
# Noise Certification Workshop

(Montreal, 20 to 21 October 2004)

NCW – BIP5/1
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## SESSION 5: ICAO/CAEP CURRENT ACTIVITIES ON NOISE CERTIFICATION

(Presented by T.L. Connor)

**SUMMARY**

The main aim of the Working Group 1 (WG1) under the Committee on Aviation Environmental Protection (CAEP) is to keep the ICAO noise certification standards up-to-date and effective, whilst ensuring that certification procedures are as simple and inexpensive as is practical. This background information paper describes the role and composition of the working group and its current work programme.

### 1. ROLE OF WORKING GROUP 1 (WG1)

1.1 Aeroplanes and helicopters built today are required to meet the noise certification Standards adopted by the Council of ICAO. These are contained in Annex 16 — *Environmental Protection*, Volume I — *Aircraft Noise* to the Convention on International Civil Aviation. Practical guidance to certificating authorities on implementation of the technical procedures of Annex 16 is contained in the *Environmental Technical Manual on the use of Procedures in the Noise Certification of Aircraft* (Doc 9501).

1.2 The WG1 manages the technical content of Annex 16, Volume I and maintains the Environmental Technical Manual (ETM). Annex 16, Volume I contains the Standards and Recommended Practices and guidelines for aircraft noise certification applicable to subsonic jet aeroplanes, propeller-driven aeroplanes, helicopters, tilt-rotor aircraft and supersonic aeroplanes.

1.3 The ETM supplements the Annex 16, Volume I to promote uniformity of implementation of the procedures. The ETM provides guidance such that all certificating authorities can apply the same degree of stringency and the same criteria for acceptance in approving applications. The WG1 develops the guidance on the application of equivalent procedures. An equivalent procedure is a test or data analysis procedure, which, while differing from a test or procedure specified in Annex 16, Volume 1, yields the same noise level in the judgment of the certificating authority.

### 2. WG1 COMPOSITION

2.1 Developing noise Standards and Recommended Practices that reduce the adverse impact of aviation on the environment while ensuring safety and economic reasonableness has always been challenging. It requires a multifaceted balancing of expertise and information from

engineers, environmental experts, the scientific community, and economists that is unique in ICAO. The work of WG1 and the other CAEP working groups is accomplished by a relatively small number of experts qualified to address the task at hand. The CAEP process relies on the significant participation by both Member State and industry experts. Because of the need to progress work on many diverse tasks at each CAEP meeting, these groups and smaller task groups meet continually throughout the year – some working or task groups meet for a week or more 3 to 4 times each year.

2.2 The WG1 is composed of subject area experts from certificating authorities, manufacturers, airlines, and airport operators who were named by their respective CAEP members and observers. Mr. T. Connor of the FAA is the rapporteur of WG1 and Mr. W. Franken of the Netherlands CAA is the vice-rapporteur. The following table lists the organizations currently represented on the working group.

**Table. Representation on WG1**

Direction Générale de l'Aviation Civile (DGAC)
Egyptian Civil Aviation Authority
Japan Civil Aviation Bureau (JCAB)
Luftfahrt-Bundesamt (LBA)
Luftfartsverket (Swedish CAA)
Netherlands Civil Aviation Authority (NLA)
Transport Canada
U.K. Civil Aviation Authority (CAA)
U.S. Federal Aviation Administration (FAA)
Airport Council International (ACI)
- Schiphol Group

Arab Civil Aviation Commission (ACAC)
International Airport Transport Association (IATA)
- Air France
- Cathay Pacific
- Delta Air Lines

International Coordinating Council of Aerospace Industries Associations (ICCAIA)
- Agusta
- American Helicopter Society (AHS) International
- Bell Helicopter Textron
- Bombardier
- Boeing
- Dassault Aviation
- EADS Airbus
- Embraer
- Eurocopter
- GE Aircraft Engines
- Goodrich Aerostructures
- Gulfstream
- Honeywell
- Ishikawajima-Harima Heavy Industries (IHI)
- Pratt & Whitney
- Rolls-Royce
- Saab Aircraft
- Sikorsky
- SNECMA

International Federation of Airline Pilots Associations (IFALPA)

## 3. CURRENT WORK PROGRAMME

3.1 The sixth meeting of CAEP (CAEP/6) agreed that WG1 would continue to do the technical noise work including maintaining an interface with the technical and scientific communities and the development of aircraft noise Standards, Recommended Practices and technical guidance materials.

3.2 The current work programme includes studying the future of the noise certification scheme, reexamining the sonic boom issue and supersonic jet noise certification requirements, developing a new ETM, maintaining the aircraft type noise certification database, studying the relationship between noise and emissions trade-offs, and addressing specific issues to improve the noise certification procedures.

3.3 A priority objective for the WG1 is the hoped for culmination of the multiyear study of the future of the noise certification scheme. This activity has involved reviewing the purpose of certification, studying the noise problem around airports, and understanding the role of the current certification scheme in aircraft type design. The product of this activity should address whether any changes in the noise certification scheme are necessary.

3.4 In light of new supersonic flight research initiatives, the WG1 will begin work to address the noise requirements for this type design. The common goal of the research activities in different regions of the world is to develop supersonic civil aircraft that are deemed environmentally acceptable for supersonic operations overland. Supersonic flight is a major technological challenge for both commercial and business aviation. Sonic boom is the primary barrier to development of supersonic vehicles and a major, but not the only, barrier to the development of supersonic transports with overland capability. As stated in the ICAO policy on supersonic flight "…the role ICAO must play is to ensure that the development and any introduction into service of supersonic civil aircraft and of the supporting air navigation services are made in an orderly manner, so as to safeguard the safety, regularity, and efficiency of civil air transport to the advantage of the people of the world while avoiding effects that would be detrimental to the public and international civil aviation."

3.5 The work on the new ETM has the objective to provide detailed technical information and guidance in support of the noise certification process, and to help promote application of uniform and cost-effective methods in showing compliance with the Standards of ICAO Annex 16, Vol. I. The new ETM will contain information on equivalent procedures, documenting those methods that are already in wide use, as well as any new procedure that will prove to comply with the requirement of the Annex 16 to the satisfaction of the certificating authorities.

3.6 The CAEP/6 acknowledged the importance of taking an integrated approach to aviation environmental issues, where appropriate. It was agreed that the working groups should follow progress on the development of new tools and metrics for addressing interdependencies. The WG1 will work with the CAEP working group on emissions (WG3) to study the relationship between noise and emissions trade-offs. The WG1 will build upon its previous detailed review of the factors involved in the aircraft technology development process.

3.7 The WG1 work programme involves many complex technical issues. Some efforts, such as sonic boom, may require the best possible scientific advice that falls outside the current WG1 resources. Research focal points with liaison to external international scientific bodies could provide valuable information for the most complex tasks. Even though resources may be in short supply and the time frame is short, the WG1 is committed to completing its work programme in time for the seventh meeting of CAEP (CAEP/7).

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