMBRAER

- Embraer and ABC Financial Leasing Corporation Ltd, a wholly owned subsidiary of Agricultural Bank of China, have signed a MoU on aircraft financing and leasing at a ceremony held at Embraer headquarters in São José dos Campos, São Paulo, Brazil. The agreement is designed to create new financing opportunities for Embraer to sell aircraft in China and other markets, with a focus on the development of China's regional, executive, and agricultural aviation.

GENERAL ELECTRIC

- General Electric Aircraft Engines, Lynn, Massachusetts, has been awarded a \$246.5 million (₹1,109 crore) modification to a previously awarded firm-fixed-price contract to exercise an option for 68 Lot 15 F414-GE-400 engines and device kits for the F/A-18E/F aircraft. Work is expected to be completed in April 2013.

RAYTHEON

- The Missile Defense Agency has awarded a cost-plus-incentive fee modi-

SHOW CALENDAR

12-14 April
MRO AMERICAS 2011
 Miami Beach Convention Center, Miami, FL, USA
www.aviationweek.com/events/current/mro/index.htm

13-15 April
SHANGHAI INTERNATIONAL BUSINESS AVIATION SHOW
 Shanghai Hongqiao International Airport Business Aviation Center, Shanghai
www.shanghaiairshow.com

17-20 April
INTERNATIONAL SYMPOSIUM ON AIR DEFENSE 2020+
 Air Defense Forces Institute, Jeddah, Saudi Arabia
www.isad2020.org.sa

19-21 April
CORPORATE AVIATION SAFETY SEMINAR
 Sheraton San Diego Hotel and Marina, San Diego, CA, USA
www.flightsafety.org

11-13 May
INTERNATIONAL MILITARY HELICOPTER 2011
 Olympia Conference Centre, London, England, UK
www.militaryhelicopterevent.com

17-19 May
EBACE 2011
 PalExpo, Geneva, Switzerland
www.ebace.aero

19-21 May
HELI-RUSSIA
 Crocus Expo, Moscow, Russia
www.helirusia.ru

24-26 May
AIR WEAPONS INTEGRATION 2011
 Le Meridien Piccadilly, London, UK
www.airweaponsintegration.com

6-8 June
ARMY AVIATION EXHIBITION & CONFERENCE
 Redstone FMWR Community Activity Center (CAC), Redstone Arsenal, AL USA
www.armyaviationevent.com

20-26 June
PARIS AIR SHOW 2011
 Le Bourget Exhibition Centre, Le Bourget, Paris, France
www.paris-air-show.com/en



INTERGLOBE REBRANDED AS THE ESTD

InterGlobe General Aviation, a subsidiary of InterGlobe Enterprises, has undergone a change in its brand identity and has relaunched as InterGlobe Established Products Private Limited.

Branded as "The ESTD", the company has expanded its portfolio from a business aviation provider to a new one-stop shop for luxury lifestyle solutions. The rebranded outfit will offer an exclusive selection of the world's most sought after luxury products—from executive jets to super cars, luxurious yachts to high-end motorcycles and much more will be on offer.

Nigel Harwood, President and CEO, The ESTD said, "The luxury market in India is estimated to grow annually by 25 per cent and with the emergence of young HNI who seek thrill and adventure never seen in India before, it creates an interesting and exciting market opportunity." The ESTD unveiled ultra luxury Koenigsegg and Gumpert cars; Vyrus and Hollisters motorcycles and ISA and Arcadia yachts. Daniel Keady, Vice President (Sales) Asia-Pacific & India, Hawker Beechcraft said SP's Aviation that the company would bring newer luxury products into India and also China, both markets growing at a fast pace. "We have a dedicated demo fleet of Hawker 400 900 XP and KingAir 3501 for the Indian market and that makes known our intent of growing the segment here." •

-----➔ (OTV) for the US Air Force Rapid Capabilities Office (RCO). The OTV was launched on an Atlas V rocket into a low-Earth orbit from Cape Canaveral Launch Complex 41. The first OTV was launched in April 2010 and orbited for approximately eight months. In December, it successfully de-orbited and landed at Vandenberg Air Force Base, California, where it continues to undergo post-flight evaluation.

Lockheed Martin strides in human space exploration



Forging a new path forward to ensure safe, affordable and sustainable human exploration beyond low Earth orbit, Lockheed Martin unveiled on March 21 the first Orion spacecraft and a spacious state-of-the-art Space Operations Simulation Center

(SOSC). These two major projects, located at Lockheed Martin's Waterton Facility near Denver, Colorado, showcase the NASA-industry teams' progress for human space flight, the Orion Project and NASA's multi-purpose crew vehicle.

STSS track short-range missile

The US Missile Defense Agency's (MDA) Space Tracking and Surveillance System (STSS) demonstration satellites kept an unblinking watch on a boosting missile during an airborne laser test bed (ALTB) exercise off the Central California coast. The STSS satellites were built by Northrop Grumman Corporation and Raytheon Company. The STSS demonstration satellites faced a different set of challenges than previously seen because of quick timelines associated with the target, according to Gabe Watson, Vice President of missile defence and missile warning programmes for Northrop Grumman's Aerospace Systems sector. •

QuickRoundUp

fication to Raytheon Missile Systems Corporation, for \$312.6 million (₹1,407 crore). The modification is to manufacture 24 Standard Missile-3 Block 1B missiles. The period of performance is March 2011 through June 2013.

ROLLS-ROYCE

• Rolls-Royce has won a \$200 million (₹900 crore) order from Turkish Airlines for Trent 700 engines to power three Airbus A330 freighter aircraft. The contract includes a TotalCare long-term service agreement. The aircraft, which will be delivered in 2012-14, are in addition to two Rolls-Royce powered A330 freighters previously ordered, one of which is now in service.

SAAB

• Saab has received an order worth SEK 200 million (about \$31.6 million) from FMV (the Swedish Defence Material Administration) for system maintenance of Gripen. The contract represents a part of continual system maintenance and updating tasks for the Gripen C/D and complies with the Swedish Armed Forces' long-term planning for the Gripen.

SABRELINER

• Sabreliner Corporation has been awarded a \$15 million (₹66 crore) firm-fixed-price contract. The award will provide for the modification of two VIP UH-60M Black Hawk helicopters for the Royal Jordanian Air Force.

SANSWIRE CORPORATION

• Sanswire Corporation, a developer of lighter-than-air unmanned aerial vehicles (UAVs) and related technologies has announced recently that it has unveiled the company's new UAV, Argus One. It is a lighter-than-air UAV designed to fly over areas of interest for extended durations carrying various payloads designed to allow for ISR, communications and other applications.

TURKEY

• Turkey has announced that it is putting the planned purchase of 100 F-35 fighter jets from the US on hold because the Pentagon refuses to share the source code used in the software designed for the aircraft as well as the codes that might be used externally to activate the planes.

NOT ENOUGH!



While it is true that no war can be won without the use of air power, the experience in Libya will only reinforce the lesson that air power alone without boots on the ground is unlikely to win a war, **at least not in the conventional spectrum**

IN THE WAKE OF the rebellion in Libya against the regime of Colonel Gaddafi, under authorisation by the UN Security Council for the imposition of a “no fly zone” over the country, France went into action almost immediately ahead of the other members of the hurriedly assembled coalition. British and Canadian jets followed and the US forces initially pounded targets firing over 100 Tomahawk cruise missiles followed up by offensive missions by combat jets. The immediate aim of the aerial offensive was to degrade the capability of the Libyan Government to prevent the coalition from implementing the UN Resolution 1973. While the US, UK and France had pushed for the resolution and were supported in this effort by the Arab League, India, China, Russia, Brazil and Germany abstained. Somewhat surprisingly, neither China nor Russia opted to exercise veto powers, but along with India have subsequently been highly critical of the air strikes over Libya.

The stated objective of the aerial campaign was to protect the lives of innocent civilians from the onslaught by the Libyan Government to crush the rebellion. Aerial action under the UN resolution championed by the US and some allies is understood to have been authorised to safeguard human rights and democratic values; but from the geopolitics of the region, it is abundantly clear that the real battle is for control of oil post-Gaddafi regime.

The UN Resolution clearly stated that no “foreign occupation force” would be permitted on the Libyan soil. As such the US-led coalition has been left with air power as the primary means and as interpreted by them, was authorised to adopt measures such as air or missile strike against airfields, aircraft on the ground, air defence network as also the command, control and communication systems of the Libyan Government. Such actions were considered necessary to prevent the Libyan Air Force aircraft from attacking the civilian population consisting of a mix of military and civilian personnel. Setting aside the legal or ethical aspects of the UN resolution or the debate over the issue of interference into the internal affairs of a nation, it would be pertinent to examine whether air power alone would help achieve the stated as well as unstated objectives in Libya.

It is the forces on the ground that ultimately captures and holds ground. For the successful conduct of operations, there-

fore, it is necessary that there be proper coordination with the supporting air elements. For better synergy, it is also necessary that the two elements train together. The problem today is that the aim of the mission has not been clearly defined by the coalition. Also, there is lack of cohesion and leadership amongst the rebels that the western powers have been able to identify. As some of the militarily powerful nations of the world are involved, the available air power is perhaps the most potent. However, the ground elements in Libya battling the Gaddafi regime are neither organised nor well equipped and are driven primarily by the rebellious spirit and enthusiasm. Besides, there are signs already of a stalemate on the ground and cracks in the coalition over the issue of leadership role have begun to appear. With the passage of time, opposition to the campaign against the Gaddafi regime may begin to grow especially in the Islamic world. One should not be surprised therefore if the rebels and the coalition forces combine are unable to deliver a knockout blow to the Gaddafi regime quickly enough.

The rebellion in Libya in essence has the character of a tribal war and aggravated by external influences, the interne-cine conflict could go on indefinitely, progressively degenerating into an insurgency and urban guerrilla warfare. Perhaps another quagmire like Afghanistan from where a decent exit may be difficult. In a situation wherein the dividing line between the combatant and non-combatants would get blurred, precision targeting from the air of the ‘enemy’ would be well nigh impossible making it difficult for coalition forces to prevent collateral damage even with the use of precision weapons. The end result will be that aerial action will hurt the sections of the population the UN Resolution seeks to protect thus alienating the coalition forces. Besides, history of the employment of air power shows that it is not easy to break the will of a nation or its people by aerial bombardment alone. The allies failed to subdue the Nazi regime during World War II through massive strategic bombing. Also, despite the US overwhelming superiority in air power and the most scientifically directed air campaign, the war in Vietnam could not be won.

While it is true that no war can be won without the use of air power, the experience in Libya will only reinforce the lesson that air power alone without boots on the ground is unlikely to win a war, at least not in the conventional spectrum. ^{SP}

— **Air Marshal (Retd) B.K. Pandey**

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