April 2013 Serving the Worldwide Helicopter Industry rotorandwing.com

rotor&wing

Special Report:
Training with India's
HATSOFF

Heli-Expo 2013 Wrap

Military Insider: FVL

Safety & Training

Access Intelligence

Flying THROUGH TH

Photo courtesy of CAE

By Andrew Drwiega,
International Bureau Chief/Consultant

HATSOFF, the joint venture Indian simulation center, is gearing up for a spectacular growth in the demand for synthetic training as the national market expands. Andrew Drwiega visited the Bangaluru-based complex during Aero India 2013.

CAE Bell 412 simulator at HATSOFF.

With helicopter numbers expected to multiply rapidly in India over the next few years, both in the civil sector and the military, there is a corresponding rise for synthetic training, something that is just now coming to the fore.

A joint venture organization established in January 2008 between Hindustan Aeronautics Ltd. (HAL) and CAE, the Canadian simulation and integrated training provider, now seems ideally placed to take advantage of this growth.

The quirky, acronym named HATSOFF is located in an area of the city of Bangaluru in southern India that is dominated by the state-run aerospace giant HAL. HATSOFF, the Helicopter Academy to Train by Simulation of Flying to give it its full name, was established to offer an India-based home synthetic training center for pilots of three of the most popular types of aircraft flown in India: the Bell 412, Eurocopter's Dauphin and, of course, HAL's Dhruv.

Two of the key people behind the center are CEO Maj. Gen. (Ret.) Ajit Hari Gadre and chief of training Capt. Neti Krishna. Gadre is a 37-year veteran of the Indian Army who retired as Additional Director General of Army Aviation, a post that came with the responsibility for managing the operations, training, maintenance and logistics for Indian Army Aviation. He has more than 5,000 hours as a helicopter pilot and is a qualified flying instructor.

Krishna is an ex-Indian Air Force (IAF) pilot with more than 6,000 hours and experience spread between 17 helicopter types. He participated in the design and the development of the Dhruv helicopter and is an examiner on the aircraft type.

Once the training center concept was agreed, building began in 2009 with the three cockpit simulators that are in operation today being delivered in quick succession: the Bell 412 in June 2010, the Dhruv in May 2011, and lastly the Dauphin in December 2011. The expectation is for the military Dhruv cockpit to be delivered around March 2014.

HATSOFF provides full mission simulation certified to Level D (the only facility in India that currently allows this). It is certified both by EASA (Level 2) and the Indian Directorate General of Civil Aviation (DGCA), Level 3.

Although synthetic training is growing in India, the number of aircraft of each type in India did not yet warrant a dedicated training device. Krishna's estimate is that there are 28 Bell 412s; 42 Eurocopter Dauphin N3s; and 12 civil Dhruvs (with 60 conventional military Dhruvs). Hence the reason that HATSOFF has one roll-on, roll-off (RORO) "mothership" docking station fed by three cockpit simulators.

When not in the docking station, each cockpit can be used as a fixed training device, allowing students associated accreditation. The process of changing cockpits takes around three hours. "In a month," says Krishna, "we operate the following training pattern: Weeks 1 and 2, Dhruv; Week 3, Bell 412; Week 4, Dauphin. This pattern

Photo courtesy of CAE

Front of the HATSOFF training complex in India.

Photo by Andrew Drwiega

HATSOFF management Maj. Gen. (Ret.) Ajit Hari Garde (center) and chief training officer Capt. Neti Krishna (right) in front of CAE's Roll-On Roll-Off docking station simulator. They are accompanied by visiting Indian Air Force Commodore Vridhachalem (left).

gives visibility to our customers so that they can plan their training cycles." He estimates that there are currently around 400 pilots for Bell 412s in India, 600 for Dauphin N3s and 100 (civil) pilots for Dhruvs (although the military numbers will be increasing substantially).

"The military already trains with us on the civil Dhruv but the scope of their training will increase once the military simulator is delivered," stated Capt. Krishna. "One major difference is that the light combat helicopter has the flight crew seated front and back whereas the standard Dhruv is side-by-side, therefore there will need to be some integration modifications before the Indian Air Force (IAF) will be able to train here."

The total training package on offer includes type rating/conversion, recurrent and continuity training, together with crewman operational role training including under slung load carrying, winching and hill operations.

"We have every civil operator in the country training with us," said Krishna. "As far as services, they have the Army and IAF while the Navy are still deciding what training requirement they expect in the future. The Bell and Dauphin cockpits are almost exclusively used by civil operators."

According to Gadre, the DGCA mandates that every pilot needs to carry out 10 hours of simulator training every two years. Estimating the amount of business is therefore relatively simple. "We calculate the number of helicopters, multiply by three (the number of pilots per cockpit), then times that by two years. We also undertake crewman training for operational rolls including under slung loads and winching."

Said Gadre: "India's mountains can reach up very high (over 20,000 feet near the Siachen Glacier)—so when pilots change rolls and have to fly into the hills, particularly an offshore pilot, they need to be retrained."

The military can benefit from a cockpit that is partially NVG compatible, so helipad landings and takeoffs are practiced together with nap-of-the earth flying. "We will again be able to do more when the military training begins," added Krishna. "The simulator will become a valuable tool for them. The armed forces using simulators for helicopter pilot training is a concept that has come only in the last three or four years. Prior to this everything had to be learned in the aircraft. We could never be allowed to make a mistake, which of course you can do in a simulator." The military version will also include weapons firing—which the military will be keen to practice and cut down on expensive real-firing.

A key factor that adds realism to the training is CAE's Medallion-6000 image generator, which is high-resolution sharp, together with its liquid crystal on silicon (LCoS) projectors. But the heart of the system is the huge database, the largest in the world according to Krishna. "We can show the marsh area of Gujarat, the desert of Rajasthan, the plains of Punjab—all of course very sensitive areas," explained Krishna. Kashmir is also included from the low-altitude hills right up to the Siachen Glacier where the Army still regularly flies. It is basically a database of the border country with Pakistan, which is why it is so appealing to the military. There is also a database for the Bangaluru area for local pilots.

Annual Training Hours From Start in June 2010

Fiscal Year	Hours
2010-11	211
2011-12	570
2012-13	1,900
(1,300 in early February 13)	
2013-14	3,000 (predicted)
2014-15	4,000 (predicted)

In terms of landing areas, there are three high-resolution airfields and nine helipads which begin at sea level and progress up to 20,000 feet, differing in location such as confined area, table top, desert, on a mountain spur—all offering different challenges for pilots to experience.

Weather is also simulated: updraft, downdraft, wind shear and turbulence. There are also around seven types of oil rig, starting with a simple landing area to encourage students to increase their confidence before stepping up in the complexity of the rig. "We also have rooftop landing pads which are a relative recent addition to the challenge for pilots in India," adds Krishna.

Each training flight can be recorded and played back on a four-screen LCD monitor in any one of the eight multi-media classrooms, although demand only requires four to be used at the moment. These are backed up by additional briefing rooms, meaning that there is plenty of additional capacity.

Residential pilots when not training have their own air conditioned room with a study area, together with their own dining hall, a small gym, entertainment room and even an outdoor area.

Future Growth

Gadre said that the first year of operation was modest as all their potential helicopter operator customers were contracted to other centers in foreign countries, from Dubai to the United States. "We invited them to come and see this facility and were impressed. We then began winning business when contracts came up for renewal."

The growth in business has been at a rate of around 100 percent for the last three years which was helped by the widening military contact, but the rate will normalize at around 40 percent for the next few years as the number of Indian customers using the facility hits a zenith for the number of pilots per type, flattening out as the simulator time available reaches saturation point.

The management team already has expansion plans built into their calculations, in that there is space for a new simulator docking station next to the current one. "We will start the planning process when we pass 70 percent of our max capacity, which is expected to be reached around 2015," said Gadre. He added that all of the crucial equipment is on UPS, connected to both the regular power supply and the center's own generator, and already has the capacity to support another simulator "mothership."

However, the real increase in demand will come when the Dhruv family of helicopters spread out throughout the Indian military and pilots then correspondingly need the training the center offers.

Krishna said that the management is aware of the dangers of the Indian helicopter market slowing due to financial restrictions: "We are conscious of the fact that this growth rate is due to an increase in demand, but unless the helicopter industry in India expands at the rate currently predicted—1,000 helicopters in the next five years—then we won't max out and we will have to attract pilots from the international market. We have already started looking to attract pilots from southeast Asia. We are competitive in terms of rates, and we are closer than the traditional training centers in Europe and America so our advantage is that India is a much cheaper place to train."

The target markets include Indonesia (operating Bell 412s), Malaysia (EC365s), Thailand and Japan. "We will cast our net wide," said Gadre. "It has been tough getting customers whose pilots wanted to travel further afield, but the cost element is one that is key and becoming more so. Pawan Hans, the national helicopter company, has saved around one third of their budget by coming to us. Many of their pilots at first did not imagine that such a facility would be available in India."

Preliminary discussions with helicopter OEMs have been held to examine their attitude to helicopter sales and subsequent training. While many OEMs are trying to expand their business portfolio to include training, Krishna says that it is not just the simulator that needs qualification, but the tuition also requires certification by the DGCA.

"We like to think we can be a logical partner as our infrastructure can incorporate any new cockpit," explained Krishna. "Once the numbers for a type—say Bell 429s and AW109s—start rising then we can fit another cockpit simulator at our facility." There does need to be a critical number of helicopters in country of each type for this to happen. Krishna added that should another facility be required anywhere else in India, then HATSOFF has already demonstrated its prowess in this field: "We have the expertise and could provide sound advice and maybe run even run it in a BOMT (build, operate, maintain and train) model."

Training involves a separate set of skills, he warned; it is not the same as running an aircraft company. "As we have already learned by experience and we are now confident that we can provide BOMT to any of the OEMs."


Photo by Andrew Drwiega

Ground school training at HATSOFF.