

## The Dangers of Routing Without Good Control

J. D. Proctor

WELL developed states have aircraft following airways in an orderly fashion under full positive A.T.C. control with good v.h.f. communications. The least developed states on the other hand are overflowed by aircraft each on its own desired track with little if any control or communications. Many emergent states have taken the simplest step on the road to civilization in the air; they have specified mandatory airways or routes. In the most primitive situation aircraft, usually few in number, are protected against the risk of collision by natural dispersion. In other words the sky is so big and aircraft are so small that, provided they are spread out, there is very little risk of collision. The broadcasting of position reports by aircraft by v.h.f. on 126.9 m enables pilots to resolve any potential encounters that may occur. This situation occurs over the western Sahara.

For a variety of reasons states like to specify airways or routes through their flight information regions. It is a simple cheap exercise of their power over (probably foreign) aircraft and if there is radar it simplifies the identification of intruders. Once routes are specified and shown as lines on charts, the airways syndrome makes most airlines, pilots, navigators and planners follow them. Feelings of duty to keep on track arise, laudable if the airway is properly controlled but misplaced otherwise. Thus aircraft are concentrated on ill-protected airways or routes and the traffic density goes up; the more accurate the navaid the greater the concentration. Without good air/ground v.h.f. communications and control the risk of collision increases. However, the density may still be so small that no collisions occur: I know of only one collision from this cause, that over Nantes during the French A.T.C. strike, one airmiss over Malakal, when one aircraft did not use 126.9 m, and a similar airmiss over Benina.

Orderliness in this case can be dangerous, dispersion may be safer. These unnecessary ill-protected airways and routes may add mileage and waste time and expensive fuel. But states may insist on particular routes being used, e.g. in East Africa, South America and India, and pilots, navigators and airlines reporting their position as off the specified route may be forced to land or be otherwise penalized. Although it is many years since an airliner made a forced landing (except perhaps the Varig Boeing 707 near Paris) most aviators feel they ought to give true position reports, so it is seldom feasible to be off track yet report on track. Perhaps the safest and best solution to the dilemma is to keep a little to the right of isolated tracks; I purposely say 'a little' and do not specify a number of miles, so that each person can select his own figure and so help to increase dispersion.

The central part of the North Atlantic is ill-protected because air/ground communication is by h.f. but here aircraft at least started on the organized non-intersecting tracks with such separation as should last the whole crossing. The trouble with h.f. of course is that although normally its efficiency may be 99

per cent it may be nil on bad days. Away from the organized tracks the concentration of aircraft, by requiring them to cross every ten degrees of longitude at a whole degree of latitude, may slightly increase the risk of collision when h.f. is bad.

The Canaries and Casablanca F.I.R.s deserve a special word. There are so many intersecting routes as to ensure considerable dispersion except at the entry/exit points near the Canaries. Traffic between Europe and the Canaries is considerable. A.T.C. handover is inadequate, v.h.f. coverage is inadequate and there are language difficulties. Conflicts of traffic are fairly frequent but often are not resolved by A.T.C., who merely give traffic information when workload allows and rely on V.M.C. climbs and descents. Pilots have difficulty sometimes in resolving conflicts due to the poor v.h.f. and the occasional multiple conflicts.

In conclusion the best situation is full positive control of all aircraft with radar and direct routing where conditions allow; the next best is full positive control of all aircraft on airways; the next best is random routing where control and/or communications are inadequate; and the worst is mandatory routes without adequate control and/or communications.

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## Humber Branch Meeting

The paper by Lieut.-Cmdr. R. B. Richardson, R.N. (ret.), on 'Sea lanes and terminal approaches' will be given at the Department of Geography, Hull University on Wednesday, 26 May 1976, *not* on 27 May as notified in the Institute list of meetings.