The Story of Dhruv

NAL's Foundation Day function, held on 24 July 2002 in the S R Valluri Auditorium, was an opportunity to pay a richly deserved tribute to HAL's Advanced Light Helicopter (ALH), now named Dhruv, and salute the hundreds of engineers and managers involved in the design and development of this wonderful Indian helicopter.

The function opened with a brief welcome address by NAL's new Director, Dr B R Pai. Dr Pai said that Dhruv's success was a "major landmark in Indian aeronautics". "All eyes are now on NAL and SARAS", Dr Pai remarked and expressed his complete confidence that SARAS too would take off very soon.

The sixteenth NAL Foundation Day Lecture featured two speakers: Mr K S Sudheendra, Adviser and Wg Cdr (Retd) C D Upadhyay, Chief Test Pilot, of HAL's Rotary Wing Research and Design Centre. Mr Sudheendra has been with the Dhruv programme "from inception to certification", while Wg Cdr Upadhyay, who has been decorated with the Vir Chakra, has test-flown the Dhruv for over 700 hours. There couldn't have been two more knowledgeable gentleman on the Dhruv! To no one's surprise therefore their lecture, titled "Technology and status of the Indian Dhruv and potential for R&D in rotor craft technology from the Dhruv platform", proved to be truly illuminating.

Mr Sudheendra delivered the opening part of the lecture in which he introduced HAL, the Dhruv helicopter's features and capability and showed pictures of some innovative test facilities created for Dhruv. It is not often realised that helicopters are very difficult flying vehicles to design; Mr Sudheendra spoke with great authority on the various design challenges faced by the helicopter design team, and how they were overcome.

Wg Cdr Upadhyay, in the first part of his lecture, provided the pilot's and the manager's perspective. Praising Dhruv's flying performance the pilot said that "the helicopter has the feel of a fixed wing aircraft". The Dhruv is agile, can fly high and low, and in both hot and cold conditions. Wg Cdr Upadhyay also listed the major milestones in the Dhruv programme: starting with a project report in September 1970, the switch-over to a two-engine craft in 1979, the MBB consultancy phase during the 1980's, the decision to go for skids instead of wheels in 1987, the first ("official") PT1 flight on 30 August 1992 and leading up to the delivery of eight Dhruv helicopters to the armed forces by 2002. It was a gripping narrative and, when the speaker described the many problems (e.g. burning smell during flight, vertical oscillations, FADEC and engine malfunctioning etc.) faced by Dhruv during its design and development, many NAL colleagues now working hard on the SARAS project nodded in empathy.

Mr Sudheendra returned briefly to discuss potential areas for future research on Dhruv (vertical oscillation, vibration noise, jerky yaw motion etc.) and Wg Cdr Upadhyay concluded the lecture with a running commentary accompanying video clips of Dhruv flying over difficult terrains (e.g. in Siachen) and in different flying roles.

After Dr Pai released the NAL Annual Report 2001-2002 (punctually at the Foundation Day function for the sixteenth consecutive year) the "fun part" of the Foundation Day function began with NAL colleagues receiving shields and awards for outstanding performance and children of NAL colleagues also receiving prizes for good performance in studies and sports. It must have been a particularly special moment for Mr C R Kannan of Materials Science Division when his family scored a hat-trick of awards. The function, arranged meticulously by the Technical Secretariat, ended with the vote of thanks by Dr R V Krishnan.

Srinivas Bhogle