

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

**Agenda Item 7 Aeronautical air-ground and air-to-air
: communications**

CNS/ATM - THE PARADOXES FOR BUSINESS AVIATION

(Presented by the International Business Aviation Council (IBAC))

SUMMARY

This paper identifies the paradoxes which confront business aircraft operators, aircraft manufacturers and avionics systems manufacturers regarding ADS/CPDLC and recommends that ICAO take account of these issues as CNS/ATM planning and implementation proceeds.

Action by the conference is in paragraph 3.

1. INTRODUCTION

1.1 The global business aviation fleet comprises over 22,500 turbine-powered aircraft. Of the approximately 11,000 jet aircraft, more than 3,500 are capable of and/or engaged in intercontinental operations.

2. DISCUSSION

2.1 Unlike airline aircraft engaged in long-haul operations, which are sourced essentially from two manufacturers, there are at least eight manufacturers of business aircraft.

2.2 Whereas the number of airlines globally is counted by the hundreds i.e. approximately 900 scheduled operators, there are over 14,000 business aviation operators worldwide.

2.3 A distinguishing feature for business aircraft is that, unlike airline aircraft, the avionics systems are not 'controlled' by the form, function and fit (and thus interchangeability) provided for by AEEC

Characteristics adopted by airlines. Thus, for avionics systems design and development, business aviation is almost entirely avionics vendor-driven.

2.4 **Paradox 1**

2.4.1 There is no business case in the traditional sense for equipage with ADS/CPDLC.

Reason

Typically low annual aircraft utilization, approximately one-tenth of that of airline aircraft.

Conclusion

Equipage will occur mainly, if not only, to preserve or regain airspace access for business aircraft or in response to unrelated perceived benefits.

2.5 **Paradox 2**

2.5.1 Because the advent of FANS 1/A was essentially business case driven, an incentive existed for airline aircraft manufacturers and avionics manufacturers to invest in systems development and for their customers to incur the cost of equipage.

Conclusion

Absent a commercial incentive of this nature, business aircraft manufacturers and their avionics suppliers are not likely to enter the market until such time as they can predict with confidence the onset of the access-to-airspace driver, mentioned above. This same rationale applies to avionics for the retrofit market.

2.6 **Paradox 3**

2.6.1 FANS 1/A are 'proprietary' to Boeing and Airbus aircraft. Moreover, neither system is SARPs compliant.

2.6.2 The airline industry is largely committed to this direction and, understandably, ANS Providers have responded accordingly.

2.6.3 No ADS/CPDLC avionics is currently available for business aircraft!

Comment

For the prospective development of ADS/CPDLC, should business aviation emulate FANS1/A capabilities and also depart from ICAO SARPs and enjoy the services provided by ANS Providers? Or, should business aviation incur the potentially higher cost of developing SARPs compliant services not knowing the time frame within which ANS Providers will support these services?

Indeed there are indications that the lifespan of FANS1/A could be much longer than contemplated just several years ago due to the dire financial circumstances of the airline industry. Moreover, there are some indications that existing ICAO SARPs may be overtaken by the development of systems using Internet Protocols.

2.7 **Paradox 4**

2.7.1 The implementation of ADS/CPDLC by airlines required very considerable airline flight technical and engineering support. This was augmented by expertise in the aircraft manufactures, avionics providers as well as communications and ANS Providers.

Comment

There is no equivalent flight technical and engineering resources within business aviation flight departments.

Conclusion

Business aviation operators will require external, contract service support for the successful implementation of ADS/CPDLC.

2.8 **Paradox 4**

2.8.1 The use of ADS/CPDLC by flight crews requires specific and considerable training as well as the maintenance of proficiency, which regular use of these systems normally occasions.

Comment

Business aviation flight crews by virtue of the fact that many only conduct intercontinental operations occasionally can be expected to be more reliant on training than regular use to establish proficiency.

Conclusion

Training in the use of ADS/CPDLC can be expected to play a more significant role for business aviation flight crews than is the case for airline flight crews and the introduction into routine operational service of these capabilities may therefore take more time than is customarily the case in airline operations.

2.9 **Paradox 5**

2.9.1 The implementation of ADS on some international routes or route segments has recently taken place on an exclusionary basis, apparently unrelated to either the application of a more stringent RNP value or otherwise directly related to the provision of separation between aircraft. Apparently this exclusionary requirement has been imposed by the State concerned rather than being prescribed in an Air Navigation Plan or in the Regional SUPPS RAC.

Comment

The advent of exclusionary measures in relation to the carriage of a non-SARPs compliant capability and in circumstances when such a capability is not uniformly available to all airspace users would seem to represent a significant departure from the traditional safeguards offered by ICAO SARPs and implementation planning protocols.

Conclusion

Business aircraft operators are exposed to progressive airspace access restrictions as a result of the traditional ICAO processes being usurped.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to consider the issues identified above with a view to recommending that ICAO take these into account in proceeding with the planning and implementation of CNS/ATM.

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