Session R. Noise IV: Environmental Noise and Impact on Hearing

David Lubman, Chairman
Hughes Aircraft, Building 618, MS H425, Post Office Box 3310, Fullerton, California 92631

Contributed Papers

8:00

R1. Canadian "National Guidelines for Environmental Noise Control—Procedures and Concepts for the Drafting of Environmental Noise Regulations/By-laws in Canada." Deirdre A. Morison (Bureau of Radiation and Medical Devices, National Health and Welfare, Canada, Ottawa, Ontario K1A 0L2, Canada)

These National Guidelines have been prepared for legislators at all levels of government, provincial planners, municipalities, consultants, industries, and designers. The intent is to provide a common basis across Canada for the assessment, measurement, and legislative control of environmental noise while, at the same time, providing options to allow flexibility of choice to fit specific needs. The National Guidelines may be adopted or modified, in entirety and in part, into provincial or municipal legislation or into codes of practice. The National Guidelines are divided into two major parts. Part I, Concepts and Procedures, details the various options available in developing a noise control program and includes a section on Land Use Planning and Model Noise Control Legislation presenting sound level objectives and more general bylaws. The second part of the document contains technical reference material, including a section on instrument specification, measurement, and prediction, and another covering noise reduction techniques. Terms and interpretations, references, and technical support documents are included also. The texts of the technical support documents are briefly summarized in the document and are reproduced on microfiche at the end of the National Guidelines. The National Guidelines were prepared by the Working Group on Environmental Noise on the Federal/Provincial Advisory Committee on Environmental and Occupational Health, which intends to provide periodic revisions.

8:15

R2. Public reaction to low levels of aircraft noise. John E. Wesler (Wyle Laboratories, 2001 Jefferson Davis Highway, Arlington, VA 22202)

Several recent instances have raised the issue of public annoyance from the noise of airplanes flying at relatively high altitudes or at relatively large distances from the nearest airport. Public complaints have arisen about airplane flights over northern New Jersey as the result of changes in flight patterns associated with the major New York airports, even though in many instances those airplanes are flying at 15 000 ft or higher. Concerns have arisen regarding the noise levels on the ground from the new, swept-blade, advanced turboprop airplanes when they are flying at cruise altitudes of 30 000 ft and higher. Complaints about aircraft noise over national parks have resulted in a Congressional requirement to measure those noises and determine their severity. These noise levels do not meet the usual criteria for annoyance or interference with individual activity, whether in terms of average level or single events. A better understanding of the intrusive effects of low levels of community noise is needed, especially where present in areas of relatively low ambient noise levels.

8:30

R3. The noise environment under low-altitude, high-speed military aircraft training routes. Kenneth J. Plotkin (Wyle Laboratories, 2001 Jefferson Davis Highway, Suite 701, Arlington, VA 22202) and Alton Chavis (HQ TAC/DEEV, Langley Air Force Base, VA 23665)

Low-altitude, high-speed training operations are routinely conducted along specially designated Military Training Routes (MTRs). Design of new routes and/or realignment of existing routes requires an environmental assessment to determine the community noise impact. Nominally, aircraft on these routes navigate from point to point along defined segments. Key elements required for noise prediction are the frequency of flights, the statistical variation of position relative to the nominal centerline, and the operational noise emission levels of the aircraft. Noise measurements were conducted on three routes: one operated by the Strategic Air Command and two by the Tactical Air Command. On each route, 20 automatic noise monitors were deployed on a 2- to 4-mi array across the route centerline. Major findings were: noise emission levels are fully consistent with predictions from USAF's NOISEFILE database; aircraft tend to fly within the central part of a route; aircraft follow nominal tracks corresponding to defined route centerline or corresponding to prominent visual references; the lateral distribution about each track is Gaussian; and multiple tracks can exist. Noise events were infrequent (typically less than three or four per day), and the highest L_{dn} measured was less than 65 dB. [This work was sponsored by USAF AAMRL/BBE.]

8:45

R4. ROUTEMAP model for predicting aircraft noise exposure along military training routes. Michael J. Lucas and Kenneth J. Plotkin (Wyle Laboratories, 2001 Jefferson Davis Highway, Suite 701, Arlington, VA 22202)

A model and PC-based computer program has been prepared to calculate noise levels along low-altitude, high-speed military training routes. The program is designed for use by environmental planning personnel who are familiar with MTR operations and with noise, but are not necessarily expert. The program provides options for selecting general types of operations (visual or instrument navigation), aircraft types and speeds, altitudes, and nominal track centerlines. Up to 20 track/altitude/aircraft types may be defined within a 20-mi-wide corridor. Aircraft on each track have a Gaussian lateral distribution about the centerline. The program contains nominal standard deviations based on the type of operations, or the user may specify a site-specific value. Aircraft noise emission levels are derived from the USAF NOISEFILE database. The program calculates L_{eq}, L_{dn}, and L_{dnmr}, where L_{dnmr} is L_{dn} with an adjustment to account for the onset rate of MTR aircraft noise. Program output is available in tabular form or in graphs suitable for inclusion in reports. [This work was sponsored by USAF AAMRL/BBE.]

9:00

R5. Sonic boom spectra of Atlantis landing 6 December 1988. Robert W. Young and Frank T. Awbrey (Sea World Research Institute, Hubbs Marine Research Center, 1700 South Shores Drive, San Diego, CA 92109)

After circling the world 69 times, orbiter Atlantis came to a stop on Runway 17 of Edwards Air Force Base in California, at 1537U on 6