

permitted to operate. The DGCA is also installing visual approach aids at 15 regional airports and simple approach lights at 32 airports. These upgrades are to be completed by 1995 at a cost of Rs. 1.05 billion (See Appendix F for the navigation aids currently in place at the major Indian airports).

As well as improving specific airport navigation systems, the Indian Government also plans to improve its overall navigation management network. Being strategically located at the confluence of the east and west corridors of aviation - the two main invisible air traffic paths - it is estimated that air traffic over India will grow by eight per cent every year until 2000. To accommodate this increase in air traffic, the Government of India has drawn up an ambitious Rs. 10 billion plan to comply with the Future Air Navigational System (FANS) recommended by the International Civil Aviation Organization (ICAO). FANS will be implemented in two stages in India, and completed before the 2010 deadline issued by ICAO.

The first stage of FANS is to introduce communications, navigation and surveillance facilities. Using the INSAT-2A satellite, an Aeronautical Fixed Telecommunication Network (AFTN) has been planned to connect 43 airports in the country and form part of a Remote Area Business Management Network (RABMN), whose hub will be located at Sikandarabad, near Delhi. The RABMN will provide dedicated data links, as well as a voice hot line, to each airport. India will soon be connected to INMARSAT through an earth station at Arvi, near Pune. Planes equipped with an Aircraft Earth Station (AES) will then be able to communicate to any point in the world through this link.

In the second stage of FANS, an Automatic Dependence Surveillance (ADS) system will be introduced by using the Russian-owned GLONASS and USA-owned GPS satellite systems. The Electronics Corporation of India Limited (ECIL) has already started to engineer an ADS system. The first phase is to develop the necessary hardware and software. The second phase, to be completed by 1995, is to develop a degree of basic competence in operating the ADS system. In early 1993, ECIL installed a prototype of the system at the Madras airport for trials. The final phase would see the addition of INMARSAT aero hardware at the Arvi earth station, which would be connected to the airports at Delhi, Bombay, Madras, Calcutta and Guwahati to provide complete ADS service over Indian air space (See Appendix E Long Term Plans for details on FANS).

#### Other Development Projects

Other development projects being planned by the NAA include:

- a) Construction of new airports at Langpui in Arunachal Pradesh and Tura in Meghalaya.
- b) Construction of new Terminal Complexes at Dimapur and Porbandar.
- c) Extension and modification of existing Terminal Buildings at Jodhpur and Agra.
- d) NAA is to start construction of a new terminal building and extension of the runway from 5,400 to 7,500 feet at Lilabari, as soon as the State Government transfers approximately 50 acres of land free of cost.
- e) Construction of a Civil Air Terminal at Bhubaneswar.
- f) Extension and strengthening of runways and associated pavements at Ranchi, Jabalpur and Salem.
- g) Development of an airport for B-737 and A-320 operations at Port Blair, Barapani and Tripura.
- h) Modernization of the Mangalore airport, including extension of the runway to 9,000 feet, has been delayed until the 9th Five Year Plan.
- i) Strengthening and widening of taxiways and aprons at Agra and Cochin.
- j) Upgrading of airports for B-737 operations at Tripura and Barapani.
- l) With financial assistance from the Tirupati Devasthanam Trust, a Rs. 120 million modernization project of the Tirupati airport will be started by October and completed by December 1994. The runway will be strengthened and extended from its present 4,500 feet to 6,000 feet initially to handle B-737 aircraft, then to 7,500 feet to handle A-320 aircraft. RITES has prepared a project report and tenders should be awarded by the end of September.