

## Consultation Paper 3.5

### The Modernisation of the Air Traffic Management System

#### Executive Summary

The modernisation of the ATM system is one of the most urgent tasks in the aviation sector. It is necessary if Afghanistan is to re-establish its international reputation.

To do this it will be necessary first to decide the Concept of Operations (CONOPS). On the basis of the CONOPS decided on, it will be necessary to develop a national ANS architecture and a blue print for modernisation. This should take into account the likely flow of traffic, the geographical environment, the costs of investing in and maintaining the system and the potential revenue.

In due course it should be considered whether to transfer ATM into a separate corporate entity. But the modernisation of the system is the real priority and to try to do both at the same time would probably put an insupportable strain on MCAT's administrative resources.

Outside expertise should be sought to advice on the choice of CONOPS. This should not take more than two or three man months at a cost of about USD 100,000. Thereafter it should be possible to go rapidly to the second phase (ANS architecture) towards the end of 2003.

Whichever CONOPS is chosen, the modernisation programme will require a considerable training effort and recruitment.

#### Recommendations:

MCAT should begin modernisation of the ATM system by deciding on ATM concept of operation (CONOPS). Based on the above decision, a national ANS architecture and a blue print for modernisation should be developed. The institutional restructuring of the sector should have lower priority.

#### Actions:

MCAT should seek outside expertise to advise on the choice of CONOPS.

## **Introduction**

The Background Document identified the modernisation of the ATM as an objective to be achieved urgently to enable Afghanistan to re-establish its international aviation reputation. This paper proposes the steps that should be taken next to do this.

## **Background**

It is necessary to distinguish the immediate tasks necessary to maintain the current system from the development of a viable ATM system for the longer term. An FAA study of September 2002 has identified the former; this aspect in any case lies outside the TSR's remit. This paper deals with the latter.

There are two vital strategic planning components to this objective:

- a) The development of a concept of operations (CONOPS). This describes the type of operational environment which is thought appropriate.
- b) The development of a national ANS architecture and a master blue print for modernisation, designed to achieve the operational environment decided on under a). This should take into account the likely flow of traffic, the geographical environment, the costs of investing in and maintaining the system and the potential revenue.

These decisions are best taken sequentially since the substance of b) will depend very much on decisions taken under a).

## **The Development of a Concept of Operations**

There are basically four operations that might be envisaged :

- (i) To maintain and improve the current status. This essentially means providing a flight information service (FIS) as now, but one that is more efficient and more comprehensive.
- (ii) To provide a separation service using non-radar separation requirements (time and distance) (a procedural service). This would involve the provision of navigational aids.
- (iii) To build on (i) and (ii) above by the addition of radar. This might involve using non-radar separation requirements en-route and radar separation in the approach control areas; or alternatively using radar separation in both the en-route and approach control areas around the airports.
- (iv) The options (i) - (iii) above are essentially enhancements of the current system of providing ATM services. The fourth is to go for a satellite based system based on Automatic Dependent Surveillance (ADS).

Each of the four options will entail different standards of facility, different types of training and different equipment. For example, for a radar-based service there would be a heavier requirement to buy and maintain equipment. ADS would avoid (or reduce) the need for

ground-based infrastructure but entail advanced work-stations and advanced controller training.

The choice of one of these options is for the Afghan government to make. When making its choice it will need to have in mind a number of different aspects. These include :

- Technical expertise of the personnel needed to provide the service (air traffic, meteorological, technical engineers, etc.).
- Staffing requirements.
- Communication and navigational aids required.
- Expected user needs and requirements (en-route, terminal).
- Cost-recovery expectations (over flight, landing, gate fees).
- The International Civil Aviation Organisations requirements, in particular compatibility with the ICAO Middle East Navigation Plan.

It would be in accordance with TSR recommendations and the government's general policy that in assessing which option to go for the primary objective should be to ensure that the service provided is sustainable without outside assistance.

To help in making this assessment, TSR suggests that MCAT take outside advice. The sort of person TSR would suggest to give this advice would be a retired ATM Director General or Deputy Director General from a country with a well-established ATM system. His role would be to facilitate the MCAT decision-making process in choosing the CONOPS it prefers in the light of the anticipated traffic flow and a calculation of the costs and benefits of each option; and then lead the implementation effort.

This process thus envisages the following steps:

- The choice of CONOPS.
- The development of an ANS architecture and a blue print for modernisation.
- The implementation of the blue print.

These are considerable tasks, but they are urgent. At some stage it would be appropriate to consider whether to transfer the provision of ATM to an independent corporate entity, but in TSR's view this is less urgent than the modernisation of the system itself. To try to do both together would put an insupportable strain on MCAT's administrative resources.

## **Recommendations**

The MCAT should adopt the approach to ATM modernisation recommended here, i.e. decide first on ATM concept of operation (CONOPS). Then based on this decision MCAT should develop a national ANS architecture and a blue print for modernisation. The institutional restructuring of the sector should have lower priority.

## **Actions**

TSR notes that FAA Study referred to above was sponsored by the US Trade and Development Agency (USTDA); and that the USTDA invited the Afghan government to

identify the areas where USTDA might play a role. It seems sensible to TSR to pick-up this invitation to take things forward.

This implies the following action plan:

1. The Afghan government should approach USTDA with a view to their sponsoring an analysis of, and a recommendation on the choice amongst the four CONOPS options listed above.
2. In the light of its decision on that recommendation to approach potential donors including the international institutions, appropriate private sector consultancies and manufacturers of ATM equipment with a view to the implementation of the option decided on.

In TSR's view, the first action above could be taken quite quickly. It would then be possible to invite tenders for the second, and more substantial study towards the end of 2003.

In view of the FAA survey action 1. would probably need not more than two or three man months, at a total cost of about USD 100,000.