

Indian civil aviation: Where it needs to go

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With the opening up of great circle routes in Russian airspace, following the collapse of the Soviet Union, and the development of long-range aircraft such as the Airbus 340 Indian airports will get bypassed by airlines. We have to aggressively develop at least one International Airport (e.g. Delhi) as an attractive destination and as a major hub to smaller airports such as Kathmandu, Dhaka, Colombo, Male, etc.

Moreover, we need to develop our domestic airports, modernize and expand our air traffic control and encourage the growth of airlines within the country. We urgently need policies to bring a large quantum of low cost, long term capital investment into key areas of our route structure and install the latest technological developments progressively in these focus areas.

To modernize our systems we need to follow International Civil Aviation Organization norms in communications, navigation and surveillance. India has no option but to move in step with these global developments and ensure that new equipment is obtained and its staff (on the ground as well as in the air) is adequately trained.

Communications. Presently, we depend largely on voice communications linked to manual procedures. Future systems will be based on automatic digital communications with voice communications as a back up. Whereas current communications depend on VHF radio links and HF radio beams, these will be replaced by satellite-based systems handling digital communications. The HF radio beam will be replaced by Secondary Surveillance Radar (with S Band). This will result in error-free, instant communication of information between the aircraft and air traffic control.

Navigation. Present systems are built around VORs (VHF Omnidirectional Range) and Instrument Landing Systems (ILS). The VOR is a radio beacon that broadcasts at a given frequency. An aircraft can tune into and lock onto this beam,

the direction of which is displayed in the cockpit direction finder. On any given route, aircraft move from VOR to VOR by successively turning into the next VOR on their route. This system will be replaced by the Global Navigation Satellite System that enables location of an aircraft anywhere in the world with absolute accuracy.

In the ILS, a radio beam lays down the glide path for a descending aircraft, in conjunction with a high intensity runway lighting system that marks the centre line of the runway, as well as the touch-down zone. The highest grade of Instrument Landing System (Category III C) makes it possible for the aircraft to land in thick fog, i.e. in zero visibility conditions. Indian international airports have lower levels of ILS in operation. ILSs could be replaced by Microwave Landing Systems for guiding the precision approach and landing of aircraft in all weather. However, this is likely to be superseded by the early adoption of the Global Positioning System that is a more recent technological development.

Surveillance. The radars in use display aircraft location only. The Air Traffic Controller has to obtain altitude, speed, etc. from each pilot over the radio and enter this data manually on the control chart. With individual transponders now fitted in each aircraft, the latest radars automatically indicate the flight number on each blip on the radar screen, thereby giving the individual controller a comprehensive picture of the situation in the area, and minimizing the possibility of errors.

To make airports more user-friendly and efficient, terminal design is also undergoing continual change and refinement. Aerobridges are now almost a standard feature. With electronic check-in speeding up processing of passengers, flexibility in the use of check-in counters is now possible with Common User Terminal Equipment systems. These systems also move incoming baggage from the aircraft container unloading point to the correct baggage conveyor in the arrival hall.

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