2nd

NOISE POLLUTION

(NASA-CR-135954) NOISE POLLUTION RESOURCES COMPENDIUM Quarterly Update, 1 Jan. - 31 Mar. 1973 (New Mexico Univ.) ~~129~~ 136 p HC $8.50 CSCL 20A

N73-33618

Unclas G3/23 15826

TAC BIBLIOGRAPHIC SERIES NUMBER 2

QUARTERLY UPDATE

JANUARY 1 THROUGH MARCH 31, 1973

TAC-BIBL-2 (73/1)

Reproduced by
NATIONAL TECHNICAL INFORMATION SERVICE
US Department of Commerce
Springfield, VA. 22151

TECHNOLOGY APPLICATION CENTER
INSTITUTE FOR SOCIAL RESEARCH AND DEVELOPMENT
THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

N O T I C E

THIS DOCUMENT HAS BEEN REPRODUCED FROM THE BEST COPY FURNISHED US BY THE SPONSORING AGENCY. ALTHOUGH IT IS RECOGNIZED THAT CERTAIN PORTIONS ARE ILLEGIBLE, IT IS BEING RELEASED IN THE INTEREST OF MAKING AVAILABLE AS MUCH INFORMATION AS POSSIBLE.

NOISE POLLUTION RESOURCES COMPENDIUM

QUARTERLY UPDATE
March 31, 1973

Prepared by

THE TECHNOLOGY APPLICATION CENTER
INSTITUTE FOR SOCIAL RESEARCH & DEVELOPMENT
THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO

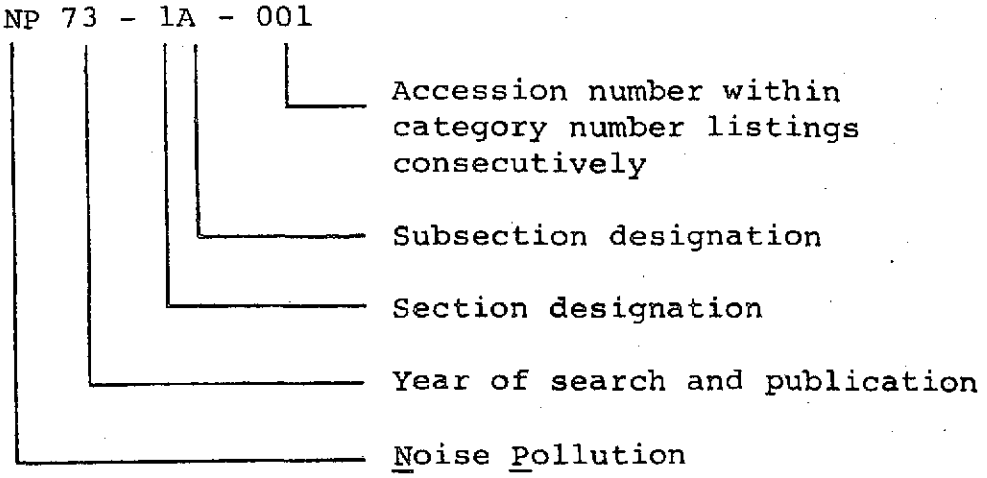
CONTENTS

This is the first issue of the planned quarterly publications concerning noise pollution. The quarterly issues will be combined at the end of each year into a single volume. This method of publication makes it possible for subscribers to remain currently aware of noise pollution information and at the same time, satisfy the needs of those requiring less urgently timed information through use of the yearly publication.

The eight sections of the basic Noise Pollution Resource Compendium have been merged and/or reduced to five sections in this issue in order to more efficiently categorize the current references.

This quarterly issue features complete abstracts instead of data processed bibliographic citations. The changed format is considered more desirable from a user's point of view. The new format and subject organization will be maintained in the upcoming quarterlies and the annual supplement.

The contents of this quarterly publication are arranged under subject headings which are judged major areas of noise pollution activity. An index at the end of each subject group simplifies cross reference of interrelated articles. This publication is paginated by the accession number of the first abstract contained on the appearing page. The legend of the accession number follows the organization of the basic Noise Pollution Resources Compendium.



1. NOISE SOURCES

1.A GENERAL

NP73-1A-001

72-5TG-0576
Dooms, Ir. L. (Ed.) National Center for Scientific and Technical Documentation, Dept. of Environmental Research, Brussels, Belg.

Belgian environmental research index.
Belgian Environmental Research Index. Vols. I and II, 1969-1970. National Center for Scientific and Technical Documentation, Brussels, Belg. 81 pages. Dec. 17, 1971.

Research index only. SS.

AIR POLLUTION ; WATER QUALITY ; NOISE CONTROL ; SOLID WASTES ; PESTICIDES ; BELGIUM ; research index.

Research by Belgian investigators on water, air and noise pollution, solid waste and pesticides is documented. Legislation and treatment are also included.

NP73-1A-002

† 69253. CARLESTAM, GOSTA. (Linnegatan 81, Stockholm 0, Swed.) Noise: The scourge of modern society. AMBIO 1(3): 102-109. Illus. 1972.--The increased consumption of energy for production and transportation generates a waste problem in the form of unwanted sound. The radiation of sound from a single source, an airplane for example, will disturb more and more people in consequence of urbanization. Urban man is more or less constantly exposed to sounds from a technology-created environment and because of the biological constitution of human bodies this leads to so-called stress reactions. The mental process determines exposure to disturbing noise (significance) or more noise (sound level). In the article these problems are discussed in connection with how urban and regional physical planning can eliminate the negative effects of aircraft noise for the 115,000 residents around Arlanda airport in the Greater Stockholm area.

NP73-1A-003

AD-751 090 PCS3.00/MF90.95
Environmental Health Lab McClellan AFB Calif
TECHNICAL REPORT BIBLIOGRAPHY.
Final rept.,
Gale F. Hoffnagle. Aug 72, 147p Rept no. EHL-M-72M-14

Descriptors: (°Air pollution, Air Force research), (°Water pollution, Air Force research), (°Industrial medicine, Air Force research), (°Radiation hazards, Air Force research), Chemical analysis, Microwaves, Lasers, Entomology, California.
Identifiers: Electromagnetic radiation hazards, °Noise pollution, McClellan Air Force Base.

A Bibliography of all unclassified technical reports prepared by USAF Environmental Health Laboratory McClellan is presented. It contains a listing by subject matter and a listing of all reports by year with report number and abstract. The reports cover most areas of environmental topics such as air, water, noise, and radiation pollution.

NP73-1A-004

380. ALLEN, W. Problems and deficiencies in aircraft noise research. *Sound*, 6(2), 1972, 39-44.

Presents a brief systems look at what seems to be very unsystematic research coverage of the field in the past decade. There has been extensive discussion of domestic noise during this period, though with notable omissions. There has been research on interference with education, and some on hospitals. Quite a number of activities of importance have hardly had comment, let alone research. Discusses some of the problems for the designer in dealing with the present situation and puts forward ideas which seem to him likely to put design on a better basis.—*J. Abst., ed.*

NP73-1A-005

Noise and the environment. Holmes C. Proc R Soc Med 65:369-2, Apr 72

NP73-1A-006

Noise in the environment. P. A. Franken and D. G. Page. J Envir Sci & Tech 6: 124-9 F '72

1A GENERAL
(See Also)

1E018	3D001	3D003	3D005	3D026	3D050	5A002
2A003	3D002	3D004	3D006	3D027	3D053	5A008

1.B INDUSTRIAL

NP73-1B-001

N72-30695// Goodfriend (L. S.) Associates, Cedar Knolls, N.J.
NOISE FROM INDUSTRIAL PLANTS
31 Dec. 1971 333 p refs
(EPA-68-04-0044)
(NTIS300.2) Avail: NTIS HC $18.75

Typical industrial plants located in urban, suburban, and rural communities were surveyed and their noise sources were identified. The plants were glass manufacturing, oil refinery, power generating, automobile assembly, and can manufacturing. The noise at communities adjacent to these plants was recorded for five minute sampling periods during two days and nights of normal operation and during weekends. Only the automobile assembly and glass manufacturing plants are principal sources of community noise; elsewhere noise from surface transportation on superhighways and traffic near the plants either predominates or contributes equally with industrial plants. The impact of industrial plant noise on the work and the community environments, and attitudes towards noise legislation are discussed. Noise control programs for industrial plants are described, and the noise abatement technology is discussed.
N.E.N.

NP73-1B-002

A73-12956 // Inlet sound power of axial compressors. S. N. Kuznetsov (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 289-292. 5 refs.

Design and experimental data on the sound power of the inlet noise were compared for the compressors of several stationary gas turbine plants. It appears that in spite of the different reactions of the first stages of several full-scale compressors, the parameter K (the dimensionless similarity criterion) changes insignificantly. F.R.L.

NP73-1B-003

A73-14129 // Effect of wake-wake interactions on the generation of noise in axial-flow turbomachinery. G. J. Walker (Tasmania, University, Hobart, Tasmania, Australia). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 45 p. 13 refs. Research supported by the Department of Supply of Australia and Australian Research Grants Committee.

This paper describes the interaction between the viscous wakes of successive blade rows in an axial-flow turbomachine. It is shown that wake-wake interactions produce regular spatial variations in the unsteady velocity field, and therefore have a significant influence on the generation and propagation of internal noise. The discussion is supported by noise measurements and flow observations at low speed in a single-stage axial-flow compressor. (Author)

NP73-1B-004

A72-44917 Tone noise from rotor/stator interactions in high speed fans. N. A. Cumpsty (Rolls-Royce, Ltd., Derby, England). *Journal of Sound and Vibration*, vol. 24, Oct. 8, 1972, p. 389-409. 5 refs.

The behaviour of some important aspects of fan noise is both highly complex and paradoxical. By using a qualitative theory based on the work of Kaji and Okazaki, however, it is possible to predict the behaviour in the forward arc of the tone noise from the aerodynamic interaction of the fan rotor and stator. In this paper the theory is developed and extensive results from a fan operating at subsonic tip speeds (although designed for supersonic operation) are used to justify and illustrate the theory. (Author)

9

NP73-1B-005

23992. HARRISON, R. (Imp. Chem. Ind. Ltd., Explosives Div., Blackley, Manch., Engl., UK.) and M. J. STOKES. A possible noise hazard noise air-fed hoods. ANN OCCUP HYG 14(4): 331-335, illus. 1971[rcvd. 1972].--Sound pressure levels in a typical air fed hood and the audiograms of 2 human volunteers before and after wearing the air hood were measured. A simple method of reducing the noise to an acceptance level was sought and tested.--J. E. F.

NP73-1B-006

51672. GONCHARENKO, V. P. Analiz shuma kompressorov, primenyaemykh v steklo'noi promyshlennosti, puti ego snizheniya. [Analysis of the noise produced by compressors used in glass industry and means of its reduction.] GIG TR PROF ZABOL 15(6): 47-49. 1971. --The noise of air suction into the compressor was measured at 3 points inside the filter chamber and at 250 and 2000 mm distance from it. The noise created by 4 different types of compressors in the plant was measured primarily to compare the existing level of the sound pressure and noise spectrum with requirements of the sanitary standards. Results showed that the noise in the air suction chamber reached the maximum at 1000, 2000 and 4000 Hz frequencies, constituting 103-108 db at summary level of L_{sum} = 112.5 db. At 250 mm distance from the chamber the noise reached its maximum at the same frequencies with a level of 100-104 db at L_{sum} = 107.3 db, but at 2000 mm distance from shutters of the air suction chamber the level was 93-97 db at L_{sum} = 101.5 db. Spectral components of compressor noise were at a wide diapason of high and low frequency, and exceeded the admissible values in all 4 types of compressors. Reduction of noise was accomplished by applying a plastic muffler, a combined damper of noise pulsation, and especially by reconstruction of valves.--M. D. S.

NP73-1B-007

[Characteristics of noise in mechanical wood processing shops at cellulose-paper plants]
Marinenko NV. Gig Sanit 35:116-7, Oct 71 (Rus)

10

NP73-1B-008

73-2TE-00065
Van Steenbrugge, B. — Inst. of Applied Physics TNO, Delft, Neth.

Compressorstation 'Ommen', silencing measures.
See Citation No. 73-2TE-00049 pp. 158-166. 1971.
In English; Eng., Fr., Ger. sums., illus., refs. (Some in Du.), from AS & Text.
INDUSTRIAL NOISES : NOISE REDUCTION : MACHINERY : INTERNAL-COMBUSTION ENGINES : RURAL AREAS : NETHERLANDS : compressors : gas turbines : Ommen.

The Netherland's gas compressor station, Ommen, has operated for ½ yr with 4 compressor units of 15,000 hp each, driven by gas turbines. The station is situated in a rural environment which made it necessary to fix the permissible noise levels at the rather low noise rating value of 30 outside the nearby houses. Noise production of the main gas turbines is studied and the silencing measures are made from the necessary excess attenuation. Particulars about the composition and dimensions of the silencing equipment are given. Graphs with measuring results from some noise sources are shown.

NP73-1B-009

72-6TE-0161
Kraatz, Gert — Wuppertal, Ger.
Druckluft, Laerm und Umweltschutz.
Wasser, Luft und Betrieb. 16(3): 86-91, March 1972.
In German; Eng., Fr., Ger. sums., 21 figs., no refs., from Sum.
NOISE SOURCES : NOISE REDUCTION : COMPRESSED AIR : environmental protection.

The problems of defining noise sources besides those caused by compressors and pneumatic hammers are discussed, as well as measures for noise reduction. The use of compressed air for environmental protection e.g. with the air-bubble method or in deep sea drilling is also considered.

NP73-1B-010

72-6TE-0160
Arvidsson, Ola — (both) Statens Institut foer Folkhaelsan, Stockholm, Sweden
Berglund, Kenneth
Berlin, Maths — Lunds Universitet, Institutionen foer Hygien, Sweden
Wahlstroem, Sten — (both) Kungliga Tekniska Hoegskolan, Institutionen foer Byggnadsakustik, Stockholm, Sweden
Aaberg, Sven

Byggbuller som samhaellsproblem, Del 2.
Stockholm. Statens Institut foer Byggnadsforskning. Byggforskningens Rapport No. R21, 231 pages, 1971.
In Swedish; no abs., numerous figs., data tables, no refs., SS.
NOISE SOURCES : NOISE MEASUREMENTS : MOTOR VEHICLES : MACHINERY : SWEDEN : construction noise.

Tables are presented of building site noise measurements, generated by earth moving and construction equipment. Data for each machine is presented with a photograph, description and measurement results.

NP73-1B-011

72-6TE-0168
Lamonica, Joseph A. — USBM, Pittsburgh Technical Support Center, PA
Noise levels in cleaning plants.
American Mining Congress. 1972 Coal Show. Papers. (Held in Cleveland, Ohio, May 8-11, 1972). American Mining Congress, Coal Division, Washington, D.C. 13 pages. [1972?].
No abs., 5 figs., 5 tables, no refs., from Introd. & Text.

NOISE LEVELS : MINING INDUSTRY : cleaning plant noise.

In anticipation of noise regulations for coal mine surface facilities, the U.S. Bureau of Mines conducted a noise survey at 3 cleaning plants in an attempt to identify possible problem areas. Those occupations where the individual's exposure exceeded the limits of the proposed noise sources were identified. The manner in which sound energy is distributed over the audible range of frequencies was described.

NP73-1B-012

72-6TH-0397
Anon.
Research entitled theoretical studies of fan-noise generation by a transonic compressor blade row.
Commerce Business Daily: 15, Aug. 11, 1972.
Contract: Air Force Office of Scientific Research F44620-69-C-0130, July 24, 1972. Estimated Amount: $39,680. Awardee: Cornell Aeronautical Lab., Inc., Buffalo, N.Y.
CONTRACTS : NOISE GENERATION : FAN NOISE : transonic compressor blade row : Air Force Office of Scientific Research : Cornell Aeronautical Lab., Inc.

1B INDUSTRIAL
(See Also)

34009	3A024	3B037	3B053	3D034	5C030	5C064
3A011	3A025	3B038	3B054	3D036	5C033	5C070
3A012	3A029	3B039	3D002	3D052	5C034	5C071
3A013	3A030	3B040	3D014	5A001	5C037	5C072
3A021	3B003	3B047	3D017	5A013	5C040	
3A022	3B008	3B048	3D020	5B009	5C049	
3A023	3B036	3B049	3D028	5C025	5C062	

1.C HOME, OFFICE AND NON-INDUSTRIAL

NP73-1C-001

73-2TE-00002
Trbuhovic, Ljubomir Zurich, Switz.
Schallkomfort als Problem der Umweltgestaltung.
See Citation No. 73-2TE-00049 pp. 280-288. 1971.
In German; Eng., Fr., Ger. sums., illus., no refs., from AS.
NOISE LEVELS : ACOUSTIC MEASUREMENTS : BUILDINGS : environmental planning : man's perception and sensitivity.

The new attitude toward sound and acoustics in the architectural environment is considered. Acoustic properties as such, man as producer and consumer of sounds, as well as the perception of and sensitivity to acoustics were examined in detail, and the new hypotheses and proposals were clarified by examples and discussions of position. Observations relating to the architectural interior as a form of the environment inhabited by man are considered. In order to ensure him sonic comfort, man is initially considered as the object (construction of a new system of location and orientation of the spatial coordinates at eye and ear level); then as the subject (in terms of his faculties of spatial perception and the responses elicited by sound signals); finally, man-to-man relations. Measures of planning, technical production, and sound insulation in the created environment are described. These considerations show sound to be a component of the environment, and some aspects and criteria of a technical sonic nature that promote comfort and achievement are therefore taken into account.

NP73-1C-002

Household noise problems; P.K.BAADE (Carrier Corp., Syracuse, NY); J Acoust Soc Am v 50 n 5 pt 1 Nov 1971 p 1293-8; Communication to the Editor makes a plea for uniform sound ratings on household equipment, for information on proper application and installation and for realistic criteria on acceptable sound levels. Recent standards are cited for the Air-Conditioning and Refrigeration Institute. Data are given for noise of a refrigerator, air conditioner and dishwasher in a typical kitchen. 99321

NP73-1C-003

[Determination of the noise level in pharmacies]
Leinlek IZ.
Farmatsiia 20:66-8, Sep-Oct 71 (Eng. Abstr.) (Rus)

14

1C HOME. OFFICE AND NONINDUSTRIAL
(See Also)

1A004	3B034	3B055	3D017	3D032	4B006	5C013
3A007	3B052					

1.D URBAN

16

NP73-1D-001

N72-20011// Bolt, Beranek and Newman, Inc., Cambridge, Mass.
NOISE FROM AIRCRAFT OPERATIONS AT MIRAMAR NAVAL AIR STATION, CALIFORNIA AND LAND USE INTERPRETATIONS
Dec. 1971 81 p refs
(Contract N62474-71-C-0781)
(AD-740393; BBN-2038) Avail: NTIS CSCL 20/1

The purpose of the report is to define the noise environment due to military aircraft operations in the vicinity of Miramar Naval Air Station. The noise environment is depicted by means of several noise contours which are interpreted in terms of expected impact on land usage. The major purpose of the study is to provide interpretations of the aircraft noise as an aid in the compatible development of land surrounding Miramar Naval Air Station. Author (GRA)

NP73-1D-002

N72-29210// Association of Bay Area Governments, Berkeley, Calif.
AIRPORT NOISE AND LAND USE ANALYSIS
Paul K. Dygert, Judy A. Unperer, and Fred L. Collins Mar. 1972 46 p refs Sponsored by HUD
Avail: NTIS HC $4.50

Two separate but related activities which were undertaken to provide a tool for the evaluation of changes in aircraft noise around airports are presented. The two activities involved, first, the development of extensive and detailed data on land uses around the three major air carrier airports in the area encompassed by the Regional Airport Systems Study; and, secondly, the creation of a computer-based system for manipulating the data so that it can be conveniently used for the study of alternative airport development plans. As inputs, the analysis uses the noise contours computed for the Regional Airport Systems Study and detailed land use data prepared by the Regional Airport Systems Study. The computer program for merging the land-use data and the noise contours is described Author

NP73-1D-003

A73-13977 # Noise exposure around an airport. J. Igarashi and G. Nishinomiya (Tokyo, University, Tokyo, Japan). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 513-516.

Noise level measurements at 150 locations around the Osaka airport are discussed. Effective Continuous Perceived Noise Levels (ECPNL) are given for eight aircraft types. A noise level area contour map and a diagram of noise duration allowance vs aircraft distance are given for the airport. V.Z.

NP73-1D-004

A73-12979 # The influence of background noise on disturbance due aircraft. D. M. Waters and C. G. Bottom (Loughborough University of Technology, Loughborough, Leics., England). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 521-524. 6 refs.

The procedures and results of a recent social survey examining the problem of combined aircraft and traffic noise are reviewed. Correlations with various noise exposure units are examined. The results indicate some influence of traffic background noise on both annoyance due to aircraft and the overall dissatisfaction due to aircraft and traffic. The use of a unit in the form of noise pollution level seems to offer the possibility of a promising method for predicting dissatisfaction due to combined noise sources. M.V.E.

NP73-1D-005

A73-12880 # The second noise and social survey around Heathrow, London airport. A. E. Knowler (Department of Trade and Industry, London, England). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 525-528.

Summary of the main features and results of the second noise and social survey conducted around Heathrow airport in 1967 for the purpose of verifying the validity of the results obtained from the first 1961 survey. A brief statement is presented of the 15 main conclusions reached. M.V.E.

NP73-1D-006

A73-13838 An acceptable exposure level for aircraft noise in residential communities. N. S. Yeowart (Salford, University, Salford, Lancs., England). *Journal of Sound and Vibration*, vol. 25, Nov. 22, 1972, p. 245-254. 30 refs.

A review of existing guidelines and noise laws relating to aircraft indicated that they were governed, not by the acceptability of the aircraft noise to an exposed community, but by economic considerations. To examine the impact on aircraft noise requirements of a change in emphasis, from vehicle economy to noise acceptability, existing literature was used to estimate the maximum noise exposure from aircraft that a community would probably find acceptable. The suggested limit is 90 (plus or minus 5) PNdB for twenty noise events per day. Ideally, this noise level should fall within the airport boundary or on nonresidential land. (Author)

NP73-1D-007

A72-41159 # Possibilities and problems of achieving community noise acceptance of VTOL. W. Z. Stepniewski (Boeing Co., Vertol Div., Philadelphia, Pa.) and F. H. Schmitz (U.S. Army, Air Mobility Laboratory, Moffett Field, Calif.). *International Council of the Aeronautical Sciences, Congress, 8th, Amsterdam, Netherlands, Aug. 28-Sept. 2, 1972, Paper 72-34.* 21 p. 27 refs.

Two methods of decreasing the acoustical annoyance of VTOL aircraft to the surrounding community are reviewed; reducing the noise at the source through aircraft design, and managing the flight path in the terminal area. Advanced rotorcraft and lift-fan aircraft are discussed in the context with emphasis placed upon understanding the noise performance tradeoffs of rotary-wing designs. A method of evaluating total community annoyance is proposed which accounts for the population distribution within the acoustically affected area and the ambient noise levels of the community. The resulting methodology is applied to two hypothetical VTOL ports located in existing urban communities, assuming present and 1980 levels of technology. (Author)

NP73-1D-008

A72-44077 # Community noise levels of the L-1011 Tristar Jet Transport. N. Shapiro (Lockheed-California Co., Burbank, Calif.). *Acoustical Society of America, Spring Meeting, 83rd, Buffalo, N.Y., Apr. 18-21, 1972, Paper.* 11 p.

Comments on the recent noise certification of the L-1011 Tristar Jet Transport under the noise standards of the Federal Aviation Regulation (FAR) Part 36. Flyover noise levels below FAR Part 36 limits and as low as the aim of the art would allow were established as basic objectives early in the design of this wide-bodied Lockheed jet transport. The recent flyover noise demonstrations have confirmed that these goals have been achieved, making possible a significant improvement in the community noise environment around airports. M.V.E.

NP73-1D-009

AD-747 [illegible] FCS3.00/MF30.95
Texas A and M Univ College Station Dept of Industrial Engineering
AN ANALYSIS OF NOISE CONDITIONS PRESENT IN COMMERCIAL AND MILITARY VEHICLES.
Master's thesis,
James Edward Elliott. 1971, 64p

Descriptors: (°Vehicles, °Noise), Human engineering, Auditory perception, Thresholds (Physiology), Engine noise, Engine mufflers, Safety, Statistical data, Trucks.
Identifiers: °Noise pollution.

A noise survey was conducted to determine whether hazardous noise conditions exist within construction, farm, or military vehicles. A check was also made on the basic modes of public transportation: plane, railroad, bus, taxi, and private automobiles. Extreme noise conditions were found in much of the construction and farm equipment. The military design vehicles also showed some situations of extreme noise. The public transportation modes were generally free from any extreme noise conditions. (Author)

NP73-1D-010

AD-747 [illegible] FCS3.00/MF30.95
Human Engineering Lab Aberdeen Proving Ground Md
NOISE STUDY: XM561 AND XM561E1 1 1/4-TON CARGO TRUCKS.
Technical note,
James B. Moreland. Oct 45, 42p Rept no. HEL-TN-4-45
Descriptors: (°Cargo vehicles, °Noise), Engine noise, Transmissions, Voice communication systems.
Identifiers: M-561 trucks (1-1/4-ton), M-561 trucks.

The noise of the XM561 and XM561E1 1-1/4-ton cargo trucks was evaluated with the vehicles moving and stationary. The normal operational noise levels in the cabs of both vehicles exceeded the levels recommended in the HEL Standard S-1-63B because of excessive transmission noise. In the XM561E1, there were also other noises at excessive levels, but their sources could not be isolated. Unless engine noise is reduced, personnel will not be able to use 'direct-voice' or 'intercom-type' communications in these vehicles. (Author)

NP73-1D-011

AD-754 174 FCS10.25/MF65.15
Control Research Corp Pittsburgh Pa
A COMMUNITY/AIRPORT ECONOMIC DEVELOPMENT MODEL. VOLUME III. USER'S MANUAL.
Final rept. Apr 71-May 72,
Jere J. Hinkle. May 72, 213p FAA-EQ-72-3-Vol-3, CPG-73-0045
Contract DOT-FA71WA-2565
See also Volume 2, AD-753 034 and Volume 4, AD-751 932.

Descriptors: (°Airports, Mathematical models), (°Urban planning, Airports), (°Computer programs, Instruction manuals), Economics, Site selection, Airplane engine noise.
Identifiers: Land use, °Noise pollution, Land development, CAEDM computer program, FORTRAN 4 programming language, FORTRAN, Economic models, Programming manuals.

The volume presents a description of the operation of the Community/Airport Economic Development Model (CAEDM). These can be used to examine a wide variety of problems encompassing aircraft noise and land use incompatibilities in the vicinity of an airport. Information is given in both narrative and graphic form regarding the kind of input that is required to be provided by the user of the program. The options that are available within the program and the format and ordering of the data that are required for program operation are given. Sample output of the CAEDM is presented in this volume. A listing of the CAEDM program is included. (Author)

NP73-1D-012

PB-211 [illegible] FCS3.00/MF30.95
Transport and Road Research Lab., Crowthorne (England).
URBAN TRANSPORT AND ENVIRONMENTAL POLLUTION,
L. H. Watkins. 1972, 23p TRRL-LR-455
Paper presented at the 5th Symposium on the Future of Conurbation Transport held at the University of Manchester, 19-21 Oct 71.

Descriptors: (°Pollution, °Highway transportation), (°Air pollution, Highway transportation), (°Noise (Sound), Highway transportation), (°Urban transportation, Pollution), Great Britain, Vibration, Esthetics, Exhaust gases, Roads, Legislation, Highway planning, Engine noise.
Identifiers: °Noise pollution.

The paper identifies the major adverse environmental effects of conurbation roads and road traffic as noise; air pollution; visual intrusion; physical interference; and severance. Techniques are described for countering these adverse effects, and wherever possible criteria are given. The paper discusses control by planning and legislation, and gives a brief indication of the environmental consequences of two possible transportation systems of the future. (Author)

NP73-1D-013

PB-213 [illegible] FCS3.50/MF30.95
Office of the Secretary of Transportation, Washington, D.C.
TRANSPORTATION NOISE AND ITS CONTROL.
Jun 72, 31p° DOT-P-5030.1
Paper copy available from GPO $0.70 as stock no. 5000-0057.

Descriptors: (°Transportation, °Noise (Sound)), (°Noise reduction, Planning), Aircraft noise, Motor trucks, Automobiles, Motorcycles, Rapid transit railways, Control, Engine noise, Tires, Public opinion, Problem solving, Reviews.
Identifiers: °Transportation noise, °Noise pollution.

The booklet outlines specific aspects of the noise problem caused by the various modes of transportation – sub and supersonic aircraft, highway noise, (trailer trucks, passenger cars, motorcycles, and sports cars), and rapid transit noise.

NP73-1D-014

PB-213 [illegible] FCS3.00/MF30.95
Office of the Secretary of Transportation, Washington, D.C. Office of Noise Abatement.
TRUCK NOISE-II. INTERIOR AND EXTERIOR A-WEIGHTED SOUND LEVELS OF TYPICAL HIGHWAY TRUCKS.
Final rept.,
William H. Close, and Robert M. Clarke. Jul 72, 92p° OST/TST-72-2
See also PB-204 188.

Descriptors: (°Noise (Sound), °Motor trucks), (°Engine noise, Motor trucks), Truck engines, Field tests, Testing.
Identifiers: °Noise pollution.

A field measurement and analysis effort was undertaken by the Office of Noise Abatement to ascertain interior sound levels and simplified test procedures. Due to interest in community noise on the parts of the truckers and the Department of Transportation, the exterior noise levels were measured as well as the interior noise levels of the test trucks. Interior and exterior noise level data are presented for a variety of truck operating procedures which include: stationary low idle; stationary engine acceleration; stationary high idle (governed rpm); SAE J366a acceleration, SAE J366a deceleration; and SAE J366a engine brake deceleration. Sample measurements of typical over-the-road driver sound level exposure are also reported. An analysis of the significance of the various tests and a recommended enforcement procedure for interior noise level is reported. A methodology to relate the simplified procedure to driver exposure and the hearing conservation criterion of the Occupational Safety and Health Act is proposed. (Author)

NP73-1D-015

Highway noise. A design guide for highway engineers; C.G.GORDON (Bolt Beranek and Newman, Los Angeles, Calif), W.J.GALLOWAY, B.A.KUGLER, D.L.NELSON; Highway Res Bd, Nat Coop Highway Res Program Rep 117, 1971, 79 p; The report discusses and compares different analytical and experimentally derived models of traffic noise, and describes the model used in the Design Guide. It also describes the sources of information and technical approaches used in determining the noise level adjustments for finite element length, acoustical barriers, elevating or depressing the roadway, gradients and different road surface conditions, and the presence of intervening buildings or foliage between the observer and the noise source. Several approaches to the selection of criteria for traffic noise. 33 refs.
89421

NP73-1D-016

Theory of steady-state urban noise for an ideal homogeneous city. Shaw EA, et al.
J Acoust Soc Am 51:1781-93, Jun 72

NP73-1D-017

73-1TE-00009
Priede, T. — Southampton Univ., Dept. of Automobile Engineering, Eng.

Diesel engine noise control in the 1970's.
Noise, Dirt and the Diesel; a Guide to Current and Proposed Legislative Requirements on Diesel Engine Testing, Exhaust Emission Control and Noise Testing. Conference. Papers. (Held in London, Eng., March 23, 1972). Organized by Business and Industrial Training Ltd., London, England. pp. 8-32. [1972?].
No abs., illus., refs., from Text & SS.
INTERNAL-COMBUSTION ENGINES : NOISE REDUCTION : ENGINE DESIGN : GREAT BRITAIN : diesels.

Diesel engines are noisier than gasoline engines, but because of their greater fuel economy, they remain in widespread use. Sources of diesel engine noise, the relation between combustion induced and piston slap noise, characteristics of combustion controlled noise, effect of timing gears and accessories, noise and engine design parameters, and consideration of the principles of noise control are discussed. Diesel engine noise can be reduced even taking into account future trends for higher power outputs. However, research efforts must investigate high pressure charging techniques for automotive use in conjunction with studies of exhaust emissions; quiet structure design is just as important since only by both techniques can the required demands be met.

NP73-1D-018

73-1TE-00007
Tyler, D.A. — Gulf Oil Corp., Houston, TX

Noise and the truck driver.
See Citation No. 73-1TE-00006 p. 127. [1972?].
Abs. only, from AA.
TRANSPORTATION NOISES : OCCUPATIONAL HEALTH : MOTOR VEHICLES : NOISE REDUCTION : abstract only : trucks.

Truck drivers may be exposed to high noise levels while driving. The source and character of the noise, the noise reduction achieved, and the noise reduction techniques utilized by one Industrial Hygiene Department are reviewed. The most effective combination of noise reduction techniques achieved a level of 84 dbA under all driving conditions (with closed windows and air vents).

NP73-1D-019

73-1TE-00022
Chang, H.C.
Hermann, E.R. — (both) Northwestern Univ., Evanston, IL

Accoustical (sic) study of a rapid transit system.
See Citation No. 73-1TE-00006 p. 172. [1972?].
Abs. only, from AA.
TRANSPORTATION NOISES : TRAINS : ACOUSTIC MEASUREMENTS : OCCUPATIONAL HEALTH : ILLINOIS : abstract only : speech interference : rapid transit system : Chicago.

Noises generated by trains of the Chicago Transportation Authority were studied and analyzed relative to occupational health hazard and speech interference. Tape recordings of noise occurring inside of train cars were obtained under various operating conditions. Frequency of occurrence and cumulative distributions of sound intensities were developed through instrumental analysis of the tape recordings. Analyses were measured in terms of over-all sound pressure level, dbA, and sound intensity in each of the octave bands. In some cases, daily noise exposures exceed the limits recommended by the American Conference of Governmental Industrial Hygienists and specified in the Walsh-Healy Act. Years of daily exposure to these noises had adverse effects on the hearing acuity of a portion of the train crew. Speech interference is extensive on these trains. Some portion of the passengers, probably develop a small amount of temporary hearing shift in a single trip, yet it is unlikely that any will develop noise induced permanent threshold shifts from this source.

NP73-1D-020

73-1TE-00029
Hinton, Lloyd — Metropolitan Aircraft Sound Abatement Council

Aircraft noise as a continuing national problem.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 76, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720622.
AIRCRAFT : NOISE REDUCTION : URBAN PLANNING : abstract only.

The history of the aircraft noise problem is presented using many references to particularly important studies. Emphasis is placed upon the similarity of expert opinions during 20 yr of research for measures needed to resolve the problem. The views of noise-impacted airport-community residents who cannot comprehend the lack of progress in aircraft noise abatement are represented. This lack of progress has persisted in spite of general agreement on measures needed, and is the basis of a call for the reallocation of authority among federal agencies having responsibility both for the regulation of aviation and for the planning and development of urban areas, including airports, with environmental protection as basic criterion.

NP73-1D-021

73-1TE-00033
Waters, P.E.
Priede, T. — (both) Univ. of Southampton, Highfield, Eng.

Origins of diesel truck noise and its control.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 77, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720636.
INTERNAL-COMBUSTION ENGINES : NOISE REDUCTION : MOTOR VEHICLES : abstract only : trucks : diesels.

The fundamental origins of truck noise are discussed and the rate at which the noise of each individual source increases with speed is shown. Various means of controlling noise from each component are considered. A method of predicting engine noise, and hence vehicle noise, from basic engine speed and piston diameter data is given and the significance of this information to the engine designer is emphasized.

NP73-1D-022

73-2TE-00043
Price, A.J. — Univ. of British Columbia, School of Architecture, Vancouver, Can.

Community noise survey of greater Vancouver.
Acoustical Society of America. New York. Journal, 52(2): 488-492, Aug. 1972.
Abs., illus., refs., from AA & SS.
NOISE REDUCTION : NOISE STANDARDS : LEGISLATION : ACOUSTIC MEASUREMENTS : CANADA : Vancouver.

A community noise survey was made of the Greater Vancouver Regional District, British Columbia, Canada, which covers 560 mi². Approximately 100,000 individual noise measurements were recorded over a 4-mo period. The statistical noise climate in residentially zoned areas was almost identical in level distribution to that observed by Donley for the mid-Atlantic states some years earlier. In deciding what maximum noise levels should be allowed, the following factors should be taken into consideration: economic impacts, community benefits, enforcement problems, and political motives.

NP73-1D-023

72-5TE-0140
Anon.
Urban traffic noise: Strategy for an improved environment.
Urban Traffic Noise: Strategy for an Improved Environment. Report. Organisation for Economic Co-Operation and Development, Consultative Group on Transportation Research. Organisation for Economic Co-Operation and Development, Paris, France. 139 pages. Aug. 1970.
In English; no abs., 17 figs., 3 tables, data tables, appendix, 48 refs. (2 in Fr., 5 in Ger., 5 in Scan.), from Text & SS.
GOVERNMENT REGULATIONS : NOISE SOURCES : traffic noise : Europe : Canada : urban noise.

Sources and characteristics of urban traffic noises are given and their effects on humans are listed. Control of urban traffic noise is discussed with reference to modifications in vehicular design, traffic operations and urban architecture. Current administrative and legislative practices and directives in various member countries are reviewed. The Consultative Group on Transporation Research of Organisation for Economic Co-Operation and Development makes several recommendations for the role of government relative to vehicle noise, traffic noise and urban environment, economics of noise abatement, research and development, and international cooperation.

NP73-1D-024

72-5TE-0144
Delany, M E.
Copeland, W.C.
Payne, R.C.
Propagation of traffic noise in typical urban situations.
Teddington, Eng. National Physical Laboratory. Acoustics Report No. 54, 89 pages, Oct. 1971.
Sum., 40 figs., 26 tables, index, no refs., from AS.
NOISE MEASUREMENT : ENGLAND : traffic noise propagation.

Field measurements were carried out to investigate the propagation of traffic noise for 10 different road and housing configurations. The shielding produced by a substantial brickwall parallel to a main road, and the effect of an aperture in such a barrier, was measured and results compared with data for open grassland. Shielding by rows of houses flanking a main road and noise propagation along side-roads branching off main roads was investigated in detail, and empirical curves are presented for predicting levels of L_{10} (the noise level in dB(A) exceeded for 10% of time) in such situations.

NP73-1D-025

72-5GD-0606
Appleyard, Donald (both) Univ. of California, Dept. of City
Lintell, Mark and Regional Planning, Berkeley
Environmental quality of city streets: The residents' viewpoint.
National Research Council. Highway Research Board. Highway Research Record No. 356: 69-84, 1971.
Abs., 6 figs., 21 refs., from AA.
Presented at Committee on Social, Economic and Environmental Factors of Transportation Annual Meeting. 50th.
NOISE SOURCES : HIGHWAYS : AUTOMOTIVE POLLUTANTS : SAN FRANCISCO : residences : traffic.

The San Francisco Planning Department did a small study of the quality of the environmental along some of the city's main traffic streets to find out what effect traffic has on the street as a living environment. Viewpoints of those people who live on the city's streets are presented. The criteria categories examined were traffic hazard; stress, noise, and pollution; privacy and home territory, neighboring and visiting; and identity and interest.

NP73-1D-26

72-5TG-0330
Vernier, Jacques
La bataille de l'environnement.
La Bataille de l'Environnement. Editions Robert Laffont, Paris, France. 307 pages. 1971. (pbk).
In French; no abs., 23 tables, data tables, 4 refs., from Introd. & SS.
WATER POLLUTANTS : AIR POLLUTANTS : NOISE CONTROL : WASTE MANAGEMENT : URBANIZATION : ECONOMICS : book.

Water pollution, air pollution, waste management, noise, mining, urban crowding, and water usage are discussed, as are ways to deal with these problems. The environment of industrial civilization is defined and subdivided into 3 parts for analysis. The economic aspects of solutions to these problems and actions to be taken are discussed. The technology of civilization which causes pollution must help overcome pollution.

NP73-1D-27

72-6TE-0171
Bhattacharya, B. Indian Inst. of Technology, Kharagpur
An analysis of the problem of noise in the urban areas.
See Citation No. 72-6TE-0170 p. 25. [1972?].
Abs. only, from AA.
NOISE SOURCES : NOISE CONTROL : INDIA : effects : urban areas : abstract only.

An analysis of the sources, effects and control methods of urban noise in India is presented.

NP73-1D-028

72-6TE-0174
Nambi, K.
Agarwal, A.L.
Ramanathan, N.L.
Noise pollution in Ahmedabad.
See Citation No. 72-6TE-0170 p. 28. [1972?].
Abs. only, from AA.
NOISE SOURCES : NOISE CONTROL : INDIA : Ahmedabad : traffic noise : abstract only.

Results of a survey of the noise environment in the city of Ahmedabad, India, indicate that traffic noise is the major noise source. Several measures are recommended to alleviate the problem and a "noise map" of the city is included.

NP73-1D-029

72-6GD-0793
Sturman, Gerald M. Parsons, Brinckerhoff, Quade & Douglas, Inc., New York, NY
Effects of highways on urban environments.
Journal of Environmental Systems. 2(1): 61-69, March 1972.
Abs., 2 figs., 3 refs., from AA.
HIGHWAYS : AUTOMOTIVE POLLUTANTS : NOISE GENERATION.

Impacts on an urban highway on the communities through which it passes are studied. Air pollution, noise pollution, access disruption, loss of job opportunities, and loss of housing are analyzed.

1D URBAN
(See Also)

1A002	2C017	3B043	3D008	3D037	5A003	5C036
1B001	3A016	3B044	3D012	3D051	5A005	5C076
1E004	3A017	3B045	3D017	3D053	5A009	
1E031	3A021	3B046	3D018	3D057	5B004	
2C004	3B041	3D002	3D019	3D059	5B008	
2C015	3B042	3D004	3D025	5A002	5C011	

1.E AERONAUTICS

NP73-1E-001

N73-14037// Lockheed-Georgia Co., Marietta.
THE GENERATION AND RADIATION OF SUPERSONIC JET NOISE. VOLUME 3: PROGRESS TOWARD A UNIFIED THEORY OF JET ENGINE NOISE Final Technical Report, 1 May 1971 - 31 May 1972
Philip E. Doak Jul. 1972 152 p refs
(Contract F33615-71-C-1383; AF Proj. 3066)
(AD-749139; AFAPL-TR-72-53-Vol-3) Avail: NTIS CSCL 20/1

Existing theories of aerodynamic noise generation are critically reviewed with special emphasis on conceptual adequacy and physical scope with special reference to supersonic jet noise. In this review the basic work of Stokes, Kirchoff and Rayleigh on fluctuating motions in fluids is recalled and developed to provide a firm basis for the critique. The advantages and disadvantages of acoustic analogy theories such as Lighthill's are thoroughly discussed in Section 11.3. A contribution is made towards removing the criticisms made by Lighthill of Ribner's isotropic source tensor theory. New developments such as those by Crow, Lilley and Doak are emphasized. On the basis of the evidence provided by the critical review, a new unified theory for jet noise has been devised. Author (GRA)

NP73-1E-002

N73-14048// Transportation Systems Center, Cambridge, Mass.
THE NOISE EXPOSURE MODEL MOD-5, VOLUME 1
J. Taub, T. Foreman, and B. Brownfield Jun. 1972 93 p refs 2 Vol.
(PB-211979; DOT-TSC-OST-72-5-Vol-1) Avail: NTIS HC $3.00 CSCL 13B

The report contains three sections. The first two sections are contained in Volume 1. It contains an airport analysis which describes the noise exposure model MOD-5 from the perspective of analysing an airport in order to develop the program input model, and a user's manual which describes the process of developing the input model for the noise exposure model.

GRA

NP73-1E-003

N72-27030*// National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
PRELIMINARY NOISE TESTS OF THE ENGINE-OVER-THE-WING CONCEPT. 2: 10 DEG - 20 DEG FLAP POSITION
Meyer Reshotko, William A. Olsen, and Robert G. Dorsch Jun. 1972 39 p refs
(NASA-TM-X-68104; E-7038) Avail: NTIS HC $4.00 CSCL 01B

Preliminary acoustic tests of the engine-over-the-wing concept as a method for reducing the aerodynamic noise created by conventional and short takeoff aircraft are discussed. Tests were conducted with a small wing section model having two flaps which can be set for either the landing or takeoff positions. Data was acquired with the flaps set at 10 degrees and 20 degrees for takeoff and 30 and 60 degrees for landing. The engine exhaust was simulated by an air jet from a convergent nozzle. For field noise data are presented for nominal pressure ratios of 1.25, 1.4 and 1.7 for both the flyover and sideline modes. Author

NP73-1E-004

A73-12100 # Model study of aircraft noise reverberation in a city street. L. Pande (MIT, Cambridge, Mass.). *Acoustical Society of America, Meeting, 83rd, Buffalo, N.Y., Apr. 18-21, 1972, Paper.* 68 p. 12 refs. U.S. Department of Transportation Contract No. TSC-93.

Experimental studies of sound propagation from a source situated above roof top level in an urban environment have indicated the amplification and shielding effects of buildings. These experiments have been supplemented by diagnostic tests with a spark source which indicate the paths of propagation and their contribution to the received sound. A criterion for reverberation in a city street due to an aircraft is developed in terms of images formed. Charts indicating the amplification or shielding of noise from low flying aircraft are presented. (Author)

NP73-1E-005

A73-12952 # The problems of aeronautical acoustics (Les problèmes d'acoustique aéronautique). P. A. Liénard (ONERA, Châtillon-sous-Bagneux, Hauts-de-Seine, France). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 1. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 1-16. 7 refs. In French.

Aeronautical acoustic problems involve noise in aircraft interiors, stresses in the structures, external noise near aircraft, especially in inhabited areas around airports and, with the advent of the supersonic aircraft, the problem of the 'sonic boom'. The general characteristics of aerodynamic noise are discussed, as well as modification of the equation of propagation in a turbulent fluid, and its solution. First applications of the equation to various aircraft are studied. Attention is given to antinoise legislation and regulation, recent studies, and future prospects. F.R.L.

NP73-1E-006

A73-12972 # Performance and noise generation studies of supersonic air ejectors. P. S. Barna (Old Dominion University, Norfolk, Va.). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 481-484.

Experimental study of the effects of primary and secondary air discharge rates on the pumping performance and noise generation of a supersonic air ejector. The noise spectra obtained from the tests appear to be in fair agreement with the results found by other investigators. M.V.E.

NP73-1E-007

A73-13940 Analysis of internally generated sound in continuous materials. II - A critical review of the conceptual adequacy and physical scope of existing theories of aerodynamic noise, with special reference to supersonic jet noise. P. E. Doak (Southampton, University, Southampton, England). *Journal of Sound and Vibration*, vol. 25, Nov. 22, 1972, p. 263-335. 68 refs. Contract No. F33615-71-C-1661.

NP73-1E-008

A73-14040 Acoustic power spectrum of a subsonic jet. A. G. Munin and M. A. Shchepochkin. (*Akusticheskii Zhurnal*, vol. 18, Apr.-June 1972, p. 292-298.) *Soviet Physics - Acoustics*, vol. 18, Oct.-Dec. 1972, p. 241-245. 5 refs. Translation.
(For abstract see issue 17, p. 2571, Accession no. A72-35544)

NP73-1E-009

A73-14012 Sources of noise in aero-engines. D. A. A. Marshall (Rolls-Royce, Ltd., Derby, England). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 23 p.

A noise source breakdown in level and directivity is presented for low-bypass-ratio engines, such as the Rolls-Royce Spey, and for high-bypass-ratio engines, such as the Rolls-Royce RB.211. It can be seen that the change from low to high bypass ratios has resulted in a marked noise reduction by substitution of discrete tone and broadband noise (characteristic of fan, compressor, and turbine) for the low frequency roar of the jet. The generative mechanisms of jet, compressor, fan, and turbine noise are analyzed. A study of jet mixing noise reveals a new source, termed tailpipe noise, which is an internal source amenable to reduction both by design and with acoustic linings. It is shown that intake airflow quality can be a significant factor for the single-stage fan without inlet guide vanes. Turbine noise investigation also requires careful experimentation to reveal the sources. V.P.

NP73-1E-010

A73-14468 The aeroplane as a threat to the environment. P. Lloyd. *Aeronautical Journal*, vol. 76, Oct. 1972, p. 599-603. 16 refs.

An attempt is made to assess the effects of noise, smoke, and odors produced by aircraft on the environment. The engineering and administrative measures which are being taken to control these effects are also considered. It is suggested that, in addition to causing noise and odors, aircraft add to pollution indirectly by enabling people to visit remote places of the earth which would normally be free from pollution. Atmospheric pollution, engine-generated noise, the sonic boom, and pollution of the stratosphere are discussed in detail. It is considered that noise in the vicinity of airports is the core of the problem. F.R.L.

NP73-1E-011

A73-16760 Disturbance of the environment by jet aircraft noise (Lärmbelästigung der Umwelt durch den Strahlflugverkehr). G. Zimmermann (Max-Planck-Institut für Strömungsforschung, Göttingen, West Germany). *(Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, 4th, Baden-Baden, West Germany, Oct. 11-13, 1971.)* In: Deutsche Gesellschaft für Luft- und Raumfahrt, 1971 Yearbook. (A73-16755 05-01) Cologne, Deutsche Gesellschaft für Luft- und Raumfahrt, 1972, p. 176-187. 18 refs. In German.

NP73-1E-012

A73-17190 Olympus on Concorde (L'Olympus sur le Concorde). J. Devriese (SNECMA, Paris, France) and P. H. Young (Rolls-Royce, Ltd., Bristol Engine Div., Bristol, England). *(Association Aéronautique et Astronautique de France and Royal Aeronautical Society, Journée Louis Blériot, 25th, Paris, France, Apr. 21, 1972.) L'Aéronautique et l'Astronautique*, no. 37, 1972, p. 5-22. 8 refs. In French.

It has been demonstrated during flight tests that the Olympus engine cycle, eight years after it was designed, is perfectly suited to supersonic operation. Engineering improvements such as: intake casing assembly, annular combustion chamber, modern means of soundness monitoring, etc., were introduced to maintain the engine in the lead of advanced technology while satisfying pollution requirements. Noise reduction is being subjected to extensive research, with continuous improvements being introduced. The use of reheat - with a ratio increased to 18 per cent - was extended to transonic flight operation. Increased payload is ensured by the new type of secondary nozzle, which also contributes to noise abatment. Further engine developments are being considered. (Author)

A73-17272 Recent progress in the field of aircraft noise technology (Progressi recenti nel campo della tecnologia del rumore aeronautico). L. G. Napolitano and G. D'Elia (Napoli, Università, Naples, Italy). *L'Aerotecnica - Missili e Spazio*, vol. 51, Aug. 1972, p. 283-287. 30 refs. In Italian.

NP73-1E-014

A72-33031 * // Externally blown flap impingement noise. T. W. Putnam and P. L. Lasagna (NASA, Flight Research Center, Edwards, Calif.). *American Institute of Aeronautics and Astronautics, Fluid and Plasma Dynamics Conference, 5th, Boston, Mass., June 26-28, 1972, Paper 72-664.* 8 p. 8 refs. Members, $1.50; nonmembers $2.00.

An investigation of externally blown flap impingement noise was conducted using a full-scale turbofan engine and aircraft wing. The noise produced with a daisy nozzle installed on the engine exhaust system was greater than that produced by a conical nozzle at the same thrust. The daisy nozzle caused the jet velocity to decay about 35 percent at the flap. The presence of the wing next to the conical nozzle increased the noise, as did increasing the flap deflection. Compared with the conical nozzle, the daisy nozzle produced slightly less noise at a flap deflection of 60 deg but produced more noise at the lower flap deflections tested. (Author)

NP73-1E-015

A72-36403 Transient acoustical sources in an idealized jet. E. W. Graham and B. B. Graham. *Acoustical Society of America, Journal*, vol. 52, July 1972, pt. 2, p. 221-226. 8 refs.

Detailed study of the transmission of acoustic disturbances from the interior of an idealized jet through the mean velocity profile and into the far field. The noise generator is taken to be a sequence of transient acoustical point sources traveling with the local fluid in the idealized jet. The idealized jet is two-dimensional, and extends to infinity upstream and downstream with velocity profile independent of streamwise position. For the limited set of examples considered it is shown that the velocity profile has a large effect on the magnitude of the noise radiated to the far field; much of the far field noise, especially at low Strouhal numbers, originates not as true waves but in the form of acoustical disturbances within the jet which are not radiating energy; at subsonic velocities, the characteristic lobes appearing in a polar plot of far field mean-square pressure approach the downstream axis as frequency decreases. (Author)

NP73-1E-016

A72-36414 // Simple pressure source model of jet noise. T. D. Scharton and P. H. White (Bolt Beranek and Newman, Inc., Canoga Park, Calif.). *Acoustical Society of America, Journal*, vol. 52, July 1972, pt. 2, p. 399-412. 25 refs. USAF-supported research.

The simple pressure source model of the sound radiated by a sonic jet is investigated analytically and experimentally. From the simple source model, the ratio of the frequency spectra of the radiated sound power and the jet pressure is derived for an assumed form of the jet-pressure cross correlation. The spatial variation of the overall jet pressures, the frequency spectra of the jet pressures, the axial and radial cross correlations of the jet pressures, and the cross correlation between jet pressure and farfield sound pressure are measured for a cold jet. Some implications of the simple source model with regard to noise suppression are also discussed. (Author)

NP73-1E-017

A72-38103 * // Forward flight effects on mixer nozzle design and noise considerations for STOL externally blown flap systems. U. von Glahn, N. Sekas, D. Groesbeck, and R. Huff (NASA, Lewis Research Center, Cleveland, Ohio). *American Institute of Aeronautics and Astronautics, Aircraft Design, Flight Test, and Operations Meeting, 4th, Los Angeles, Calif., Aug. 7-9, 1972, Paper 72-732.* 9 p. 9 refs. Members, $1.50; nonmembers, $2.00.

Experimental data of the peak axial-velocity decay in a moving stream are presented for several types of nozzles. The nozzles include a six-tube mixer nozzle of a type considered for reduction of jet-flap interaction noise for externally-blown-flap STOL aircraft. The effect of secondary flow on the core flow velocity decay of a bypass nozzle is also discussed. Tentative correlation equations are suggested for the configurations evaluated. Recommendations for minimizing forward velocity effects on velocity decay and jet-flap interaction noise are made. (Author)

NP73-1E-018

A72-39117 // Noise - A triumph of ignorance. F. W. Kolk (American Airlines, Inc., New York, N.Y.). *American Institute of Aeronautics and Astronautics, Aircraft Design, Flight Test, and Operations Meeting, 4th, Los Angeles, Calif., Aug. 7-9, 1972, Paper 72-815.* 9 p. Members, $1.50; nonmembers, $2.00.

A serious long term noise problem exists with the operation of jet transports. This situation exists because of a continued lack of technical knowledge in the appreciation of the various decision making parties, coupled with a general lack of recognition that these parties do indeed lack and have lacked facts. The history of this situation is reviewed against the background of events in the field in the past twenty years, and a broad assessment of the technological position is made, with a projection of where we are going and how this direction can be best steered for the common good. The paper concludes with a suggested strategy for a long term solution to this problem which requires coordination for all parties involved. (Author)

NP73-1E-019

A72-41157 * // Hypersonic transports - Economics - environmental effects. R. H. Petersen and M. H. Waters (NASA Advanced Concepts and Missions Div., Aeronautical Missions and Technology Branch, Moffett Field, Calif.). *International Council of the Aeronautical Sciences, Congress, 8th, Amsterdam, Netherlands, Aug. 28-Sept. 2, 1972, Paper 72-32.* 13 p. 27 refs.

An economic analysis of hypersonic transports is presented to show projected operating costs (direct and indirect) and return on investment. Important assumptions are varied to determine the probable range of values for operating costs and return on investment. The environmental effects of hypersonic transports are discussed and compared to current supersonic transports. Estimates of sideline and flyover noise are made for a typical hypersonic transport, and the sonic boom problem is analyzed and discussed. Since the exhaust products from liquid hydrogen-fueled engines differ from those of kerosene-fueled aircraft, a qualitative assessment of air pollution effects is made. (Author)

NP73-1E-020

A72-41173 * # NASA aircraft engine noise research. J. J. Kramer (NASA, Washington, D.C.) and R. G. Dorsch (NASA, Lewis Research Center, Cleveland, Ohio). *International Council of the Aeronautical Sciences, Congress, 8th, Amsterdam, Netherlands, Aug. 28-Sept. 2, 1972, Paper 72-48.* 8 p.

NASA research and development work on the noise of aircraft engines suitable for use on conventional take-off and landing subsonic cruise airplanes is reviewed. The work discussed was part of the NASA Quiet Engine program. Salient results in the areas of fan, jet and complete propulsion system noise are presented and briefly discussed. (Author)

NP73-1E-021

A72-41852 # Some recent developments in the understanding of jet noise. J. D. Voce and J. Simson (Rolls-Royce, Ltd., Bristol Engine Div., Bristol, England). *International Council of the Aeronautical Sciences, Congress, 8th, Amsterdam, Netherlands, Aug.*

20-Sept. 2, 1972, Paper 72-55. 42 p. 14 refs.

Modal tests tend to confirm Ffowcs-Williams' (1960, 1963) theory that the intensity of sound radiated in the direction of the Mach wave is dependent on the third power of the velocity, although significant discrepancies occur at both high and low speeds, increasing with angle to the jet. The discrepancy at high speeds is associated with the shock structure of the supercritical jet. Pure jet and shock cell noise, and the two-dimensional or 'fish tail' class of silencers are discussed. The object of these devices is to induce a very rapid spread of the jet, in the quiet plane, with minimum thrust reduction. Rapid spreading with the associated high eddy diffusivity induces a noise reduction in the plane of the fish tail. 'Internal' or 'tailpipe' noise sources, and the effect of forward speed are considered. Tests have shown the effectiveness of acoustic absorbers and screens placed at the nozzle exit. F.R.L.

NP73-1E-022

A72-44285 The environmental effects of aviation aircraft engines (Die Umweltwirkungen von Turboflugtriebwerken). N. Schola (Motoren- und Turbinen-Union München GmbH, Munich, West Germany). *(Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, 4th, Baden-Baden, West Germany, Oct. 11-13, 1971.) Zeitschrift für Flugwissenschaften*, vol. 20, Sept. 1972, p. 317-330. 39 refs. In German.

These effects are mainly connected with the thermal radiation, the acoustic emissions, and the exhaust gas production of the engine. The effects of thermal radiation have no harmful characteristics. However, the acoustic emissions produce highly disturbing and sometimes even harmful noise effects. Certain components of the exhaust gases also have disturbing or deleterious effects. The physical mechanisms involved in the origin of the phenomena which produce the environmental effects are examined. Quantitative predictions of general validity concerning the individual effects are discussed, and the relation of these effects with the design parameters of the propulsion system is investigated. A number of suggestions for reducing the harmful environmental effects are made on the basis of the preceding analysis. G.R.

NP73-1E-023

A72-44337 // Statistical analysis of the sound level distribution of aircraft noise as a function of time (Analiza statystyczna rozkładu poziomu dźwięku lotniczych w funkcji czasu). T. Rajpert. *Technika Lotnicza i Astronautyczna*, vol. 27, Aug.-Sept., 1972, p. 21-24, 49. In Polish.

Description of a new method for evaluating the environmental annoyance of time-varying aviation noise on the basis of statistical data for instantaneous changes in the sound level of noise signals. The procedure is illustrated with statistical data collected by measurements near the approaches and on the runways of the Warsaw-Okecie airport. T.M.

NP73-1E-024

A72-44680 // Investigation of propeller vortex noise including the effects of boundary layer control. G. J. Hasly (Lockheed-California Co., Environmental Sciences Laboratory, Burbank, Calif.). *Acoustical Society of America, Spring Meeting, 83rd, Buffalo, N.Y., Apr. 18-21, 1972, Paper.* 37 p. 9 refs.

An experimental investigation has been conducted on the vortex noise produced by a two-bladed, four-foot diameter model propeller capable of boundary layer removal. The propeller had a spinner comprising 70% of the total propeller radius. A porous section on both surfaces of the symmetric section airfoil allowed removal of the boundary layer. Free-field measurements were made in an anechoic chamber at three field points for three tip speeds (309.5, 314.2 and 336.5 ft/sec) and four blade angles (0, 2.5, 5, and 10 deg.) both without and with boundary layer control. Agreement with theory was good (within 2 dB) showing a sixth power of tip velocity relationship and a classical dipole radiation pattern for the overall sound pressure level of the vortex noise. Boundary layer removal primarily affected sound levels above 3150 Hz with no ordered effect on the overall level. (Author)

NP73-1E-025

A72-44018 // Radiation properties of the semi-infinite vortex sheet. D. G. Crighton (Imperial College of Science and Technology, London, England). *Royal Society (London), Proceedings, Series A*, vol. 330, no. 1581, Oct. 3, 1972, p. 185-198. 21 refs. Research supported by the Ministry of Technology.

The Crump-Crow problem for a compressible fluid at low Mach numbers is considered. The effects of substantial compliance of the plate are discussed together with the imposition of Kutta conditions, and the generalization of Summerfield's classical half-plane diffraction problem to incorporate the vortex sheet. Questions of the relevance of the results to current problems in jet noise prediction are also examined. It is suggested that the interaction of shear layer instability with a large solid surface may be the mechanism responsible for the so-called 'broad noise' phenomenon. G.R.

AD-747 774 PCS12.50/MF$0.95
General Electric Co Cincinnati Ohio
SUPERSONIC JET EXHAUST NOISE.
Final rept. May 71-May 72,
Meyer J. Benzakein, and Paul R. Knott. Aug 72, 194p AFAPL-TR-72-52
Contract F33615-71-C-1662

Descriptors: (*Supersonic planes, *Jet plane noise), Acoustics, Conical nozzles, Flow fields, Jet flames, Turbulence, Acoustic impedance, Mathematical analysis.
Identifiers: Plumes, *Noise reduction, Noise pollution.

The report summarizes the results obtained at General Electric during the first phase of the Air Force Supersonic Exhaust Noise - Velocity Model Program. The overall objective of the program is to develop the technology to significantly reduce supersonic aircraft propulsion system noise with minimum associated performance and weight penalties. To fulfill that objective, research is being carried out to develop the experimental techniques and the necessary theory to reveal the basic mechanisms of jet generated noise through the range of velocities and temperatures typical of present and future military and commercial supersonic aircraft propulsion systems. A comprehensive aerodynamic analytical model describing the flow mechanisms in supersonic jets is presented and compared with experimental data. A large number of theoretical models describing supersonic far field jet noise are evaluated. (Author)

NP73-1E-027

AD-752 529 PCS3.00/MF$0.95
Environmental Health Lab McClellan AFB Calif
NOISE EXPOSURE AT AIRCRAFT MAINTENANCE POSITIONS.
Final rept.,
Robert A. Capell. Oct 70, 25p Rept no. EHL-M-70M-30

Descriptors: (*Airplane engine noise, Maintenance personnel), (*Maintenance personnel, Exposure), Sound, Military facilities, Head, Pain, Hearing, Pressure, Statistical data, Jet fighters, California.
Identifiers: *Noise pollution, *McClellan Air Force Base, F-111 aircraft, F-105 aircraft, F-106 aircraft, Noise suppressors, Noise environment.

A noise survey was conducted at McClellan AFB, California to investigate the noise environment of maintenance personnel exposed to the F111A, F105, and F106 A/C during trim run-up operations. The report describes conditions which were seen to affect the noise environment in the near field. (Author)

NP73-1E-028

AD-752 529 PCS3.00/MF$0.95
Environmental Health Lab McClellan AFB Calif
NOISE ENVIRONMENTS OF CONTROL TOWERS.
Final rept.,
Robert A. Capell. Jan 72, 20p Rept no. EHL-M-72M-1

Descriptors: (*Airport control towers, *Noise), (*Jet fighters, *Airplane noise), Sound, Air Force, Attenuation.
Identifiers: *Noise pollution, F-105 aircraft, F-4 aircraft, F-111 aircraft, F-104 aircraft.

Noise surveys were made at the control towers of two Air Force bases. Measurements of the indoor and outdoor sound pressure levels during aircraft take-offs and other operations were recorded. These data are presented so that an evaluation of the communication environments can be made by using certain quantitative data from each base. An evaluation of the noise attenuation provided by each tower is also made. (Author)

NP73-1E-029

AD-932 161 PCS5.75/MF$0.95
Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
PERFORATED WALL NOISE IN THE AEDC-PWT 16-FT. AND 4-FT. TRANSONIC TUNNELS.
Final rept.,
O. P. Credle. Oct 71, 72p AEDC-TR-71-216
Contract F40600-72-C-0003
Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-PWT-TR-71-161.
Distribution Limitation now Removed.

Descriptors: (*Transonic wind tunnels, Acoustic properties), (*Walls, aerodynamic noise), (*Noise, Control), Porosity, Resonant frequency, Boundary layer, Flow fields, Mathematical analysis, Orifices.

The report presents the results of recent studies of noise in wind tunnels. Noise levels in the free stream and at the test section wall were measured in two tunnels as a function of Mach number, Reynolds number, wall angle, and wall porosity. In one tunnel free-stream noise characteristics were also evaluated with solid (taped) test section walls. Test results revealed that the perforated test section wall holes generate discrete frequency, high energy noise. A critical Mach number range was noted.

NP73-1E-030

Interior noise irradiated by an airplane fuselage subjected to turbulent boundary layer excitation and evaluation of noise reduction treatments; W.V.BHAT (Boeing Co, Seattle, Washington), J. F.WILBY; J Sound Vibr v 18 n4 Oct 22 1971 p 445-64; The acoustic power radiated by an airplane fuselage structure exposed to a turbulent boundary layer pressure field has been measured at two flight Mach numbers. For a single fuselage panel the radiated power is approximately 90 and 70 db relative to 10^{-9} w at Mach 0.85 and 0.55 respectively. Damping tape and rubber wedge treatments, applied to the structure, reduce the acoustic radiation but they are more effective at Mach 0.85 than at Mach 0.55. The flight test data are in poor agreement with available wind tunnel measurements, indicating the need for improvements in scaling laws. 11 refs. M0972

NP73-1E-031

Community noise levels of the DC-10 aircraft; A.L.McPIKE; Anglo-Am Aeronaut Conf, 12th, July 7-9 1971, Can Aeronaut and Space Inst, 1971, Pap n 72/5, 7 p; Noise level data for the DC-10 are presented and community noise levels of the aircraft are discussed. 4 refs. 97037

NP73-1E-032

Turbofan trends for short haul; L.G.DAWSON (Rolls-Royce (1971) Ltd, Derby, England), T.D.SILLS; ASME Pap 72-GT-90 for meeting Mar 26-30 1972, 11 p; After a general indication of the noise problem the relation between conventional and STOL systems are broadly reviewed and their requirements as regards the power plant are discussed. Some of the associated technical challenges are considered including variable pitch fans, reduction gears, thrust reversal and the environment, (noise and pollution). 00016

NP73-1E-033

↑ 45943. LOVESEY, E. J. (Eng. Phys. Dep., R. Aircraft Establ., Farnborough, Engl., UK.) Hovercraft noise and vibration. J SOUND VIB 20(2): 241-245. Illus. 1972.--Hovercraft are a relatively new and unique form of transport, capable of traversing terrains which previously were almost impassable at speed by surface transport. This high-speed capability was gained partially at the cost of ride comfort, but unlike some vehicle developments, as power and speed have increased, the noise and vibration within the hovercraft have steadily decreased with each new craft. The sources of noise and vibration are discussed, together with their possible methods of reduction in order to improve crew and passenger comfort.

NP73-1E-034

73-1TE-00025
Nekipelov, M.I. Irkutsk State Medical Inst., USSR
Flight noise of aircraft and the subjective judgment of its annoyance.
Soviet Physics Acoustics, 18(1): 58-63, July-Sept. 1972.
Abs., illus., refs. (Some in Ger.; Russ.), from AA.
Trans. of: Akusticheskii Zhurnal, 18(1): 74-81, Jan.-March 1972.
AIRCRAFT : ACOUSTIC MEASUREMENTS : TRANSPORTATION NOISES : Tu-104 jet : subjective judgement of annoyance.

Take-off noise characteristics of the Tu-104 jet airliner in the far sound field was investigated. The local flight noise spectrum varies in accordance with the Doppler effect. A characteristic is given for the influence of noise persistence, number of flyovers, and population density on the subjective judgment of the noise annoyance factor. A method is described for calculating the persistence correction to the perceptible noise level.

NP73-1E-035

73-2TE-00047
Stevens, James Hay Environment This Month, Lancaster, Eng.
That sonic bang.
Environment This Month. The International Journal of Environmental Science. Lancaster, Eng., 1(2): 34-39, Aug. 1972.
Sum., illus., no refs., from Text & SS.
AIRCRAFT : TRANSPORTATION NOISES : sonic booms.

Physical properties, causes, and effects of the sonic boom are discussed. Factors affecting the boom are analyzed, including aircraft shape and weight, meteorological conditions, and height at which the aircraft is flying. Maneuvering and acceleration can cause a 4-or 6-fold increase in boom intensity due to focussing. The worst booms come during initial acceleration to supersonic speed because all factors tend toward the largest pressure pulses: the airplane is relatively low and at maximum weight and high incidence.

1E AERONAUTIC
(See Also)

1A004	2C004	3B002	3B017	3B050	3D055	4C005
1D001	2C008	3B004	3B018	3B051	3D056	5B005
1D002	2C010	3B005	3B019	3B056	3D058	5B009
1D003	2C016	3B006	3B020	3B057	4B001	5B012
1D004	3A002	3B007	3B021	3D015	4B002	5C001
1D005	3A004	3B009	3B022	3D017	4B003	5C006
1D006	3A005	3B010	3B023	3D038	4B004	5C017
1D007	3A006	3B011	3B024	3D041	4B005	5C076
1D008	3A009	3B012	3B025	3D042	4B007	
1D011	3A014	3B013	3B026	3D046	4C001	
2A001	3A020	3B014	3B027	3D047	4C002	
2C002	3A021	3B015	3B028	3D048	4C003	
2C003	3B001	3B016	3B030	3D054	4C004	

2. NOISE DETECTION AND MEASUREMENT

2.A GENERAL

A73-16936 # Atmospheric attenuation of noise measured in a range of climatic conditions. C. M. Smith. (Hawker Siddeley Aviation, Ltd., Hatfield, Herts., England). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 11th, Washington, D.C., Jan. 10-12, 1973, Paper 73-242.* 7 p. 19 refs. Members, $1.50; nonmembers, $2.00.

Standard values of atmospheric attenuation determined from SAE ARP 866 are used in correcting aircraft noise measurements from test day to reference day conditions but errors are often introduced when there is a large difference between test and reference conditions. This paper describes a systematic investigation into atmospheric attenuation by simultaneous measurement of meteorological data and aircraft noise under more than twenty different conditions of temperature and humidity. Measured attenuation values are presented which show better agreement with SAE ARP 866 predictions when conditions representing the whole noise path are used rather than surface conditions. Continuing analysis will provide a direct comparison with SAE ARP 866 and consider the problems of predicting attenuation where only limited meteorological data is available. (Author)

NP73-2A-002

73-2TE-00041
Lipscomb, David M. — Univ. of Tennessee, Noise Study Lab., Knoxville

Indicators of environmental noise.
Indicators of Environmental Quality. Symposium. Proceedings. Thomas, William A. (Ed.). (Held in Philadelphia, Pa., Dec. 26-31, 1971). Sponsored by American Association for the Advancement of Science. Washington, D.C. Plenum Publishing Corporation, Plenum Press, Environmental Science Research Series, Vol. I, New York. pp. 211-241. 1972.

Sum., illus., numerous refs., from Text & AS.

ACOUSTIC MEASUREMENTS : BIOINDICATORS : social, psychological, economic indicators : noise damage.

Human responsiveness to various sound stimuli is discussed, and stress is placed on potential indicative features of noise in the environment. Physical indicators, such as the Phon, Sone, and Noy scales, and perceived noise level, are quite reliable, and the technology is sufficient for providing highly refined sound analysis. Physiological, auditory, and vestibular indicators, such as hearing threshold shifts, cochlear cell damage, and interruption of cochlear and vestibular blood supply, can also be used to define the mechanisms of noise damage. Other indicators of environmental noise include those involving education, safety, psychology, social science, politics, and economics.

NP73-2A-003

72-5TE-0150
Pretlove, A.J. — Univ. of Reading, Dept. of Applied Physical Sciences, Eng.

Basics of noise.
See Citation No. 72-5TE-0148. 26 pages. 1972.

No abs., 11 figs., 8 refs., from Introd.

ACOUSTIC MEASUREMENTS : NOISE SOURCES : SOUND WAVES.

An introduction to acoustics as a form of wave motion is presented. Making physical measurements of sounds is covered together with the subjective side of acoustics. These subjects are related via the fundamental datum pressure of physical measurements. Definitions are given of the decibel (dB), and some of the simpler forms of loudness scale are described. Important physical characteristics of noise sources which are necessary to know about in order to control noises at their source are covered. Various facets of sound in rooms and buildings are examined.

2A GENERAL
(See Also)

1D019 1D024 1E034 3B047 3D025 5A014 5C007

2.B INSTRUMENTS

NP73-2B-001

73-1TE-00008
Conn, D.O., III — E.I. du Pont de Nemours and Co., Wilmington, DE
The audio dosimeter—a system for measuring personal noise exposure.
See Citation No. 73-1TE-00006 p. 127. [1972?].
Abs. only, from AA.
ACOUSTIC MEASUREMENTS : OCCUPATIONAL HEALTH : MEASURING METHODS : MONITORING INSTRUMENTS : abstract only : audio dosimeter.

An accurate measurement on the 'A' scale of the sound energy reaching the ear of the employee during his work days is necessary; his exposure should be limited to prescribed values. Methods of obtaining this measurement utilizing sound level meters, plus time and motion studies, are reviewed and limitations are defined. A new method to obtain this measurement is described. In a single operation, an instrument continuously measures the sound at the ear of the employee for all values between 90 and 115 dbA, simultaneously measures time, and integrates the result. Exposure over 115 bdA other than impulsive or impact noise is also indicated. Results of 14 mo of field experience are presented and advantages over previous methods are discussed.

NP73-2B-002

73-1TE-00010
Basch, M.W. — General Radio Co., Engineering Dept., Concord, MA
A wearable pocket noise dosimeter.
See Citation No. 73-1TE-00006 p. 128. [1972?].
Abs. only, from AA.
ACOUSTIC MEASUREMENTS : MEASURING INSTRUMENTS : ENGINEERING : abstract only : dosimeters.

A noise dosimeter that meets the ANSI Type II Sound-Level Meter Standard and accumulates the OSHA percentage directly is discussed. The frequency response for noise dosimeters should be measured with 1/3-octave bands of random noise in a reverberant room since this is more repeatable and a better approximation for a device that will ultimately measure noise. These frequency response measurements will show the effects of the proximity of the wearer. The dosimeter is composed of 2 parts: a small pocket unit that accumulates and stores the digital data representing the OSHA percentage and an indicator unit that provides a digital readout on a light emitting diode display. The pocket unit includes a small ceramic microphone, a true rms detector with more than 15 db crest factor capacity, and an extremely low-power MOS digital counter to store the OSHA percentage. It weighs 7 oz and runs for over 300 hr on an ordinary 9V transistor battery.

NP73-2B-003

[Low-cost classification measuring instrument for the exact determination of equivalent permanent noise level] Liebig W.
Z Gesamte Hyg 18:318-21, May 72 (Ger)

NP73-2B-004

39

[Improved noise meter] Kalugin GP.
Gig Sanit 37:81-2, Feb 72 (Rus)

2B INSTRUMENTS
(See Also)

2C008 3D052 5C013 5C022

2.C TECHNIQUES

NP73-2C-001

N73-11710*# Techtran Corp., Glen Burnie, Md.
LOUDNESS OF UNIFORM NOISES
E. Zwicker and R. Feldtkeller Washington NASA Nov. 1972 21 p refs Transl. into ENGLISH from Acustica (Stuttgart), v. 5, 1955 p 303-316
(Contract NASw-2037)
(NASA-TT-F-13812) Avail: NTIS HC $3.25 CSCL 20A

With the aid of equal loudness contours, of the measured width of the frequency groups and reduction of loudness in neighboring frequency groups, the level of sustained noises with given spectra can be calculated. The aural analysis of a sound into bands of definite size already demonstrated for the hearing threshold, masking and phase detection, appears meaningful in the investigation of noise levels. Loudness is estimated from the sound intensity in the frequency groups, acting separately at low intensities but with considerable throttling of one group by neighboring ones at high intensities. Author

NP73-2C-002

A73-10241 # Measurements of helicopter noise in flight. (Mesures de bruit d'hélicoptères en vol). F. d'Ambra, J.-P. Dedieu (Société Nationale Industrielle Aérospatiale, Marseille, France), and A. Julienne (ONERA, Châtillon-sous-Bagneux, Hauts-de-Seine, France). *(NATO, AGARD, Groupe Dynamique des Fluides, Réunion, Marseille, France, Sept. 13-15, 1972.) ONERA, TP no.* 1130, 1972. 10 p. In French.

Noise measurements have been performed on several helicopters in September 1971. These tests, prepared in close connection with ONERA, were aimed toward a complete survey of helicopters internal and external noise levels in several flight conditions. In order to satisfy the objectives of these tests, original techniques were used, in particular through precise time measuring trajectography equipment. Data analysis of flyover tests follows conventional aircrafts acoustical certification procedure. Test results are corrected to duplicate nominal flight path and standard atmosphere conditions in several noise units. A statistical analysis of maximum noise levels has been performed and results are presented with their confidence level. The use of the trajectography equipment grants in addition the exact timing of acoustical spectra from which directivity patterns of noise radiated from the complete aircraft in flight and from particular noise sources can be obtained. (Author)

NP73-2C-003

A73-12957 # On evaluation of aircraft noise around airbases by factor analysis. G. Nishinomiya (Japan Broadcasting Corp., Tokyo, Japan). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 313-316.

In application of the method of factor analysis to aircraft noise, the observed variables such as noise level dB(A) are assumed to be expressible in terms of a number of factors such as type of aircraft, distance from runway, and state of flight. It is shown that aircraft noise level may be expressed by those three items with accuracies of 77% or more. Factor analysis is also effective for other noise problems. F.R.L.

NP73-2C-004

A73-12978 # Techniques for determining the noise zones in the vicinity of the central Berlin-Schönefeld airport, and related problems (Methodik und Probleme bei der Bestimmung von Lärmzonen in der Umgebung des Zentralflughafens Berlin-Schönefeld). J. Hilscher (Zentralinstitut fur Verkehrsmedizin, Berlin, East Germany). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 517-520. In German.

Theoretical considerations are given regarding the determination of a set of parameters which are essential in defining the noise zones around this airport. Preliminary results are given for the relation between sonic boom and aircraft distance, for different aircraft types as sources of noise, for noise levels under current take-off procedures, and for the effects of meteorological and topographic factors on noise propagation in the airport area. V.Z.

NP73-2C-005

A73-12981 # Aerodynamic noise and alternating loads in an idealized turbine stage. F. J. Lagarer (Waterloo, University, Waterloo, Ontario, Canada). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 649-551.

From Imbach's (1971) flow computation method for two cascades in relative motion, a modified method is derived for the calculation of aerodynamic noise and alternating loads in an idealized turbine stage. The modification reduces the numerous numerical results Imbach's method yields to the most relevant parts only, namely, noise spectrum and alternating loads acting on the blades. M.V.E.

NP73-2C-006

A73-10023 * # Evaluation of the noise autocorrelation function of stationary and moving noise sources by a cross correlation method. S. P. Parthasarathy (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 11th, Washington, D.C., Jan. 10-12, 1973, Paper 73-165.* 9 p. 5 refs. Members, $1.50; nonmembers, $2.00. Contract No. NAS7-100.

NP73-2C-007

A72-39354 A new approach to the measurement of very low acoustic noise levels. L. S. Whittle and D. H. Evans (Aeronautical Research Council, National Physical Laboratory, Teddington, Middx., England). *Journal of Sound and Vibration,* vol. 23, July 8, 1972, p. 63-76. 9 refs.

NP73-2C-008

A72-44094 # Results of an area wide noise monitoring system. N. Evans (Orange County Airport, Noise Abatement Center, Santa Ana, Calif.), G. Bricken (Northrop Corp., Anaheim, Calif.), and J. Hilliard (H & R Technology, Orange, Calif.). *Acoustical Society of America, Spring Meeting, 83rd, Buffalo, N.Y., Apr. 18-21, 1972, Paper.* 14 p. 6 refs.

Description and results of application of a multipoint real-time 24-hour computerized noise monitoring system which has permitted extensive diagnostic evaluation of a typical airport. A monitoring system, known as ECOLOG, is described which consists of five sensors arrayed in both the landing and departure zones of the Orange County Airport at Santa Ana, Calif. The central processor consists of an input/output buffer called the interface chassis and a general-purpose computer. A teletype and display unit are connected to the central processor. The application of the airport's noise monitoring system is discussed, as well as the genesis and subsequent modification of the airport's noise abatement program in response to citizen reaction. A.B.K.

NP73-2C-009

A72-42999 A look at the duration correction for computing EPNL. G. Banerian (U.S. Department of Transportation, Office of Noise Abatement, Washington, D.C.). *Journal of Sound and*

Vibration, vol. 23, Aug. 22, 1972, p. 415-421. 6 refs.

This paper is concerned with the problem of computing the noise duration correction as the effective duration time tends to zero, a condition that results when the peak pressure level approaches a noise floor. The present method for computing the duration correction leads to extremely large negative values as the effective duration time approaches zero. A modification is suggested to avoid this anomaly. (Author)

NP73-2C-010

Experimental atmospheric absorption values from aircraft flyover noise signals; D.E.BISHOP (Bolt Beranek and Newman, Inc, Van Nuys, Calif), M.A.SIMPSON, D.CHANG; NASA Contract Rep CR-1751 June 1971, 72 p; A detailed analysis of the noise recorded on the ground during a series of 20 aircraft flyovers by two aircraft (a four-engine turbojet transport and a four-engine piston transport) during a single day of field measurements has been conducted. Noise levels recorded at five positions under and to the side of the flight path were acquired from the field tests. Differences in one-third octave band noise levels observed at different ground positions for the same angle of radiation from the aircraft were utilized to obtain sets of absorption values. 7 refs. 59497

NP73-2C-011

Perceived level of noise by Mark VII and decibels (E). S. S. Stevens. bibliog Acoustical Soc Am J 51:575-601 pt 2 F '72.

NP73-2C-012

73-1TE-00009
Socks, H.K. (all) USBM, Pittsburgh, PA
Durkin, J.
Murphy, J.N.
Noise monitoring and personal protection.
See Citation No. 73-1TE-00006 pp. 127-128. [1972?].
Abs., refs. from AA.
ACOUSTIC MEASUREMENTS : MONITORING INSTRUMENTS : OCCUPATIONAL HEALTH : abstract only : personal audio dosimeters : ear muffs.

A personal audio dosimeter was developed to monitor an individual's exposure to noise. The dosimeter is only 16 in^3 and is carried in an individual's pocket. The batteries provide for 2-mo operation and the unit features instantaneous readout of the percentage of maximum permissible exposure, true rms detection, and a continuous weighting scale. The results obtained in field testing and performance criteria for such devices are discussed. An ear muff with miniaturized electronics to permit the wearer to hear low level signals while wearing the muff but protect him from levels in excess of 90 dbA is also described.

NP73-2C-013

73-2TE-00046
Schlafer, J.L. Whirlpool Corp., Evansville Div., IN
Progress in reducing noise in consumer products.
See Citation No. 73-2TE-00045 ASME Publication No. 72-DE-32, 9 pages, [1972?].
Abs., illus., refs., from AA & Text.
NOISE REDUCTION : ACOUSTIC MEASUREMENTS : consumer products : identification techniques.

The reduction of sound level generated by a product involves determining the sources and attenuating or eliminating the noise by design. Several techniques for identifying noise sources are discussed. Spectrum, correlation and coherence functions can yield considerable insight into noise sources and transmission paths. The spectrum reveals all the frequencies contained in the sound generated by a product; the correlation functions reveal the transmission paths from various components as well as which specific frequencies each component may be generating; and the coherence function determines whether a frequency generated at one point is coherent with an apparent same frequency located at another point. Applying the results of the coherence spectrum to the cross-spectrum yields a very valuable corrected cross-spectrum.

NP73-2C-014

72-5TE-0152
Kuehn, J.H. B&K Labs. Ltd., Eng.
Measuring techniques.
See Citation No. 72-5TE-0148 13 pages 1972.
No abs., 6 figs., no refs., SS.
ACOUSTIC MEASUREMENTS : INSTRUMENTS : NOISE CONTROL.

Measuring techniques employed in noise monitoring and vibration measurements are presented. Microphones, sound level meters, sequential analyzers, parallel analyzers, level recorders, dose meters, accelerometers, velocity transducers, vibration meters, and force gauges are discussed.

NP73-2C-015

72-6TE-0189
Shaw, E.A.G. (both) NRCC, Div. of Physics, Ottawa, Can.
Olson, N.
Theory of steady-state urban noise for an ideal homogeneous city.
Acoustical Society of America, Journal, 51(6): 1781-1793, June 1972.

Abs., 13 figs., 3 tables, appendix, 25 refs. (1 in Ger.), from AA.
NOISE SOURCES : MOTOR VEHICLES : SOUND PROPAGATION : SOUND PRESSURE LEVELS : ideal theory : steady-state urban noise.

The city is treated as a plane surface with many identical sound sources (motor vehicles) randomly distributed over its area. An expression for the mean energy density at any point in the plane is given. To obtain the steady-state (median) energy density, a central cell containing a single discrete "test" vehicle is identified and treated separately from the rest of the distribution. Graphs and tables of steady-state level and energy density as functions of N and a are given for the homogeneous infinite city, the city of finite size, and the traffic-free zone within a city. The spreading of urban noise is determined by a characteristic distance with a typical value of 0.25 km. The observed octave-band sound-pressure levels at one location in Ottawa are compared with calculated levels based on statistical data for vehicle source strength, estimates of vehicle density, and known atmospheric absorption constants. The differences are consistent with a shielding factor of 15 d which has an effective value substantially independent of frequency.

NP73-2C-016

72-6TE-0162
McNeill, Harry Rensselaer Polytechnic Inst. of Connecticut, Hartford
Digital data reduction methods for aircraft engine noise analysis.
Sound and Vibration, 6(4): 26-29, April 1972.
Abs., 9 figs., 2 tables, 2 refs., from AA.
AIRCRAFT : NOISE MEASUREMENTS : JET ENGINES : noise analysis : digital data reduction.

Digital data reduction methods for analyzing aircraft engine noise characteristics are discussed. It is noted that the approach used is superior to those employing analog electronic analyzers because of reduced analysis time, lower cost, and improved information exchange resulting from the analytical technique standardization that is possible. Analysis of a fan noise spectrum is used to illustrate the method.

NP73-2C-017

72-6TE-0165
Ingemansson, Stig (both) Ingemanssons Ingenjorsbyraa AB,
Ljunggren, Sten Goeteborg, Sweden
Bullerproblem vid trafikleder: En litteraturstudie och forslag till beraekningsmetodik.
Stockholm, Statens Institut foer Byggnadsforskning, Byggforskningens Rapport No. R20, 192 pages, 1970.
In Swedish; Eng., Swed. sums. and legend, 84 figs., 24 tables, numerous refs. (In Eng.; Fr.; Ger.), from AS.
NOISE SOURCES : MOTOR VEHICLES : NOISE MEASUREMENTS : traffic noise : calculation method.

Existing literature on different methods of calculating traffic noise is reviewed. A new method for calculating noise from road traffic is presented, based on extensive measurements and differing from other methods mainly in that it was possible to simplify the calculating procedure due to the development of new types of charts. A new method is also presented for assessing the effect of finite screens. The new method is directly compared with the other older methods of calculation.

2C TECHNIQUES
(See Also)

1D018	3A009	3C002	4B004	5A004	5B006	5C003
25001	3A025	3D017	4C001	5A012		

2.D FACILITIES

NP73-2D-001

N72-20000*// Stanford Research Inst., Menlo Park, Calif.
PERCEIVED NOISINESS UNDER ANECHOIC, SEMI-REVERBERANT AND EARPHONE LISTENING CONDITIONS
Frank R. Clarke and Karl D. Kryter Washington NASA Aug. 1972 30 p refs
(Contract NAS1-10017)
(NASA-CR-2103) Avail: NTIS HC $3.00 CSCL 03B

Magnitude estimates by each of 31 listeners were obtained for a variety of noise sources under three methods of stimuli presentation: loudspeaker presentation in an anechoic chamber, loudspeaker presentation in a normal semi-reverberant room, and earphone presentation. Comparability of ratings obtained in these environments were evaluated with respect to predictability of ratings from physical measures, reliability of ratings, and to the scale values assigned to various noise stimuli. Acoustic environment was found to have little effect upon physical predictive measures and ratings of perceived noisiness were little affected by the acoustic environment in which they were obtained. The need for further study of possible differing interactions between judged noisiness of noisy stimuli heard and the methods of magnitude estimation and paired comparisons is indicated by the finding that in these tests the subjects, though instructed otherwise, apparently judged the maximum noise than the effective magnitude of noisy-stim noise. Author

47

2D FACILITIES
(See Also)

2B002 5B001

3. NOISE ABATEMENT AND CONTROL

3.A GENERAL

NP73-3A-001

N73-13204// IIT Research Inst., Chicago, Ill.
STUDY OF NOISE IN AIR ROUTE TRAFFIC CONTROL CENTER, FLIGHT SERVICE STATION, AIR TRAFFIC CONTROL TOWER AND REMOTE FACILITIES Final Report, 10 Nov. 1971 - 10 May 1972
J. M. Clinch and H. G. Wolotzky Oct. 1972 20 p refs
(Contract DOT-FA71WA-2567)
(U-6250; FAA-RD-72-104) Avail: NTIS HC $3.50

Various methods of reducing noise in several FAA air traffic control and navigational facilities that exceed the recommended facility noise criteria are described. Noise control procedures for each facility under consideration are discussed as well as the reasons for selecting specific noise reduction methods. Author

NP73-3A-002

N73-30775*// National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio
THE NASA QUIET ENGINES
Carl C. Ciepluch [1972] 10 p refs Presented at INTER-NOISE 72, Washington, D. C., 4-6 Oct. 1972; sponsored by Inst. of Noise Control Eng
(NASA-TM-X-68121; E-7000) Avail: NTIS HC $3.00 CSCL 21A

Efforts to develop an engine noise reduction technology suitable for use on subsonic and conventional takeoff and landing type aircraft are reported. Two boundary quiet engines were developed and tested. The engines were designed with the following quiet features. (1) high bypass ratio engine, (2) large rotor-stator spacing of rotor chords, (3) reduced rotor tip speeds, (4) sound absorbing liners in inlet-outlet ducts, and (5) an optimum ratio from stator to rotor blades. Test results show that if these features are applied to future aircraft, substantial reduction in aircraft noise levels will be obtained. E.H.W.

NP73-3A-003

N72-30979// Environmental Protection Agency, Washington, D.C. Office of Noise Abatement and Control.
NOISE PROGRAMS OF PROFESSIONAL/INDUSTRIAL ORGANIZATIONS, UNIVERSITIES AND COLLEGES
31 Dec. 1971 85 p refs
(NTID300.9) Avail: SOD $0.75

Information pertaining to noise programs being sponsored or carried out, either directly or indirectly, by professional, industrial, and voluntary associations (societies) is provided. Information is also given on private industry research and educational and research programs. A bibliography of pertinent publications relating to noise is included. Author

NP73-3A-004

A73-14135 // A review report on jet noise suppression as seen by an aircraft manufacturer. W. C. Swan and C. D. Clinton (Boeing Co., Seattle, Wash.). *Institut de Mecanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 42 p. 11 refs.

Summary of the activities of an aircraft company with regard to the reduction of jet efflux noise for three major applications of commercial aircraft. The SST noise problem is discussed first. Activities with regard to the use of duct, ejector, and water in combination with C-D and plug nozzles will be outlined. Comparisons of noise suppression and thrust loss are made, and it is shown how these data support the compatibility of an SST with the community. The conventional subsonic jet noise problem is reviewed in the light of current and proposed noise regulations. Recent test experience is reviewed and an estimate is made of the apparent jet noise floor which can be commercially accepted. The jet noise problem for future STOL or short-haul aircraft is discussed and the apparent lack of agreement on noise data in the low-velocity, 300 to 500 ft/sec range is indicated. The amplification of jet noise due to flap impingement on an EFB configuration is noted. (Author)

NP73-3A-005

A73-14147 // The variable pitch fan - Propulsion for quiet STOL. D. G. M. Davis (Davy Ross, Ltd., Gloucester, England). *Institut de Mecanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 39 p. 6 refs.

Review of design-and-development work on the concept of variable pitch fan propulsion for a quiet STOL transport aircraft. The results of the six year plan of work are summarized as a demonstration of the basic feasibility of a fully variable pitch fan driven by an Astazou turbo-shaft engine and the refinement of mechanical design aspects to meet the requirements of various applications. Special attention is given to the aerodynamic and acoustic tests on different blade designs covering the entire pitch range. A compressor test rig with the blade pitch helical and root between tests and an Astazou-driven variable pitch fan were used in the tests. The advantages of this STOL propulsion design concept are indicated. V.Z.

NP73-3A-006

A73-17272 Recent progress in the field of aircraft noise technology (Progressi recenti nel campo della tecnologia del rumore aeronautico). L. G. Napolitano and G. D'Elia (Napoli, Universita, Naples, Italy). *L'Aerotecnica - Missili e Spazio*, vol. 51, Aug. 1972, p. 289-297. 30 refs. In Italian.

NP73-3A-007

PB-211 169 PC A04/MF A01
West Virginia Univ., Morgantown. Engineering Experiment Station.
DORMITORY NOISE ABATEMENT,
James R. Stafford, Jr., and Douglas E. Kruhm.
Mar 72, 157p° Report no. 16
Grant NSF-GY-9192
Pub. as West Virginia Univ. Bull. Ser-72, no. 10-1, Apr 72.

Descriptors: (°Noise reduction, °Residential buildings), Students, Acoustics, Auditory perception, Psychophysics, Law (Jurisprudence), Building codes.
Identifiers: °Dormitories.

In discussing the problem of dormitory noise abatement, five papers are presented dealing with some basic principles of acoustics; the structure and function of the auditory system; physiological, physical and psychological effects of noise upon man; and legal justification for noise abatement in dormitories. (Author)

NP73-3A-008

PB-212 655 PC $3.00/MF $0.95
Bureau of Mines, Washington, D.C.
MEASUREMENT AND REDUCTION OF NOISE FROM DETONATING CORD USED IN QUARRY BLASTING.
Rept. of investigations,
Austin V Bone. Sep 72, 34p Bu Mines-RI-7670
Prepared in cooperation with Denver Technical Support Center, Colo.

Descriptors: (°Blasting, °Noise reduction), (°Safety engineering, °Quarrying), Detonating cord, Acoustic measurement, Auditory perception, Industrial hygiene.

Staff members of the Bureau of Mines, Health and Safety Technical Support Center, Denver, Colorado, conducted a series of tests to determine the best means of reducing noise generated by the detonating cord that is utilized for trunklines in quarry blasting. Ten different types of detonating cord were tested and evaluated for their acoustic qualities. The results of the investigation showed that noise levels produced by low core load per foot detonating cord not covered were lower than those produced by high core load per foot detonating cord covered with six inches of unconsolidated material. (Author)

NP73-3A-009

PB-210 [illegible] PC $3.00/MF $0.95
Wilsey and Ham, South Pasadena, Calif.
AIRCRAFT NOISE IMPACT-PLANNING GUIDELINES FOR LOCAL AGENCIES.
Final rept.,
R. Dale Beland, and P. Patrick Mann. Nov 72, 234p° WH-972-1
Contract HUD-H-1695
Prepared in cooperation with Bolt, Beranek and Newman, Inc., Canoga Park, Calif.

Descriptors: (°Aircraft noise, °Noise reduction), (°Airports, Planning), Urban planning, Regional planning, Standards, Management, Site selection, Environmental engineering, Acoustic insulation.
Identifiers: °Noise pollution.

The manual interprets the information developed in the Metropolitan Aircraft Noise Abatement Policy Studies reports and other case studies of aircraft noise abatement and presents it in a form that provides a practical tool for the local planner, local government and others in developing a comprehensive aircraft noise abatement policy and program. The manual contains a discussion of the entire process of developing a noise abatement program including defining the existing noise problem, determining where the noise situation may conflict with existing or proposed development, developing a program for reducing conflict, evaluating impact of the program on the community, implementing the program through legislation and action programs. Technical appendices include current FAA/DOT systems, method of finding Noise Exposure Forecast (NEF) level for a given location, analysis of sound insulation, and an annotated bibliography. (Author)

NP73-3A-010

PB-214 [illegible] PC [illegible]/MF $0.95
Environmental Protection Agency, Washington, D.C.
TOWARD A NEW ENVIRONMENTAL ETHIC.
Sep 71, 22p
Paper copy available from GPO as stock no. 5500-0051.

Descriptors: (°Pollution, °Government policies), (°Air pollution, Government policies), (°Water pollution, Government policies), National government, Waste disposal, Noise (Sound), Reviews.
Identifiers: °Solid waste disposal, °Noise pollution, Government agencies.

The pamphlet briefly reviews the purposes and functions of the Environmental Protection Agency.

NP73-3A-011

73-1TE-00005
Mann, P. Humphreys & Glasgow Ltd., Eng.
Lower your plant-noise levels.
Chemical Processing. London, 18(6): 79-80, June 1972.
Sum., illus., no refs., SS.
INDUSTRIAL PLANTS : NOISE REDUCTION : ENGINEERING : COMPUTER PROGRAMS : plant design.

The need to limit plant noise to meet increasingly stringent regulations and standards should be considered during the plant design stage to avoid costly modifications. Design procedures utilizing a computer program were developed by Humphreys & Glasgow Ltd. The program calculates the maximum tolerable sound pressure level for each individual piece of equipment so that the total assembly will meet both community and plant noise level limits, and also provides data for preparing detailed specifications for each piece of equipment. The second part of the program shows the effect of the detailed engineering on the noise levels of the plant.

NP73-3A-012

73-1TE-00018
Jana, F.S. Western Electric, Hawthorne Works, Chicago, IL
Applied acoustical technology—basis of Western Electric Hawthorne Works hearing protection program.
See Citation No. 73-1TE-00006 p. 170. [1972?].
Abs. only, from AA.
HEARING : NOISE REDUCTION : OCCUPATIONAL HEALTH : INDUSTRIAL PROGRAMS : abstract only : hearing protection program : Western Electric Hawthorne Works.

A brief history of Western Electric's mandatory hearing conservation and engineering noise abatement program is given. To augment the in-plant long-range efforts to reduce noise at its source, the Western Electric procurement specification for the purchase of new machinery is detailed. The mandatory hearing conservation program is outlined.

NP73-3A-013

73-1TE-00019
Hill, V.H. E.I. du Pont de Nemours and Co., Wilmington, DE
Noise control of high volume gas handling plants.
See Citation No. 73-1TE-00006 p. 171. [1972?].
Abs. only, from AA.
NOISE REDUCTION : CHEMICAL INDUSTRY : OCCUPATIONAL HEALTH : INDUSTRIAL NOISES : MACHINERY : abstract only : gas handling plants.

Case histories of noise problems associated with such plants as are common in the manufacture of ethylene and ammonia, are presented. The following sources are included: centrifugal compressors, piping, turbine, electric motor, gears, pressure reducing valves, vent mufflers, and oil and gas burners.

NP73-3A-014

73-1TE-00028
Becker, William B. Air Transport Assoc. of America
Aircraft noise and the airlines.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 76, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720621.
AIRCRAFT : NOISE REDUCTION : GOVERNMENT FUNDING : abstract only.

The U.S. airlines' deep concern over aircraft noise and the abatement thereof is described. The 3 basic approaches are set forth: reducing noise at the source, operational procedures, and control of land use in the airport vicinity. Emphasis is placed on the need for much larger government funding for aircraft noise research and development.

NP73-3A-015

73-1TE-00031
Young, Thomas C. Engine Manufacturers Assoc.
Noise abatement—a balanced approach.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 76, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720626.
NOISE REDUCTION : ECONOMICS : abstract only.

Concern over noise emissions has increased significantly. The noise emission problem is related to other pollution efforts, and alternative abatement strategies are defined. Major technical and economic parameters are discussed, based on the present state-of-the-art. A balanced approach to noise abatement is suggested.

NP73-3A-016

73-1TE-00030
McPike, A.L. McDonnell Douglas Corp., Long Beach, CA
Air transportation system planning: Progress in noise reduction.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 79, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720662.
AIRCRAFT : NOISE REDUCTION : TRANSPORTATION NOISES : ENGINEERING : abstract only : design.

How community noise considerations affect the development of new commercial transport aircraft is examined. The general noise level goals of the manufacturer are discussed and information is provided to show that, contrary to popular opinion, the noise levels of succeeding generations of jet transports were generally lower than those of their predecessors. Some of the evaluation procedures available for minimizing community noise are examined, along with some of the constraints the aircraft manufacturer faces in the design process. Future trends in community noise levels are assessed.

NP73-3A-017

73-1TE-00039
Cohn, Louis F. Kentucky Dept. of Highways, Frankfort
Traffic noise—measurement and abatement.
Environmental Engineering and Science Conference. Second Annual. Summaries. (Held in Louisville, Ky., April 20-21, 1972). University of Louisville, Kentucky. p. 95. [1972?].
Sum. only, from AS.
NOISE REDUCTION : MOTOR VEHICLES : TRANSPORTATION NOISES : ENGINEERING : LEGISLATION : KENTUCKY : summary only.

Taking action for traffic noise abatement involves control of the 3 phases of noise: at the source—motor vehicles—the answer lies in legislation, because the technology already exists; with respect to highways—the path—the answer is improved design techniques; and improved zoning laws would be a significant contribution to problems in the receiver phase. The legislative and design aspects of traffic noise control are discussed, with particular reference to noise measurement and abatement in Kentucky.

NP73-3A-018

73-1TA-00162
Lucas, Albert G. — General Motors Corp., Environmental Activities Staff, Warren, MI
Niepoth, George W. — General Motors Corp., Engineering Staff, Warren, MI

Future of gasoline engines.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 75-76, July 1972.
Abs. only, AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720618.
GASOLINE ENGINES : EMISSION CONTROL : NOISE REDUCTION : ECONOMICS : abstract only.

The present gasoline engine is examined against the requirements for an automotive powerplant such as performance, economy, operational factor and availability considerations. New factors of emissions and noise are shown to modify the basic requirements. The effect of these factors on future gasoline engines is discussed.

NP73-3A-019

73-1TG-00187
Anon.
Environmental engineering and science conference.
Environmental Engineering and Science Conference. Second Annual. Summaries. (Held in Louisville, Ky., April 20-21, 1972). [1972?].
Sums., illus. for various papers, SS.
AIR POLLUTION : MONITORING SYSTEMS : WATER QUALITY : NOISE REDUCTION : WASTE TREATMENT : CONFERENCES : proceedings : summaries only : selected summaries cited.

Environmental pollution is discussed, including: air quality control; water quality; noise abatement; solid waste disposal; and waste water treatment. In addition to technology, legal and economic aspects of environmental pollution are considered.

NP73-3A-020

73-2TE-00040
Stevens, James Hay
Combating aircraft noise.
Environment This Month. The International Journal of Environmental Science. Lancaster, Eng., 1(1): 12-120, July 1972.
Sum., illus., no refs., from Sum.
AIRCRAFT : NOISE REDUCTION : GOVERNMENT REGULATIONS.

Specific sources of noise (efflux, internal, and fan) in different types of aircraft are examined, and measures being taken to reduce aircraft noise to within human tolerance levels are discussed. The impact of new noise regulations on existing aircraft and the design of future aircraft are also examined.

NP73-3A-021

73-2TE-00048
Zonderland, Pieter, (Ed.) — Netherlands School of Economics, Rotterdam

Noise 2000.
Noise 2000. Association Internationale Contre le Bruit. International Congresses. 5th and 6th. (Held in London, Eng., May 1968 and Groningen, Neth., May 1970). (International Scholarly Book Services, Inc., Portland, Oregon). 311 pages. 1971. Price: $26.25.
Sums., illus., refs. for various papers, from Text & SS.
NOISE REDUCTION : INDUSTRIAL NOISES : TRANSPORTATION NOISES : PUBLIC HEALTH : CONFERENCES : BOOKS : Association Internationale Contre le Bruit : congress proceedings : selected papers cited.

From the fields of science, economy, and administration, papers are presented on new-found knowledge in the branches of medicine, noise prevention techniques, and law. Topics cover progress in noise control in various countries, aircraft noise, effects of noise on people, industrial noise, methods of noise assessment, traffic noise, and noise in construction and in buildings. Resolutions of the participants in the 6th International Congress for Prevention of Noise regarding promotion of noise reduction are also itemized.

NP73-3A-022

73-2TE-00050
Hartig, Herbert — Zentralinstitutes fuer Arbeitsschutz, Dresden, GDR
Junghans, Rudolf — Arbeitsschutz der Bergakademie, Freiberg, GDR

Organisation und Wirksamkeit des Laermschutzes in der DDR.
See Citation No. 73-2TE-00049 pp. 26-31. 1971.
In German; Eng., Fr., Ger. sums., no refs., from AS.
NOISE REDUCTION : GERMAN DEMOCRATIC REPUBLIC.

The organization of essential elements of noise control in the German Democratic Republic is described, and it is shown in what way noise control will become effective. Some basic principles are stated; how they are realized and put into practice by efficacious incorporation into the managerial and leading activity in factories, complexes of factory plants, and industrial branches as well as by incorporation into the governmental and social supervision is explained.

NP73-3A-023

73-2TE-00063
Baron, Robert Alex — Citizens for a Quieter City, Inc., New York, NY

American industry must end the tyranny of noise.
See Citation No. 73-2TE-00049 pp. 143-146. 1971.
In English; Eng., Fr., Ger. sums., no refs., from AS.
NOISE REDUCTION : INDUSTRIAL NOISES : FEDERAL REGULATIONS.

Industry must take the initiative to design for quiet without waiting for legislation and proof of a large market. The motivation is preservation of the human environment. Some voluntary moves have already been made in the U.S. Manufacturers have voluntarily made silenced giant portable air compressors, a quieter garbage truck, a silenced metal garbage can, a silent calculating machine. Legislation will now be needed to protect these progressive manufacturers from their noisier but cheaper competition, to protect the public from misleading advertising, and to improve design goals. But the federal government is moving too slowly. Industry can choose to sit back and wait, or it can voluntarily expand displays of leadership mentioned above. To educate industry to its responsibility to man and his environment is a major goal of Citizens for a Quieter City. The ultimate noise abatement goal must be a partnership of government, citizen, and industry.

NP73-3A-024

73-2TE-00064
Lang, Judith — Staatliche Versuchsanstalt fuer Waerme- und Schalltechnik am Technologischen Gewerbemuseum, Vienna, Austria

Steerung der Nachbarschaft durch Betriebslaerm.
See Citation No. 73-2TE-00049 pp. 147-157. 1971.
In German; Eng., Fr., Ger. sums., illus., refs., from AS.
NOISE LEVELS : INDUSTRIAL NOISES : LEGISLATION : adjacent neighborhood disturbance.

Research which examines methods of reducing and avoiding noise disturbance from industrial establishments is presented. A basis is provided by the cases of disturbance from factory noise to adjacent

residential dwellings with which the State Research Institute for Thermal and Sonic Technology (Austria) dealt in the last 15 yr. Three separate groups of industry can be distinguished with reference to noise production and methods of reducing the external emission of noise: large plants that occupy considerable areas of land and where at least a part of the noise production is out-of-doors; fairly large enterprises operating in their own self-contained industrial premises; and smaller plants that do not require an entire industrial premise and are therefore usually housed in the basement, ground floor, yard or annex of dwelling houses. The laws of extending and checking airborne and structure-borne sound are studied with practical examples and on a model.

NP73-3A-025

72-5TE-0148
Anon.
Noise and vibration control for industrialists.
Noise and Vibration Control for Industrialists. Conference. Papers. (Held in Bath, Eng., April 10-12, 1972). Sponsored by Institution of Electronic and Radio Engineers; Society of Environmental Engineers; University of Bath and University of Wales, Institute of Science and Technology. University of Bath, England. 243 pages. 1972.
Figs., tables, appendices, refs. for various papers, SS.
NOISE CONTROL : VIBRATION : INDUSTRIAL NOISE : conference papers : selected papers cited.

A series of papers on industrial noise and vibration control is presented. Topics include basics of noise and vibration; principles of noise and vibration control; measuring techniques, acoustic materials for absorption; acoustic materials for transmission loss; vibration isolation; vibration test facilities and techniques; criteria and standards; hearing conservation; and an industrial noise control case study.

NP73-3A-026

72-5TE-0151
Hub, D.R — Univ. of Wales, Inst. of Science and Technology, Dept. of Applied Physics, Cardiff, Eng.
Principles of noise control.
See Citation No. 72-5TE-0148. 18 pages. 1972.
No abs., 7 figs., 2 appendices, 19 refs., from Text.
NOISE CONTROL : technology : source : path : receiver.

Noise control is the technology of obtaining an acceptable noise environment at a receiver consistent with economic and operational considerations. The receiver may be, for example, a group of people, an entire community, or a piece of equipment. Various aspects of noise control are discussed: reasons for noise control; economic considerations; points of attack; statistical aspects; interaction between source, path and receiver; noise control at the source; control of the transmission path; noise control at the receiver; and systematic noise control.

NP73-3A-027

72-5TE-0155
Gordon, Colin G. — Univ. of Southampton, Inst. of Sound and Vibration Research, Wolfson Unit for Noise and Vibration Control, Eng.
Industrial noise control: A case study.
See Citation No. 72-5TE-0148. 18 pages. 1972.
No abs., 3 figs., 4 tables, 69 refs., from Introd. & SS.
NOISE CONTROL : INDUSTRIAL NOISE : FOUNDRIES : ENGLAND : building design.

A case study is presented which involves the development of noise design constraints for the installation of a new plant in a foundry in the Midlands of England. The various stages of development are described: pre-furnace noise prediction; extrapolation to new plant design; community criteria; noise control design; and alternative site.

NP73-3A-028

72-5TE-0157
Cosorta, L.V. — American Oil Co., Texas City, TX
Plant operations & loss prevention: Noise abatement in ammonia plants.
Chemical Engineering Progress, 68(5): 41-42. May 1972.
Abs., 3 figs., no refs., from Text & SS.
INDUSTRIAL PLANTS : NOISE CONTROL : NOISE REDUCTION : TEXAS : ammonia plant : refinery : equipment modifications : protective measures.

A case history is presented of the noise abatement program initiated at the ammonia facility of the American Oil Co. integrated refinery. Noise sources were identified and silencers were installed at the process vent upstream of shift conversion and at a steam superheating coil outlet vent. Concurrent with equipment modifications to reduce, a plant-wide program was instituted to specify protective measures to be used when work conditions require extended exposure to noise.

NP73-3A-029

72-5GD-0581
Bernert, J.
Protection of the environment — a task of our time.
Staub-Reinhaltung der Luft, 31(8): 28-30. Aug. 1971.
In English; no abs., 1 ref., from Text & SS.
EMISSION CONTROL : WATER QUALITY : NOISE REDUCTION : GOVERNMENT PROGRAMS : GERMANY : symposium summary.

The hazardous influences on the environment of industrial and automotive emissions, noise and water pollutants are discussed, and monitoring systems and government programs for pollution abatement are described.

NP73-3A-030

72-6TG-0836
Anon.
Report on coal technology — 1972.
American Mining Congress. 1972 Coal Show. Papers (Held in Cleveland, Ohio, May 8-11, 1972). American Mining Congress, Coal Division. Washington, D.C. 625 pages. [1972?].
Abs., figs., tables, data tables, refs. for various papers, SS.
COAL INDUSTRY : AIR POLLUTION CONTROL : NOISE CONTROL : MINING INDUSTRY : American Mining Congress 1972 Coal Show : selected papers cited.

Sections detail mine wastewater treatment, noise abatement, and emissions reductions in coal-burning power plants. The control of dust in mines through the use of foam and strip mine land reclamation are also discussed.

NP73-3A-031

72-6TG-0838
Anon.
Environmental pollution and its control.
Environmental Pollution and Its Control. Seminar Abstracts. (Held in Baroda, India, April 15-17, 1972). Institution of Engineers (India), Baroda Sub-Centre. 79 pages. [1972?].
Abs. only, SS.
WATER QUALITY CONTROL : WASTE TREATMENT : AIR POLLUTION CONTROL : NOISE CONTROL : pollution control : seminar : abstracts only : selected abstracts cited.

Abstracts on air and water pollution and control of such pollution

are presented, covering areas like wastewater treatment theory, treatment methods, unit processes-theory and design, industrial waste treatment; noise pollution; air pollution control theory, analytical procedures, surveys, hazards, automotive pollution and its control; and development of standards

NP73-3A-032

[Assessment of noise and sound protection] Lüpke A von.
Z Laryngol Rhinol Otol 51:215-20, Apr 72 (Eng. Abstr.) (Ger)

3A GENERAL
(See Also)

1A001	1D021	3D005	3D030	3D033	3D045	5C015
1B001	3D002	3D021	3D031	3D040	5A006	5C016
1D020	3D003	3D022	3D032	3D044	5A012	

3.B METHODS

NP73-3B-001

N73-12032*# Bolt, Beranek and Newman, Inc., Cambridge, Mass.
A STUDY OF THE VARIABLE IMPEDANCE SURFACE CONCEPT AS A MEANS FOR REDUCING NOISE FROM JET INTERACTION WITH DEPLOYED LIFT-AUGMENTING FLAPS
Richard E. Hayden, Yoram Kaidman, and Robert E. Sherrod 15 Jul. 1972 107 p refs
(Contract NAS1-9560)
(NASA-CR-112100; Rept-2339) Avail: NTIS HC $7.60 CSCL 01B

The feasibility of quieting the externally-blown-flap (EBF) noise sources which are due to interaction of jet exhaust flow with deployed flaps was demonstrated on a 1/15-scale 3-flap EBF model. Sound field characteristics were measured and noise reduction fundamentals were reviewed in terms of source models. Test of the 1/15-scale model showed broadband noise reductions of up to 20 dB resulting from combination of variable impedance flap treatment and mesh grids placed in the jet flow upstream of the flaps. Steady-state lift, drag, and pitching moment were measured with and without noise reduction treatment. Author

NP73-3B-002

N73-14702*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
GAS TURBINE EXHAUST NOZZLE Patent Application
David M. Straight, inventor (to NASA) Filed 19 Dec. 1972 12 p
(NASA-Case-LEW-11059-1; US-Patent-Appl-SN-316018) Avail: NTIS HC $3.00 CSCL 21E

An exhaust nozzle is described for reducing the noise of gas turbine engines by mixing low velocity secondary gas (air) with high velocity primary gas (engine or afterburner exhaust). A hollow sting is coaxially disposed in an exhaust nozzle composed of an outer housing, and an inner annular shell. Air from the engine inlet flows into the sting, and between the combustion chamber and the outer housing. The sting air cools the nozzle plug over which it is directed, and serves as a low velocity core of secondary gas which provides noise reduction for the primary exhaust gas, while the other gas provides an outer velocity layer for further noise reduction. F.O.S.

NP73-3B-003

N73-32470*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
TOTALLY CONFINED EXPLOSIVE WELDING Patent Application
Lawrence J. Bement, inventor (to NASA) Filed 14 Sep. 1972 12 p
(NASA-Case-LAR-10241-1; US-Patent-Appl-SN-289018) Avail: NTIS HC $3.00 CSCL 13H

A simple means is described for eliminating the noise and debris of explosive welding techniques by totally containing and applying the explosive pressure through the wall of the container. NASA

NP73-3B-004

A73-10302 ° # *Optimum configurations for bangless sonic booms.* W. D. Hayes and F. B. Weiskopf, Jr. (Princeton University, Princeton, N.J.). *Quarterly of Applied Mathematics*, vol. 30, Oct. 1972, p. 311-328. 13 refs. Grant No. NGL-31-001-119.

A number of optimization problems are posed and solved for supersonic aircraft flight subject to the condition that a shock wave appears only incipiently in the sonic boom signal at a given point. The principal result is one giving the maximum effective gross weight of an aircraft of given effective length under given flight conditions. The calculus of variations with inequality constraints is used, with the novel features of a non-local isoperimetric relation and of only an upper bound on a control variable. (Author)

NP73-3B-005

A73-11858 *On sonic boom avoidance.* S. B. Emdorf (Aerospace Corp., Los Angeles, Calif.). *Aeronautical Journal*, vol. 76, Sept. 1972, p. 541, 542. Comments, p. 543, 544. 5 refs.

Hilton (1971) proposed the use of maneuvers for creating 'no boom' zones as a means of protecting cities situated along the flight path of supersonic aircraft. The basic idea is that curved flight causes a local focus of shock waves and that, in regions closer to the center of curvature than this focus, shock do not form. By applying a technique, which makes it possible to plot the shock front directly, to maneuvers of the type proposed by Hilton, it is found that regions of single, double, and even triple shocks can occur, however, no shockless regions are detected. V.P.

NP73-3B-006

A73-12200 # *Further studies of the consequences of jets perturbed by screens.* R. E. A. Arndt, G. Borofsky, and N. C. Tran (Pennsylvania State University, State College, Pa.). *Acoustical Society of America, Meeting, 83rd, Buffalo, N.Y., Apr. 18-21, 1972, Paper.* 34 p. 14 refs. Navy-supported research.

The results of a study conducted by Arndt (1971) indicated that a substantial attenuation of noise intensity can be realized through the insertion of a screen into the jet flow. An extension of this study is reported. The new investigation includes detailed surveys of both pressure and velocity in a large subsonic turbulent jet. Emphasis is placed on the mixing characteristics of the jet and their relation to noise radiation. Background material is discussed, giving attention to basic theory, turbulent jet aerodynamics, and the axial distribution of sound sources and characteristic power spectra. The study was confined to the region of jet flow from zero to eight diameters from the nozzle. It was found that there is a substantial reorientation of turbulence structure in the mixing region. G.R.

NP73-3B-007

A73-12959 # Attenuation of airplane /747/ air-conditioning noise in lined and unlined ducts. A. G. Jhaveri (Washington, University, Seattle, Wash.). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 353-356.

The problems of acoustical noise generation, propagation, and attenuation in both lined and unlined straight cylindrical ducts, as well as 90 deg bends, within the cabin air-conditioning distribution system are studied. It was found to be possible to double the existing airflow velocity in the Boeing 747 air-conditioning ducts without violating cabin sound level criteria. It is possible to attenuate excess noise by lining a fraction of the duct's length with acoustical foam material, and by proper choice of R/D values for the 90-deg bends upstream of the straight cylindrical ducts. F.R.L.

NP73-3B-008

A73-12961 # An experimental study on noise reduction of axial flow fans. S. Suzuki and Y. Kanemitsu (Ebara Manufacturing Co., Ltd., Tokyo, Japan). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 373-376.

An experimental study was made on the influence of a forward inclined rotor, of an inclined stator, and of the airfoil section on the reduction of noise generated by an axial flow fan. It is shown that efficiency will be raised and noise level lowered by inclining the rotor. Noise level will be most effectively lowered when the forward inclination angle is 15 deg. Inclination of the stator is also effective, and the primary rotating noise has been decreased by 5 dB at 45 deg of the inclining angle. Efficiency can be improved and noise level reduced by careful choice of rotor airfoil section, and by adoption of the design of the free vortex type as a flow pattern. F.R.L.

NP73-3B-009

A73-12964 ° # Supersonic jet noise suppression using coaxial flow interaction. D. S. Dosanjh and J. C. Yu (Syracuse University, Syracuse, N.Y.). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 441-444. 5 refs. Grant No. NGL-33-022-082.

The scope of investigations conducted with coaxial interacting supersonic jet flows covers (1) acoustic measurements in both the far noise field and near noise field, (2) surveys of mean flow properties and fluctuating pressures, optical visualization of interacting jet flows, the associated flow and shock structure changes and the noise field, (3) the effects of different geometrical parameters of the coaxial nozzles, and (4) thrust measurements. It is shown that the flow interaction between two suitable controlled interacting coaxial supersonic axisymmetric jet flows results in substantial noise reduction based on equivalent thrust considerations. This flow interaction technique appears to be potentially an attractive approach for suppression of noise from supersonic jet exhausts. F.R.L.

NP73-3B-010

A73-13062 Subsonic aircraft noise - A solution by the wider application of today's new engines. M. J. T. Smith (Rolls-Royce, Ltd., Derby, England). *Esso Air World*, vol. 25, no. 1, 1972, p. 7-10.

Questions of the toleration of aircraft noise by the public are considered, giving attention to the concept of the noise contour. The end of the aircraft noise problem is realized only when the area of the critical contour is contained within the confines of the airport. Approaches for achieving this objective are based on the use of quiet engines and improved operational techniques. It is pointed out that at present there are advanced technology engines capable of powering subsonic aircraft which could gradually replace the existing fleets of noisy jet aircraft. Such a reequipment program would lead to a reduction of noise exposure areas by at least a factor of five. A further halving of exposure area could be accomplished with suitable development work directed at a further reduction of engine noise. G.R.

NP73-3B-011

A73-13498 ° # Nacelle design studies for advanced transport aircraft. M. B. Sussman, D. W. Gunnarson, and P. Edwards (Boeing Co., Seattle, Wash.). *American Institute of Aeronautics and Astronautics and Society of Automotive Engineers, Joint Propulsion Specialist Conference, 8th, New Orleans, La., Nov. 29-Dec. 1, 1972, AIAA Paper 72-1204.* 14 p. 6 refs. Members, $1.50; nonmembers, $2.00. Contract No. NAS1-10703.

Results are given of several analytical studies of nacelles suitable

for advanced subsonic commercial transport aircraft. The impact on the nacelle of reduced aircraft noise and increased cruise Mach number is emphasized and initially developed in terms of the individual nacelle components: inlet, fan cowl, nozzle, etc. This is achieved by relating the noise and cruise speed constraints to which the aircraft system must be designed to specific limitations on the individual nacelle components. Performance assessments are then made (separately for each nacelle component) of competitive design concepts. Overall nacelle designs, synthesized on the basis of the individual component studies, are briefly discussed. (Author)

NP73-3B-012

A73-14142 # Directional devices for noise reduction of high speed jets (Dispositifs directionnels de réduction du bruit des jets à grande vitesse). R.-G. Hoch, M. Julliand, and H. Lecomte (SNECMA, Paris, France). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 32 p. In French.

NP73-3B-013

A73-14147 // The variable pitch fan - Propulsion for quiet STOL. D. G. N. Davis (Dowty Rotol, Ltd., Gloucester, England). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 30 p. 6 refs.

Review of design-and-development work on the concept of variable pitch fan propulsion for a quiet STOL transport aircraft. The results of the six year span of work are summarized as a demonstration of the basic feasibility of a fully variable pitch fan driven by an Astazou turboshaft engine and the refinement of mechanical design aspects to meet the requirements of various applications. Special attention is given to the aerodynamic and acoustic tests on different blade designs covering the entire pitch range. A compressor test rig with the blade pitch located and reset between tests and an Astazou-driven variable pitch fan were used in the tests. The advantages of this STOL propulsion design concept are indicated. V.Z.

NP73-3B-014

A73-14148 # Some experiments on the noise emission of coaxial jets. H. W. Dahlen (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für luftsaugende Antriebe, Braunschweig, West Germany). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 17 p. 5 refs.

The extent to which reduction of jet noise can be achieved by surrounding a circular primary jet with an annular flow is examined. Acoustic experiments have been performed with a model hot primary jet which had a Mach number very close to one, surrounded by a secondary cold annular flow of variable velocity and area ratios of the coplanar convergent nozzles. The experiments show that the reduction of high frequency noise emission depends on secondary flow velocity. In most cases, this reduction seems to be not compensated by an increase in low frequency noise power. (Author)

NP73-3B-015

A73-15907 * # Thermodynamic considerations for the design of a sonic-boom reducing powerplant. N. Galonis (Sherbrooke, University, Sherbrooke, Quebec, Canada). *American Society of Mechanical Engineers, Winter Annual Meeting, New York, N.Y., Nov. 26-30, 1972, Paper 72-WA/Aero-3.* 9 p. 6 refs. Members, $1.00; nonmembers, $3.00. NASA-sponsored research.

Third-order analytical expressions are obtained for the lift and wave-drag coefficients of a two-dimensional wing. The expressions are used to demonstrate the possibility of boomless lifting configurations when the cross-section area of the stream tube is reduced. The reduction is obtained by processing the external airstream in such a manner that the stream tube area is smaller at the exit than at the entrance. Calculations by these expressions are shown to be in good agreement with exact results obtained from compressible flow tables. It is also shown that three-dimensional wing configurations of this design give the maximum thermodynamic effect when a propulsive power plant is employed for the reduction of the captured-stream area. Thermodynamic guidelines are given for power plant designs to be used for this purpose. V.Z.

NP73-3B-016

A73-16823 // Application of external aerodynamic diffusion to reduce shrouded propeller noise. R. E. Longhouse (North Carolina State University, Raleigh, N.C.). *Acoustical Society of America, Fall Meeting, Miami, Fla., Nov. 28-Dec. 1, 1972, Paper.* 16 p.

NP73-3B-017

A73-16852 * // Effect of bulk-reacting liners on wave propagation in ducts. A. H. Nayfeh, J. Sun, and D. P. Telionis (Virginia Polytechnic Institute and State University, Blacksburg, Va.). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 11th, Washington, D.C., Jan. 10-12, 1973, Paper 73-227.* 9 p. 17 refs. Members, $1.50; nonmembers, $2.00. Grant No. NGR-47-004-103.

NP73-3B-018

A73-16939 * // Externally blown flap trailing edge noise reduction by jet blowing - A preliminary study. D. J. McKinzie, Jr. and R. J. Burns (NASA, Lewis Research Center, Cleveland, Ohio). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 11th, Washington, D.C., Jan. 10-12, 1973, Paper 73-205.* 12 p. 11 refs. Members, $1.50; nonmembers, $2.00.

NP73-3B-019

A72-34494 Design requirements for a quiet helicopter. N. B. Hirsh and H. W. Ferris (Hughes Tool Co., Aircraft Div., Culver City, Calif.). *American Helicopter Society, Annual National Forum, 28th, Washington, D.C., May 17-19, 1972, Preprint 604.* 8 p. Members, $1.50; nonmembers, $2.00.

Description of tests in the development of a quiet helicopter by subsystem design modifications aimed at a combined contribution to the overall sound pressure level. Details are given on tests to establish spectral noise requirements and to verify design modifications in terms of noise level improvement. Acoustical treatment was applied to system components responsible for noise on a noise attenuation test stand. The world's quietest helicopter design was developed as a result of this test and development program. V.Z.

NP73-3B-020

A72-34603 Reduction of noise and acoustic-frequency vibrations in aircraft transmissions. R. H. Badgley (Mechanical Technology, Inc., Latham, N.Y.). *American Helicopter Society, Annual National Forum, 28th, Washington, D.C., May 17-19, 1972, Preprint 631.* 11 p. 8 refs. Members, $1.50; nonmembers, $2.00. Army-supported research.

This paper presents the results of calculations of the vibration response to spiral-bevel mesh-induced disturbances for the spiral-bevel gearshafts in the Boeing-Vertol CH-47 forward rotor gearbox and the Bell UH-1D main rotor-drive gearbox. The calculations

indicate logical reasons why noise is generated by those gearboxes at the bevel mesh frequencies and also the effects of typical shaft-bearing system design changes which may be useful for noise reduction at those frequencies. Comparison of predicted vibration amplitudes with measured values can be expected to yield both a qualitative understanding of the noise problem and also verified solution techniques which can be applied to other designs. (Author)

NP73-3B-021

A72-3[illegible] The quiet side of NASA. T. Wilding-White. *Flight International*, vol. 102, July 6, 1972, p. 17-20.

Review of the magnitude and nature of recent and current work performed or sponsored by NASA in the field of noise reduction technology. Figures of NASA 1971-1973 budget allocations to experimental quiet engine and quiet STOL aircraft programs are presented. The briefly reviewed programs include the 1969 award to General Electric of a $20 million contract to supply and test a series of experimental quiet engines, the full-scale-fan acoustic tests performed at NASA's Lewis Research Center in Ohio, Boeing's engine-noise suppressing results, and the currently performed and planned quiet experimental STOL aircraft design studies. M.V.E.

NP73-3B-022

A72-3[illegible]574 Internal noise reduction in hovercraft. D. Anderton (Southampton, University, Southampton, England). *(British Acoustical Society, Spring Meeting, Birmingham, England, Apr. 5-7, 1971.) Journal of Sound and Vibration*, vol. 22, June 8, 1972, p. 343-358. 11 refs. Research supported by the Department of Trade and Industry.

The aim of this paper is to summarize the results of several years work on the internal noise of hovercraft. The basic mechanism of noise production is described and methods for controlling it are put forward. A case history is also described. Internal noise measurements from other forms of transport are compared to those of hovercraft, and it is shown that comparatively small overall noise reductions of 4 dBA would make the internal noise the same as that of short-haul jet aircraft. Structure-borne noise is shown to be a major source of noise in at least one current production craft. Low structural damping combined with lightweight and rigidly mounted machinery are found to be the major causes of structure-borne noise. (Author)

NP73-3B-023

A72-38110 ° # Flight evaluation of three-dimensional area navigation for jet transport noise abatement. D. G. Denery, K. R. Bourquin, K. C. White, and F. J. Drinkwater, III (NASA, Ames Research Center, Moffett Field, Calif.). *American Institute of Aeronautics and Astronautics, Aircraft Design, Flight Test, and Operations Meeting, 4th, Los Angeles, Calif., Aug. 7-9, 1972, Paper 72-814.* 7 p. 6 refs. Members, $1.50; nonmembers, $2.00.

The NASA, working with American Airlines, has completed the first phase of research to evaluate the operational feasibility of two-segment approaches for noise abatement. For these tests, area navigation was used to establish the upper glide slope and an ILS was used to establish the lower. The flight director was modified to provide command information during the entire approach. Twenty-eight pilots representing the airlines, professional pilot associations, FAA, and NASA participated. With an ILS approach for comparison, the procedure gave a noise reduction of 18 EPNdB at the outer marker and 8 EPNdB 1.1 n. mi. from touchdown. (Author)

NP73-3B-024

A72-38390 Silencing the sources of jet noise. D. Crighton (Imperial College of Science and Technology, London, England). *New Scientist*, vol. 55, July 27, 1972, p. 185-188.

The probably most obvious source of jet noise is associated with the mixing process which occurs when the exhaust gas emerges from the jet nozzle. The only real cure for subsonic mixing noise lies in great exhaust speed reduction. This is now possible with the advent of turbofan engines, whose very large diameter permits the mass flow and thrust to be maintained with much lower speeds. Mixing noise still dominates the field of engines with supersonic exhaust speeds. However, the mechanism involved in this case is quite different, and noise suppression devices are available to ensure that mixing noise is no longer a problem. G.R.

NP73-3B-025

A72-3[illegible]010 Quiet propulsion. M. J. T. Smith (Rolls-Royce, Ltd., Derby, England). *Flight International*, vol. 102, Aug. 17, 1972, p. 241-243.

Quieter engines than those at present in use are essential if V/STOL and reduced takeoff and landing (RTOL) forms of aircraft operation are to become a reality in the vicinity of populated areas. Turbomachinery sources are responsible for the majority of the noise output. Some particulars of the Rolls-Royce RB.211 engine, installed in the Lockheed TriStar, the quietest of certificated aircraft, are given. A notable feature of new engines is the use of acoustically absorbent liners which make it possible to attack noise sources within the engine itself. Fan, turbine, and tailpipe noise, and the noise of the jet itself are examined. F.R.L.

NP73-3B-026

A72-41238 # Closed form solution for the sonic boom in a polytropic atmosphere. R. Stuff (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für theoretische Gasdynamik, Aachen, West Germany). *Journal of Aircraft*, vol. 9, Aug. 1972, p. 556-562. 22 refs.

Analytic solution of the sonic boom problem for typical aircraft maneuvers in a polytropic atmosphere by means of the analytic method of characteristics. Solutions for singularities in a polytropic atmosphere are derived. Using the analytic methods of singularities and of characteristics, the sonic boom of a body traveling in a parabolic arc is obtained. The asymptotic Whitham formula for the bow wave is improved by an explicit formula which gives sufficiently accurate results for distances of about 20 body lengths or more. A.B.K.

NP73-3B-027

A72-43152 ° NASA's quiet engine programs. R. P. Jackson (NASA, Washington, D.C.). *Journal of Air Traffic Control*, vol. 14, Sept. 1972, p. 16-18.

It is the goal of NASA to provide the technology that will make the aircraft unobtrusive in its environment. The primary work in propulsion source noise reduction centers around the technology to modify existing engines and the technology to design new propulsion systems for CTOL, STOL, and VTOL that operate at significantly lower noise levels than present systems. It is recommended that noise standards should also be established for new engines. Another recommendation is concerned with the incorporation of noise and pollution technology in military aircraft propulsion developments. G.R.

NP73-3B-028

A72-44125 # Supersonic turns without superbooms. H. S. Ribner (Toronto, University, Toronto, Canada). *Acoustical Society of America, Journal*, vol. 52, Sept. 1972, pt. 2, p. 1037-1041. 5 refs. Research supported by the National Research Council of Canada, Ministry of Transport, and Air Canada; Grant No. AF-AFOSR-70-1885.

It is shown that focused booms that arise in turning flight can be suppressed by the simple (although not always practicable) expedient of slowing down the aircraft. The correct deceleration will eliminate the local curvature of the wave front responsible for the focusing. Specifically, the tangential deceleration resolved along the normal to the wavefront is adjusted to cancel out the centripetal acceleration similarly resolved. Horizontal turns of a prescribed limiting sharpness are not of concern for this suppression technique: their focused booms will be cut off from reaching the ground by atmospheric refraction. The minimum turn radius for focus cutoff is related herein in a simple fashion to the tabulated width of the conic boom carpet for rectilinear flight, as a function of Mach number and altitude. (Author)

NP73-3B-029

388. SINGH, D. & MAKHIJA, I. J. Protection against blast injuries of the ear. *J. Laryngol. Otol.*, 86(9), 1972, 949-953.

Points out necessity of protecting the ears of armed forces personnel against noise and the ears of combat troops against blast without interfering with normal hearing. Measured the shock wave attenuation of a number of different combinations: muslin cloth, polyurethane foams, wire meshes and nylon and cotton net, and presents the shock and acoustic wave transmission characteristics for each.—*E. J. Moncada*

NP73-3B-030

AD-753 646 PC$3.00/MF$0.95
Hughes Tool Co Culver City Calif Aircraft Div
OH-6A PHASE II QUIET HELICOPTER PROGRAM.
Final rept. Apr 70-Apr 71,
William H. Barlow, William C. McCluskey, and Harold W. Ferris. Sep 72, 68p Rept no. HTC-AD-71-102 USAAMRDL-TR-72-29
Contract DAAJ02-69-C-0078, ARPA Order-1321

Descriptors: (°Airplane noise, Attenuation), (°Helicopters, Airplane noise), Tail helicopter rotors, Rotor blades (Rotary wings), Jet engine noise, Acoustic impedance, Engine mufflers, Flight testing.
Identifiers: Aircraft modification, H-6 aircraft, OH-6A aircraft, °Quiet aircraft, Light observation helicopters, °Noise reduction.

The report presents the results of the Phase 2 Quiet Helicopter Program. A Hughes OH-6A Light Observation Helicopter was extensively modified to obtain a maximum of quieting. The purpose was to apply the latest known sound-suppression techniques available to industry to an actual helicopter and then to measure the results. An acoustic goal was set which required a balanced treatment of each noise-producing source throughout the full frequency range. Noise reductions ranged from 14 to 20 db depending on the flight conditions. The report describes the detailed configuration changes, the test and development programs, and the final sound level measurements compared to the standard OH-6A. (Author)

NP73-3B-031

† 39399. MECKLENBURG, ROY A., WILLIAM F. ENTEMANN, DANIEL R. SCHUMAIER, CEEL VAN DEN BRINK and LEONARDO FLORES. (Mich. State Univ., East Lansing, Mich., USA.) The effect of plants on microclimate and noise reduction in the urban environment. HORTSCIENCE 7(1): 37-39. illus. 1972.--Plants have a great impact upon the urban microclimate in contrast to dry structural materials. Infrared surface temperature can be substantially modified by evaporative cooling and the interception of radiant energy by plants to reduce the heat island characteristic of the summer urban microclimate. High temperature characteristic of surfaces such as artificial turf can be reduced by irrigation. Outdoor athletic areas covered with artificial turf should be either irrigated to permit evaporative cooling or shaded to intercept solar radiant energy. Coniferous trees seem capable of providing a small amount of attenuation for environmental noises that are either predominantly low or high frequency in composition. However, dense wide plantings are necessary to achieve effective environmental noise attenuation from vegetation alone in urban areas and the practical value of plants as an urban "sound barrier" appears questionable.

NP73-3B-032

† 39899. HYNES, KEVIN M. (Mansonellan Inf., Norwood, Mass., USA.) The development of a low-noise constant area throttling device. ISA (INSTRUM SOC AM) TRANS 10(4): 416-421. illus. 1971[rcd. 1970]. --With the recent revision to the Walsh-Healey Act, possible high noise levels produced by control valves are a subject to concern to industry. A comprehensive study to determine an effective and practical approach to reducing aerodynamic valve noise resulted in the development of a fixed area, throttling device designed to reduce the production of aerodynamic noise at its source. This paper contains an analysis of valve noise and investigates the parameters affecting noise through a series of qualitative tests. The influence of effective orifice diameter, system energy losses, resonant damping, and pressure drop variations are discussed. These factors, when properly incorporated in the finished product, result in a substantial and predictable noise reduction. Test results indicate excellent agreement with predicted SPL [Sound Pressure Level] values.

NP73-3B-033

Noise reduction by vegetation and ground. D. Aylor. bibliog Acoustical Soc Am J 51: 197-205 pt 2 Ja '72

NP73-3B-034

Mounts to reduce tractor cab noise. A. E. Hakimi. il Agric Engin 52:370-1 Jl '71

NP73-3B-035

Improved earphone enclosure for communication in noise. Bauer BB, et al.
J Acoust Soc Am 51:1388-93, May 72

NP73-3B-036

The control of noise produced by bar automatic lathes. Lee GL, et al. Ann Occup Hyg 14:337-43, Dec 71

NP73-3B-037

Noise fades into the background when workers wear muffs. K. Gale. il Engineer 233:43 D 2 '71

NP73-3B-038

73-1TG-00018
Stolk, A.L. Grasso N.V., Den Bosch, Neth.
Milieubeheersing in de koeltechniek.
Water, 56(8): 16-19, Aug. 1972.
In Dutch; sum., illus., refs. (1 in Eng., 1 in Ger.), from AS & SS.
MINING : AIR POLLUTANTS : WATER POLLUTANTS : NOISE REDUCTION : THERMAL DISCHARGES : POLLUTION CONTROL : NETHERLANDS : coal industry.

The role of the coal industry in environmental pollution is discussed, considering water and air pollution, thermal discharges, and noise. Successful means to control pollution are surveyed. Crystals of freeze concentrates can be applied in some cases to reduce water pollutants. Coal production in facilities with closed water systems forestalls water pollution of surface water by Fe salts. Air pollution can be decreased by condensation of noxious substances in exhaust gases. Thermal discharges are prevented through a closed cooling-water system with an air cooled condensor. Noises are reduced by adequate choice of compressor types, vibration free installation, and adequate acoustic insulation of machine chamber walls.

NP73-3B-039

73-1TE-00020
Meyer, W.H. Humble Oil & Refining Co., Baytown, TX
Detail study of refinery noise problems.
See Citation No. 73-1TE-00006 p. 171. [1972?].
Abs. only, from AA.
PETROLEUM INDUSTRY : NOISE REDUCTION : REFINERIES : INDUSTRIAL NOISES : OCCUPATIONAL HEALTH : abstract only : petroleum and petrochemical plant : hearing conservation program.

A hearing conservation program at a large petroleum and petrochemical plant that is based on past experience and the Occupational Safety and Health Act of 1970, is reviewed. Plant surveys, problem area definition, and medical and engineering control are discussed. A multidisciplinary approach is used in which medical, engineering, and operations departments share in the responsibilities for providing a suitable noise environment. The control of furnace and pipeline noise is examined in some detail.

NP73-3B-040

73-1TE-00021
Tyler, D.A. Gulf Oil Corp., Houston, TX
Noise control process equipment.
See Citation No. 73-1TE-00006 p. 171. [1972?].
Abs. only, from AA.
CHEMICAL INDUSTRY : NOISE REDUCTION : INDUSTRIAL NOISES : REFINERIES : OCCUPATIONAL HEALTH : abstract only : petrochemical plants.

A variety of noise control techniques for common noises encountered in existing refineries and petrochemical plants is examined. The engineering concepts and designs, the materials used, the amount of noise reduction anticipated and/or achieved, and the approximate costs are discussed. A check list, used by one group for actions required by the Occupational Safety and Health Act of 1970 Standard on occupational noise exposure, is demonstrated as an example. Also a method for the choice and priority of controlling noise sources is reviewed. Examples of 'Noise Control Data Sheets' formulated for engineering departmental use are presented.

NP73-3B-041

73-1TE-00034
Duthion, L.
Doyotte, C.
High speed train noise control.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 77, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No.

NP73-3B-042

73-1TE-00037
Wilson, George Paul Wilson, Ihrig & Assoc., Inc.
Rail mass transportation system planning and noise.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 79, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720664.
TRANSIT SYSTEMS : NOISE REDUCTION : abstract only : design : rail system.

Using data obtained from various operational and experimental rail transit vehicles and systems, the noise characteristics to be expected from new and proposed systems and equipment were determined to be much less than traditionally expected due to modern design concepts and equipment. The known and specified noise characteristics can be used during the planning of transit systems to determine the expected wayside or community noise levels for various types of way structures, vehicles, and operational conditions, and can also be used to determine design features or system characteristics which should be included for the control of noise. This permits the inclusion of noise as one of the factors effecting system planning and design.

NP73-3B-043

73-1TE-00038
Beland, R. Dale Wilsey & Ham
Comprehensive community-transportation system planning and noise.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 79, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720665.
TRANSIT SYSTEMS : NOISE REDUCTION : REGIONAL PLANNING : abstract only : systems analysis.

To date, new transportation systems have failed to avoid the impact of noise on the surrounding community due to lack of adequate planning in terms of depth of research and analysis; lack of attention to the whole problem of noise pollution; and lack of coordinated planning of communities and the transport system that serve them. Several ways are discussed to achieve greater coordination between community planning and transportation planning in order to reduce noise. A systems approach should include the steps of identification of objectives, identification of programs, prediction of effectiveness, and evaluation of alternatives. Several means of doing this are discussed.

NP73-3B-044

73-1TG-00052
Brown, Colin Cummins Engine Co. Ltd., Eng.
Practical aspects of engine noise reduction in commercial motor vehicle applications.
See Citation No. 73-1TG-00051 pp. 33-42. [1972?].
No abs., illus., no refs., from Text.
INTERNAL-COMBUSTION ENGINES : EMISSION CONTROL : NOISE REDUCTION : LEGISLATION : GREAT BRITAIN : diesels.

Some techniques and developments, which have resulted from noise investigation programs, now being used on production engines are reviewed, including test methods and techniques. Practical developments involving engine speed, engine covers, and turbocharging are outlined. Installation problems, smoke control, legislation, and practical smoke reduction are also described.

NP73-3B-045

73-2TE-00042
Anderson, Grant S. — Bolt Beranek and Newman Inc., Cambridge, MA
Gottemoeller, Frederick — Maryland Dept. of Transportation
Page, Daniel G. — Bolt Beranek and Newman Inc., Cambridge, MA

Baltimore plans highways for minimum noise.
Civil Engineering. New York, 42(9): 74-78, Sept. 1972.
Abs., illus., refs., from Sum.
HIGHWAYS : NOISE REDUCTION : MARYLAND : Baltimore : earth berms : barriers : sound attenuation.

Noise level prediction of a proposed highway design is explained. Several case histories of highway design and planning in Baltimore (Maryland) are presented and represent difficult urban problems—those not solvable by handbook methods. The design and use of earth berms and acoustical barriers to attenuate noise are illustrated.

NP73-3B-046

73-2TE-00044
Paullin, Robert L. — (both) Office of the Secretary of
Safeer, Harvey B. — Transportation, Office of Noise Abatement

Motor vehicle noise generation and potential abatement.
Society of Automotive Engineers. Automotive Engineering Congress. Selected Papers. (Held in Detroit, Mich., Jan. 10-14, 1972). In: Society of Automotive Engineers. New York. Paper No. 720273, 9 pages, [1972?].
Abs., illus., refs., from AA.
MOTOR VEHICLES : TRANSPORTATION NOISES : NOISE REDUCTION.

The Department of Transportation initiated a study on the magnitude of the transportation noise problem and its potential abatement. Four computer simulation models were developed to establish noise levels which might be expected for different transportation modes as a function of the traffic characteristics peculiar to that mode. An understanding was developed of the technical, economic, and legal limits of potential abatement means for each transportation mode. Results of this study as they relate to motor vehicles are presented. The program of the Office of Noise Abatement of the Office of the Secretary, Department of Transportation, for achieving reasonable noise reduction consistent with an integrated transportation system is also discussed.

NP73-3B-047

73-2TE-00045
Cummins, D.P. — Giddings & Lewis Machine Tool Co., Fond du Lac, WI

Identifying and reducing radiated noises.
American Society of Mechanical Engineers. Design Engineering Division. Design Engineering Conference & Show. Selected Papers. (Held in Chicago, Ill., May 8-11, 1972). In: American Society of Mechanical Engineers. New York. ASME Publication No. 82-DE-36, 9 pages, [1972?].
Abs., illus., no refs., from AA.
ACOUSTIC MEASUREMENTS : NOISE REDUCTION : INDUSTRIAL NOISES : MACHINERY : hydraulic units.

Noise identification and reduction methods for hydraulic units are discussed. Identification is accomplished through use of the human ear, precision sound level meters, and 1/3 octave band analyzers. Noise reduction can be accomplished by containing it or by 'designing out' procedures such as pump and motor rpm reduction, use of flange mounted pumps, employment of isolators for components and major sub-units, use of manifolds, and use of isolators in hydraulic lines.

NP73-3B-048

73-2TE-00066
Barber, A.D. — Holman Bros. Ltd., Eng.

Recent developments in silencing pneumatic machinery.
See Citation No. 73-2TE-00049 pp. 167-170. 1971.
In English; no abs., illus., refs., from Text & SS.
MACHINERY : NOISE REDUCTION : INDUSTRIAL NOISES : pneumatic machinery.

Noise in pneumatic tools comes from 2 main sources: discharge to the atmosphere of high pressure air through exhaust outlets, and vibration produced by metallic impact of tool components. Noise reduction in pneumatic road breakers can be accomplished by a hard durable plastic double-chamber silencer. Also available are 2 silenced portable compressors of a type normally used in developed areas and on construction sites to operate road breakers and other hand tools. Silencing is achieved by the following improvements: the glass fiber canopy is lined with absorbent plastic foam combined with antidrumming compound, the enclosure is improved by incorporation of trays under the compressor and a transparent gauge panel access door, engine exhaust noise is reduced by a pair of tandem exhaust silencers, a lined cooler duct directs cooling air downwards, and the canopy is flexibly mounted.

NP73-3B-049

73-2TE-00080
Mugglin, Eth G.A. — Zurich, Switz.

Laermbekaempfung aus der Sicht des Bauunternehmers.
See Citation No. 73-2TE-00049 pp. 265-272. 1971.
In German; Eng., Fr., Ger. sums., illus., no refs., from AS & SS.
NOISE REDUCTION : CONSTRUCTION INDUSTRY : BUILDINGS : reduced-noise methods.

Ideally, a building method considers requirements of the building site and those of a neighbor, economics, and noise production. It is a question of developing building methods low in noise and of carrying them out with low-noise machines. Excessive building noise is only acceptable if no other method of building is available or if a lower-noise method would mean enormous extra costs. One example of a low-noise building method is the cavity wall method, which can be used instead of ramming iron bulkheads.

NP73-3B-050

73-2TE-00081
Reichow, H.B. — Hamburg, FGR

Ein neuartiger Baulicher Laermschutz fuer die Stadt Kelsterbach am Rande des Flughafens Frankfurt A.M.
See Citation No. 73-2TE-00049 pp. 273-276. 1971.
In German; Eng., Fr. sums., illus., no refs., from AS & SS.
ACOUSTIC ABSORPTION : NOISE REDUCTION : AIRPORTS : CONSTRUCTION INDUSTRY : FEDERAL GERMAN REPUBLIC : Kelsterbach : sound protection barrier.

Inhabitants of the town of Kelsterbach, Germany, N of Frankfurt airport, are harassed by noise of takeoffs and expansion construction of the airport—especially 45 freight loading places and a new W runway. Construction of a series of hangars, and administrative and clearance buildings, while utilizing 15 m high sound protection wall with a sectioned, horizontal absorption plate on the upper side, was recommended as a practical means to reduce the noise. Because of the nearness of this wall to loading places and runways, this measure aims at sound absorption and deflection resulting in a protective action which is more effective than that of sound protection barriers. The airport administration has resolved to adopt this suggestion and to execute, by stages, construction of the sound protection wall totaling a length of 3.8 km.

NP73-3B-051

72-5TE-0138
Williams, J.E. Ffowes — Imperial College, Dept. of Mathematics, London, Eng

Aircraft noise in the 1980's.
Clean Air Conference. Preprints. (Held in Folkestone, Eng., Nov. 2-5, 1971). National Society for Clean Air, Brighton, Sussex, England. pp. 104-113. 1971.
No abs., 7 figs., no refs., from Text & SS.
AIRCRAFT : NOISE SOURCES future controls.

Aircraft noise is a nuisance. Conservationists, government research establishments, universities and industry are working together to minimize the noise nuisance without ruining the economy of the air transporation industry. New aircraft can be made quieter, they may be assessed by means of a "noise foot-print," so called because of the foot-shaped pattern of the ground area exposed to noise in excess of a specified level during take-off and landing. Foot-print area is directly proportional to the number of poeple disturbed. Noise curbs for existing aircraft are being studied as well. Better engines and enforcement of noise regulations are helping to alleviate the problem. A low noise engine is described.

NP73-3B-052

72-5TE-0139
Rink, Charles N. Rink Corp., Hazleton, PA
Noise control in air handling systems.
Florida. University. Gainesville. Engineering Progress at the University of Florida, 25(1): 49-54, May 1971.
Sum., 2 figs., 3 tables, 1 ref. SS
AIR CONDITIONING : NOISE EFFECTS : NOISE SOURCES : NOISE CONTROL : ECONOMICS

Generation, propagation and control of noise in air handling systems require careful engineering. Unitary air conditioning systems are compared to central station systems. Today's systems incorporate smaller machines, less ductwork and the proper amount of acoustically absorbent material. Information available to sound engineers on sound frequencies, the threshold of hearing, sound curves of equal loudness and annoyance, permissible noise limits for occupational exposures, and sound levels which cause discomfort and pain, is discussed. Causes of unwanted noise in a building's mechanical system are examined, with special emphasis on the fan. Oversilencing must also be avoided because other mechanical noises then become audible and more annoying to the human ear. The various components which generate sound are described and suggestions are made for achieving more efficient and lower cost systems.

NP73-3B-053

72-5TE-0145
Warnaka, Glenn E. (all) Lord Corp., Lord Manufacturing Co., Erie, PA
Miller, H.T
Zalas, J.M.
Structural damping as a technique for industrial noise control.
American Industrial Hygiene Association. Journal, 33(1): 1-11, Jan. 1972.
Abs., 11 figs., 3 tables, 15 refs (2 in Ger.), from AA.
NOISE CONTROL : DAMPING : INDUSTRIAL NOISE : structural damping.

Damping, although often used synonymously for attenuation, refers to an energy conversion process where the energy of mechanical vibrations is converted to heat energy. On this basis, damping is shown to be a useful tool for noise reduction where structural resonance or wave propagation at sonic speeds is responsible for noise radiation. Structural damping reduces noise radiation from structures by attenuating both the temporal and spatial components of flexural waves traveling in the structure. Structural damping is further shown to be useful in reducing noise originating from mechanical impact and from steady-state excitation. Examples of the effect of structural damping in reducing the noise from industrial machinery are presented, and data is given indicating the noise control obtained.

70

NP73-3B-054

72-5TE-0146
Holmer, C.I. Bolt, Beranek and Newman, Inc., Cambridge, MA
Legaco, A. National Research Corp., Cambridge, MA
Effect of structural damping on the sound radiated from impacted structures.
American Industrial Hygiene Association. Journal, 33(1): 12-18, Jan. 1972.
Abs., 5 figs., 2 tables, 1 ref., from AA.
NOISE CONTROL : DAMPING : SOUND PRESSURE LEVELS : INDUSTRIAL NOISE : impacted structures.

Theoretical and experimental evaluations of some damping treatments utilized to control noise from transfer of materials in a foundry are presented. A theoretical investigation is outlined which indicates that the change in peak radiated sound pressure level from an impact is proportional to the change in mass and stiffness of the impacted surface. The change in total sound power radiated is proportional to the change in mass, stiffness and the loss factor of the impacted surface. The energy noise reduction has application in predicting the reduction of the time-average reverberant field sound pressure level from a large number of impacts occurring throughout a period of time.

NP73-3B-055

72-5TE-0147
Doelle, Leslie L. Montreal, Que., Can.
Environmental acoustics.
Environmental Acoustics. McGraw-Hill Book Company, New York. 247 pages. 1972. Price: $18.50.
No abs., numerous figs., 18 tables, 4 appendices, index, numerous refs., SS.
ACOUSTICS : ENVIRONMENTAL ENGINEERING : NOISE CONTROL : SOUND ABSORPTION : book : architectural acoustics.

A detailed analysis of environmental acoustics in architectural design is presented for practical application to present-day building practices. Properties of sound and various aspects of room or space acoustics are described. Environmental noise control, including sound-insulating construction, noise criteria, control of mechanical noise and vibration, and noise control in specific types of buildings, is discussed. Detailing, specification and supervision are included.

NP73-3B-056

72-5TH-0282
Anon.
Study of feasible methods for reducing the noise levels of turbofan and turbojet aircraft.
Commerce Business Daily: 16, July 7, 1972.
Contract: DOT FA72WA-3053, June 23, 1972. Solicitation No: RFP WA5R-2-0872. Estimated Amount: $345,000. Awardee: Univ. of Tennessee Inst., Tullahoma.
CONTRACTS : NOISE REDUCTION : AIRCRAFT : DOT : Univ. of Tennessee Inst.

NP73-3B-057

72-5GD-0554
National Industrial Pollution Control Council. Wash., DC
Airlines and Aircraft
Sub-Council
Noise from gas turbine aircraft engines.
Noise from Gas Turbine Aircraft Engines. Sub-Council Report. Washington, D.C. 23 pages. Feb. 1971. Price: $0.30
Sum., 3 figs., no refs., from AS & SS.
NOISE CONTROL : AIRCRAFT : ENGINE NOISE : gas turbine.

The reduction of noise from gas turbine aircraft engines is discussed. The introduction of low-bypass ratio turbofan engines reduces exhaust noise but adds fan tones particularly noticeable in landing. Fan design and acoustic treatment technology for reducing fan noise in high-bypass engines are considered. The high-bypass ratio engine provides good fuel economy and low jet exhaust noise levels.

NP73-3B-058

72-5TI-0682
Macdonald, Howard R. San Diego, CA
Method and apparatus for suppressing the noise of a fan-jet engine (3,673,803).
Official Gazette U S. Patent Office, 900(1): 60, July 4, 1972.
Filed Oct 6, 1969, Ser. No. 863,796. Int. Cl. F02k 1/26; U.S. Cl. 60-226 R. 3 Claims.
PATENTS : NOISE DAMPING . JET ENGINES : assignor to Rohr Corp., Chula Vista, Calif.

3B METHODS
(See Also)

1B006	1D007	1E009	1E026	2C013	3A030	3D048
1B008	1D015	1E012	2C012	3A021	3D018	5B013
1B009	1E003					

3.C MATERIALS

NP73-3C-001

73-1TE-00026
McAuliffe, Daniel R. — Korfund Dynamics Corp., Westbury, NY
Agne, T.D. — Lead Industries Ass'n., New York, NY
Hammond, Joseph I. — Soundcoat Co., New York, NY
Materials for noise and vibration control.
Sound and Vibration. Cleveland, 6(7): 20-24, July 1972.
Sum., illus., no refs., from Sum. & Text.
NOISE REDUCTION : VIBRATIONS : ACOUSTIC ABSORPTION : materials : applications.

Four types of materials are available for dealing with noise and vibration control problems: sound absorption materials, sound barrier materials, vibration/shock isolation materials, and vibration damping materials. Two or more of these materials are often incorporated in a single commercial product to obtain the benefits of their combined effects. Properties of these materials and their performance when used singly and in combination are discussed. Transformer enclosures, engine test cells, appliance enclosures, railroad wheels, and pipes and valves illustrate typical applications of noise/vibration/shock control materials.

NP73-3C-002

73-1TE-00027
Jones, David I.G. — USAF, Materials Lab., Wright-Patterson Air Force Base, OH
Damping treatments for noise and vibration control.
Sound and Vibration. Cleveland, 6(7): 25-31, July 1972.
Sum., illus., numerous refs. (1 in Ger.), Sum.
NOISE REDUCTION : VIBRATIONS : ACOUSTIC DAMPING : techniques : materials.

A survey is made of the techniques and materials which can be utilized for the control of noise transmission and vibration induced failure in structures. Consideration is given to dynamic behavior of damping materials as a function of temperature and the effect of various damping treatments on the response and modal damping of a variety of structural elements exhibiting many different stiffness and geometrical characteristics. Examples are given of prior applications of damping to the solution of a variety of vibration and noise control problems, and of materials available for vibration control.

NP73-3C-003

73-2TE-00084
Willigers, L.H.J.
van den Eijk, J.
Satisfactory sound insulation between dwellings: A real possibility.
See Citation No. 73-2TE-00049 pp. 292-293. 1971.
In English; Eng., Fr., Ger. sums., refs., from AS.
Also in: Delft. Research Institute for Public Health Engineering. Publication No. 300.
BUILDINGS : ACOUSTIC INSULATION : EUROPE : housing construction.

For satisfactory airborne sound insulation between dwellings, more insulation than the usual minimum requirement in Western Europe is necessary. This goal is attainable if thick external walls and floors are combined with lightweight internal walls. Improved insulation values of 6-9 db were measured in apartments of a building system for social housing.

74

3C MATERIALS
(See Also)

1C001 3A025 3B025 3B029 3B031 3B033

3.D REGULATIONS AND STANDARDS

NP73-3D-001

N72-30010# Committee on Commerce (U. S. Senate).
NOISE CONTROL ACT OF 1971 AND AMENDMENTS, PART 1
Washington GPO 1971 826 p refs Hearings on S. 1016 and S. 1588 before Comm. on Com., 92d Congr., 2d Sess., 28, 30 Jun. and 26 Jul. 1971
Avail: Subcomm. on the Environment.

The hearings concerning noise pollution and the Noise Control Act are reported. The comments from the following agencies are included: Department of Interior, Department of State, Comptroller General, Department of Agriculture, Civil Aeronautics Board, National Science Foundation, EPA, and NASA. Additional articles, letters, and statements concerning effects of noise, and sound rating of outdoor equipment are included. F.O.S.

NP73-3D-002

N72-30559# Committee on Public Works (U. S. Senate).
REPORT TO THE PRESIDENT AND CONGRESS ON NOISE
Washington GPO Feb. 1972 472 p refs Presented by the Administrator of EPA to Comm. on Public Works, 92d Congr., 2d Sess., 1 Mar. 1972 Prepared by Environ. Protection Agency
(S-Doc-92-63) Avail. SOD $1.75

The effects of noise on living things and property, noise sources and their current environmental impact, and control technology and estimates for the future are considered. The following topics are discussed: auditory, sociological, physiological, and psychological effects; effects of noise on wildlife; effects of sonic boom and other impulsive noise on property; physical effects of noise on structures and property; community noise; transportation systems, devices powered by internal combustion engines; noise from industrial plants; construction equipment and operations; household and building noise; transportation industry programs; noise reduction for industrial plants; construction and appliance industry efforts; laws and regulatory schemes for noise abatement; government, industry, professional, and voluntary association programs; and assessment of noise concern in other nations. K.P.D.

NP73-3D-003

N72-30606# Environmental Protection Agency, Washington, D.C.
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FROM REPORT TO THE PRESIDENT AND CONGRESS ON NOISE
31 Dec 1971 18 p refs
(NRC500.1) Avail SOD $0.30

General observations, conclusions, and the future program are briefly summarized from the study on noise sources, noise pollution, and noise abatement. It is pointed out that noise effects are difficult to define and evaluate and available information on typical exposures is sparse. Noise control technology and possible changes in the noise problem to the year 2000, methodologies for noise measurement and evaluation, and economic implications of noise and noise abatement are mentioned. Recommendations for achieving noise reduction over the next 5 to 10 years are outlined. N.E.N.

NP73-3D-004

N72-33678# Mitre Corp., McLean, Va.
A PROTOTYPE STANDARD AND INDEX FOR ENVIRONMENTAL NOISE QUALITY
Steven N. Goldstein Oct. 1971 16 p Presented at 82d Meeting of the Acoust. Soc. of Am., Denver, Colo., 21 Oct. 1971 Submitted for publication
(PB-210221; MTP-358) Avail: NTIS HC $3.00 CSCL 20A

A prototype technical standard for environmental noise is proposed in terms enabling an index of noise quality to be defined and calculated. The standard takes into account the damaging aspects of chronic exposure to loud noise as well as psychologically disturbing aspects of typical community noises which are not loud enough to be physically dangerous. Inasmuch as the standard is intended to portray environmental quality rather than to reflect damage risk criteria, it is generally conservative with respect to work related noise standards, such as those specified by the Walsh-Healey Act. The basic standard specifies a distribution of noise intensities to which an individual might be exposed in a 24-hour period. The distribution may be approximated by the composite of three Gaussian distributions with means and standard deviations of (30 and 3), (50 and 8.5), and (70 and 14)dB (A). Author (GRA)

NP73-3D-005

N72-33983# George Washington Univ., Washington, D.C.
LAWS AND REGULATORY SCHEMES FOR NOISE ABATEMENT
31 Dec 1971 643 p refs
(Contract EPA 68 04 0032)
(PB 206719, EPA NTID300.4) Avail. NTIS HC $9.00 CSCL 13B

The report presents results from surveying the existing Federal, State, and local laws, ordinances, and regulations governing the abatement and control of environmental noise. The basic assignment was divided into four subtasks: current governmental noise regulatory schemes; analysis of existing legal regulatory structure for noise abatement and control; the effectiveness of existing noise control regulations; and proposals and problems in the regulation and abatement of noise. Author (GRA)

NP73-3D-006

N72-33984# Environmental Protection Agency, Washington, D.C.
REPORT TO THE PRESIDENT AND CONGRESS ON NOISE
31 Dec. 1971 468 p refs
(PB-206716; EPA-NRC500.1) Avail: NTIS HC $6.00 CSCL 13B

The report reviews the effects and abatement of noise on society. The contents include the following topics: effects of noise on living things and property; sources of noise and their current environmental impact; control technology and estimates for the future, laws and regulatory schemes for noise abatement; government, industry, professional and voluntary association programs; and an assessment of noise concern in other nations. GRA

NP73-3D-007

PB-213 443/9 PC$3.00/MF$0.95
National Inst. for Occupational Safety and Health, Rockville, Md.
CRITERIA FOR A RECOMMENDED STANDARD. OCCUPATIONAL EXPOSURE TO NOISE.
Final rept.
1972, 150p° NIOSH-TR-003-72

Descriptors: (°Occupational diseases, Noise (Sound)), (°Noise (Sound), Standards), (°Industrial hygiene, Noise (Sound)), Criteria, Noise reduction, Auditory perception, Exposure, Audiometry, Sound pressure.
Identifiers: °Noise pollution.

The report presents the criteria and a proposed standard for preventing occupational diseases arising from exposure to noise. These criteria and the recommended standard were developed by the National Institute For Occupational Safety and Health (NIOSH). A majority of the NIOSH Review Consultants recommended an 85 dBA noise limit with mandatory hearing protection and audiometric testing for the most complete protection. Data are provided in this document which indicate that approximately 14% of workers in manufacturing are exposed to noise above 90 dBA, but no data are available relative to the number exposed to 85 dBA or to the technological feasibility of meeting the proposed 85 dBA standard in a given time period. The present recommendations defer the 85 dBA standard until after an extensive feasibility study and limit mandatory audiometric testing to new employees, with a recommendation that employers consider the merits of a full hearing conservation program.

NP73-3D-008

EIS-AA-72-9002-F PC$12.25/MF$0.95
Federal Highway Administration, Washington, D.C.
NOISE STANDARDS AND PROCEDURES.
Final environmental impact statement.
Nov 72, 202p° FHWA-EIS-72-02-F ELR-5822
Supersedes report dated 30 May 72, EIS-AA-72-4559-D.

Descriptors: (°Environmental surveys, °Noise reduction), (°Highway planning, Noise reduction), Government policies, National government, Standards, Land use.
Identifiers: °Environmental impact statements, °Noise pollution.

The report describes the impact that implementing highway noise standards will have. The standards provide for a weighing of the costs of noise abatement measures on a case-by-case basis, including the need for additional land to serve as buffer strips so that in each case there will be a weighing of the use of resources against the benefits achieved. It is possible that the standards may lead to more land being required for future highways. Much of the report consists of responses to the new guidelines.

78

NP73-3D-009

† 51604. KRYTER, KARL D. (Stanford Res. Inst., Menlo Park, Calif. 94025, USA.) Acoustical Society of America policy on noise standards. J ACOUST SOC AM 51(3 Part 1): 803-806. Illus. 1972.--The role of the Acoustical Society of America in connection with standards, particularly as related to noise as it affects man is reviewed in the light of the recommendations of the Ad Hoc Committee on Policy and Requirements of the Arden House Conference on Standards (July 1971).

NP73-3D-010

† 51655. MEYER, ALVIN F. (Off. Noise Abatement Control, Environ. Pro. Agency, Washington, D. C. 20406, USA.) The need for standards on noise. J ACOUST SOC AM 51(3 Part 1): 800-802. 1972.--The problem of noise is reviewed from the standpoint of environmental pollution. The regulation of noise by government at every level demands the setting up of standards which take into account not only scientific criteria but also economic, sociological and political considerations.

383. FOX, M. S. Occupational hearing loss—Recent guidelines and statutes of interest to the otolaryngologist. *Laryngoscope*, 82(7), 1972, 1226-1230.

Recent federal and state guidelines for permissible noise exposure levels have created renewed interest in the industrial noise problem. Reviews the provisions of the noise criteria, discusses the role of the otologist, and calls attention to areas of inconsistency and conflict in the medical legal evaluation of hearing loss claims.—*J. Abst.*

NP73-3D-012

[Town-planning and building regulation in zones surrounding airports, in relation to noise produced by planes. Medico-social aspects of the problem] Paccagnella B.
Ann Sanita Pubblica 32:693-6, Nov-Dec 71 (Ita)

NP73-3D-013

Noise-exposure: the legal viewpoint. Fredrikson RM.
Trans Am Acad Ophthalmol Otolaryngol 75:1272-82, Nov-Dec 71

NP73-3D-014

New industry anti-noise law requires hearing tests and sound controls. Ind Med Surg 41:34-5, May 72

NP73-3D-015

Next federal cleanup target: aircraft noise and emissions. Il Envir Sci & Tech 6:220-2 Mr '72

NP73-3D-016

Noise control and government regulation. H. V. Semling, jr. Foundry 100:53-5 F '72

NP73-3D-017

73-1TE-00001
Lewis, Ron — Los Angeles Dept. of City Planning, Advance Planning Div., CA

Noise pollution.
An Environmental Conservation Element for the Los Angeles City General Plan; a Collection of Environmental Conservation Studies. Department of City Planning, Advance Planning Division, Los Angeles, California. 106 pages. Aug. 1970.
Abs., illus., refs., from AA.
NOISE STANDARDS : URBAN NOISES : NOISE LEVELS : TRANSPORTATION NOISES : INDUSTRIAL NOISES : CALIFORNIA : Los Angeles : physiological and psychological effects : policy recommendations.

Urban noise and its general impact on the environment are discussed. Methods by which noise levels can be measured or calculated are presented, and the physiological and psychological effects of urban noise on man are considered. Major local sources of noise, including air surface transportation systems, residential sources (apartments, playgrounds, and neighborhood pets), and commercial and manufacturing sites are discussed. Policy recommendations for the reduction of urban noise levels given include: adopt a quantitative noise standard for operations at Los Angeles International Airport, limiting noise levels to 90 PNdb (perceived noise level) or lower at the airport boundary; modify the westerly take-off pattern at the airport to effect its extension to the west; apply an 85 PNdb standard to all commercial helicopter operations; propose the passage of stricter quantitative noise standard and enforce current noise regulations governing motor vehicle operations; requiring the use of acoustical insulation in all new residential buildings; and adopt quantitative noise standards governing all construction equipment operating in the city.

NP73-3D-018

73-1TE-00004
Flanagan, William — SAE, New York, NY

Legal noise limits demand improved engines and subsystems.
Society of Automotive Engineers, New York. Journal of Automotive Engineering, 80(5): 36-41, May 1972.
Sum., illus., no refs., SS.
NOISE REDUCTION : INTERNAL-COMBUSTION ENGINES : NOISE STANDARDS : summary : Inst. for Noise Control in Internal-Combustion Engines.

Several lectures and discussions from the meeting of the Institute for Noise Control in Internal Combustion Engines held in January 1972 are summarized. Topics reviewed include noise standards, source isolation, attenuation factors, measuring procedures, and methods for reducing noise levels of combustion, fans, mufflers, hydraulic systems, and other components.

NP73-3D-019

73-1TE-00006
Heath, W.M. — Dept. of Highway Patrol, Sacramento, CA

California's experience in vehicle noise enforcement.
American Industrial Hygiene Conference. Abstracts. (Held in San Francisco, Calif. May 14-19, 1972). Sponsored by American Industrial Hygiene Association and American Conference of Governmental Industrial Hygienists. p. 126. [1972?].
Abs. only, from AA.
TRANSPORTATION NOISES : MOTOR VEHICLES : NOISE REDUCTION : LEGISLATION : LEGAL ASPECTS : CALIFORNIA : abstract only : noise enforcement.

The enforcement program was preceded by several years of studies, legislative proposals, and evaluations of procedures, before enforcement by instrumentation (sound level meters) was feasible. Because of the detailed preliminary planning, the law operated very well and produced significant results. Noise teams were trained and judges and district attorneys were consulted before initiating the program in different areas of the state. The 1st enforcement efforts resulted in a number of new vehicle models, both muscle cars and trucks, being recalled by manufacturers for refitting with quieter exhaust systems. Yearly reductions were made in levels in one or another part of the noise law based on compromises between desired levels of quieting and the numbers of vehicles that might have to be reworked if particular levels were enforced.

NP73-3D- 020

73-1TE-00016
Lamonica, J.A. — USBM, Pittsburgh, PA

Coal mine noise standard enforcement under the provisions of the Federal Coal Mine Health and Safety Act.
See Citation No. 73-1TE-00006 p. 141. [1972?].
Abs. only, from AA.
NOISE STANDARDS : LEGISLATION : MINING : COAL : LEGAL ASPECTS : abstract only : standards enforcement.

Various aspects of implementing the noise standard are discussed, including a history of the noise regulations, training of mining industry and Bureau of Mines enforcement personnel, requirements of the industry and the Bureau, and the treatment of violations.

NP73-3D- 021

73-1TE-00017
Marrazzo, R.M.; Meyer, A.F., Jr. — (both) EPA, Office of Noise Abatement and Control, Wash., DC

Environmental Protection Agency noise pollution program.
See Citation No. 73-1TE-00006 p. 170. [1972?].
Abs. only, from AA.
FEDERAL AGENCIES : NOISE REDUCTION : NOISE STANDARDS : abstract only : EPA : program description.

The existing authority and responsibilities of the Environmental Protection Agency's (EPA) noise control program and its impact on federal, state, and local governments are discussed. The role of the Office of Noise Abatement and Control is covered. Proposed standards and regulations are considered and a synopsis of a report to the President and Congress on the national noise problem is discussed, including some of the salient data, conclusions, and recommendations. Noise control and abatement measures which the EPA will undertake to protect the health and welfare of the public are also included.

NP73-3D- 022

73-1GD-00018
Vedeilhie, R. — Commission d'Etudes du Bruit a la Sante et Securite Sociale, Fr.

Legislation et reglementation sur le bruit.
See Citation No. 73-1GD-00017. 6 pages.[1971?].
In French; no abs., no refs., from Text.
NOISE LEVELS : LEGISLATION : GOVERNMENT REGULATIONS : FRANCE : urban : transportation : industrial noise.

Regulations and legislation on noise in France are surveyed. Special rules for the soundproofing of buildings and maximum noise levels for motor vehicles in different categories are specified. The vicinity of airports is divided into zones according to sound intensity. The maximum noise levels recommended for housing areas are presented as well as suggestions for new regulations of machines, engines, industrial noise, protection of workers, and insulation of buildings.

NP73-3D-023

73-1TG-00029
Baird, Lawrence M. — Univ. of Southern California, Center for Urban Affairs, Los Angeles

A survey of governmental agencies, studies and publications concerned with the environment of the Southern California coastal zone.
Los Angeles. University of Southern California. Sea Grant Program. Publication No. 2-72, 150 pages, Jan. 1972.
No abs., illus., numerous refs., from Text.
Grant: NOAA 2-35227.
WATER QUALITY : AIR RESOURCES : LAND DEVELOPMENT : SOLID WASTES : NOISE REDUCTION : CALIFORNIA COAST : catalog : government agencies and studies : Southern California.

Agencies, activities, and studies are cataloged. The listings include state agencies and local governments in Los Angeles and Orange counties, as well as selected resource libraries for government publications located in the Los Angeles area. A bibliography of government reports on air resources, land use, solid waste management, noise abatement, and water pollution is included.

NP73-3D-024

73-1TE-00032
Mayo, Louis H. George Washington Univ., School of Law, Wash., DC
Consideration of environmental noise effects in transportation planning by governmental entities.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 76, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720627.
TRANSPORTATION NOISES : NOISE REDUCTION : GOVERNMENT REGULATIONS : abstract only.

The increasing public concern in recent years over the problem of environmental noise has resulted in the enactment of technology-based regulatory agencies and statutory measures to control technological applications. Most of the earlier controls, however, were reactive measures rather than positive efforts to assure development of a new technology in the public interest. This situation is beginning to change as new environmental codes are being implemented in various states and cities. A description is presented of how the noise factor has influenced the planning of transportation systems by various legislative and regulatory entities at the federal, regional, state, and local levels.

NP73-3D-025

73-1TE-00035
Cooper, A.S. California Highway Patrol
California laws and regulations relating to motor vehicle noise.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 78, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720655.
TRANSPORTATION : NOISE REDUCTION : STATE REGULATIONS : LEGISLATION : CALIFORNIA : abstract only.

Reasonable and effective laws for the enforcement of motor vehicle noise were enacted and successfully applied in California. Specific laws to prohibit both sale and operation of noisy vehicles were necessary. Measurements by both instruments and human ear judgments are practical and necessary at this time. Noise limits would be gradually reduced commensurate with the needs of the public and the capability of the technology. Future controls on noise producing components, in addition to the complete vehicle, appear to be necessary to obtain desirable minimum levels. California has pioneered interim solutions to portions of this environmental problem and has developed the expertise along with the practical experience to achieve further advancements in solving the problems.

NP73-3D-026

73-1TG-00040
Anon.
An environmental conservation element for the Los Angeles city general plan.
An Environmental Conservation Element for the Los Angeles City General Plan; a Collection of Environmental Conservation Studies. Department of City Planning, Advance Planning Division, Los Angeles, California. 495 pages. Aug. 1970.
Abs., illus., refs. for various papers, from Text.
AIR POLLUTION : WATER QUALITY : NOISE REDUCTION : LAND RESOURCES : SOLID WASTE DISPOSAL : PESTICIDES : CALIFORNIA : Los Angeles City Planning Department.

A comprehensive review and analysis of environmental issues in Los Angeles are presented. It is a framework through which governmental and private agencies and citizen groups can perceive interrelationships between various aspects of environmental problems. Specific policy recommendations needed for formulation of additional standards and legislation pertaining to environmental quality are provided, and guidelines for modification of city procedures so as to minimize the negative impact of city operations on the environment are given. Areas covered are air pollution, water quality, noise control, land resource conservation, solid waste disposal, and pesticides. Factors affecting the particular issue, dimensions of the problem locally, measures currently being taken to alleviate the problem, and policy recommendations are discussed for each area.

NP73-3D-027

73-1GD-00043
Anon.
Noise pollution control in Illinois.
Noise Pollution Control in Illinois. Report. Illinois Environmental Protection Agency, Division of Noise Pollution Control, Springfield. 10 pages. [April 1972?].
No abs., illus., no refs., SS.
NOISE REDUCTION : STATE REGULATIONS : LEGISLATION : ILLINOIS : pamphlet.

The problems of noise, its damaging effects, and the need for noise pollution control are discussed. Governmental action related to noise control in Illinois is described, including the comprehensive Illinois Environmental Protection Act, new regulations proposed for adoption by the Pollution Control Board, the work of the Illinois Division of Noise Pollution Control, and the prosecution of noise violators.

NP73-3D-028

73-1TG-00097
Torrey, J.D. U.S. Dept. of Labor, Denver, CO
Some preliminary experience with the Occupational Safety and Health Act in the Rocky Mountain region.
See Citation No. 73-1TG-00053 p. 194. [1972?].
Abs. only, from AA.
OCCUPATIONAL HEALTH : LEGISLATION : DUSTS : PESTICIDES : NOISE STANDARDS : INDUSTRIES : US : abstract only : Occupational Safety and Health Act : Rocky Mountain region.

The Williams-Steiger Occupational Safety and Health Act was signed into law on Dec. 29, 1970. Most of its health provisions became effective on Aug. 27, 1971. The states in Region VIII have a normal complement of industries excluding the Maritime. Response to complaints and normal plant inspection work indicated exposures to common contaminants as well as noise and exotic materials. CO, free silica, nuisance dust, and welding fumes are some of the commonplace materials. Polyurethane foams, pesticides, and organic solvents represent some exotics. Citations were issued for alleged violations of the noise standards and occupational health and environmental control standards in both the construction industry and usual industrial production or service plant.

NP73-3D-029

73-1TG-00170
Lazo, Luis R. (both) Transportation Technology, Inc.
Bohle, John B.
Personal rapid transit systems and their relationship to the environment.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 78, July 1972.
Abs. only, from AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720646.
TRANSIT SYSTEMS : EMISSION CONTROL : NOISE LEVELS : abstract only : Personal Rapid Transit systems.

Qualitative and quantitative data on the relationship of emerging Personal Rapid Transit systems and the environment are presented. Specific reference is made to comparison of these systems with the U.S. air pollutant inventory and with the automobile. Thermal pollution and reduction of power supply requirements for these transit systems are considered. Definitive specification information for interior/exterior noise levels, in comparison with other transportation modes and with background conditions, are provided. Visual aesthetics of guideway, station, and vehicle design are presented as the most challenging remaining problem in the integration of Personal Rapid Transit systems into the society.

NP73-3D-030

73-2TE-00049
Connell, John British Noise Abatement Society
The conquest of noise in Great Britain.
Noise 2000. Association Internationale Contre le Bruit. International Congresses. 5th and 6th. Zonderland, Pieter (Ed.). (Held in London, Eng., May 1968 and Groningen, Neth., May 1970). (International Scholarly Book Services, Inc., Portland, Oregon). pp. 16-22. 1971.
In English and German; no abs., no refs., SS.
NOISE REDUCTION : GREAT BRITAIN : Noise Abatement Society.

The Noise Abatement Society (Great Britain) was formed to eliminate excessive and unnecessary noise from all sources. Concerns and actions of this group are in the areas of present noise law enforcement, new laws, educational programs, public health effects, machinery noise, aircraft noise, and traffic noise.

NP73-3D-031

73-2TE-00051
Lehtinen, P.U. Helsinki, Fin.
The conquest of noise in Finland.
See Citation No. 73-2TE-00049 pp. 32-33. 1972.
In English: Eng. Fr. Ger. sums., refs., from AS & SS.
NOISE REDUCTION : LEGISLATION : FINLAND.

Noise reduction legislation in Finland is briefly reviewed. The 1958 Finnish Law on Safety in Work considers occupational health and noise abatement in industry. In 1966, the Finnish Council for Air Conservation and Noise Abatement was appointed: the council is responsible for dealing with general problems concerning air pollution and noise abatement. Conservation of nature in 1970 created several committees for the planning of how to increase the efficiency of noise legislation.

NP73-3D-032

73-2TE-00052
Wiethaup, Hans Dortmund, FGR
Die Laermbekaempfung bei Gast-und Schankwirtschaften, Barbetrieben usw. in rechtlicher Sicht.
See Citation No. 73-2TE-00049 pp. 34-40. 1971.

In German; Eng., Fr., Ger. sums., refs., from AS & SS.
NOISE REDUCTION : BUILDINGS : LEGAL ASPECTS : FEDERAL GERMAN REPUBLIC : restaurants : inns : bars.

Apart from preventive noise abatement measures considered in planning and building, there are also numerous legal means of combating excessive noise from restaurants, inns, etc. If the person(s) creating the noise will not end the disturbance in spite of detailed and energetic complaints, the person protesting can make immediate use of the legal possibilities outlined. Every owner of a public building should decide whether he would be willing to risk facing judicial measures in spite of justified protests against noise. The protection of human health takes precedence over all economic considerations.

NP73-3D-033

73-2TE-00053
Zonderland, Pieter Netherlands School of Economics, Rotterdam
The combating of noise in the entire world and in Holland.
See Citation No. 73-2TE-00049 pp. 48-55. 1971.
In English and German; no abs., no refs., from Text & SS.
NOISE REDUCTION : INTERNATIONAL COOPERATION : NETHERLANDS.

Development of noise control in the Netherlands is outlined. International noise legislation, and the way in which the standards are internationally matched and their degree of applicability, are important for noise control. Introduction of special divisions for prevention of noise within police forces, introduction of an international certificate to be awarded to those manufacturers for products whose production does not exceed an acceptable sound level, evaluation of present national antinoise magazines, and prohibition of supersonic civil air traffic are recommended for international support. In Holland, a more adequate use of the knowledge at the disposal of TNO [Toegepost Natuurwetenschappelijk Onderzoek], and coordination of all groups concerned with partial or regional aspects of noise are needed.

NP73-3D-034

73-2TE-00067
Duck, B.W. British Petroleum Co., Ltd., Medical Dept., London, Eng.
Noise nuisance control by oil refineries.
See Citation No. 73-2TE-00049 pp. 171-173. 1971.
In English; Eng., Fr., Ger. sums., no refs., from AS & Text.
NOISE REDUCTION : INDUSTRIAL PROGRAMS : PETROLEUM INDUSTRY : REFINERIES : EUROPE : international study group : environmental problems.

In 1963 oil companies operating in Western Europe established an international study group at The Hague to investigate the oil industry's environmental pollution problems. The progress of a section on noise control towards stated objectives is briefly reviewed. These objectives include collation of experience on neighborhood noise problems; information on legislation, standards, and codes; noise levels of particular types of equipment information on noise suppression measures; agreement on a standard method of assessing refinery noise levels; and development of a standard method of specifying noise levels for new equipment.

NP73-3D-035

72-5TE-0142
Anon.
Municipal corporations: Noise pollution.
Oklahoma Law Review, 24(2). 261-266, May 1971.
No abs., no refs., from Text & SS.
NOISE CONTROL : LEGISLATION.

As a source of environmental pollution, noise is not presently

receiving as much attention as industrial waste or automobile exhaust, but it is a subject of growing concern. To indicate the nature and scope of the issue, the law as it now stands as related to the problem of noise is examined. Whether the law provides effective means of regulation and control is analyzed.

NP73-3D-036

72-5TE-0153
Potrusowicz, S.A. Univ. of Bath, School of Engineering, Eng.
Criteria and standards.
See Citation No. 72-5TE-0148. 14 pages. 1972.
No abs., 4 figs., no refs., from Introd.
NOISE STANDARDS : INDUSTRIAL NOISE : INTERNATIONAL COOPERATION : GREAT BRITAIN.

Almost every major industrial country has issued standards relating to noise, noise measurement and criteria. A high degree of standardization and similarity between national standards was achieved by the International Organisation for Standardisation (ISO) where participating countries agreed on a common new standard and then based their national standards on ISO. British standards are either identical with ISO, or have some differences to suit particular conditions. Noise criteria are generally not standards (although the method of derivation is) and are usually either recommendations which cannot be legally enforced or Acts of Parliament which can be legally enforced. All British Noise Standards are considered; most commonly used criteria applicable to industrial noise are described fully.

NP73-3D-037

72-5GD-0538
Anon.
Noise control.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No. 7: 60, April 24, 1971.
Sum. only, from Sum.
Also in: OECD Press Release No A(71)2, Jan. 27, 1971.
NOISE CONTROL : NOISE REDUCTION : INTERNATIONAL COOPERATION : summary only OECD council report : traffic noise.

The Organization for Economic Cooperation and Development Council approved a report recommending measures to reduce and control urban traffic noise. The report will be published under the title "Urban Traffic Noise — Strategy for an Improved Environment."

NP73-3D-038

72-5GD-0540
Anon.
Aircraft noise.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No 9: 79, May 22, 1971.
Sum. only, from Sum.
Also in: Sammelblatt: 677, 1971.
AIRPORTS : NOISE SOURCES LEGISLATION : GERMANY : summary only.

A law to control aircraft noise came into force on March 31, 1971. It defines areas around civil and military airports outside which operators are limited to a low level of noise and it prohibits development of certain amenities (hospitals, schools, etc.) in the areas around airports.

NP73-3D-039

72-5GD-0541
Anon.
Environment.
British Institute of International and Comparative Law. London. Bulletin of Legal Development No. 9: 82, May 22, 1971.
Sum. only, from Sum.
Also in: Neue Zuercher Zeitung: 27, March 10, 1971; 35, March 11, 1971; 27, March 12, 1971; 35, March 25, 1971; 21, May 10, 1971 and 26, May 15, 1971.
GOVERNMENT PROGRAMS : POLLUTION CONTROL : SWITZERLAND : summary only : environmental protection council.

The Bundesrat decided to set up a council for the protection of the environment to be approved by referendum. The council would deal in particular with water pollution and conservation, clean air and noise control; it would also control and coordinate research and work in the whole field of environmental matters.

NP73-3D-040

72-5GD-0542
Anon.
Noise control.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No. 9: 83, May 22, 1971.
Sum. only, from Sum.
Also in: Neue Zuercher Zeitung: 25, April 17, 1971.
NOISE CONTROL : LEGISLATION : PUBLIC HEALTH : SWITZERLAND : summary only : Luzern.

The Canton Luzern enacted a law to control noise levels for the protection of health. It will be enforced beginning July 7, 1971.

NP73-3D-041

72-5GD-0544
Anon.
Environment.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No. 10: 94, June 5, 1971.
Sum. only, from Sum.
Also in: Financial Times: 5, May 19, 1971.
SST : LEGISLATION : AIRCRAFT : summary only : United States.

A bill that could lead to the banning of all supersonic airliners in the USA was introduced in the House of Representatives. It would make it unlawful to operate a supersonic aircraft unless the government agencies are satisfied that its operation would not have detrimental effects on people on the ground or on the environment.

NP73-3D-042

72-5GD-0547
Anon.
Noise.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No. 11: 100, June 19, 1971.
Sum. only, from sum.
Also in: Le Monde: 36, May 29, 1971.
NOISE CONTROL : LEGISLATION : SST : NEW YORK : summary only.

The State Senate approved an anti-pollution Act which includes control of noise, including aircraft noise. It could be used to prohibit the landing of supersonic aircraft.

NP73-3D-043

72-5GD-0551
Hildebrand, James L. Harvard Univ., School of Law, Cambridge, MA
Noise pollution: An introduction to the problem and an outline for future legal research.
Noise Pollution. An Introduction to the Problem and an Outline for Future

Legal Research. Paper. U S. Environmental Protection Agency. Office of Noise Abatement and Control 42 pages. [n.d.].
No abs., data table, numerous refs. (In Fr.), from Text & SS.
Also in: Columbia Law Review, 70: 652, April 1970.
NOISE CONTROL . LEGAL ACTIONS : research.

The harmful effects of noise on the environment are discussed, and sources of noise pollution and their elimination are considered. An outline for future legal research is suggested.

NP73-3D-044

72-5GD-0552
Lewin, Stuart F. — National Inst of Municipal Law Officers, Wash., DC

Law and the municipal ecology. Part two: Noise pollution.
Law and The Municipal Ecology. Part II. Noise Pollution Paper. U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 34 pages. [n.d.]
No abs., 1 fig., 3 tables, 2 appendices, 89 refs., from Text & SS.
See also: PA Citation No 71-2GD-0370.
NOISE CONTROL : LEGISLATION LEGAL ACTIONS : municipal control.

Legal alternatives available to city attorneys to reduce noise pollution in cities are discussed. Municipal noise ordinances, limitations on municipal action and the enforcement of noise ordinances are considered. Court cases are presented

NP73-3D-045

72-5GD-0557
Meyer, Alvin F., Jr. — EPA, Office of Noise Abatement and Control, Wash., DC

EPA's noise abatement program.
EPA's Noise Abatement Program. Paper. U.S. Environmental Protection Agency, Washington, D C 13 pages. [1971?].
No abs., 1 ref., SS.
Presented at: National Organization to Insure a Sound-Controlled Environment National Meeting Second (Held May 19, 1971.
NOISE CONTROL GOVERNMENT REGULATIONS

Government programs and regulations concerning abatement of noise are discussed, with emphasis on the Clear Air Act of 1970, P L. 91-604 and a proposed noise control act. (S 1016).

NP73-3D-046

72-5GD-0586
Anon.
Aircraft noise.
British Institute of International and Comparative Law. London Bulletin of Legal Developments No. 16: 169, Aug. 28, 1971.
Sum. only, from Sum.
Also in: Le Monde: 9, July 8, 1971 and 10, July 9, 1971.
AIRPORTS : NOISE SOURCES : LEGAL ACTIONS : FRANCE : summary only.

The Cour d'Appel de Paris affirmed the judgement of a lower court which awarded damages against 3 airlines (Air France, Pan American and Trans World Airlines) which had caused damages to inhabitants of houses bordering Orly Airport through the noise caused by their aircraft landing and taking off.

NP73-3D-047

72-5GD-0605
Latley, Gordon — Air Travel, New York, NY

Airports need space to grow; so do some humans and wildlife.
Air Travel. Chicago. 16-18, June 1971.
No abs . 3 figs . no refs., SS.

AIRPORTS : SITING CRITERIA : NOISE CONTROL : LEGAL ACTIONS.

The siting of airports is discussed, with emphasis on problems created by land use and noise. Legal actions in New York and Dade County, Florida, are discussed, and the liability of airlines regarding noise control is examined.

NP73-3D-048

72-5GD-0659
Lewicke, Carol Knapp — Environmental Science and Technology, Wash., DC

Next federal cleanup target: Aircraft noise and emissions.
Environmental Science and Technology. Wash., D.C., 6(3): 220-222, March 1972.
No abs., 2 figs., data tables, 1 ref., from Text.
AIRCRAFT : EMISSION CONTROL : JET NOISE : NOISE REDUCTION : GOVERNMENT POLICIES : EPA.

Industry and government efforts to reduce aircraft and jet engine noise and emissions are discussed. Industry reduced jet noise by switching from "low bypass" to "high bypass" jet engines which move the air at a lower velocity through the jet exhaust, thereby creating less "whine." The Federal Aviation Association promulgated the 1969 Federal Air Regulation 36 which sets noise limits for commercial aircraft. The Environmental Protection Agency's standards and studies of aircraft emissions are discussed, and the industry's smoke retrofit program for jet engines is described.

NP73-3D-049

72-5GD-0667
Anon.
Bei Strassenlaerm Entschaedigung fuer Schallschutzaufwendungen.
Frankfurter Allgemeine: 9, June 14, 1972.
In German; no abs., no refs., from Text. (2¾ col. in.).
NOISE SOURCES NOISE STANDARDS : AUTOMOBILES : GOVERNMENT REGULATIONS . GERMANY : indemnity : newspaper article.

Owners of homes located on new or rebuilt federal roads will be able to claim indemnity for soundproofing when the traffic noise reaches a certain level, according to a new law. Indemnity will be paid by the state when traffic noise causes equivalents exceeding 75dB, measured on the exterior walls of the houses during a representative period

NP73-3D-050

72-6TE-0163
Mayo, Louis H.; Ware, Robert C. — (both) George Washington Univ., Program of Policy Studies in Science and Technology, Wash., DC

The evolving regulatory structure of environmental noise abatement and control.
Institute of Environmental Sciences. Annual Technical Meeting. 18th. Proceedings. (Held in New York, N.Y., May 1-4, 1972). Institute of Environmental Sciences, Mt. Prospect, Illinois. pp. 226-234, 1972.
No abs., 20 refs., from Text.
NOISE SOURCES : NOISE CONTROL : NOISE STANDARDS : GOVERNMENT REGULATIONS : regulatory structure : private actions.

The evolution of laws and regulatory structures to control environmental noise are discussed. Sources, regulatory efforts, and trends in the private sector, and at the local, state, and federal levels are investigated.

NP73-3D-051

72-6TE-0164
Cohn, Louis F. — Kentucky Dept. of Highways, Noise Abatement, Frankfort

Pavoni, Joseph L. (both) Univ. of Louisville, Dept. of
Heer, John E., Jr. Civil Engineering, KY
Development of a federal traffic noise control law.
See Citation No. 72-6TE-0163 pp. 529-532. 1972.
No abs., 4 figs., data tables, 3 refs., from Introd.
NOISE STANDARDS : MOTOR VEHICLES : GOVERNMENT REGULATIONS : LEGISLATION : KENTUCKY : federal traffic noise control : recommendations.

The necessity of developing a federal traffic noise control law is examined. The results of noise level profile studies are discussed in terms of providing the technical basis for the drafting of a Kentucky traffic noise control law that would be applicable nationwide. Recommendations for vehicle noise limits are made and methods for the enforcement of standards are suggested.

NP73-3D- 052

72-6TE-0169
Murphy, John N. (all) USBM, Pittsburgh Mining and Safety
Sacks, H.K. Research Center, Industrial Hazards
Durkin, J. and Communications Group, PA
Summers, Charles R.
Progress in noise abatement.
See Citation No. 72-6TE-0168. 19 pages. [1972?].
Abs., 7 figs., 4 tables, 8 refs., from AA.
MINING INDUSTRY : NOISE ABSORPTION : DOSIMETERS : noise-selective earmuffs.

The mandatory noise standards developed in response to the Coal Mine Health and Safety Act of 1969 specify maximum personnel noise level-time exposures for underground coal mines. The Act further specifies that personal protective devices shall not be used to meet the standards where the protective devices may otherwise impair the safety of a miner; this specifically refers to the use of earmuffs or plugs that would impair the ability to hear warning signals in the mine. A personal audio dosimeter developed to assess an individual's exposure to intermittant vs multiple coal mine noise is described. A discriminating earmuff which in the absense of noise allows the wearer to hear low-level warning signals is also discussed, as is the development of noise abatement and control techniques for underground noise sources, particularly pneumatic drills.

NP73-3D- 053

72-6TE-0170
Bose, B. (both) Jadavpur Univ., Dept. of
Bhattacharyya, A.K. Mechanical Engineering, Calcutta, India
Noise and community.
Environmental Pollution and Its Control. Seminar. Abstracts. (Held in Baroda, India, April 15-17, 1972). Institution of Engineers (India), Baroda Sub-Centre, p. 24. [1972?].
Abs. only, from AA.
NOISE MEASUREMENTS : NOISE CONTROL : INDIA : abstract only.

The environmental noise problem is examined by discussing procedures for assessing noise annoyance, control methods, and other aspects of noise pollution.

NP73-3D- 054

72-5GD-0550
Anon.
Noise pollution.
British Institute of International and Comparative Law, London. Bulletin of Legal Developments No 23: 240, Dec. 4, 1971.
Sum. only, from Sum.
Also in: Berlingske Tidende: 10, Nov 13, 1971.
NOISE CONTROL SST NORWAY DENMARK SWEDEN : summary only

Uniform laws will be introduced in the parliaments of Norway, Denmark and Sweden in Jan. to prohibit all supersonic flights over Scandinavian territory.

NP73-3D- 055

72-6GD-0678
Anon.
Noise control.
British Institute of International and Comparative Law, London. Bulletin of Legal Developments No. 12: 121, June 17, 1972.
Sum. only, from Sum.
Also in: Aftenposten: 38, May 31, 1972.
NOISE CONTROL : SST : LEGISLATION : NORWAY : summary only.

The parliamentary transport committee of Norway approved the Government Bill to prohibit supersonic flight by aircraft over Norwegian territory.

NP73-3D- 056

72-6GD-0678
Anon.
Noise.
British Institute of International and Comparative Law, London. Bulletin of Legal Developments No. 12: 124, June 17, 1972.
Sum. only, from Sum.
Also in: International Herald Tribune: 3, June 8, 1972.
SONIC BOOMS : LEGAL ACTIONS : summary only : property damage : United States.

The U.S. Supreme Court ruled that the government is not liable for property damage caused by the sonic booms of high-flying military planes. This decision reversed a lower court order that held the government liable in damages caused by Air Force jets.

NP73-3D- 057

72-6GD-0757
Bluecher, Goesta National Board of Urban Planning, Sweden
The evaluation of traffic noise in Swedish urban and regional planning — from research to norms.
Plan: 92-99, Special Issue 1972.
in English: sum., 1 fig., data table, 1 ref., from Text.
NOISE SOURCES : MOTOR VEHICLES : NOISE STANDARDS : NOISE LEVELS : HIGHWAYS : SWEDEN : traffic noise : urban and regional planning.

A final draft of planning guidelines for traffic noise, submitted in Jan. 1971, recommended that the effective indoor noise level in a dwelling unit should not exceed 35 db in the daytime and 25 db at night. The draft also recommended that traffic noise within playgrounds and recreational areas not exceed 55 db. Other recommendations are given for suitable limits in factories, offices, schools, and hospitals, together with outdoor recreational areas attached to those areas. The guidelines also account for the means available to highway engineering and physical planning to achieve the desired protection against noise, and they include a simple estimation model for prediction of noise levels, given a particular planning situation, which would appear when the plan layout is adopted. The effects of these norms as presented in the guidelines on urban and regional planning are evaluated.

NP73-3D- 058

72-6GD-0760
Anon.
Pollution (noise).
British Institute of International and Comparative Law, London. Bulletin of Legal Developments No 7: 73, April 8, 1972.
Sum only from Sum

Also in: International Herald Tribune: 1, March 16, 1972.
NOISE CONTROL : SST : GOVERNMENT PROGRAMS : summary only : proposed legislation.

A federal anti-noise program which includes provisions to prohibit commercial supersonic flight over the U.S. and its territorial waters was proposed in the Senate.

NP73-3D-059

72-6GD-0766
Meyer, Michael B. Environmental Affairs, Inc., Brighton, MA
Air and noise pollution surrounding airports: *East Haven v. Eastern Airlines, Inc.*.
Environmental Affairs, 1(4): 862-881, March 1972.
No abs., 93 refs., from Text.
AIR POLLUTANTS : NOISE CONTROL : AIRPORTS : LEGAL ACTIONS : *East Haven v Eastern Airlines, Inc.*

Rights of property holders near airports to a quiet and clean environment have increasingly come into conflict with whatever rights the public has to relatively unrestricted air travel. In *East Haven v. Eastern Airlines, Inc.*, the United States District Court for the District of Connecticut dealt with such a conflict, and ruled for the public's right to relatively unrestricted air travel. The court's decision is subject to three major criticisms. Most importantly, it does not recognize nuisance as legal theory most applicable to complex controversies involving airports. In addition, it does not recognize trespass as an appropriate legal theory for dealing with invasions of property by either aircraft or physical agents. Finally, the courts's decision limits the class of property holders who may recover and allows only for money damages, an inadequate remedy in view of the continuing nature of the problem.

NP73-3D-060

72-6TG-0794
Anon.
Environmental health planning.
U.S. Public Health Service. Wash., D.C. Publication No. 2120, 134 pages, 1971.
No abs., 1 fig., 1 table, numerous refs., from Introd. & SS.
GOVERNMENT PROGRAMS : URBAN REFUSE : PUBLIC HEALTH : manual : HEW : environmental health : radiation : noise : pesticides.

This manual is intended to guide state and local environmental health planners and managers in development of appropriate and effective programs through systematic planning, either for the development of new programs or the evaluation and upgrading of existing ones. Basic planning information is provided, as well as special considerations relating to planning state or local programs in each of the principal environmental health areas. The specific areas covered include air, water, solid wastes, radiation, noise, vectors, pesticides, the residential environment, institutions, injuries, occupational health, recreation, food, drugs, therapeutic devices, and cosmetics.

3D REGULATIONS AND STANDARDS
(See Also)

1A001	1D012	1D023	1E005	3A017	3A024	3B046
1B001	1D017	1D027	3A010	3A019	3A025	5A012
1C002	1D020	1D028	3A011	3A020	3A029	5C071
1D008	1D022					

4. PHYSICAL EFFECTS OF NOISE

4.A GENERAL

NO CITATIONS THIS ISSUE

4.B STRUCTURAL

NP73-4B-001

N72-20003// Advisory Group for Aerospace Research and Development, Paris (France).
ACOUSTIC FATIGUE DESIGN DATA. PART 1
A. G. R. Thomson (Eng. Sci. Data Unit Ltd.) May 1972 80 p refs
(AGARD-AG-162-Pt-1; AGARDograph-162-Pt-1) Avail: NTIS HC $5.00

The problem of acoustic fatigue life of a structure subjected to jet noise is introduced. A framework of a design procedure applicable especially to skin panels is described. A method of estimating the near field sound pressure levels due to high velocity jet noise is described, including its limitations. Methods are described to predict the first two groups of natural frequencies of flat and singly curved skin-stringer structures with four different end conditions. The parameters considered are: (1) stringer torsional stiffness, (2) aspect ratio of a typical section, and (3) the number of half-waves across the frame pitch. A method of estimating the root mean square in rectangular skin panels subject to random acoustic loading is presented. Author

NP73-4B-002

N72-30000* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
STRUCTURAL DAMAGE CLAIMS RESULTING FROM ACOUSTIC ENVIRONMENTS DEVELOPED DURING STATIC TEST FIRING OF ROCKET ENGINES c27
Stanley H. Guest and Robert M. Stone, Jr. *In its* NASA Space Shuttle Technol. Conf. Jul. 1972 p 45-69 (For availability see N72-30005 21-31)
CSCL 21M

During static testing of multi-million pound thrust rocket engines areas adjacent to the test site have been subjected to the noise generated by rocket engines. Structural damage claims and subjective complaints were filed by those who alleged that the noise levels were excessive. The statistical analysis of these claims and complaints which were filed during those rocket engine development programs led to the determination of a relationship between claims and overall sound pressure level. Community exposure criteria are then assessed based on what can be considered allowable acoustic environments from large rocket engines. Author

NP73-4B-003

N72-32013// National Bureau of Standards, Washington, D.C.
THE EFFECTS OF SONIC BOOM AND SIMILAR IMPULSIVE NOISE ON STRUCTURES
31 Dec. 1971 21 p refs Sponsored by EPA
(NTIS-PB-203.12) Avail: SOD $1.00

A brief discussion is given of the physical nature of sonic booms, and other impulsive noises, and the parameters, such as over-pressure, duration, and mechanical impulse, which are used to characterize booms. This is followed by an overview of the response of structures, particularly buildings, to sonic booms and a review of the damage history observed due to supersonic overflights. A summary of the observed effects of impulsive noise on human and natural structures is included. Author

NP73-4B-004

A72-42000 // Studies of the ground effect on the noise levels and their frequency distribution in the near field of an engine jet directed vertically against the ground (Untersuchungen über den Bodeneinfluss auf die Schallpegel und deren Frequenzverteilung im Nahfeld eines senkrecht gegen den Boden gerichteten Triebwerksstrahls). R. Schulten. Berlin, Technische Universität, Dr.-Ing. Dissertation, 1971. 125 p. 13 refs. In German.

A procedure is developed for determining the stresses on the airframes of jet-powered V/STOLs due to high noise levels in the near field of the jet engine. It is shown that Lighthill's method for calculating the radiated noise power of an engine jet in the far field can be extended to the near field by introducing a position-dependent velocity exponent. With this modified Lighthill theory a semi-empirical calculation procedure is derived the bases of which are the measured sonic field and velocity exponent field of a reference jet engine. A.B.K.

NP73-4B-005

AD-701 923 PCS3.00/MF$0.95
New York Univ Bronx Dept of Aeronautics and Astronautics
NUMERICAL PREDICTION OF INTERIOR AND STRUCTURAL RESPONSE OF BUILDINGS TO SONIC BOOM OVERFLIGHTS.
Final rept. Mar 71-Sep 72,
Simon Stanky, and Leo Arnold. Sep 72, 35p° Rept no. NYU-AA-72-23 FAA-RD-72-116
Contract DOT-FA71WA-2559

Descriptors: (°Buildings, Response), (°Supersonic flight, °Sonic booms), Structural parts, Floors, Roofs, Acoustic properties, Models (Simulations), Supersonic planes, Numerical analysis.

The report describes a procedure for predicting the structural and acoustic response of full scale architectural structures to sonic booms using laboratory techniques. It is shown that the essential acoustic properties of a full scale structure located in Istres, France could be accurately simulated on a small scale (1:20) model located at N.Y.U. and that this model could be used to determine acoustic impulse response functions of various rooms under varying window and door configurations and under varying supersonic flight Mach numbers. The calculated impulse response functions were used in conjunction with measured scale boom signatures from Mirage III overflights at speeds of Mach 1 and Mach 2 to calculate building responses. These responses were then compared with measured building responses. (Author)

94

NP73-4B-006

73-1TE-00023
Mahig, J.
Elliott, H.J., Jr.
Gentile, R.J.
Noise and vibration transmission floors and walls.
Air Conditioning Conference. 21st Annual. Proceedings. (Held Feb. 24-25, 1972). Sponsored by University of Florida, Dept. of Mechanical Engineering, Gainesville. In: Florida. University. Gainesville. Engineering and Industrial Experiment Station. Engineering Progress at the University of Florida, 26(1): 18-20, July 1972.
No abs., illus., no refs., from Text & SS.
Also in: Florida. University. Gainesville. Engineering and Industrial Experiment Station. Bulletin Series No. 138, May 1972 and Building Systems Design Magazine, July 1972.
NOISE REDUCTION : VIBRATIONS : BUILDINGS : CONFERENCES : concrete slab transmission.

An experiment determined the noise and vibration levels caused by pumps and motors in a building, and definite frequency band pass region existed for a concrete slab. The vibrations of the floor slab decayed rapidly to 10% of its amplitude at the source and only slightly thereafter at frequencies above 100 Hz, and the noise level in the room could be significantly affected by force input into the floor slab. The wall was not affected transversely by floor vibrations of the amplitude considered, and significant transmission losses would occur if the slab were not continuous at the wall and if the wall did not have substantial contact with the joints.

NP73-4B-007

73-2TE-00083
Pym, Francis — London, Eng.
The effect of sonic bangs on buildings.
See Citation No. 73-2TE-00049 pp. 289-291. 1971.
In English; no abs., no refs., from Text & SS.
TRANSPORTATION NOISES : AIRCRAFT : BUILDINGS : GREAT BRITAIN : sonic boom effects.

The wave motion from a single boom with an extra overpressure of 1 lb/ft^2 has a sharp rise at the beginning and a gradual fall away. The wave motion of a sonic boom of the magnitude tested over London recently differs in that it has a 2nd shock wave immediately following the 1st which creates the characteristic double boom. One of the difficulties with sonic booms is the peculiar shape of the double boom, inducing resonance, thereby considerably increasing the effective power of the boom. Adverse effects on building components such as plate glass, steel, masonry, or timber, are briefly considered. The most serious point and a real concern which has not yet been studied is that of the cumulative effect of prolonged vibration from sonic boom impulses which will occur if they become part of everyday life. Specifically, the effects of sonic booms on historical structures in Great Britain are considered in light of the economics involved in preserving the landmarks vs supersonic transport.

NP73-4B-008

72-6GD-0677
Anon.
Noise.
British Institute of International and Comparative Law. London. Bulletin of Legal Developments No. 12: 123, June 17, 1972.
Sum. only, from Sum.
Also in: Times: 4, June 2, 1972.
NOISE SOURCES : SST : PUBLIC HEALTH : UNITED KINGDOM : summary only.

Britain's sub Committee for Environmental Conservation's recent report states that there is now sufficient circumstantial evidence to indicate that supersonic flying over land on a large scale is likely to cause damage to old buildings, and severe disturbance to people, birds, and animals and lead to widespread public alarm.

4B STRUCTURAL
(See Also)

3B011 3C002

4.C ENVIRONMENTAL

97

NP73-4C-001

N72-30901* # Wyle Labs., Inc., Huntsville, Ala
EVALUATION OF ACOUSTIC TESTING TECHNIQUES FOR SPACECRAFT SYSTEMS Final Report, Mar. 1970 - Feb. 1971
James A Cochburn Jun 1971 348 p refs
(Contract NAS5-21203)
(NASA-CR-122450, WR-71-7) Avail. NTIS MC $19.50 CSCL 22B

External acoustic environments, structural responses, noise reductions, and the internal acoustic environments have been predicted for a typical shroud/spacecraft system during lift-off and various critical stages of flight. Spacecraft responses caused by energy transmission from the shroud via mechanical and acoustic paths have been compared and the importance of the mechanical path has been evaluated. Theoretical predictions have been compared extensively with available laboratory and in-flight measurements. Equivalent laboratory acoustic fields for simulation of shroud response during the various phases of flight have been derived and compared in detail. Techniques for varying the time-space correlations of laboratory acoustic fields have been examined, together with methods for varying the time and spatial distribution of acoustic amplitudes. Possible acoustic testing configurations for shroud/spacecraft systems have been suggested and trade-off considerations have been reviewed. The problem of simulating the acoustic environments versus simulating the structural responses has been considered and techniques for testing without the shroud installed have been discussed.

Author

NP73-4C-002

A73-12967 # The scattering characteristics of a sonic boom at the passage through a turbulent layer (Das Streuverhalten eines Überschallknalles beim Durchgang durch eine turbulente Schicht). F. Obermeier and G. Zimmermann (Max-Planck-Institut für Strömungsforschung, Göttingen, West Germany). In: International Congress on Acoustics, 7th, Budapest, Hungary, August 18-26, 1971, Proceedings. Volume 2. (A73-12951 03-12) Budapest, Akademiai Kiado, 1971, p. 457-460. 5 refs. In German.

Computations of the pressure as a function of time conducted by Witham (1950) for the sonic boom are considered. The computations showed the existence of a wave consisting of two compressive shocks. The calculation had been performed on the basis of idealized conditions. Deviations of the real temporal pressure relationship from the ideal relations obtained by Witham are discussed, giving attention to a broadening of the shock and to statistical fluctuations of the sonic boom parameters. Phase changes in the wave were further investigated by studying the scattering of an ideal wave in a suitable model atmosphere, giving attention to low and high frequencies.

G.R.

NP73-4C-003

A73-14143 # Study of the influence of the volumetric mass of a jet on acoustic sound emission (Etude de l'influence de la masse volumique d'un jet sur son émission acoustique). R. G. Hoch, J. P. Duponchel (SNECMA, Paris, France), B. J. Cocking, and W. D. Bryce (National Gas Turbine Establishment, Pyestock, Hants., England). *Institut de Mécanique des Fluides, International Symposium on Air Breathing Engines, 1st, Marseille, France, June 19-23, 1972, Paper.* 38 p. 20 refs. In French.

98

NP73-4C-004

AD-745 728 PCS3.00/MF$0.95
Naval Ordnance Lab White Oak Md
PROPAGATION OF A WEAK SHOCK WAVE THROUGH A TURBULENT MEDIUM,
Ralph E. Phinney, and Leonard S. Taylor. 31 May 72, 26p Rept no. NOLTR-72-130

Descriptors: (*Sonic boom, Distortion), (*Atmospheric motion, Microbarometric waves), Propagation, Partial differential equations, Vector analysis, Turbulence, Shock waves.

The propagation of a weak nearly plane shock wave through a slightly inhomogeneous medium was studied. The equations for a finite strength shock wave are used as a starting point in order that the cumulative effect of second order terms will not be lost. The motivation for the study was the experimental observations that atmospheric turbulence can alternately focus and defocus weak waves from an aircraft. A more detailed understanding of the influence of atmospheric turbulence on this problem was sought. The basic equations are derived, and some preliminary results are obtained. (Author)

NP73-4C-005

AD-752 881 Not available NTIS
Acoustical Society of America New York
PROCEEDINGS OF THE SONIC BOOM SYMPOSIUM (2ND) SPONSORED BY THE ACOUSTICAL SOCIETY OF AMERICA (80TH MEETING) HELD AT HOUSTON, TEXAS ON 3 NOVEMBER 1970,
Herbert S. Ribner, and Harvey H. Hubbard. 1972, 152p
Sponsored in part by Federal Aviation Administration. Library of Congress Card Catalog No. 72-96208. International Standard Book No. 0-88318-201-7.
Availability: Available from Back-Numbers Dept., American Institute of Physics, 335 East 45 St., New York, N. Y. 10017. PC$5.00.

Descriptors: (*Sonic boom, Symposia), Acoustics, Supersonic flight, Shock waves, Propagation, Stress (Physiology), Humans, Animals, Behavior.
Identifiers: Noise pollution, Ray tracing.

A major environmental effect of supersonic flight that sets it apart from other aircraft operations is the sonic boom. The wave pattern that travels with the aircraft--rather like the bow wave of a ship--sweeps over underlying areas and mimics the advancing shock wave of a mild explosion. Impelled by the prospect of civil supersonic transport (SST) aircraft, there has been a great volume of research on the sonic boom and its effects, particularly during the last decade. The state-of-the-art as of 1965 was summed up in the first Sonic Boom Symposium sponsored by the Acoustical Society of America, held in St. Louis. The state-of-the-art as of 1970 was largely summed up in the second Sonic Boom Symposium held in Houston five years later on 3 November 1970. The 1970 Symposium consisted again of a series of invited papers, for the most part of a survey nature. The authors were drawn from the international community of researchers on sonic boom and its effects. (Author)

4C ENVIRONMENTAL
(See Also)

1E035 2A001

5. SOCIAL EFFECTS OF NOISE

5.A GENERAL

NP73-5A-001

N72-30974// Environmental Protection Agency, Washington, D.C.
NOISE ABATEMENT AND CONTROL. VOLUME 1: CONSTRUCTION NOISE
9 Jul. 1971 192 p refs Public Hearings before Office of Noise Abatement and Control, Atlanta, 8-9 Jul. 1971
Avail SOD $0.75

The public hearings on construction noise are reported for Atlanta, Georgia. The statements of 33 witnesses are presented and include discussions on hearing loss, noise control in office buildings, noise in industrial plant construction, and noise control in construction equipment. F.O.S.

NP73-5A-002

N72-33861// Environmental Protection Agency, Washington, D.C.
NOISE: THE ULTIMATE INSULT
Alfred Etter 29 Jul. 1971 4 p Presented at Chicago Noise Hearings, 28-29 Jul. 1971
Avail: NTIS HC $3.00

The inhumanity of man's noise in the cities is protested. The effects of noise on animals forced to listen to noise are briefly discussed. The traditional use of noise to ridicule, embarrass, denigrate, and curse is contrasted with silence being used for worship, respect, anticipation, and love. It is concluded that the cities have destroyed nature, and created a tumult of noise borne of their demands for every convenience, every novelty, and every protection from exercise. F.O.S.

NP73-5A-003

Community reaction to airport noise--v 1; Annu; NASA Contract Rep CR-1761 July 1971. 97 p; Report describes a study of the relationships of large numbers of variables--physical, psychological, and social--with community reaction to the noise of aircraft around international airports in large United States cities. The seven major airports involved were Logan International-Boston, O'Hare International-Chicago, Dallas International-Dallas, Stapleton International-Denver, Los Angeles International-Los Angeles, Miami International-Miami, and Kennedy International-New York. 69504

NP73-5A-004

Preferred noise criterion (PNC) curves and their application to rooms; L.L.BERANEK (Bolt Beranek and Newman Inc, Cambridge, Mass), W.E.BLAZIER, J.J.FIGWER; J Acoust Soc Am v 50 n 5 pt 1 Nov 1971 p 1223-8; A new set of noise criterion curves were developed to specify acceptable noise levels in rooms occupied by human beings for specifying noise-control design goals. The new criteria are a modification of those published by L.L.Beranek in 1957, specifying lower levels and new octave bands. Data are given for recent noise-control projects in office buildings and theater-concert halls. 13 refs. 69577

NP73-5A-005

382. BRAGDON, C. R. Noise pollution—The unquiet crisis. Phildelphia: U. Pennsylvania Press, 1971. Pp 280.

A report of research having 3 interrelated objectives: (a) to evaluate the social basis for the existence of noise pollution; (b) to investigate methods of abating noise and the status of the noise abatement programs; and (c) to assess the subject of noise as an urban environmental health problem, noting consciously perceived as well as insidious effects. Surveyed, by questionnaire, 2 communities in Pennsylvania and the responses to the survey and noise measurements of the communities represent most of the data reported here. Describes his method for evaluating the health hazard of noise in a community and presents a model showing how noise can be managed. Includes a bibliography of over 500 items arranged in 6 major categories: noise, general; physical effects; psychosocial effects; law; noise abatement; and noise sources.—*I. M. Ventry*

NP73-5A-006

387. ROZEN, S. Noise and health. (Russian text) *Vestn. ORL*, 34(4), 1972, 37-39.

On the basis of the literature and own investigations, emphasizes that noise (industrial, domestic), threatens health. Neurosensory elements of the organ of hearing proved to be affected by noise. Sudden noise acts negatively on the function of the cardiovascular system causing vascular contraction. Refers noise to an intermediate stress. A more severe form of atherosclerosis of the aorta developed in animals subjected to the action of noise than in control animals. Considers that the loudness of many sources of noise can be diminished by technical means and believes that measures for effective control of noise should be introduced. 16 ref.—*J. Abst.*

NP73-5A-007

Further study of combined heat, noise and vibration stress. Grether WF, et al. Aerosp Med 43:341-8, Jun 72

NP73-5A-008

[Man in noise] Berendes J.
Z Allgemeinmed 48:674-82, 20 May 72 (Ger)

NP73-5A-009

[Public evaluation of railroad transport noise (based on data from a questionnaire and word association tests)] Volkov AM, et al.
Gig Sanit 37:29-32, Feb 72 (Eng. Abstr.) (Rus)

NP73-5A-010

[Man as a measuring instrument] Berglund B, et al.
Lakartidningen 69:2797-803, 31 May 72 (Eng. Abstr.)
(Swe)

NP73-5A-011

Social consequences of noise. B. L. Clarkson. bibliog diags Inst Mech Eng Proc 186 no 8:97-107 '72

NP73-5A-012

73-1TE-00024
Informatics Inc.
Noise facts digest.
Noise Facts Digest. U.S. Environmental Protection Agency, Washington, D.C. 206 pages. June 1972.
No abs., illus., indexes, no refs., from Text & SS.
Contract: EPA 68-01-0512.
NOISE REDUCTION : FEDERAL PROGRAMS : EPA hearings : research abstracts.

The prevention, abatement, and control of noise are considered. A noise ordinance enacted by the city of Chicago and an information retrieval system being used by the U.S. Environmental Protection Agency are described. A digest of EPA hearings is provided, along with abstracts of research on noise emission and supression; physiological, psychological, and sociological effects of noise; economic aspects of noise control; building acoustics; measurement methods; planning, design, and architectural siting; legislation, standards, and legal precedents; enforcement and educational techniques; and government programs.

NP73-5A-013

73-1TE-00030
Baron, Robert Alex — Citizens for a Quieter City, Inc.
Construction noise, a citizen's viewpoint.
Society of Automotive Engineers. New York. Journal of Automotive Engineering, 80(7): 76, July 1972.
Abs. only, AA.
Also in: Society of Automotive Engineers. New York. Section Papers No. 720625.
CONSTRUCTION INDUSTRY : NOISE REDUCTION : abstract only.

Construction noise accompanying the rehabilitation of old and the development of new transportation modes is extremely destructive to the quality of life, and the environment. With few exceptions, industry has failed to internalize the cost of muffled equipment and procedures, and the cost of this intense noise exposure is an 'external cost' borne by both the worker and the exposed public. Engine equipment manufacturers, contractors, and project sponsors resist design for quiet. Engineers have an ethical imperative to protect the noise receiver. Citizen demand for quieter construction is growing and a few manufacturers are voluntarily marketing quieter compressors and paving breakers. Government, on all levels, is beginning to raise the question of unlimited noise emissions. The Walsh Healey noise exposure limits are now applicable to construction operations. Industry should be given financial incentives and assistance to expedite the necessary change-over to design and operation for quiet.

NP73-5A-014

72-5GD-0570
Burland, Theodore — Chicago, IL
The fight for quiet.
The Fight for Quiet. Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 373 pages. 1970. Price: $8.95.
No abs., 4 appendices, index, numerous refs. (In Du., Fr.; Gr.; It.; Scand.), SS.
NOISE CONTROL : LEGAL ACTIONS : book.

The measurement of noise is discussed, along with its destructive effects on the human mind and body. Methods of combatting noise pollution (including legal actions) are described.

5A GENERAL
(See Also)

1A004	1D011	1D029	3A020	3A025	3D006	3D049
1D002	1D023	1E027	3A021	3B039	3D010	3D056
1D009	1D025	1E033	3A024	3B040	3D047	4B008

5.B BEHAVIORAL

NP73-5B-001

N73-11089// Naval Submarine Medical Center, Groton, Conn. Research Lab.
PSYCHOLOGICAL EFFECTS OF PROLONGED EXPOSURE TO SONAR SIGNALS AT AN ELEVATED INTENSITY. 2: TWENTY-FOUR DAYS EXPOSURE TO SIGNALS AT 85 dB Interim Report
Benjamin B Weybrew and Ernest M. Noddin 8 Dec. 1971 32 p refs
(AD-746103, NSMRL-691) Avail. NTIS CSCL 06/19

Ten carefully screened male subjects, 5 civilian men from the New London community and 5 Navy enlormen were secluded in the Audiology spaces of the Submarine Medical Research Laboratory for a total of 30 days, 4 pre-experimental (no boop), 24 days: exposure to the 85 dB boop and 2 recovery days. Administered daily, the test battery consisted of a sequential reaction time test, a hand-eye coordination test, a measure of muscular tension and 4 measures of mood and affect. Although in 8 of the ten men some depressive trends occurred in the first 3 days of the exposure period, the performance data demonstrated no evidence of significance impairment. Similarly, while 3 men reported mild re-occurring headaches, and 5 indicated the boop may have affected their sleep as well as their performance on certain testing procedures, the overall adjustment of the 8 men did not appear to be impaired allowing 1/2 - 3 days for adaptation. Author (GRA)

NP73-5B-002

N72-30063// Control Inst. for the Deaf, St. Louis, Mo. Control Inst. for the Deaf.
EFFECTS OF NOISE ON PEOPLE
31 Dec 1971 185 p refs
(Contract EPA-68-01-05000)
(NTID300 7) Avail NTIS HC $10.25

It is shown that noises can act as sources of psychological distress, either because of responses directly to the noise itself or because of responses to irrelevant messages carried by the sound. Psychological distress in turn contributes to the various unpleasant effects as hearing loss, speech interference, nervosa, anxiety, distress, etc. G.G.

NP73-5B-003

N72-30067// Civil Aeromedical Inst., Oklahoma City, Okla.
RESIDUAL PERFORMANCE EFFECTS OF SIMULATED SONIC BOOMS INTRODUCED DURING SLEEP
W. Dean Chiles and Georgetta West May 1972 9 p refs
(FAA-AM-72-19) Avail: NTIS HC $3.00

Twenty-four male subjects were tested on a complex performance device involving monitoring, mental arithmetic, and pattern discrimination. Three age-groups were used: 20 to 26, 40 to 45, and 60 to 72. Subjects were tested for 30 minutes each morning and each evening for a 21-day period. On the sixth through the 17th nights, subjects were exposed to eight simulated sonic booms with an outdoors overpressure level of 1.0 psf presented at 1-hour intervals during sleep. The results provided no evidence that exposure to simulated sonic booms during sleep produced measurable consequences with respect to complex performance. A significant age effect was found for five of the ten measures. Significant differences (apparently a learning effect) were found in performance across the three phases (pre-boom, boom, and post-boom). There was also a significant interaction between age and phase for five of the measures. Analysis of the simple effects indicated there were rather large differences among the three groups at the beginning of testing with the differences decreasing in the two latter phases. The time of day effect was significant for five of the measures. Author

NP73-5B-004

N72-30068// Wyle Labs, Inc., El Segundo, Calif.
COMMUNITY NOISE

31 Dec 1971 204 p refs
(Contract EPA-68-04-0046)
(NTID300 3) Avail SOD $1.75

The overall noise pollution problem which is associated with outdoor noise in a community is considered. Provided is a quantitative framework for understanding the nature of the outdoor noise environment and the reaction of people and community to its various aspects. Author

NP73-5B-005

A73-10781 Annoyance reactions from aircraft noise exposure. R. Rylander, S. Sorensen, and A. Kajland (Kungl. Karolinska Institutet; National Environment Protection Board, Dept. of Environmental Hygiene, Stockholm, Sweden). *Journal of Sound and Vibration*, vol. 24, Oct. 22, 1972, p. 419-444. 26 refs. Research supported by the Royal Traffic Noise Committee, Swedish National Bank, and the City Council of Linkoping.

Social surveys were conducted in 24 areas with well-defined noise exposure characteristics around eight airports in Scandinavia. The results demonstrate that the extent of annoyance reactions in an exposed population is closely correlated to the noise level of single overflights. For areas exposed to a low number of takeoffs, the extent of 'very annoyed' in the population is below 5% provided the noise levels do not exceed 90 dB(A). For areas exposed to a high number of takeoffs, an increase in the extent of 'very annoyed' is found already when the noise level increases from 70 to 75 dB(A). The increase with noise levels up to 95 dB(A) is linear (correlation coefficient 0.99). (Author)

NP73-5B-006

38401. BREGMAN, HOWARD L. and RICHARD G. PEARSON. (N. C. State Univ., Raleigh, N. C., 27607, USA.) Development of a noise annoyance sensitivity scale. NASA (NATL AERONAUT SPACE ADM) CONTRACT REP CR(1954): 1-40. Illus. 1972.--Examining the problem of noise pollution from the psychological rather than the engineering view, a test of human sensitivity to noise was developed against the criterion of noise annoyance. Test development evolved from a previous study in which biographical, attitudinal, and personality data had been collected on a sample of 166 subjects drawn from the adult community of Raleigh North Carolina, USA. Analysis revealed that only a small subset of the data collected was predictive of noise annoyance. Item analysis yielded 74 predictive items that composed the preliminary noise sensitivity test. This was administered to a sample of 80 adults who later rated the annoyance value of 6 sounds (equated in terms of peak Sound Pressure Level) presented in a simulated home, living-room environment. A predictive model involving 20 test items weighting scheme was evaluated.--J. F. L

NP73-5B-007

† 5072. MOREIRA, NAOMI M. and M. E. BRYAN. (Audiol. Res. Unit, Dep. Electr. Eng., Univ. Salford, Salford M5 4WT, Engl., UK.) Noise annoyance susceptibility. J SOUND VIB 21(4): 449-462. Illus. 1972.--The variations of annoyance due to tape recorded noise were investigated in a group of 34 normal hearing subjects. There were significant differences between subjects in their rating of 3 different types of noise, 20 sec samples of which were played at levels varying from 55-95 dBA [noise rating vs. noise level]. Subjects were stable in their judgements of annoyance over a 2 mo. period. Those subjects most sensitive to noise showed greater initial annoyance but their annoyance grew less rapidly with increasing noise level than that of those least sensitive to the noise. The former tended to have steeper loudness functions than the latter. While sensitivity to annoyance by noise (or noise annoyance susceptibility) does not appear to depend upon such personal factors as age, sex, education, job responsibility, nor such personality traits as determined by the EPI [Eysenck Personality Inventory] and the MMPI [Minnesota Multi-phasic Personality Inventory] it is apparently quite strongly related to various measures of personality given by the Rorschach Projection Test. A tentative personality profile of a noise sensitive individual is proposed and some support for this is found from noise annoyance field studies and from individual loudness function data. In order to predict an individual's annoyance to a particular noise, it may be necessary to know not only the level of the noise but also his personality.

NP73-5B-008

57625. VOLKOV, A. M., I. L. KARAGODINA, A. I. TSYSAR', S. A. SOLDATKINA and V. V. SHISHKINA. (F. F. Erisman Mosc. Res. Inst. Hyg., Moscow, USSR.) Otsenka naseleniem shuma zheleznodorozhnogo transporta (po dannym oprosa i slovesno-assotsiativnogo eksperimenta). [Evaluating railway traffic noise by questionnaire information and verbal association experiment with populations.] GIG SANIT 37(2): 29-32. 1972. [Engl. summ.]--The paper deals with data on high noise levels created by railway traffic on territories surrounding its tracts. The noise causes great inconvenience to the population, 87% of whom presented mass complaints. The noxious effect produced by the noise on the CNS manifested itself in the prolongation of the latent period in the reply reaction time during a verbal-association experiment.
--J. F. L.

NP73-5B-009

379. A'BROOK, M. F. A brief examination of the psychological aspects of associations formed to promote the control of aircraft noise. *Sound*, 6(2), 1972, 37–38.

Examines the motives of those people joining associations aimed at the control and reduction of aircraft noise. Pressure groups have increased in their sophistication and now seem able to exert powerful influence upon the authorities.—*J. Abst.*

NP73-5B-010

[Physiopathological problems raised by noise at an aeroplane construction factory] Chemin A, et al. Bord Med 3:121-2 passim, Jan 70 (Eng. Abstr.) (Fre)

NP73-5B-011

72-5TE-0143
Anderson, C.M.B.
Robinson, D.W.
The effect of interruption rate on the annoyance of an intermittent noise.
Teddington, Eng. National Physical Laboratory. Acoustics Report No. 53, 23 pages, Oct. 1971.
Sum., 8 figs., 2 tables, 24 refs., from AS.
NOISE LEVELS : PSYCHOLOGICAL FACTORS : ENGLAND : psychophysiclogical noise annoyance models : intermittent noise.

An experiment designed to test a prediction made from the Noise Pollution Level (LNP) formulation is described. During each test session of 30 min, subjects were exposed to 15 min of road drill noise at 87 dB(A), the experimental variables being the number and duration of the noise bursts. The results were broadly consistent with the formula when compared with experiments using steady noise, but secondary effects are found which depend on the intermittancy rate. The results are used to illustrate a psychophysiological model of noise annoyance, and are also discussed in relation to the noise fluctuation term in the LNP formula. Of the personality indices taken, extraversion was the only measure to show significant effects.

NP73-5B-012

72-5TE-0156
LeVere, T.E. (both) North Carolina State Univ., Dept. of Psychology, Raleigh
Bartus, Raymond T.
Hart, F.E. North Carolina State Univ., Dept. of Mechanical and Aerospace Engineering, Raleigh
Electroencephalographic and behavioral effects of nocturnally occurring jet aircraft sounds.
Aerospace Medicine. St. Paul, Minn., 43(4): 384-389, April 1972.
Abs., 5 figs., 2 tables, 11 refs., from AA.
Grant: NASA NGL 34-002-095.
JET NOISE : AIRCRAFT : NOISE EFFECTS : PHYSIOLOGY : human : electroencephalogram : behavior : sleep.

Data relative to the objective evaluation of the effects of a specific complex auditory stimulus presented during sleep are presented. The auditory stimulus was a jet aircraft flyover of approximately 20-sec duration and a peak intensity level of approximately 80 db (A). The physiological effects (changes in electroencephalographic, EEG, activity) produced by the jet aircraft stimuli outlasted the physical presence of the auditory stimuli by a considerable degree. Both behavioral and EEG changes were noted during waking performances subsequent to nights disturbed by the jet aircraft flyovers which were not apparent during performances subsequent to undisturbed nights. Even limited exposure to nocturnal stimuli which do not necessarily produce behavioral awakening can nonetheless produce significant changes in an individual's pattern of sleeping and waking EEG and overt waking performance.

NP73-5B-013

72-6TE-0172
Desai, D.D. Bhartiya Vidya Bhavan's Sardar Patel College of Engineering, Bombay, India
Environmental pollution due to noise.
See Citation No. 72-6TE-0170 p. 26. [1972?].
Abs. only, from AA.
NOISE LEVELS : ACOUSTICS : NOISE CONTROL : abstract only.

The anatomy of the human ear and the behavior of man and animals in an exceedingly noisy environment is discussed. The effect of distance on sound levels and sound-intensity level phenomena is considered in studying the noise problem acoustically. Several protective and preventive measures for industrial workers and people associated with noisy machinery are suggested. It is recommended that the noise problem be studied psychologically as well as statistically.

5B BEHAVIORAL
(See Also)

1A002	1D005	1E034	3D004	5A003	5A012	5C077
1D004	1D007	3D002	3D017			

5.C HEALTH AND PERFORMANCE

NP73-5C-001

N72-11000// Toronto Univ. (Ontario). Inst. for Aerospace Studies.
AN UNSTABLE STEERING TASK WITH A SONIC BOOM DISTURBANCE
K. W. Lee Sep. 1972 93 p refs
(UTIAS-TN-179) Avail: NTIS HC $4.75

An initial study was made concerning the effect of sonic boom disturbances on an individual's compensatory tracking performance for an unstable system. The tracking task simulated automobile driving. It was found that most individuals were disturbed and recovered in varying degrees. These preliminary results, although somewhat qualitative, show that useful data can be obtained from this type of simulation. Author

NP73-5C-002

N72-11239// Toronto Univ. (Ontario). Inst. for Aerospace Studies.
INITIAL CALIBRATION AND PHYSIOLOGICAL RESPONSE DATA FOR THE TRAVELLING-WAVE SONIC-BOOM SIMULATOR
Richard Carothers Aug. 1972 91 p refs
(UTIAS-TN-180) Avail: NTIS HC $3.75

The construction of two sonic boom simulators at the University of Toronto, Canada is discussed. The simulators are used to determine the effects of sonic booms on the human heart. The details of the construction of the facility are presented. The characteristics of the shock waves produced by the facility are analyzed. The effect of boundary layer growth on the particle velocity at various distances is analyzed. Physiological response data concerning heart action in response to sonic booms are presented as block diagrams. Author

NP73-5C-003

N72-27093// Aerospace Medical Research Lab., Wright-Patterson AFB, Ohio.
THE EFFECTS OF HIGH INTENSITY NOISE ON HUMAN EQUILIBRIUM
C. Stanley Harris and Henning E. vonGierke Dec. 1971 24 p refs Presented at Aerospace Medical Assoc. Meeting, Washington, D. C., Apr. 1967
(AF Proj. 7231)
(AD-737826; AMRL-TR-67-41) Avail: NTIS CSCL 06/19

Five experiments were conducted on the effects of broadband, high intensity noise on human equilibrium. The ability of subject to balance on narrow rails was measured during exposure to the noise and immediately after termination of the noise. Four different noise conditions were used in each experiment: control, 120, 130, and 140 dB (re. 0.0002 dyne/sq cm). In the first experiment subjects wore earmuffs and earplugs; in the second, only earplugs were worn; and in the third experiment, subjects wore earplugs and one earmuff to produce an asymmetrical exposure. At an ambient level of 140 dB, a detrimental effect was obtained in all three experiments. At lower intensities of noise, there were performance decrements only for the asymmetrical exposure. In the remaining two experiments, conducted after termination of the noise, detrimental effects were obtained for asymmetrical auditory exposure but not for equal auditory exposure. The results of these experiments are interpreted as a possible quantitative demonstration of the direct effect of high intensity noise on the vestibular system.
Author (GRA)

NP73-5C-004

N72-27095// Texas A&M Univ., College Station. Dept. of Industrial Engineering
A STUDY OF THE EFFECTS OF ILLUMINATION AND NOISE ON SIMPLE MOTOR PERFORMANCE M.S. Thesis
Carol A Gardmier 1971 32 p refs
(AD-739474) Avail: NTIS CSCL 05/10

The paper investigates the effects of two environmental parameters, illumination and noise, on human performance. While many single-factor studies have been made on both illumination and noise, relatively little research has been done to determine multi-factor environmental effects on performance. Studies of the combined effects of various environmental factors would be useful to both government and industry in the maintenance area, such as for obtaining accurate estimates for maintenance task times and repair times. In an organization as large as the Army, for example, this could result in a significant cost reduction. In this study, subjects performed a manual task under four conditions of illumination and noise. The results are reported. GRA

NP73-5C-005

N72-27097// Texas A&M Univ., College Station. Dept. of Industrial Engineering.
THE EFFECTS OF COMBINED ENVIRONMENTAL FACTORS ON HUMAN PERFORMANCE OF A MANUAL TASK: NOISE AND TEMPERATURE M.S. Thesis
Robert P. Lewis May 1971 37 p refs Sponsored by the Army
(AD-739432) Avail: NTIS CSCL 05/10

The effects of two environmental factors, noise and temperature, upon human performance of a simple, well-learned manual dexterity task were examined. The experimental design was a 2x2 factorial, using twelve subjects. The data obtained from scores on a Purdue Pegboard task were analyzed in a randomized block, by means of an analysis of variance. Results indicated that temperature had a significant effect on performance, while noise and the temperature x noise interaction did not.
Author (GRA)

NP73-5C-006

N72-33088// Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
NOISE AND SPEECH LEVELS ASSOCIATED WITH THE F-111 A PREP AREA Final Report, May - Nov. 1970
Henry C. Sommer and Justus F. Rose, Jr. May 1972 38 p refs
(AD-744828; AMRL-TR-72-2) Avail: NTIS CSCL 20/1

The purpose of the study was to measure the ambient noise environment and speech reception levels associated with the F-111 A flight prep area at McClellan AFB, California; to measure noise attenuation characteristics of several ear protection devices contemplated for use in the ambient noise; and to determine maximum permissible human exposure durations based on these data. The results show that a H-133 (standard AF communication headset, microphone) in combination with a custom molded insert communication earplug would permit personnel to be exposed up to 8 hours continuously at the 70% and 85% engine power settings. These time limits decrease to 36 minutes per 8 hour day during afterburner zone 5. Even in the highest noise levels, communication capability was satisfactory with this earplug/headset combination. Author (GRA)

NP73-5C-007

A73-10107 // Noise effects on the critical tracking performance of the human operator. G. M. Swisher, M. L. Ritchie, and F. Maher (Wright State University, Dayton, Ohio). *Journal of Spacecraft and Rockets*, vol. 9, Oct. 1972, p. 778, 779. 5 refs. USAF-sponsored research.

Measurement of the closed-loop compensatory tracking performance of the human operator in terms of the environmental stress of a 95-db white noise, using the critical tracking task of Jex et al. (1966). Following a description of the equipment and subject methodology, the results obtained are shown to indicate that the zero-order Jex task performance measures of total time and critical divergence frequency are sensitive to noise stress, whereas the switching time is not. These results suggest that control and human factors engineering researchers in environmental stress must be extremely careful in their selection of performance measures. M.V.E.

NP73-5C-008

A73-13560 # Effects of intermittent and continuous noise on serial search performance. C. S. Harris (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Perceptual and Motor Skills*, vol. 35, Oct. 1972, p. 627-634. 13 refs.

To determine whether high intensity broadband noise has an adverse effect on human performance when special conditions related to type of task, length of testing, and intensity of noise exposure are met, 3 groups of 20 subjects each were tested on a serial search task. The first group was presented continuous broadband noise, the second received intermittent noise, and the third served as a control group. Performance was measured for 36 min continuously on a practice day and 4 test days. Both noise groups produced approximately the same results. Both groups found significantly fewer numbers on the task than the control group on the last two days of testing. The results support the contention that when certain conditions of testing are met, a reliable effect of noise on performance can be demonstrated. (Author)

NP73-5C-009

A73-16703 ° The interaction of auditory noise and subjective noise annoyance sensitivity with peripheral visual sensitivity. D. W. Conrad (North Carolina State University, Raleigh, N.C.). In: Technology for man 72; Proceedings of the Sixteenth Annual Meeting, Los Angeles, Calif., October 17-19, 1972. (A73-16701 05-05) Santa Monica, Calif., Human Factors Society, Inc., 1972, p. 26-30. 19 refs. Grant No. NGL-34-002-055.

NP73-5C-010

AD-767 001 Reprint
Human Engineering Labs Aberdeen Proving Ground Md
RELIABILITY OF TTS (TEMPORARY THRESHOLD SHIFT) FROM IMPULSE-NOISE EXPOSURE.
Technical memo.,
David C. Hodge, and R. Bruce McCommon.
1973, 11p Rept no. HEL-TM-2-67
Availability: Pub. in Jnl. of the Acoustical Society of America, v40 n4 p939-946 Oct 66.

Descriptors: (°Hearing, °Thresholds (Physiology)), (°Noise, Stress (Physiology)), Reliability, Exposure, Pathology, Standards.

A comprehensive damage-risk criterion (DRC) for impulse-noise exposure is needed, and it is desirable to state the DRC in terms of allowable TTS (temporary threshold shift), since TTS is both a valid and convenient measure of noise effects on hearing. This is possible only if TTS is also a reliable measure. Four TTS-reliability studies are reported. The following conclusions are reached. Individual subject's TTS's are not sufficiently reliable to permit generalization of impulse-noise effects. Group mean TTS varies only slightly across a series of exposures and is considered to be a reliable (consistent, repeatable) measure. This is true for the exposure of normal-hearing subjects to different impulse-noise conditions, for the TTS's of subnormal-hearing subjects, and for frequencies representative of the whole range of human hearing. The formulation of an impulse-noise DRC should be based on group data (means, quartiles, etc.). Samples should be as large as possible and should be representative of the population of which generalization of results is desired. (Author)

NP73-5C-011

AD-767 139 PC$3.00/MF$0.95
Environmental Acoustics Chatsworth Calif
EVALUATION OF HEARING LEVELS OF RESIDENTS LIVING NEAR A MAJOR AIRPORT.
Final rept.,
J. E. Parnell, D. C. Nagel, and A. Cohen. Jun 72, 99p FAA-RD-72-72
Contract DOT-FA70-WAI-200, PMS-71-010

Descriptors: (°Airplane noise, °Airports), (°Hearing, Airplane noise), Thresholds (Physiology), Exposure, Urban areas, Analysis of variance, Auditory acuity.
Identifiers: °Noise pollution, Los Angeles International Airport.

Audiograms and other data related to ear conditions and noise exposure were obtained from residents drawn from two neighborhoods in the greater Los Angeles area. One community bordered Los Angeles International Airport and had been subjected over the years to frequent takeoff noise of high level. Maximum rms measurements of these aircraft sounds outdoors in this neighborhood ranged from 76 to 101 dBA with a median of 88 dBA. The second community was similar to the airport one in demography but free of significant aircraft noise intrusion. Noise levels here rarely exceeded 60 dBA and commonly were 50 dBA or less. Both groups displayed average hearing levels as good and at certain frequencies slightly better than estimates obtained from the National Health Survey of 1960-1962. The overall findings did not make it possible to draw firm conclusions about community aircraft noise exposure as a cause of the apparent differences in hearing levels between the two groups. (Author)

NP73-5C-012

AD-768 [illegible] PC$3.00/MF$0.95
Environmental Health Lab Headquarters AFB Calif
SOURCE EMISSIONS SAMPLING AND RADIATION SURVEY OF PLASMA TORCH, MCCLELLAN AIR FORCE BASE, CALIFORNIA.
Final rept.,
David W. Peters. Jul 73, 17p Rept no. RHL-M-TM-15

Descriptors: (°Industrial medicine, °Torches), (°Air pollution, Wastes (Industrial)), Noise, Particles, Nitrogen oxides, Ozone, Cutting, Hazards, Room noise, Venting, Gas analysis.
Identifiers: °Plasma torches, °Noise pollution.

The report describes the procedures and results obtained from sampling the emissions from a plasma torch cutting operation. The emissions were sampled from the stack used to direct the exhaust system air away from adjacent buildings. The exhaust air was sampled for particulate matter, nitrogen oxides, and ozone. An octave band analysis of the noise exposure to the operator was performed and a study of the radiation hazards to the operator is being conducted. (Author)

NP73-5C-013

381. BARRY, J. P. & THOMAS, I. B. A clinical study to evaluate rock music, symphonic music and noise as sources of acoustic trauma. *J. Audio Engineer. Soc.*, 20(4), 1972, 271-274.

Undertook to evaluate, under carefully controlled clinical conditions, the relative damage potential of rock music, symphonic music, and band-limited white noise. Exposed 10 normal hearing Ss to each program source for 60 min. at an average SPL of 95 dB binaurally through electrostatic headphones. After each exposure, obtained a TTS_3 by Békésy audiometry at each of 10 frequencies. An octave-band analysis demonstrated that both the rock and symphonic music had very similar frequency spectra, being within ±4 dB from 125 Hz-8000 Hz and having maxima at 500 Hz. The TTS_3s for both rock and symphonic music were nearly identical with maximum TTS_3s from 2000-5000 Hz and averaging 8-10 dB. The white noise, being richer in high frequencies, produced average TTS_3s of 11-17 dB for the same test frequency range.—*J. Abst.*

NP73-5C-014

385. NIEMEYER, W. Gibt es eine Habituation des Innenohres? (Is there habituation of the inner ear?) *H.N.O.*, 20(7), 1972, 198-202.

Explains habituation of the auditory system to strong, permanent noise. Measured the stapedius reflex in 105 persons suffering from noise-induced hearing-loss with frequencies from 0.5-4 KHz, and compared it with the threshold of discomfort. It appeared that only the latter in noise workers was raised (transfer of the habituation to permanent noise immission to the test stimuli of the loudness tolerance test). Correspondingly, the difference level stapedius reflex threshold vs. threshold of discomfort was raised from normally 10-20 dB to 30-50 dB; at least 2 yr. after the end of the noise exposure, the difference level was found normal again or even decreased by recovery of the threshold of discomfort. The stapedius reflex threshold remained in the normal level range, even in the frequency band of greater hearing losses. Hence, the hair cell responds to great sound intensities with an unchanged metabolic expenditure. Only the central rating of strong noise is habituated; the peripheral receptor remains in unchanged susceptibility to acoustic overload. There is no habituation of the inner ear; the inhibitory efferents are not able to provide an effective protection against metabolic exhaustion—and consecutive degeneration—by the nonbiological noxae of industrial noise. 18 ref.—*J. Abst., ed.*

NP73-5C-015

386. PELL, S. An evaluation of a hearing conservation program. *Amer. Industr. Hyg. Assoc. J.*, 33(2), 1972, 60-70.

A long-term study of noise and hearing loss in the Du Pont Co. was started in 1966 to evaluate the Company's hearing conservation program. The study population consisted of about 30,000 men and women, of whom about 7000 worked in areas of high noise levels. Presents a preliminary, cross-sectional analysis of the data, with a longitudinal study to be forthcoming later. Loss of hearing acuity with age, at each test frequency, occurred at about the same rate in 2 levels of noise exposure and in quiet areas. Age-adjusted median thresholds were slightly greater among exposed workers at 3000, 4000, and 6000 Hz. Although some of the differences were statistically significant, primarily because of the large sample size, the magnitude of the differences was considered too small to be biologically important. Furthermore, the differences could be explained by factors other than noise. Tentatively concluded that the protection afforded by the Company's hearing conservation program was effectively preventing hearing loss among noise-exposed workers.—*J. Abst.*

NP73-5C-016

389. TOAL, P. F., Report of the Whale Island hearing conservation programme for the Gunnery Branch of the Royal Navy. *J. Roy. Nav. Med. Serv.*, 58(2), 1972, 132-135.

Results of hearing conservation program instituted for participants in gunnery course. Incidence of high-frequency hearing loss was reduced by 16% after start of program. Discusses problem of reassignment of moderately hearing-impaired servicemen.—*I. Shapiro*

NP73-5C-017

4465. Thackray, Richard I. (FAA, Civil Aeronautical Inst., Oklahoma City, Okla.) **Sonic boom exposure effects II.3: Startle responses.** *Journal of Sound & Vibration*, 1972, Vol. 20, 519–526.—Reactions of both humans and animals to impulsive acoustic stimuli, including sonic booms, may involve startle reflexes or orienting responses. The former usually tends to disrupt performance; the latter may actually facilitate it. The lack of consistent findings in the literature regarding the effects of sonic booms on performance may reflect a general failure to differentiate between these 2 basically different types of reaction. Thus, objective criteria for distinguishing startle from orienting reactions and methods for measurement are suggested. Relevant stimulus parameters of impulsive stimuli and other factors which may modify the evoked reaction are discussed. Suggestions are offered for needed research. (35 ref.)—*W. E. Collins.*

NP73-5C-018

5411. Young, I. M. & Harbert, F. (Jefferson Medical Coll., Philadelphia, Pa.) **Noise effects on speech discrimination score.** *Journal of Auditory Research*, 1970(Apr), Vol. 10(2), 127–131.—Studied effects of ipsilateral and contralateral presentation of masking noise on speech discrimination (DS) scores of 7 normal-hearing Ss, 65 Ss with unilateral total hearing loss and normal hearing in the opposite ear, and 15 Ss with bilateral symmetrical hearing loss. Speech and noise were combined and presented monaurally. The normal and the bilateral-loss group yield similar results: a DS greater than 70% when the signal/noise (S/N) ratio is +5 db. and higher, and less than 50% when the S/N ratio is −5 db. and lower. Ss with unilateral total hearing loss require a S/N ratio about 10 db. higher to approximate the DS obtained by normals.—*P. N. Herman.*

NP73-5C-019

27256. PYATAEV, G. E. (Res. Inst. Forensic Pathol., Minist. Health Kaz. SSR, Alma-Ata, USSR.) K voprosu o funktsional'nom sostoyanii zvukovogo analizatora pri deistvii moshchnogo preryvistogo shuma. [Functional state of the auditory analyzer under the effect of powerful-intermittent noise.] VESTN OTORINOLARINGOL 33(5): 31-36. Illus. 1971. [Engl. summ.]--A complex audiological investigation was conducted of 121 men who were subjected to the effect of a powerful intermittent noise in combination with the shock wave developing during explosions of detonating gas. Tests of tonal threshold, supraliminal and speech audiometry were used. In the majority of the examinees, threshold of pure tones increased in the range of 3000-8000 cycles/sec; in some cases they also spread to median frequencies. Two types of curves were singled out: steep and sloping. The differential load threshold in most cases was within the limits of 0.2-0.4 db, whereas the differential threshold of the height of the sound was 0.6 - 1.0%. In noise audiometry the perception of pure tones was commonly on the level of masking noise and rarely below this level by 15-20 db. In pure tone and in investigation of the temporary shift of the hearing thresholds during a work shift without protection of the ears with antiphones most examinees demonstrated signs of fatigue of the auditory analyzer. The results of speech audiometry showed the presence of dissociation between tonal and speech hearing. The pathological process in most of the examinees may be localized in hair cells of the spiral organ, in the cochlear ganglion; in both cases there are apparently functional shifts also in the cortical region of the auditory analyzer.--F. K.

NP73-5C-020

34196. RUMYANTSEV, G. I. and D. A. MEKHEL'SON. (I. M. Sechenov 1st Mosc. Med. Inst., Moscow, USSR.) Vliyanie shumo-vibratsionnogo faktora v komplekse sudovykh uslovii na organizm moryakov. [Effect of the noise-vibration factor on sailors under complex conditions.] GIG SANIT 36(9): 25-27. 1971. [Engl. summ.]--Vibration noise causes definite shifts in carbohydrate and lipid metabolism, and increases the concentration of sugar and β-lipoproteins in the blood. Introduction of thiamine and nicotinic acid into the daily food ration had a favorable effect. These vitamins should be administered to sailors exposed to vibration noise on ships for a long period.--J. F. L.

NP73-5C-021

† 34420. MILLS, JOHN H. and DAVID J. LILLY. (Cent. Inst. Deaf, St. Louis, Mo. 63110, USA.) Temporary threshold shifts produced by pure tones and by noise in the absense of an acoustic reflex. J ACOUST SOC AM 50(Part 2): 1556-1558. Illus. 1971.--Subjects (6) with an acoustic reflex and 6 subjects without an acoustic reflex were exposed on separate occasions to a 710-Hz pure tone and to a 1/8-octane band noise with an upper cutoff frequency of 710 Hz. Both exposures were 10 min at 110 db sound-pressure level (SPL). Temporary threshold shift (TTS) was measured at 1000 Hz. For the subjects with an acoustic reflex, the pure-tone exposure produced 10 db more TTS2 than the noise exposure. For the subjects without an acoustic reflex, the pure-tone exposure and the noise exposure produced the same amounts of TTS. Low-frequency pure tones produce more TTS than low-frequency bands of noise because of the differential effects of the acoustic reflex in responding to these 2 types of sounds.

NP73-5C-022

35649. MIYAZAKI, MANABU. (Kosai-in Hosp., Suita City, Osaka, Jap.) Effect of undesirable sound (noise) on cerebral circulation. JAP CIRC J 35(8): 931-936. Illus. 1971[recd. 1972].--The effect of undesirable sound (random noise of ca 100 phon) on the cerebral circulation was investigated by means of the ultraonic Doppler apparatus in 10 normal young and elderly males. Increase of the blood flow was conspicuously observed in all the subjects after the onset of the noise. The increasing rate of the blood flow in the internal carotid artery and the vertebral artery was not coincident. The dissociation of the blood flow change in the 2 arteries is discussed. Headache and discomfort due to the noise were observed in all the subjects. Moreover, disturbance of sleep was observed in 2 cases. Severe and repeated noise may induce abnormality of cerebral circulation and various kinds of psychosomatic diseases.--M. F.

NP73-5C-023

† 39811. REASON, J. T. (Dep. Psychol., Univ. Leic., Leicester, LE1 7RH, Engl., UK.) Some correlates of the loudness function. J SOUND VIB 20(3): 305-309. 1972.--Studies correlating the slope of the loudness function and the slope of the function relating spiral after-effect persistence to the duration of prior stimulation with objective motion are summarized. Motion sickness susceptibility is indicated by a personal history inventory. The slopes of other psychophysical magnitude functions and the slope of the function relating auditory reaction time to sound pressure level are also correlates of the loudness function. Consistent individual differences in "receptivity", or the characteristic way of the human transduces stimulus energy explains the results.

NP73-5C-024

† 39812. HOCKEY, G. R. J. (Dep. Psychol., Univ. Durham, Durham, Engl., UK.) Effects of noise on human efficiency and some individual differences. J SOUND VIB 20(3): 299-304. Illus. 1972.--Research concerning the effects of loud noise on the efficiency of human work led to an examination of differences between individuals in the extent to which efficiency is affected. Noise is regarded as producing a narrowing of attention towards work components of high priority, an effect seen as providing a basis for understanding previous contradictory interpretations in this area. Extroverted people seem more susceptible to this narrowing of attention, while the performance of introverts is more stable. Related research on individual differences in performance and preference for noisy environments is also discussed.

NP73-5C-025

45964. GORSHKOV, S. L, N. A. KOKHANOVA, A V. KOLESNIKOVA, I. F. LAKEEVA. (Inst. Ind. Hyg. Occup. Dis., Acad. Med. Sci. USSR. Moscow, USSR.) Fiziologicheskie sdvigi u tkachei, obsluzhivayushchikh tkatskie stanki s raznymi urovnyami shuma. [Physiological shifts in weavers operating looms with different noise intensity.] GIG SANIT 37(1): 29-32. Illus. 1972. [Engl. summ.]--The investigations performed showed that intense industrial noise in work shops with shuttle looms caused changes in the CNS activity in weavers. The development of fatigue could not be eliminated during lunch periods and became most intense by the end of the week.--J. F. L.

NP73-5C-026

† 46304. NICHOLS, ALAN C. (San Diego State Coll., San Diego, Calif. 92115, USA.) Effects of noise on articulation scoring: A methodological study. J COMMUN DISORD 4(3): 199-207. Illus. 1971[recd. 1972].--A video-tape of children's responses to an articulation test was played once in the ambient quiet of a television studio, and once while electronically mixed with 5 conditions of broadband noise. The responses were scored. Differences in scoring between the play and replay showed: errors heard in both quiet and noise decreased, and more errors were obscured by noise as a function of greater noise levels. Responses, scored as errors in noise but not scored as errors in quiet, were maximized when the broadband noise was between 60 and 65 db. The noise affected the listeners' judgments of the apparent defectiveness of the articulations they heard in complex and conflicting ways. Control of noise in experimental studies of articulation and in articulation testing is needed.

NP73-5C-027

† 46316. OKADA, AKIRA (Sapporo Med. Coll., Dep. Public Health, Sapporo, Jap.), HIROTSUGU MIYAKE, KOTARO YAMAMURA and MASAYASU MINAMI. Temporary hearing loss induced by noise and vibration. J ACOUST SOC AM 51(4 Part 2): 1240-1248. Illus. 1972. --Five male students (19-20 yr-old) with normal hearing were exposed to steady-state noise, vibration, and noise and vibration at the same time. In a control experiment the subject sat beside the moving vibrator with ear plugs and earmuffs. Temporary threshold shift (TTS) occurred after both 20 and 60 min of exposure to the vibration of acceleration 500 cm/sec^2 and frequency 5 Hz, which is regarded as a resonance frequency of human body. The TTS by a steady-state

noise [101-db sound-pressure level (SPL) broad band] was increased by simultaneous vibration (500 cm/sec^2 and 5 Hz).

NP73-5C-028

† 46317. GJAEVENES, KJELL and ERLING R. RIMSTAD. (Inst. Phys., Univ. Oslo, Blindern, Oslo 3, Norway.) The influence of rise time on loudness. J ACOUST SOC AM 51(4 Part 2): 1233-1239. Illus. 1972.--The influence of the rise time on the loudness of sound pulses perceived by humans and the meaning of the sound spectrum were examined. A "paired comparison" method was used. The sound pulses had a duration of 0.7 - 1.0 sec and the rise time was varied between 0.03 and 1.0 sec. For most of the measurements, a signal level of 95 db re 2×10^{-5} N/m^2 was used. The signals with the fastest onset showed the highest loudness. The influence of the rise time on the loudness was significantly dependent on the signal spectrum. The possibility of explaining the observed effects on the basis of changed synchronism of the neural activity and on the basis of a rapid adaptation in the nervous system is discussed.

NP73-5C-029

† 46318. ABEL, SHARON M. (Dep. Psychol., Univ. Toronto, Toronto 181, Ont., Can.) Duration discrimination of noise and tone bursts. J ACOUST SOC AM 51(4 Part 2): 1219-1223. 1972.--The human observer's ability to discriminate a difference in duration for noise bursts and gated sinusoids was investigated. Two observers compared 2 durations (T and T + ΔT) in a 2-alternative forced-choice procedure. The value of T ranged from 0.16 - 960 msec. For each T the value of ΔT for 75% discrimination was determined. For most of the range investigated ΔT was proportional to T 1/2. Performance was not affected by a change in bandwidth from 3500 - 200 Hz. Values of ΔT for 75% correct did decrease when the observers were given audible spectral cues from very short pulsed sinusoids. The theory best describing the results was a neural counter model.

NP73-5C-030

51666. SHEPELIN, O. P. (Vladivost. Med. Inst., Minist. Health RSFSR, Vladivostok, USSR.) Kompleksnaya otsenka uslovii truda i sostoyaniya zdorov'ya rabochikh sudoremontnoi promyshlennosti. [Complex evaluation of working conditions and the health of workers in the ship repairing industry.] GIG SANIT 36(10): 114-116. 1971[recd. 1972].--The effect of industrial factors on 1789 workers, 195 of whom had regular contact with hand power tools was studied. Functional changes in the nervous and cardiovascular systems, acoustical, vestibular, visual, cutaneous and motor analysors and morphology of the blood were considered. Intensive noise associated with local vibrations was the greatest unfavorable effect. Functional disorders were related to specific jobs. Hypertension, tachycardia, increased excitability of centers of parasympathetic and sympathetic innervation, increased thresholds of hearing and decreased muscle strength were observed in different groups.--N. L. G.

NP73-5C-031

52024. KRYLOV, Y. V. and M. V. NEFEDOVA. Osobennosti slukhovoi adaptatsii pri kompleksnom vozdeistvii na cheloveka shumov srednei intensivnosti v usloviyakh otnositel'noi izolyatsii i gipokinezii. [Peculiarities of auditory adaptation of humans in response to a complex action of noises of medium intensity under conditions of relative isolation and hypokinesis.] IZV AKAD NAUK SSSR SER BIOL 4: 629-630. 1971. [Engl. summ.]--Auditory adaptation under conditions of isolation and hypokinesia depends primarily on the state of the sections of the auditory analyzer. Relative isolation and hypokinesia tangibly influence the auditory function. This leads to the formation of a stable effect of external hindering causing a considerable change of the auditory adaptation.
--J. A. L.

NP73-5C-032

† 57624. GLORIG, A. (Callier Hear. Speech Cent., 1966 Inwood Road, Dallas, Tex. 75235, USA.) Medical aspects of noise control. TAPPI (TECH ASSOC PULP PAP IND) 55(5): 699-704. Illus. 1972.--Noise produces a significant hearing loss for speech when the exposure to levels above 90 dB (decibels) is continued over several years. Ear protection will prevent that loss but noise control at the source is the eventual solution. The nonauditory health effects of noise exposure were never established. Many claims of general health effects are made but no supporting evidence exists. In spite of the need for more research, enough is known to institute hearing conservation programs in industry.

NP73-5C-033

57629. KOZLOV, V. N. and N. P. KISELEVA. (Saratov. Res. Inst. Rural Hyg., Saratov, USSR.) Opyt elektroentsefalograficheskogo obsledovaniya traktoristov v protsesse polevykh rabot. [Electroencephalographic investigation of tractor operators during field work.] GIG SANIT 36(8): 106-107. Illus. 1971.--EEG data are given for 12 tractor operators working in the field under conditions of intense noise, vibrations and other factors which have a considerable effect on the functional state of the CNS.--M. D. S.

NP73-5C-034

57642. RUTENBURG, E. S. (Leningr. Res. Inst. Med. Hyg. Occup. Dis., Leningrad, USSR.) Sostoyanie zdorov'ya podrostkov, obuchayushchikhsya i rabotayushchikh v pryadil'no-tkatskikh tsekhakh. [The state of health of adolescents working at spinning-weaving shops.] GIG SANIT 37(2): 53-56. 1972. [Engl. summ.]--As a result of training and working in these shops adolescents presented certain nonspecific signs of a noxious effect of occuptional industrial factors (changes in the nervous and cardiovascular systems, in the gastrointestinal tract, disturbances of the menstrual cycle, etc.) and initial symptoms of specific occuptional diseases of the ears, bone and muscle. A number of measures for protecting adolescents' health at enterprises of the textile industry are suggested.--J. F. L.

NP73-5C-035

† 57568. SCOTT, THOMAS D. (Nat. Sci. I., Univ. Calif., Santa Cruz, Calif. 95060, USA.) The effects of continuous, high intensity, white noise on the human sleep cycle. PSYCHOPHYSIOLOGY (BALTIMORE) 9(2): 227-232. Illus. 1972.--Eight male college students slept for 8 consecutive nights under conditions of 93 ± 2 dB white noise (N) and under normal quiet conditions (Q). On N nights the percentage of total sleep time spent in REM [rapid eye movement] stage was decreased ($p < .001$), the percentages of stages 1 and 2 were increased ($p < .05$, $p < .001$, respectively) and REM latency was increased ($p < .02$) compared to Q nights prior to N nights. On Q nights following N nights the percentages of stage REM increased above baseline levels indicating compensatory recovery effects from REM sleep deprivation on the prior N nights. Stages 3 and 4 remained unchanged throughout the study. The reduction in stage REM on N nights was directly attributed to the effects of noise on the CNS and not a secondary result of an increased number of awakenings on N nights.

NP73-5C-036

5073. EVANS, MARGARET J. and W. TEMPEST. (Audiol. Res. Unit, Dep. Electr. Eng., Univ. Salford, Salford M5 4WT, Engl., UK.) Some effects of infrasonic noise in transportation. J SOUND VIB 22(1): 19-24. Illus. 1972.--Sound pressure levels in cars traveling at highway speeds were measured down to the octave centered on 2 Hz. The effects of infrasound on balance and psychological awareness studied. Levels of infrasound in moving vehicles can produce symptoms of balance disturbance, including vertical nystagmus, and have deep effects on psychological awareness, in normal humans. Possible mechanisms for these effects are discussed.--J. E. F.

NP73-5C-037

5077. KRUGLOV, N. P., V. A. LUTOV, A. L. PINCHUK and G. G. SOROCHINSKII. (Dep. Gen. Hyg., Vitebsk Med. Inst., Vitebsk, USSR.) Voprosy gigieny truda v shveinom proizvodstve. [Industrial hygiene problems in the sewing industry.] GIG SANT 37(3): 22-25. Illus. 1972. [Engl. summ.]--A study of industrial conditions prevailing at a sewing factory proved the technol gic process was accompanied by certain noxious environmental factors. The main factors are the unsatisfactory microclimate in the sewing shops, significant levels of high-frequency noise and a considerable strain of attention, vision and neuro-motor apparatus in fulfillment if monotonous production line operations. All this has a considerable effect on the physiological reactions, the state of health and the work productivity.--D. T. S.

NP73-5C-038

† 69028. SCHNEIDER, BRUCE A. (Columbia Univ., New York, N. Y. 10027, USA.), ALLEN J. NEURINGER and DOUGLAS RAMSEY. Magnitude estimation of loudness with a minimum 24-hr interstimulus interval. PSYCHONOMIC SCI SECT HUM EXP PSYCHOL 27(4): 243-245. Illus. 1972.--Magnitude estimates of the loudness of white noise were obtained in 2 conditions: in the 1st, the time between consecutive stimulus presentations was at least 24 hr; in the 2nd, the time was less than 2 min. In both conditions, the relationship between the reports of the subjects (Ss) and the intensities of the stimuli was best described by a power function. The exponent of the function was lower and the variance was slightly greater in the 24-hr interstimulus condition.

NP73-5C-039

69254. WAHI, P. N. (Indian Counc. Med. Res., New Delhi, Delhi, India.) Noise pollution and health. INDIAN J MED RES 59(7): 1148-1153. 1971.--Many possible sources of noise pollution are reviewed. Possible fetal and infant damage of humans and rodents, hearing impairments, and the relationship between coronary ailments and mental disorders and noise are stressed.--S. G. B.

NP73-5C-040

69262. TARASENKO, N. Yu., A. A. KASPAROV, E. M. SMIRNOVA and B. V. ANAN'EV. (I. M. Sechenov 1st Mosc. Med. Inst., Moscow, USSR.) O kombinirovannom deistvii faktorov vneshnei sredy na proizvodstve i ikh normirovanni. [Joint action of environmental factors in industry and their standardization.] GIG SANIT 36(7): 27-32. Illus. 1971. [Engl. summ.]--In the chemical industry, the action of toxic substances prevails on a background of other occupational noxious factors (noise, high air temperature). Hygienic investigations carried out in boric acid production proved that noise intensity was at a permissible level, but the functional state of hearing in workers presented a number of unfavorable shifts. The 80th curve, accepted as a standard of permissible noise level, is quite unfit for a number of chemical productions. In winter time, the air temperature of work shops did not exceed 27-29°, but signs of thermoregulatory stress were observed in the workers. The standardization of the microclimate in the chemical industry should be regulated on the basis that workers experience a joint action of factors.--J. L. S.

NP73-5C-041

69584. SHAPIRO, MARK T., WILLIAM MELNICK (Ohio State Univ., Columbus, Ohio, 43210, USA.), and VICTOR VER MEULEN. Effects of modulated noise on speech intelligibility of people with sensorineural hearing loss. ANN OTOL RHINOL LARYNGOL 81(2): 241-248. Illus. 1972.--Twenty-four adult male subjects, 12 with normal hearing and 12 with sensorineural hearing loss, were tested to compare their speech discrimination in quiet and in a noise background. The wide-band noise used was either continuous or modulated and was presented at various signal-to-noise ratios. The speech test material was monosyllabic words. Subjects with sensorineural loss showed markedly poorer discrimination under all experimental noise conditions. Performance improved as the signal-to-noise ratio increased and as the modulation rate decreased. The poor discrimination of subjects with sensorineural hearing loss in the presence of noise provides support for routine clinical measurement of discrimination in noise for these individuals. Individual performance in noise could not be predicted with a high degree of certainty from discrimination scores measured in quiet.--E. S.

NP73-5C-042

Temporary threshold shift and recovery patterns from two types of rock and roll music presentation. Rintelmann WF, et al.
J Acoust Soc Am 51:1249-56, Apr 72

NP73-5C-043

Observations on the effect of contralateral noise on intensive differential sensitivity. Paul RG, et al.
Acta Otolaryngol (Stockh) 73:379-86, May 72

NP73-5C-044

Noise-exposure. Facts and myths. Glorig A.
Trans Am Acad Ophthalmol Otolaryngol 75:1254-62, Nov-Dec 71

NP73-5C-045

Environmental noise is growing--is it damaging our hearing? Lipscomb DM.
Clin Pediatr (Phila) 11:374-5, Jul 72

NP73-5C-046

Advantage and disadvantage of hearing aids in industry. A. J. Szecsody. bibliog Audio Eng Soc J 20:109-11 Mr '72

NP73-5C-047

[Effect of acoustic stimulation on behavior of hematic cortisol in man] Favino A, et al.
Boll Soc Ital Biol Sper 48:105-9, 15 Mar 72 (Ita)

NP73-5C-048

Functional changes in the ear produced by high-intensity sound; 5.0-khz stimulation. G. R. Price. bibliog diag Acoustical Soc Am J 44:1541-5 D '68; 51:552-8 pt 2 F '72

NP73-5C-049

Hazardous exposure to industrial impact noise: persistent effect on hearing. Guberan E, et al.
Ann Occup Hyg 14:345-50, Dec 71

NP73-5C-050

[Are hearing tests necessary during continued work in a noisy environment?] Schweiz F.
Monatsschr Ohrenheilkd Laryngorhinol 106:344-52, 1972 (Eng. Abstr.) (Ger)

NP73-5C-051

[Bioelectric reactions in the skeletal muscles after the action of constant and impulse noise] Butukhanov VV, et al. Gig Sanit 36:21-5, Oct 71 (Eng. Abstr.) (Rus)

NP73-5C-052

[Threshold audiometric studies on hearing disorders in starfighter ground personnel] Grosskurth D.
Med Welt 23:818-20, 27 May 72 (Ger)

NP73-5C-053

[Noise induced deafness--a clinical report] Lehnhardt E.
Z Laryngol Rhinol Otol 51:221-30, Apr 72 (Eng. Abstr.) (Ger)

NP73-5C-054

[Noise as a health problem of the human environment] Pintér I. Orv Hetil 113:1335-40, 4 Jun 72 (Hun)

NP73-5C-055

Some remarks on the effects of drugs, lack of sleep and loud noise on human performance. Sanders AF, et al.
Ned Tijdschr Psychol 26:670-84, Dec 71 (51 ref.)

NP73-5C-056

Noise--a challenge to the otolaryngologist: introduction. Fox MS.
Trans Am Acad Ophthalmol Otolaryngol 75:1251-3, Nov-Dec 71

NP73-5C-057

Temporary threshold shifts produced by pure tones and by noise in the absence of an acoustic reflex. J. H. Mills and D. J. Lilly. bibliog Acoustical Soc Am J 50: 1556-8 pt 2 D '71

NP73-5C-058

The effect of noise during sleep on the sleep patterns of different age groups. Roth T, et al.
Can Psychiatr Assoc J 17:Suppl 2:SS197, 1972

NP73-5C-059

[Determination of noise exposure during long extended stochastically oscillating noise--a methodical study from the viewpoint of work arrangement] Neubert J.
Z Gesamte Hyg 18:184-90, Mar 72 (Ger)

NP73-5C-060

[Medico-legal assessment of noise induced deafness] Feldmann H.
Z Laryngol Rhinol Otol 51:230-48, Apr 72 (Eng. Abstr.) (Ger)

NP73-5C-061

[Influence of noise on rotatory sensation in unilateral deafness] Wirth G.
Arch Klin Exp Ohren Nasen Kehlkopfheilkd 199:558-60, 1971 (Ger)

NP73-5C-062

Noise-exposure: the industrial physician. Barbon CI. Trans Am Acad Ophthalmol Otolaryngol 75:1283-71, Nov-Dec 71

NP73-5C-063

Noise: a new medicolegal problem. Schroeder OC Jr. Postgrad Med 52:47-9, Jul 72

NP73-5C-064

[Evaluation of industrial noise with special reference to acoustic trauma] Meister FJ. HNO 20:310-2, Oct 72 (Eng. Abstr.) (Ger)

NP73-5C-065

Temporary threshold shift in hearing from exposure to different noise spectra at equal dBA level. A. Cohen and others. bibliog Acoustical Soc Am J 51:503-7 pt 2 F '72

NP73-5C-066

Temporary threshold shifts produced by noise-exposure of long duration. Carder HM, et al. Trans Am Acad Ophthalmol Otolaryngol 75:1346-54, Nov-Dec 71

NP73-5C-067

Growth and recovery of temporary threshold shift at 4 kHz due to a steady state noise and impulse noises. Okada A, et al. Int Z Angew Physiol 30:105-11, 1972

NP73-5C-068

Effects of noise, tranquillizer and increased delay time of tracking performance and heart rate. Strasser H. Pfluegers Arch 332:Suppl 332:R82, 1972

NP73-5C-069

73-1TE-00011
Jones, H.H. National Inst. for Occupational Safety and Health, Cincinnati, OH
Effects of varying levels of interruption on temporary threshold shift.
See Citation No. 73-1TE-00006 pp. 139-140. [1972?].
Abs. only, from AA.
NOISE LEVELS : NOISE STANDARDS : ACOUSTIC MEASUREMENTS : HEARING : abstract only : temporary threshold shift : noise intermittency.

Intermittency is a noise exposure variable which must be considered in proposing standard limits. A noise interruption is a period in the noise exposure when the level falls below 80 dbA for more than 5 min or for 20% of the duration of the preceding noise burst. Interruption levels below 80 dbA may have variable effects on resultant temporary threshold shifts. Thirty subjects were exposed to noise bursts wherein the only variable was the level of noise during interruption. The resultant temporary threshold shifts from these exposures are discussed.

NP73-5C-070

73-1TE-00012
Schmidek, M. National Inst. for Occupational Safety and Health, Cincinnati, OH
Survey of chain saw operators: Nature of intermittent noise exposure and associated damage risk to hearing.
See Citation No. 73-1TE-00006 p. 140. [1972?].
Abs. only, from AA.
NOISE LEVELS : OCCUPATIONAL HEALTH : HEARING : NOISE STANDARDS : abstract only : temporary threshold shifts.

Intermittent noise exposure is an occupational hazard that is difficult to identify and monitor. Depending on job or machine operations interruption intervals can range from a fraction of a second to an hour or more, while the number of these interruptions might vary from one to thousands. Since hearing can recover to some degree when a noise exposure is interrupted, resultant shifts in hearing thresholds can be variably affected. A survey was conducted of U.S. Forest Service workers employed as chain-saw operators. Types of intermittent exposures, resultant temporary threshold shifts and subsequent recovery-rate, and hazard risk related to proposed standards associated with intermittent noise exposures were studied.

NP73-5C-071

73-1TE-00013
Schmidek, M. National Inst. for Occupational Safety and Health, Cincinnati, OH
Survey of hearing conservation programs in industry.
See Citation No. 73-1TE-00006 p. 140. [1972?].
Abs. only, from AA.
INDUSTRIAL PROGRAMS : HEARING : NOISE STANDARDS : OCCUPATIONAL HEALTH : abstract only : hearing conservation : survey of industries.

Excessive noise at the workplace poses risk of hearing loss to workers. The occupational noise exposure standard in effect under the Occupational Safety and Health Act directs industry to develop programs for the purpose of conserving workers' hearing. Because there are no generally accepted standards for such programs, the National Institute for Occupational Safety and Health conducted a survey to find on-going industrial hearing conservation programs and to assess the extent and nature of their variability to learn of the range of problems involved in establishing such programs, and to determine apparent measures of effectiveness. Forty-three hundred questionnaires were sent out; as of Dec. 1, 1971, responses were received from 62% of the mining companies, 58% of the manufacturing companies, 55% of the transportation companies, and 40% of the construction companies.

126

NP73-5C-072

73-1TE-00014
Pell, S. E.I. du Pont de Nemours and Co., Wilmington, DE
An evaluation of a hearing conservation program—a five-year longitudinal study.
See Citation No. 73-1TE-00006 p. 141. [1972?].
Abs. only, from AA.
HEARING : INDUSTRIAL PROGRAMS : OCCUPATIONAL HEALTH : NOISE LEVELS : abstract only : hearing conservation.

A long-term study of noise and hearing loss was undertaken in the du Pont Company to evaluate the company's hearing conservation program. About 30,000 men and women, of whom about 7,000 work in areas where the noise levels are above the company's hearing conservation criteria, were studied. Findings of changes in hearing threshold levels over a 5-yr period are presented. Changes among nonexposed workers are compared with those among workers in 2 levels of noise exposure.

NP73-5C-073

73-1TE-00015
Botsford, J.H. Bethlehem Steel Corp., PA
Relation of hearing impairment to noise exposure and age.
See Citation No. 73-1TE-00006 p. 141. [1972?].
Abs. only, from AA.
HEARING : MATHEMATICAL ANALYSIS : abstract only : hearing impairment : age : noise exposure.

An equation relating prevalence of impaired hearing to age and noise exposure is based on the assumptions that the probability of developing impaired hearing at any age is proportional to the fraction of the population of that age which has already developed impaired hearing. The probability of impairement is also proportional to the fraction of the population remaining unimpaired and, therefore, is available for impairment. The solution of the differential equation resulting from these assumptions reveals a complex relationship of age and noise exposure to impairment. The effects of age and noise are not simply additive as is often assumed.

NP73-5C-074

73-1GD-00025
Tatusesco, D.
L'importance de la protection acoustique.
See Citation No. 73-1GD-00017. 1 page.[1971?].
In French; no abs., no refs., from Text.
NOISE REDUCTION : PUBLIC HEALTH : physiological and psychological effects.

The effects of noise pollution are surveyed, considering the resulting physiological and psychological fatigue. Permanent fatigue without relaxation or recuperation can lead to irreversible injuries. Noise must not be considered an inevitable nuisance. A solution to the problems requires education and regulations to reduce noise levels where its production is inevitable and insure areas, such as homes, sufficient quiet where recuperation is possible.

NP73-5C-075

73-2TE-00068
Schwetz, Friedrich Vienna, Austria
Betriebslaermbekaempfung in Oesterreich. Bericht ueber die audiometrischen Untersuchungen bei 50 000 Laermarbeitern.
See Citation No. 73-2TE-00049 pp. 174-175. 1971.
In German; Eng., Fr., Ger. sums., no refs., from AS.
NOISE REDUCTION : DISEASES : OCCUPATIONAL HEALTH : AUSTRIA.

All Austrian hearing troubles caused by noise and measured audiometrically are classified in 4 groups according to their course and extent. It clearly appears that the risks of hearing troubles are

necessarily of variable importance in the various enterprises. As regards the average decrease of the hearing capacity, the noise characteristic registered in every working place seems to be extremely important. All experiences gained support and facilitate the application of personal and technical audioprotective measures in the various enterprises. Moreover, the investigation of which percentage of professional diseases ought to be indemnified (relative deafness caused by excessive noise) is discussed.

NP73-5C-076

72-5TE-0149
Large, John B. Southampton Univ., Inst. of Sound & Vibration Research, Eng.

Noise control.
See Citation No. 72-5TE-0148. 26 pages. 1972.
No abs., 5 figs., 4 refs., from Text & SS.
NOISE CONTROL : AIRCRAFT : AUTOMOBILES : INDUSTRIAL NOISE.

Measurement and assessment of the impact of noise are discussed. Noise affects society in two ways: it produces damage to the hearing mechanisms if the intensity of the noise is too high or if the human is subjected to excessive periods of noise; and secondly, at lower intensities, it produces a state of mental disturbance. Problems and solutions for aircraft noise and sonic booms, traffic noise, and industrial and domestic noise are discussed.

NP73-5C-077

72-5TE-0154
Walker, J.G. Univ. of Southampton, Inst. of Sound and Vibration Research, Operational Acoustics and Audiology Group, Eng.

Hearing conservation.
See Citation No. 72-5TE-0148. 12 pages. 1972.
No abs., 2 appendices, 6 refs., from Text & SS.
NOISE CONTROL : HEARING LOSS: EAR DAMAGE.

The biological effects of noise can best be considered by classifying them into five categories: physical; psychological; physiological; pathological; and performance. Effects of noise on the ear and hearing, practical effects of noise-induced hearing loss, and a hearing conservation program are discussed.

NP73-5C-078

72-5TE-0158
Grether, W.F.
Harris, C.S.
Ohlbaum, M.
Sampson, P.A. (all) Aerospace Medical Research Lab., Wright-Patterson Air Force Base, OH
Guignard, J.C. Wright State Univ., Dayton, OH

Further study of combined heat, noise and vibration stress.
Aerospace Medicine. St. Paul, Minn., 43(6): 641-645, June 1972.
Abs., 5 figs., 4 tables, 4 refs., from AA.
Also in: Aerospace Medical Research Laboratory. Technical Report No. 71-131.
NOISE MEASUREMENTS : VIBRATIONS : PHYSIOLOGY : stress effects.

As a follow-up to an earlier study of combined heat, noise and vibration stress, the same levels of heat (120°F), noise (105 dB) and vibration (5 Hz, 0.30 peak g) were studied but with some modifications. Physiological measures included skin and rectal temperature, heart rate, weight loss and biochemical urine analyses. Performance measures included two-dimensional compensatory tracking, choice reaction time, a voice communication test of logical alternatives, mental arithmetic, visual acuity and subjective ratings of the stress conditions. As in the previous study the combination of stresses produced no additive stress interactions. On tracking and reaction time tests the greatest impairment of performance was produced by vibration alone. Transmissibility of vibration was not altered by heat or noise. Subjective ratings of stress severity progressively increased with the number of stresses in the combination. Subjective ratings of stress intrusiveness, however, did not show such a trend.

NP73-5C-079

72-5TE-0160
Sommer, Henry C.
Harris, C. Stanley (both) Aerospace Medical Research Lab., Wright-Patterson Air Force Base, OH

Combined effects of noise and vibration on mental performance as a function of time of day.
Aerospace Medicine. St. Paul, Minn., 43(5): 479-482, May 1972.
Abs., 4 figs., 3 refs., from AA.
Presented at: Aerospace Medical Ass'n. Meeting. (Held in Houston, Tex., April 26, 1971).
NOISE LEVELS : VIBRATIONS : effects : mental performance : time function.

To determine combined effects of noise and vibration on mental performance as a function of time of day, 10 subjects were randomly exposed to each of the following conditions: stress (5 Hz vibration-0.25 g_z, 110 dB noise) at 6:00 a.m.; no stress (no vibration-85 dB noise) at 6:00 a.m., stress at 3:00 p.m.; and no stress at 3:00 p.m. Subjects' performance on a mental arithmetic task was measured during each of these exposures on consecutive days. Significant interaction between time of day and stress was due to both a slight improvement in performance in no stress condition at 3:00 p.m., and a slight decrement in performance at 3:00 p.m. in the stress condition. Results suggest that phase of the circadian cycle may be a variable to be considered in studies on the effects of stress on human performance.

5C HEALTH AND PERFORMANCE
(See Also)

1A003	1D018	2C001	3D002	3D017	5A003	5A012
1B011	1D019	3A012	3D007	3D040	5A005	5B001
1D012	2A002	3A013	3D009	3D046	5A006	5B002
1D014	2B001	3B029	3D011			