

ASA TECHNICAL  
MEMORANDUM

NASA TM X-72710

NASA TM X-72710

PUBLICATIONS IN ACOUSTICS AND NOISE CONTROL  
FROM THE NASA LANGLEY RESEARCH CENTER  
DURING 1940-1974

Compiled by  
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Edited by  
The Staff of the Acoustics  
and Noise Reduction Division

July 1975

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
LANGLEY RESEARCH CENTER, HAMPTON, VIRGINIA 23065

(NASA-TM-X-72710) PUBLICATIONS IN ACOUSTICS  
AND NOISE CONTROL FROM THE NASA LANGLEY  
RESEARCH CENTER DURING 1940.- 1974 (NASA)

N76-23942

CSCI 20A

Unclas

G3/71 26962

1. Report No. NASA TM X-72710	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Publications in Acoustics and Noise Control From the NASA Langley Research Center During 1940-1974	5. Report Date July 1975	6. Performing Organization Code 26.000
	7. Author(s) Compiled by Goldie C. Smith and Jean M. LaNeave - Edited by the Staff of the Acoustics and Noise Reduction Division	8. Performing Organization Report No. NASA TM X-72710
9. Performing Organization Name and Address Langley Research Center Hampton, Virginia 23665	10. Work Unit No. 505-03-12-02	11. Contract or Grant No.
	12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D. C. 20546	13. Type of Report and Period Covered Technical Memorandum
15. Supplementary Notes	14. Sponsoring Agency Code NASA	
16. Abstract This document contains reference lists of published Langley Research Center papers in various areas of acoustics and noise control for the period 1940-1974. The research work was performed either in-house by the center staff or by other personnel supported entirely or in part by grants or contracts. The references are listed chronologically and are grouped under the following general headings:  I. DUCT ACOUSTICS  II. PROPAGATION AND OPERATIONS  III. ROTATING BLADE NOISE  VI. JET NOISE  V. SONIC BOOM  VI. FLOW-SURFACE INTERACTION NOISE <b>PRICES SUBJECT TO CHANGE</b>  VII. HUMAN RESPONSE  VIII. STRUCTURAL RESPONSE		
17. Key Words (Suggested by Author(s)) (STAR category underlined) Aircraft Noise Sources Noise Control Noise Effects Sonic Booms	18. Distribution Statement Unclassified  Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21.

\* Available from { The National Technical Information Service, Springfield, Virginia 22151  
{ STIF/NASA Scientific and Technical Information Facility, P.O. Box 33, College Park, MD 20740

## Foreword

This document contains reference lists of published Langley Research Center papers in various areas of acoustics and noise control for the period 1940-1974. The research work was performed either in-house by the center staff or by other personnel supported entirely or in part by grants or contracts. The references are listed chronologically and are grouped under the following general headings:

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Included are the generally available NACA and NASA Technical Reports (R-), NACA and NASA Technical Notes (TN- and TN D-), NACA Research Memorandum (RM-), Contractor Reports (CR-), and Journal Articles, copies of which can be obtained from the NASA Scientific and Technical Information Facility (STIF), P. O. Box 8757, Baltimore/Washington International Airport, Maryland 21240, for a nominal charge. Other publications such as NACA Technical Memorandums (TM-), NASA Memorandums and Technical Memorandums (TM- and TM X-), are produced in limited supply but reproduction copies will in most cases also be available from STIF.

Langley Working Papers (LWP-), Masters and Doctoral Theses, and company reports are generally not available from STIF. In nearly all cases the supply is limited and copies have to be requested directly from the authors.

## I. DUCT ACOUSTICS

Some of the topics covered in this section are as follows:

- . Reciprocating Engine Mufflers
- Jet Engine Inlet and Discharge Duct Acoustic Liners
- Propagation in Flowing Ducts
- Liner Configurations and Materials
- . Helmholtz Resonators
- Acoustic Impedance and Flow Resistance
- Measurements and Analyses
- Facilities and Test Equipment

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## II. PROPAGATION AND OPERATIONS

Some of the topics covered in this section are as follows:

Atmospheric Propagation of Sound and Shock Waves

Absorption, Scattering, Refraction, Diffraction, and Reflection

Turbulence and Wind Effects

Aural Detection

Noise Abatement Aircraft Operations

## II. PROPAGATION AND OPERATIONS

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### III. ROTATING BLADE NOISE

Some of the topics covered in this section are as follows:

Free and Ducted Propellers; Tilt Rotors; Main and Tail Rotors of Helicopters

Noise due to Torque, Thrust, Coning, Thickness, Unsteady Loads, and Vortex Shedding and Nonuniform Inflow

Near- and Far-Field Noise Measurement, Analysis, Prediction, and Reduction

Rotating Blade Induced Loads on Structures

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#### IV. JET NOISE

Some of the topics covered in this section are as follows:

Near- and Far-Noise Fields

Subsonic and Supersonic Flows

Model Jets, Jet Engines, and Rocket Engines

Free Jets, Shear Layers, Impinging Jet and Coaxial Jets

Mach Waves, Turbulence, Temperature and Velocity Profiles,  
and Combustion

Mufflers, Suppressors, and Noise Control

Equipment, Facilities, and Test Methodology

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## V. SONIC BOOM

Some of the topics covered in this section are as follows:

Generation, Propagation, Minimization, and Prediction

Effects of Vehicle Altitude, Mach Number, Size and Shape,  
Lift Distribution, Flightpath, and Acceleration

Generation by Projectiles, Aircraft, and Spacecraft

Ballistic Ranges, Rocket Sleds, Wind Tunnels, and Other  
Simulators

Effects of Atmospheric Gradients, Turbulence, and Ground  
Reflections

Lateral Spread Ground Patterns Including Super-Booms from  
Maneuvers

Measurements and Analyses

Responses of Buildings, Building Components, Equipment, and  
Terrain

Loudness, Startle, Awakening and Annoyance Responses of  
People

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## VI. AIRFLOW-SURFACE INTERACTION NOISE

Some of the topics covered in this section are as follows:

Turbulent Boundary Layers; Separated Flows; and Impinging  
Jet Flows from Upper Surface Blowing, Jet Augmented Flaps,  
and Externally Blown Flaps

Noise from Airframes Including Such Components as Struts,  
Cavities, Spoilers, Flaps, and Porous Surfaces

Free-Flight Tests and Simulation by Wind Tunnels and  
Tracked Vehicles

Lift Induced Ground Pressures

Radiated Noise, Surface Pressures, Correlation Areas, and  
Vorticity

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## VII. HUMAN RESPONSE

Some of the topics covered in this section are as follows:

Aircraft Noise, Sonic Boom, and Vibration Environments

Psychoacoustic and Psychophysiological Responses Such as  
Annoyance, Noisiness, Loudness, Speech Interference, Task  
Performance, Muscle Tension, Startle, Sleep Awakening

Research Methods, Equipment, and Facilities

Measurements, Analysis, and Prediction

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## VIII. STRUCTURAL RESPONSE

Some of the topics covered in this section are as follows:

Noise and Sonic Boom Induced Responses of Panels, Beams,  
Windows, Walls, Cavities, Ground Buildings, Aircraft  
Structures, and Acoustic Materials

Deflections, Accelerations, Stresses, and Crack Growth

Damage Minimization

Modal Density Concepts

Acoustic Loads Prediction

Test Facilities, Equipment, and Methods

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