

Reference

REPORT NO. DOT-TSC-OST-72-34, Supplement II

REPORTS BIBLIOGRAPHY, SUPPLEMENT II
JULY - DECEMBER 1973

UNLIMITED DISTRIBUTION REPORTS

Transportation Systems Center
Management Services Division
Information Services Branch
Kendall Square
Cambridge MA 02142



JANUARY 1974

DOCUMENT IS AVAILABLE TO THE PUBLIC

Prepared for
DEPARTMENT OF TRANSPORTATION
Office of the Secretary
Washington DC 20590

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

Technical Report Documentation Page

Report No. OT-TSC-OST-72-34 Supplement II	2. Government Accession No.	3. Recipient's Catalog No.	
Title and Subtitle REPORTS BIBLIOGRAPHY, SUPPLEMENT II UNLIMITED DISTRIBUTION REPORTS		5. Report Date January 1974	6. Performing Organization Code
Author(s) F. McDonough		8. Performing Organization Report No. DOT-TSC-OST-72-34 Supplement II	
Performing Organization Name and Address Transportation Systems Center Management Services Division Information Services Branch Randall Square, Cambridge MA 02142		10. Work Unit No. (TRAIS) G-2130	11. Contract or Grant No.
Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Washington DC 20590		13. Type of Report and Period Covered Reports Bibliography July-December 1973	
Supplementary Notes		14. Sponsoring Agency Code	

Abstract

This publication supplements the "Reports Bibliography - December 1972," and "Reports Bibliography, Supplement 1 - January - June 1973. It provides a listing of all reports with unlimited distribution, which have been published by the Transportation Systems Center, DOT, from July through December 1973.

The Reports Bibliography, Unlimited Distribution edition, lists only those reports which are available through the National Technical Information Service. These reports are classified according to their sponsoring agency. A copy of the title page (which contains an abstract of the report) is included for each report.

Key Words Report Bibliography Unlimited Distribution		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC	
Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 68	22. Price

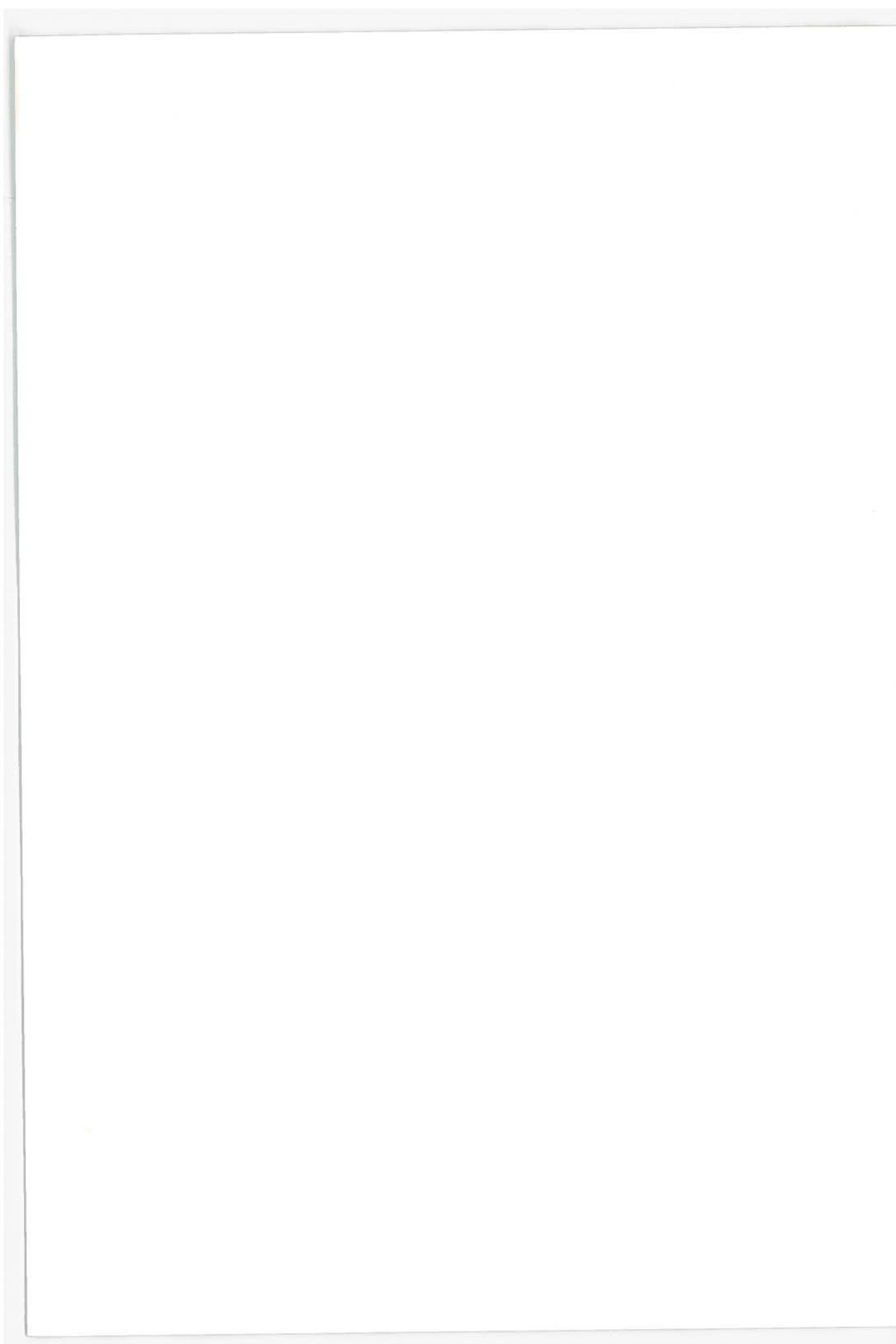
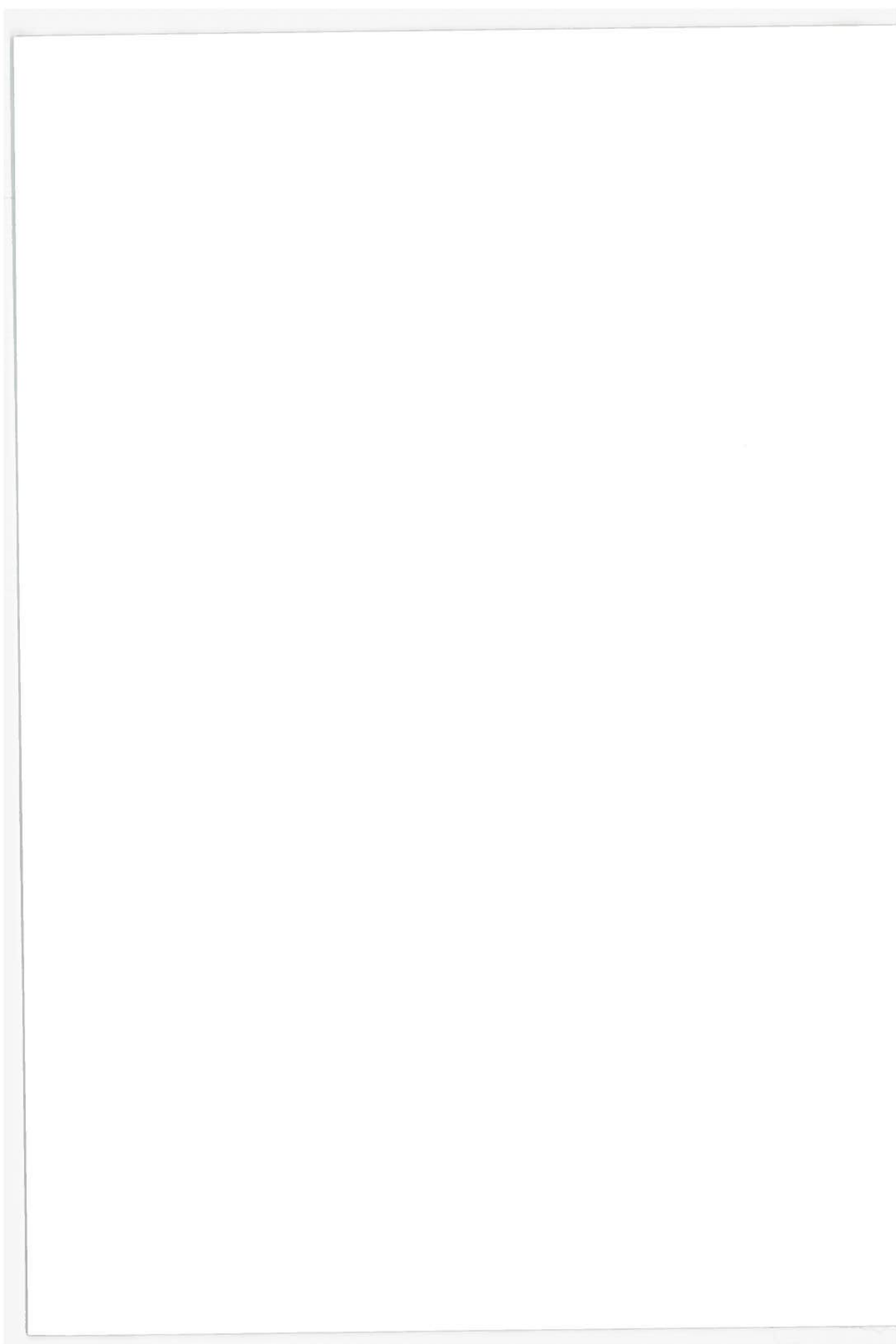


TABLE OF CONTENTS

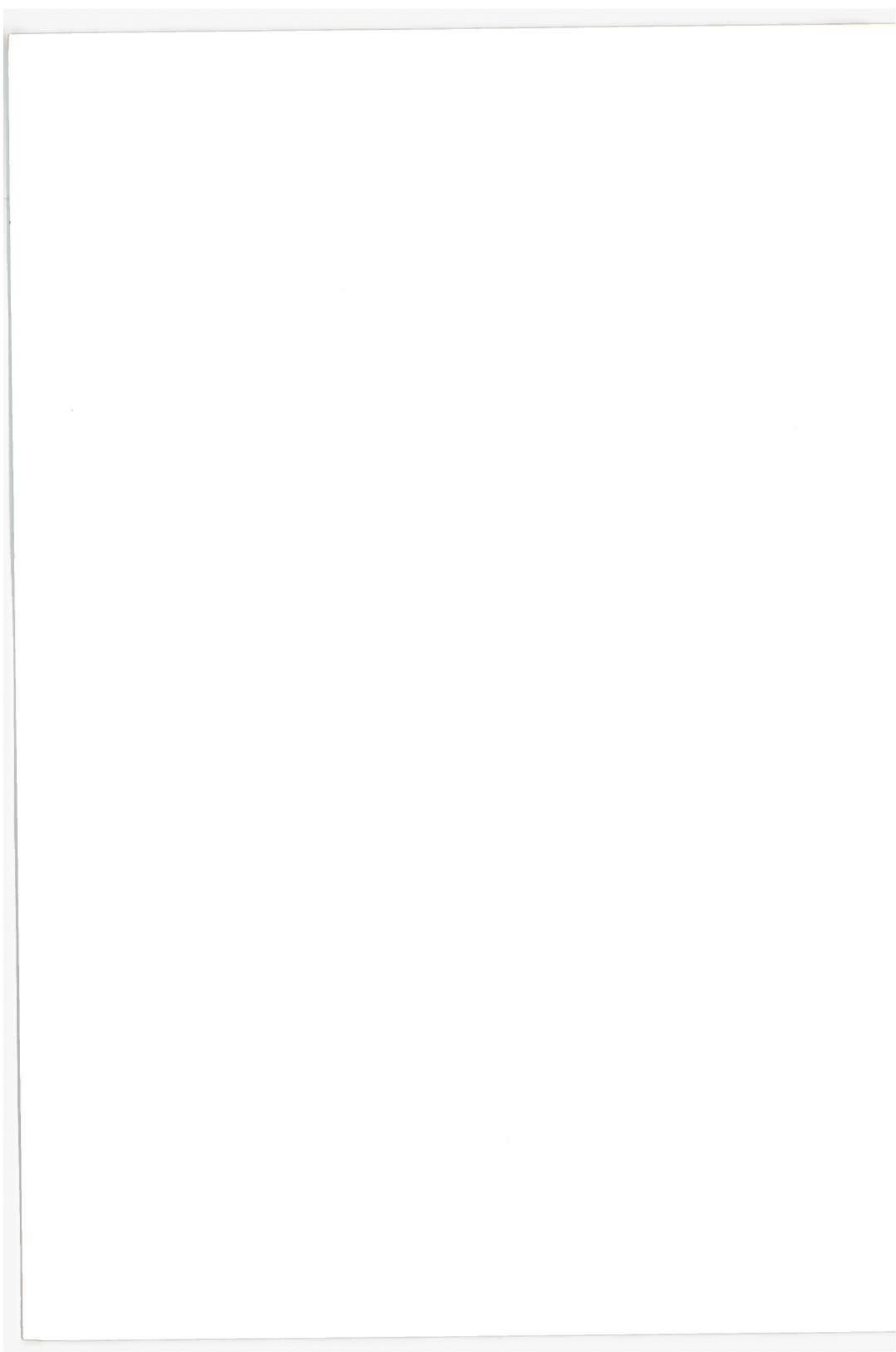
<u>Section</u>	<u>Page</u>
AVAILABILITY OF REPORTS.....	1
UNLIMITED DISTRIBUTION REPORTS.....	3
Federal Aviation Administration (FAA).....	3
Federal Highway Administration (FHWA).....	15
Federal Railroad Administration (FRA).....	19
National Highway Traffic Safety Administration (NHTSA)	29
Office of the Secretary (OST).....	39
Urban Mass Transportation Administration (UMTA).....	51
United States Coast Guard (USCG).....	61



AVAILABILITY OF REPORTS

Reports listed in this bibliography with an "AD" number or a "PB" number are available from the National Technical Information Service, in either paper copy or microfiche. Prices can be obtained from the Government Reports Announcements.

NTIS
Springfield, Virginia 22151



UNLIMITED DISTRIBUTION REPORTS
FEDERAL AVIATION ADMINISTRATION

DOT-TSC-FAA- /FAA-ED-08-1

Engineering and Development Program Plan - Airport Surface Traffic Control,
by Airport Surface Traffic Control Program Office,
April 1973.

DOT-TSC-FAA-72-27/FAA-RD-73-31

AD765 761/2

Evaluation of ILS Localizer Signal Specification During Ground Rollout,
by J. S. Koziol, Jr.,
Final Report, August 1973.

DOT-TSC-FAA-73-2/FAA-RD-73-193

Evaluation of the Watertown Arsenal Building #311 as an ILS Model Range,
by Robert M. Weigand and Francis J. LaRussa
Interim Report, December 1973.

DOT-TSC-FAA-73-13/FAA-RD-73-76

User's Manual for ILSLOC: Simulation for Derogation Effects on the Localizer Portion of the Instrument Landing System,
by G. Chin, L. Jordan, D. Kahn, S. Morin, D. Newsom, and A. Watson,
Operational Handbook, August 1973.

DOT-TSC-FAA-73-16/FAA-RD-73-77

Airport Information Retrieval System (AIRS) System Design,
by M. F. Medeiros and J. Sussman,
Final Report, July 1973.

DOT-TSC-FAA-73-17/FAA-RD-73-69

Human Factors Experiments for Data Link: Interim Report No. 3,
by E. H. Hilborn and R. W. Wisleder,
Interim Report, August 1973.

DOT-TSC-FAA-73-20/FAA-RD-73-120

Aircraft Vortex Wake Descent and Decay Under Real Atmospheric Effects,
by P. B. S. Lissaman, S. C. Crow, P. B. MacCready, Jr., F. H. Tombach and E. R. Bate, Jr.,
Final Report, February 1973 (Contractor Report).

DOT-TSC-FAA-73-23, II/FAA-RD-112, II

North Atlantic (NAT) Aided Inertial Navigation System
Simulation - Volume II: Computer Program NAT NAV User's Manual,
by W. C. Hoffman and K. G. Bowie,
Final Report, July 1973 (Contractor Report).

DOT-TSC-FAA-73-24/FAA-RD-121

Airport Information Retrieval System (AIRS) User's Guide,
by M. F. Medeiros and J. Sussman,
Final Report, August 1973.

DOT-TSC-FAA-73-25/FAA-RD-73-122

Airport Information Retrieval System (AIRS) System Support Manual,
by M. F. Medeiros and J. Sussman.

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FAA-ED-08 1		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ENGINEERING & DEVELOPMENT PROGRAM PLAN-AIRPORT SURFACE TRAFFIC CONTROL				5. Report Date April 1973	
				6. Performing Organization Code TSC, PTG	
7. Author(s) Airport Surface Traffic Control Program Office				8. Performing Organization Report No.	
9. Performing Organization Name and Address Airport Surface Traffic Control Program Office Traffic Control Programs Division Transportation Systems Center- Dept of Trans Kendall Square, Cambridge, MA 02142				10. Work Unit No.	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Office of Systems Engineering Management Washington, D.C. 20591				13. Type of Report and Period Covered Period Covered 1972 - 1979	
				14. Sponsoring Agency Code FAA ARD-600	
15. Supplementary Notes Reprinted July 1973					
16. Abstract Background, requirements, system descriptions, task descriptions, activities, schedules and funding levels are presented for the Airport Surface Traffic Control (ASTC) program for the years 1972-1979. Systems, subsystems proposed concepts and equipments are to be defined and specified in a system context and will then be designed, developed tested, and evaluated for introduction, in modular fashion into the existing airport environment. Modular structure of the system will permit system configurations to be tailored to the needs of the individual airport and will permit modular expansion of either capacity or function to meet the airport's needs as they evolve with time.					
17. Key Words Airports, Surface Traffic Control, Surveillance Radar, Trilateration, Loop Detectors, Guidance Devices Development Plan.				18. Distribution Statement Document is available to the public through the National Technical Information Service, Springfield, Virginia 22151	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 162	22. Price

1. Report No. FAA-RD-73-31		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle EVALUATION OF ILS LOCALIZER SIGNAL SPECIFICATION DURING GROUND ROLLOUT				5. Report Date August 1973	
				6. Performing Organization Code	
7. Author(s) Joseph S. Koziol, Jr.				8. Performing Organization Report No. DOT-TSC-FAA-72-27	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142				10. Work Unit No. R2108/FA207	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington, DC 20591				13. Type of Report and Period Covered Final Report July 1971 - July 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The International Civil Aviation Organization (ICAO) has developed a specification for localizer information on the runway surface appropriate for rollout guidance during Category III B operations. The suitability of this specification was evaluated by systems analysis and simulation and is reported herein. The results of the performance evaluation for a representative rollout guidance system indicate that the specification is too stringent especially for higher frequency type localizer disturbances and therefore should consider the spectral characteristics of the localizer disturbance. A more relaxed specification was therefore developed by taking additional advantage of the sensitivity effect of the localizer receiver and the attenuating effect of the rollout guidance system on localizer disturbances. The revised specification is recommended for future localizer signal specification since it could allow Category III B certification, without degradation of overall rollout system performance or safety, that the current specification might otherwise preclude. Practical means for applying the revised localizer signal specification are discussed but other more simpler and practical means should be examined.					
17. Key Words Rollout guidance, Localizer signal specification, Instrument Landing System, Performance, Localizer sensitivity, Signal Characteristics			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 102	22. Price

Form DOT F 1700.7 (8-69)

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FAA-RD-73-193		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle EVALUATION OF THE WATERTOWN ARSENAL BUILDING #311 AS AN ILS MODEL RANGE				5. Report Date December 1973	
				6. Performing Organization Code	
7. Author(s) Robert M. Weigand, Francis J. LaRussa				8. Performing Organization Report No. DOT-TSC-FAA-73 - 2	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, Massachusetts 02142				10. Work Unit No. R-3117/FA307	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington, DC 20591				13. Type of Report and Period Covered Interim Report Sep. 1972 - March 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>The Watertown Arsenal Building #311 was evaluated for use as an indoor ILS model range using upward frequency scaling of 100 to 1. To model the effects of small buildings and aircraft in the vicinity of an airport ILS, any model range has to have very low background reflections. If background reflections are large, they will obscure the desired measurements. Sets of measurements designed to determine the amplitude and location of undesirable background reflections due to structural objects around the proposed model site show that it will be necessary to completely enclose the range with high quality absorber.</p> <p>Using 200 square feet of inexpensive absorber to cover regions causing the largest background reflections and using antennas of narrow beamwidth, measurements of the effects of several large scattering objects were made. The scattered energy due to the largest target (3 feet x 3 feet) is in good agreement with calculations based on geometrical optics.</p>					
17. Key Words ILS Model Range			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 44	22. Price

Form DOT F 1700.7 (8-69)

1. Report No. FAA-RD-73-76		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle USER'S MANUAL FOR ILSLOC: SIMULATION FOR DEROGATION EFFECTS ON THE LOCALIZER PORTION OF THE INSTRUMENT LANDING SYSTEM				5. Report Date August, 1973	
				6. Performing Organization Code	
7. Author(s) G. Chin, L. Jordan, D. Kahn, S. Morin, D. Newsom, A. Watson				8. Performing Organization Report No. DOT-TSC-FAA-73-13	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142				10. Work Unit No. R3117/FA307	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington, D.C. 20591				13. Type of Report and Period Covered Operational Handbook	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>This manual presents the complete ILSLOC computer program package. In addition to including a thorough description of the program itself and a commented listing, the manual contains a brief description of the ILS system and antenna patterns. To illustrate the program a test case was created and the figures of the case are incorporated in the report. Program DYNM and program ILSPLT are included as Appendices. The ILSPLT, complete with sample graphs, is a plotting routine for ILSLOC.</p> <p>For a technical mathematical analysis of the system, the FAA report "Instrument Landing System Scattering" No. FAA-RD-72-137 should be consulted.</p>					
17. Key Words ILS, Derogation, CDI, Localizer				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 92	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FAA-RD-73-77		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle AIRPORT INFORMATION RETRIEVAL SYSTEM (AIRS) SYSTEM DESIGN			5. Report Date July 1973		
			6. Performing Organization Code		
7. Author(s) Manuel F. Medeiros and Julie Sussman			8. Performing Organization Report No. DOT-TSC-FAA-73-16		
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142			10. Work Unit No. FA-306/R4111		
			11. Contract or Grant No.		
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington DC 20591			13. Type of Report and Period Covered Final Report		
			14. Sponsoring Agency Code		
15. Supplementary Notes					
16. Abstract This report presents the system design for a prototype air traffic flow control automation system developed for the FAA's Systems Command Center. The design was directed toward the immediate automation of airport data for use in traffic load predictions and flow control operational support. The system employed computer services offered by commercial time-sharing companies. The system was also designed to serve as a technology foundation and an experimental tool from which subsequent automation specifications could be derived. The report covers the design decisions associated with the data base, the user interface, the user language, the special processing and the numerous operational considerations. Also included are the supporting program designs for data base updating and integrity maintenance. Finally, the report presents several recommended improvements to the automation system.					
17. Key Words Flow Control, Air Traffic Control, Central Flow Control Facility, Automation, Information Retrieval, Airport Information, Flow Control Procedures			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 188	22. Price

Technical Report Documentation Page

1. Report No. FAA-RD-73-69		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle HUMAN FACTORS EXPERIMENTS FOR DATA LINK Interim Report No. 3				5. Report Date August 1973	
				6. Performing Organization Code	
7. Author(s) Edwin H. Hilborn and Robert W. Wisleder				8. Performing Organization Report No. DOT-TSC-FAA-73-17	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. (TRAIS) FA313/R-3130	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington DC 20591				13. Type of Report and Period Covered Interim Report March 1973-May 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>The results of three experiments involving eight FAA NAFEC test pilots are reported. Section I describes the evaluation of four prototype Data Link displays in a GAT-1 simulator. While there was lack of agreement among the pilots as to the relative merits of the four displays, their opinions concerning Data Link as a concept were generally favorable.</p> <p>Section 2 describes reaction time and error rate measurements made as 144 slides were presented containing a variety of short ATC messages. It was determined that differences in type font were not significant, that arrows were generally better than words for altitude and heading commands, and the "L" or "R" as heading commands in messages such as HDGL230 were extremely difficult to comprehend.</p> <p>Section 3 describes a second laboratory experiment which studied the differences between long and short abbreviations with and without spaces. The need for the use of spaces was demonstrated.</p> <p>The results of the experiments described in Sections 2 and 3 closely parallel those previously obtained using TSC engineers as experimental subjects.</p>					
17. Key Words •Air Traffic Control •Data Link •Message Coding •Simulators			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 124	22. Price

Technical Report Documentation Page

1. Report No. FAA-RD-73-120		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle AIRCRAFT VORTEX WAKE DESCENT AND DECAY UNDER REAL ATMOSPHERIC EFFECTS				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) *P.B.S. Lissaman, S.C. Crow, P.B. MacCready, Jr., I.H. Tombach, & E.R. Bate Jr.				8. Performing Organization Report No. DOT-TSC-FAA-73-20	
9. Performing Organization Name and Address AeroVironment Inc. 660 South Arroyo Parkway Pasadena CA 91105				10. Work Unit No. (TRAIS) R-3106/FA305	
				11. Contract or Grant No. DOT-TSC-523	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington DC 20591				13. Type of Report and Period Covered Final Report September 1972 - February 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes * Under contract to: Department of Transportation Transportation Systems Center Kendall Square, Cambridge MA 02142					
16. Abstract Aircraft vortex wake descent and decay in a real atmosphere is studied analytically. Factors relating to encounter hazard, wake generation, wake descent and stability, and atmospheric dynamics are considered. Operational equations for encounter hazard, wake generation, and atmospheric dynamics are given, including a brief description of a possible automatic meteorological system to provide atmospheric data for an airport wake forecasting program. A new analysis for Crow Instability in ambient turbulence is given, expressing time-to-linkage as an explicit function of the turbulent dissipation. The analysis is well corroborated by flight tests although only limited data is available. Wake descent in a stratified inviscid fluid is studied analytically providing new results for this problem. According to the present theory, the vortex span reduces upon descent into a stably stratified flow, causing the rate of descent to increase. Exact solutions are derived for vortex cell shapes in a uniformly sheared crosswind, showing that the upwind cell is greatly increased in size. It is believed that this may partly account for the observed unsymmetrical behavior (banking, etc.) in crosswinds. A discussion of core bursting and turbulent wake entrainment during descent is given, with some tentative formulations for the latter. Full understanding of these two aspects must still be considered incomplete. Finally, an assessment of the remaining problems is given, with recommendations for further analytical and flight test research.					
17. Key Words Wake vortices, Atmospheric effects, Vortex transport and decay, Kolmogorov Spectra			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 222	22. Price

1. Report No. FAA-RD-73-112, II		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle NORTH ATLANTIC (NAT) AIDED INERTIAL NAVIGATION SYSTEM SIMULATION Volume II: Computer Program NATNAV User's Manual				5. Report Date July 1973	
				6. Performing Organization Code	
7. Author(s) *William C. Hoffman, Kathryn G. Bowie				8. Performing Organization Report No. DOT-TSC-FAA-73-23, II	
9. Performing Organization Name and Address Aerospace Systems, Inc. One Vine Brook Park Burlington MA 01803				10. Work Unit No. FA314/R3144	
				11. Contract or Grant No. DOT-TSC-473-73-2	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington DC 20590				13. Type of Report and Period Covered Final Report June 1972 to January 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to: Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142					
16. Abstract A user's manual is provided for Program NATNAV (North Atlantic NAVigation), a digital computer simulation program developed to evaluate the performance of navigation systems for future commercial NAT aircraft operations. Error models for aided-inertial navigation systems with external measurements from Doppler radar, Omega, satellite-ranging or air data are simulated. The covariance matrix error analysis method is used to calculate the navigation error histories, using the recursive navigation technique to incorporate measurements. A 34th-order error state vector requires the numerical integration of up to 585 independent, first-order differential equations to propagate the covariance matrix. The program provides for an optimum initial alignment of the INS prior to taxi. A dead-reckoning option is also available. Independent measurements using Doppler radar, Omega or satellite-ranging may be used to update the position and velocity estimates using the optimum recursive Kalman filter. Optionally, suboptimum filter gains may be used instead. The outputs of the simulation are the standard deviations of the position and velocity errors, resolved into along-track, cross-track and vertical components. NATNAV is written entirely in Fortran IV for operation on the CDC-3800 digital computer at the Naval Research Laboratory. The program was developed with a highly modular structure for ease of program checkout, to simplify the user's understanding of the program, and to facilitate any modifications which might be required for future applications. Programming details of the simulation describe functions of the various routines, flow charts, common storage and definition of Fortran variables. The usage of the program is illustrated with an example which presents typical input data and results. The hardware requirements, the deck setup, program options and operating procedures are all described. Certain restrictions and potential modifications are discussed, and a complete listing of the Fortran source program is included.					
17. Key Words Simulation; User's Manual; Computer Program Navigation; Error Analysis; North Atlantic Air Traffic; Kalman Filtering; Inertial Navigation System; Doppler; Omega; Satellite-Ranging; Air Data.				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 158	22. Price

Technical Report Documentation Page

1. Report No. FAA-RD-73-121		2. Government Accession No.		3. Report Catalog No.	
4. Title and Subtitle AIRPORT INFORMATION RETRIEVAL SYSTEM (AIRS) USER'S GUIDE			5. Report Date August 1973		6. Performing Organization Code
7. Author(s) Manuel F. Medeiros and Julie Sussman			8. Performing Organization Report No. DOT-TSC-FAA-73-24		
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142			10. Work Unit No. (TRAIS) FA-406/R4111		11. Contract or Grant No.
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research & Development Service Washington DC 20591			13. Type of Report and Period Covered Final Report		14. Sponsoring Agency Code
15. Supplementary Notes					
16. Abstract <p>This handbook is a user's guide for a prototype air traffic flow control automation system developed for the FAA's System Command Center. The system is implemented on a time-sharing computer and is designed to provide airport traffic load predictions and flow control support. The User's Guide is a reference manual designed for use by the air traffic controllers and does not require any previous computer experience. The AIRS request (command) language is explained along with instructions on using remote teletype and graphical display terminals in working with the time-sharing computer. The manual tells the user how to obtain airport traffic demand data, flight listings, plots, arrival delay predictions and flow control assistance. It also describes how to enter operational data such as landing capacity estimates and how to add (or cancel) flight schedules to the AIRS centralized data base.</p>					
17. Key Words Flow Control, Air Traffic Control, Central Flow Control Facility, Automation, Information Retrieval, Airport Information, Flow Control Procedures			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 107	22. Price

Technical Report Documentation Page

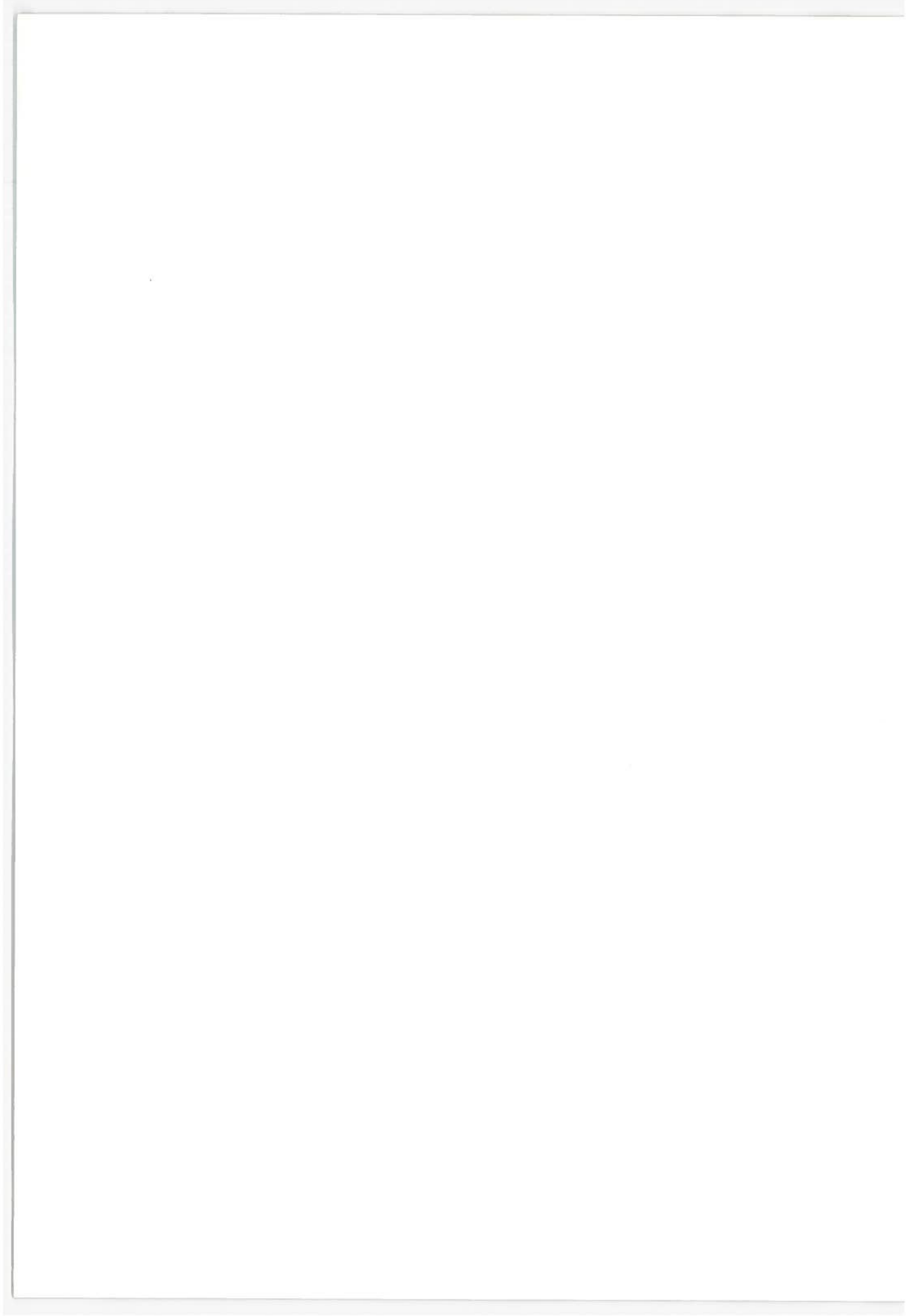
1. Report No. FAA-RD-73-122	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle AIRPORT INFORMATION RETRIEVAL SYSTEM (AIRS) SYSTEM SUPPORT MANUAL		5. Report Date October 1973	
		6. Performing Organization Code	
7. Author(s) Manuel F. Medeiros and Julie Sussman		8. Performing Organization Report No. DOT-TSC-FAA-73-25	
		10. Work Unit No. (TRAIS) FA-406/R4111	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142		11. Contract or Grant No.	
		13. Type of Report and Period Covered Final Report	
12. Sponsoring Agency Name and Address Department of Transportation Federal Aviation Administration Systems Research and Development Service Washington DC 20591		14. Sponsoring Agency Code	
		15. Supplementary Notes	
16. Abstract This handbook is a support manual for a prototype air traffic flow control automation system developed for the FAA's Systems Command Center. The system is implemented on a time-sharing computer and is designed to provide airport traffic load predictions and flow control support. The System Support Manual is designed for use by an experienced computer programmer. It contains instructions on performing the monthly AIRS data base updating including the Official Airline Guide data tape processing, the merging with the existing data base and the maintenance of the associated supporting data files. The manual describes the duties associated with monitoring nightly file checking and failsafe programs to assure data base integrity. The daily processing and troubleshooting of the system's usage records are also described. Other support functions involving data base maintenance are presented.			
17. Key Words Flow Control, Air Traffic Control, Central Flow Control Facility, Automation, Information Retrieval, Airport Information, Flow Control Procedures		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 85	22. Price

UNLIMITED-DISTRIBUTION REPORTS
FEDERAL HIGHWAY ADMINISTRATION

DOT-TSC-FHWA-73-12

PB-225088

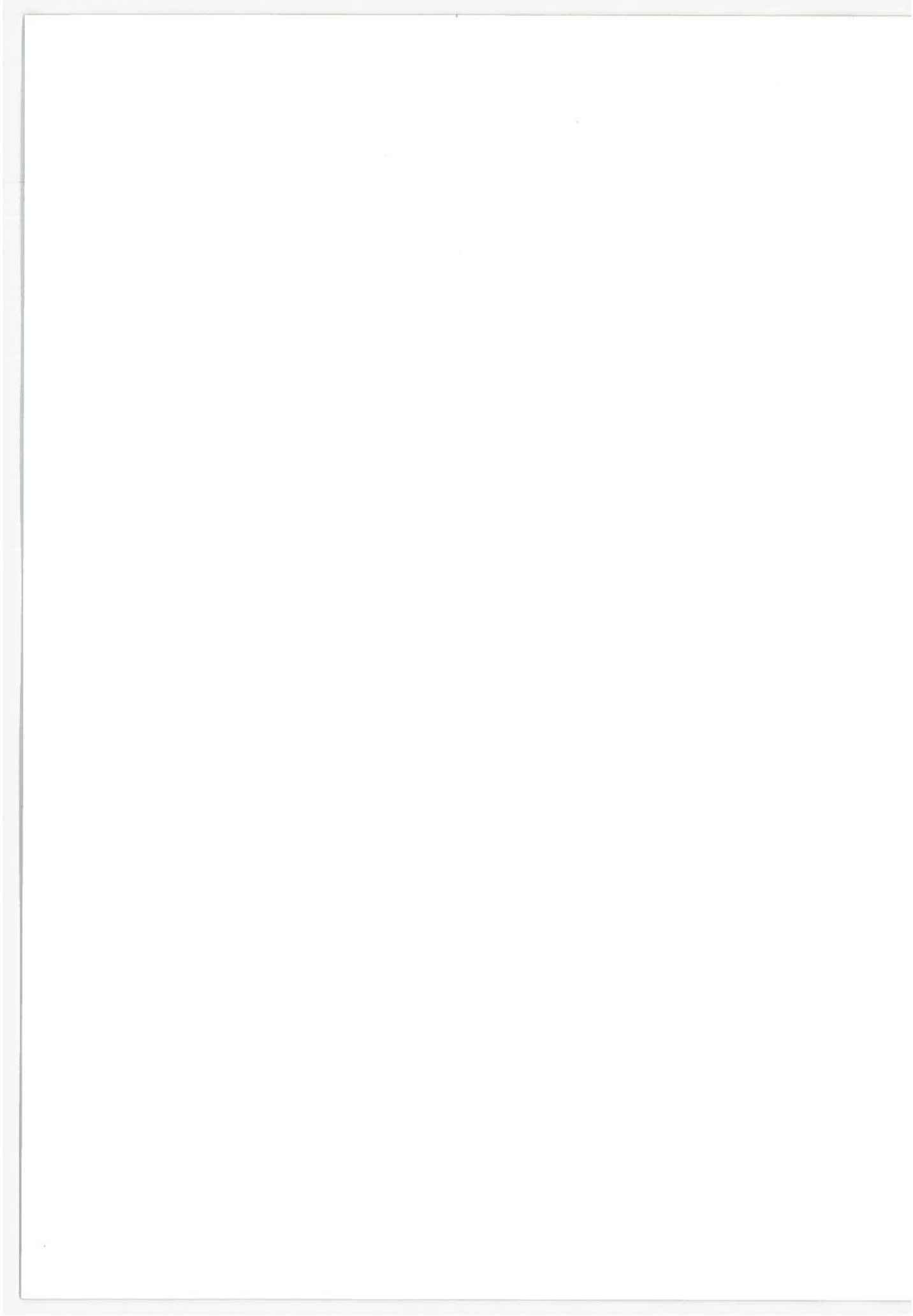
Some Considerations on the Problem of Non-Steady-State Traffic
Flow Optimization,
by D. Kahn and R. Mintz,
Final Report, October 1973.



TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. DOT-TSC-FHWA-73-12		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle SOME CONSIDERATIONS ON THE PROBLEM OF NON-STEADY STATE TRAFFIC FLOW OPTIMIZATION				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) David Kahn, Ronald Mintz				8. Performing Organization Report No. DOT-TSC-FHWA-73-12	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. R3204	
				11. Contract or Grant No. HW308	
12. Sponsoring Agency Name and Address Department of Transportation Federal Highway Administration Fairbanks Highway Research Station McLean VA 22101				13. Type of Report and Period Covered Final Report May 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>This report contains our initial efforts aimed at extending the steady state freeway model for optimizing freeway traffic flow to a non-steady state model. The steady-state model does not allow reaction to continuously changing conditions which are often important. The non-steady state or dynamic model will allow this and is intended to be used whenever a metering rate which changes with time is needed. The dynamic modeling is accomplished by developing optimization procedures based on the principles of traffic dynamics, specifically, the continuum equations. In this initial effort only a tunnel roadway and a single lane freeway (but with exits and ramps) are considered.</p>					
17. Key Words Traffic Flow, Steady State, Dynamic, Tunnel, Freeway, Optimization, Discretization			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 62	22. Price

Form DOT F 1700.7 (8-69)



UNLIMITED-DISTRIBUTION REPORTS
FEDERAL RAILROAD ADMINISTRATION

DOT-TSC-FRA-73-1/FRA-ORD&D-74-15

PB 223889/6

Enhancement of Train Visibility,
by J. B. Hopkins,
Final Report, September 1973.

DOT-TSC-FRA-73-3/FRA-ORD&D-74-14

PB 223902/8

71-3
Grade Crossing Protection in High-Speed, High-Density,
Passenger-Service Rail Corridors,
by J. B. Hopkins, September 1973.

DOT-TSC-FRA-73-4/FRA-ORD&D-74-20

PB 226281

Input Power Characteristics of a Three-Phase Thyristor Converter,
by Raymond A. Wlodyka, Joseph D. Abbas and George Ploetz,
Final Report, December 1972.

DOT-TSC-FRA-73-7/FRA-RT-74-1

Guidelines for Writing Railroad Operating Rules,
by D. B. Devoe and A. W. Story,
Technical Report, July 1973.

DOT-TSC-FRA-73-8/FRA-RT-73-34

PB 222476/4

Towing Tank Tests on a Ram Wing in a Rectangular Guideway,
by Y. A. Boccadoro,
Final Report, July 1973 (Contractor Report).

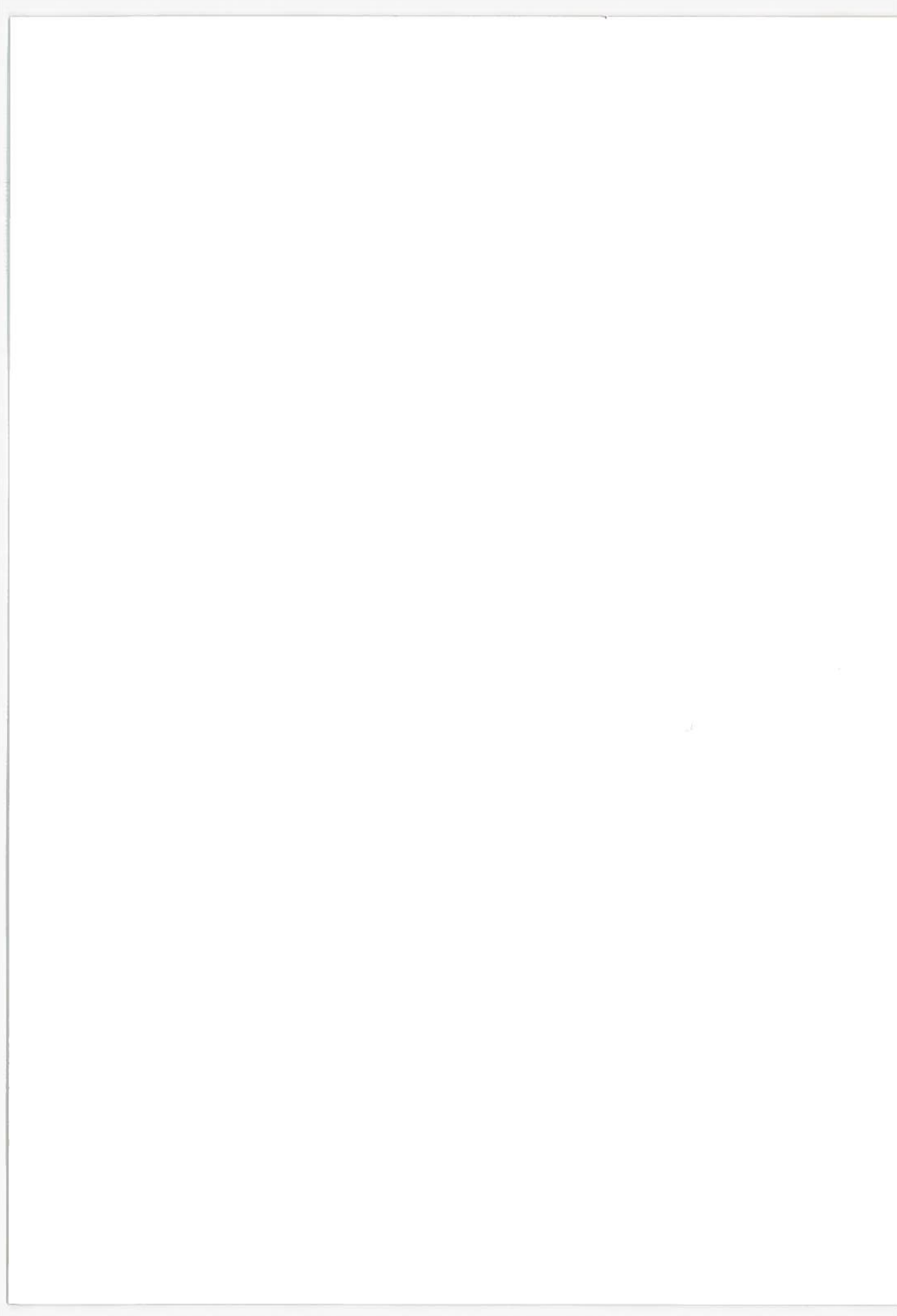
DOT-TSC-FRA-73-9/FRA-ORD&D -74-21

PB 212358

Assessment of Control Techniques for Reducing Emissions from
Locomotive Engines,
by J. O. Stormont and K. J. Springer
Final Report, June 1973 (Contractor Report).

DOT-TSC-FRA-73-12/FRA-ORD&D-74-24

Input Power Characteristics of the Thyristor Variable Voltage
Power Conditioner,
by John J. Stickler, George P. Ploetz and Frank L. Raposa,
Final Report, June 1973.



TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FRA-ORD&D-74-15		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ENHANCEMENT OF TRAIN VISIBILITY				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) John B. Hopkins				8. Performing Organization Report No. DOT-TSC-FRA-73-1	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142				10. Work Unit No. R-3312/RR312	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Development, and Demo. Washington, DC 20591				13. Type of Report and Period Covered Final Report Nov. - Dec. 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract This report describes a study of the most effective and practical means of enhancing the conspicuity of the trailing end of trains, in order to reduce the possibility of train-train collisions. There are five elements: (a) definition of a usable number of categories of target, background, and ambient conditions which include the great majority of situations actually encountered; (b) estimation of the stimuli required for each category to increase significantly the detection probability for typical observers; (c) examination of all potentially feasible visibility aids in terms of these criteria; (d) determination of estimated costs, lifetime, and power consumption of techniques which appear promising in terms of effectiveness, and (e) delineation of alternative systems, consistent with one another, comprising a hierarchy of effectiveness and cost. Special deficiencies, advantages, and implications for policy which may be associated with particular realizations are indicated. The devices suggested as optimal include large areas of fluorescent material arranged in a distinctive pattern, retro-reflectors at each corner, and flash lamps of moderate intensity. Detailed specifications are given for such aids.					
17. Key Words •Conspicuity Enhancement •Train Collisions •Train Visibility			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 90	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FRA-ORD&D-74-14		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle GRADE CROSSING PROTECTION IN HIGH-SPEED, HIGH-DENSITY, PASSENGER-SERVICE RAIL CORRIDORS				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) John B. Hopkins				8. Performing Organization Report No. DOT-TSC-FRA-73-3	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142				10. Work Unit No. R-3305/RR302	
				11. Contract or Grant No. RR302	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Development, and Demon. Washington, DC 20590				13. Type of Report and Period Covered Final Report January-February 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract This report is a preliminary examination of special aspects of grade crossing protection for operation of high-speed passenger trains in rail corridors for which complete grade separation is not possible. Overall system needs and constraints are indicated, and their implications examined. Application of conventional and improved hardware is considered, with special attention to activation criteria, appropriate motorist-warning devices, stalled-vehicle indicators, and train-mounted components. Non-technical aspects of the problem are also discussed, and areas for which future research efforts may be appropriate are identified.					
17. Key Words Grade crossing protection; High speed passenger trains; Rail corridors; Rail passenger safety			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 42	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FRA-ORD&D-74-20		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle INPUT POWER CHARACTERISTICS OF A THREE-PHASE THYRISTOR CONVERTER				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) Raymand A. Wlodyka, Joseph D. Abbas, George Ploetz				8. Performing Organization Report No. DOT-TSC-FRA-73-4	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. R3306	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Development, and Demons. Washington DC 20591				13. Type of Report and Period Covered Final Report Jan. 1972 - Dec. 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract A phase delay rectifier operating into a passive resistive load was instrumented in the laboratory. Techniques for accurate measurement of power, displacement reactive power, harmonic components, and distortion reactive power are presented. The characteristics of the phase delay rectifier operating with unfiltered and inductively filtered resistive loads are presented using both derivations and measurements. The changes of the phase delay rectifier characteristics with a free wheeling diode in the circuit are also presented.					
17. Key Words • Rectifier, Phase Delay • Power Measurements, Three-Phase • Analysis, Harmonic			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 90	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FRA-RT-74-1		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle GUIDELINES FOR WRITING RAILROAD OPERATING RULES				5. Report Date July 1973	
				6. Performing Organization Code DOT/TSC/TIF	
7. Author(s) Donald B. Devoe and Anne W. Story				8. Performing Organization Report No. DOT-TSC-FRA-73-7	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square, Cambridge MA 02142				10. Work Unit No. R-3301/RR309	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Development & Demo. Washington DC 20590				13. Type of Report and Period Covered Technical Report	
				14. Sponsoring Agency Code RA-42	
15. Supplementary Notes					
16. Abstract This report constitutes an aid to persons or groups who must create or revise railroad operating rules. It provides guidance for avoiding confusion, ambiguity and misconceptions in the wording of rules. Content, style and organization are discussed, with illustrations of both desirable and undesirable practices taken from current codes of operating rules.					
17. Key Words Railroad Operating Rules Writing Guidelines				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 25	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. FRA-RT-73-34		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle TOWING TANK TESTS ON A RAM WING IN A RECTANGULAR GUIDEWAY				5. Report Date July 1973	
				6. Performing Organization Code	
7. Author(s) Yves A. Boccadoro*				8. Performing Organization Report No. DOT-TSC-FRA-73-8	
9. Performing Organization Name and Address M.I.T. Aerophysics Laboratory 560 Memorial Drive Cambridge MA 02139				10. Work Unit No. RR407/R4302	
				11. Contract or Grant No. DOT-TSC-239	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Develop. & Demon. Washington DC 20591				13. Type of Report and Period Covered Final Report June 1, 1971 to October 31, 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to: Department of Transportation, Transportation Systems Center, Kendall Square, Cambridge MA 02142					
16. Abstract <p>The object of this study was to set the theoretical and experimental basis for a preliminary design of a ram wing vehicle. A simplified one-dimensional mathematical model is developed in an attempt to estimate the stability derivatives of this type of vehicle. Although very basic, the approach that was taken allows for any geometry of both the model and the guideway. A survey is made of various possible testing techniques. The experimental results obtained using the towing tank technique are reported and compared with the computed estimates. Although many results are very encouraging, the limited data do not allow for a precise estimation of the validity of the mathematical model. It is concluded that the towing tank technique is adequate for the type of investigation that is required at this early stage of the design.</p>					
17. Key Words Vehicle, ram-wing; test, towing-tank				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 116	22. Price

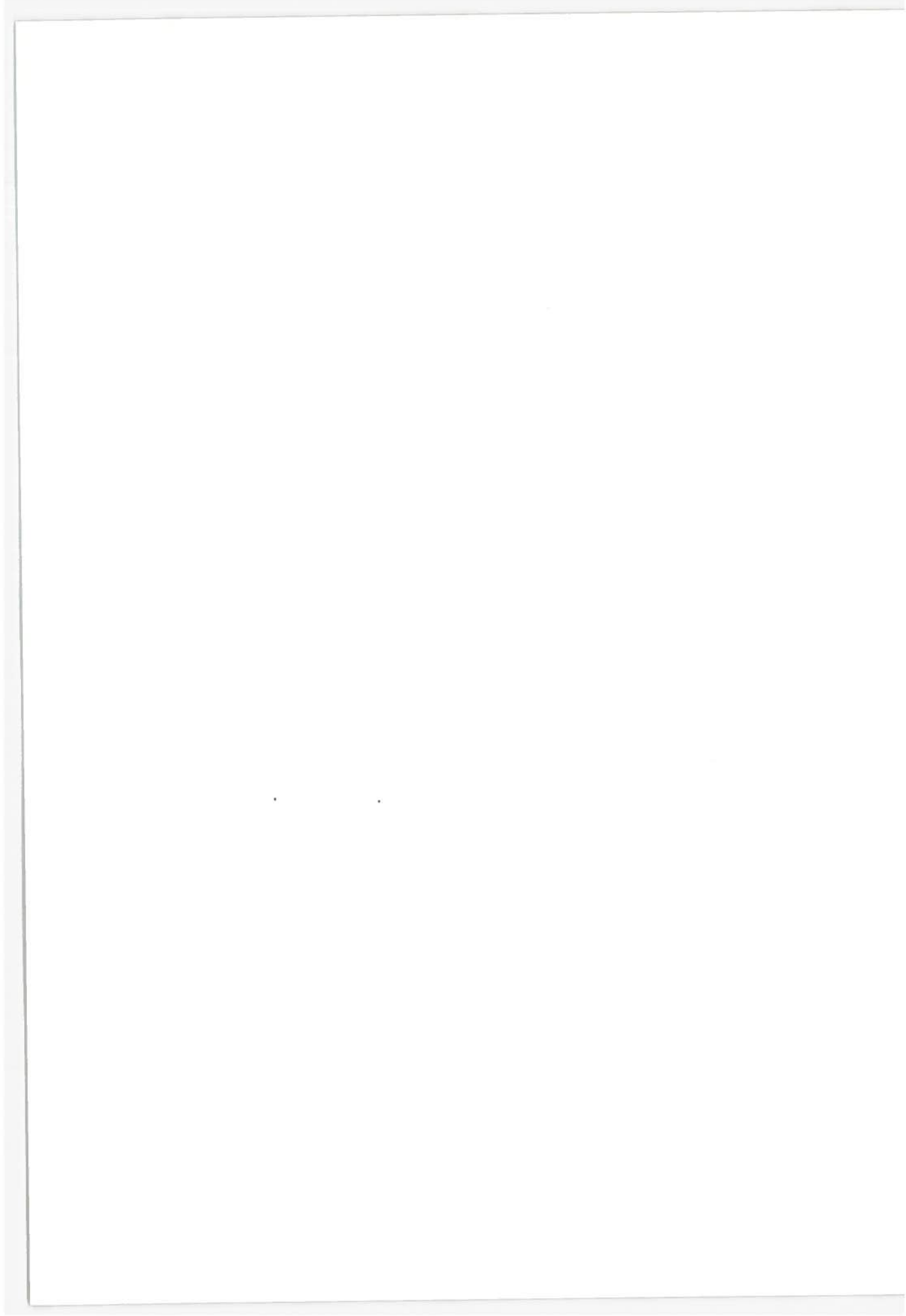
Form DOT F 1700.7 (8-69)

Technical Report Documentation Page

1. Report No. FRA-ORD&D-74-21		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ASSESSMENT OF CONTROL TECHNIQUES FOR REDUCING EMISSIONS FROM LOCOMOTIVE ENGINES				5. Report Date November 1973	
				6. Performing Organization Code	
7. Author(s) J. O. Storum, K. J. Springer				8. Performing Organization Report No. DOT-TSC-FRA-73-9	
9. Performing Organization Name and Address *Southwest Research Institute Post Office Drawer 28510, 8500 Culebra Road San Antonio TX 78284				10. Work Unit No. (TRAINS) RR416/R4316	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Federal Railroad Administration Office of Research, Development, and Demon. Washington DC 20590				13. Type of Report and Period Covered Final Report Sep. 1972-June 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to: Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142					
16. Abstract <p>The primary objective of this study was to determine the most effective method of reducing emissions of oxides of nitrogen from a two-cylinder version of an EMD series 567C locomotive engine. The control method judged most effective was that which resulted in the greatest reduction in NO_x, had the least adverse effects on other emission constituents and engine operation, yet was simple to install and maintain.</p> <p>The NO_x control techniques selected for use in this study included: (1) change in fuel injector design, (2) variation in injection timing from the standard setting, (3) inlet air humidification (water induction), (4) reduction of scavenging air volume (air box bleed) and (5) exhaust gas recirculation (EGR). In addition, methods (2) and (3) were used in combination.</p> <p>Results of these tests indicated that the most effective control method was retarded injection timing (4° from standard). The next most effective method was EGR, with the recirculated exhaust cooled to 125-150°F. It was necessary to derate (or reduce) engine power at certain points to maintain smoke opacity at acceptable levels with all of these control techniques.</p>					
17. Key Words <ul style="list-style-type: none"> • Diesel Engines • Air Pollution • Locomotives 				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 318	22. Price

Technical Report Documentation Page

1. Report No. FRA-ORD&D-74-24	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle INPUT POWER CHARACTERISTICS OF THE THYRISTOR VARIABLE VOLTAGE POWER CONDITIONER		5. Report Date November 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-FRA-73-12	
7. Author(s) John J. Stickler, George P. Ploetz and Frank L. Raposa		10. Work Unit No. (TRAIS) UM401/R4701	11. Contract or Grant No.
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142		13. Type of Report and Period Covered Final Report Oct. 1972 - June 1973	
		14. Sponsoring Agency Code	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of the Administrator Washington DC 20590		15. Supplementary Notes	
16. Abstract <p>A laboratory study was made of transformer and thyristor voltage control for speed control of a rotary induction motor. The test program consisted of two parts; the first dealing with measurements of the induction motor characteristics and the second with the distribution of complex electric power in the system with both types of voltage-control. The current harmonics which are generated by thyristor control are shown to give rise to additional motor losses and reduction in motor efficiency. The non-sinusoidal currents present with thyristor control produce reactive distortion power. Suggestions are made regarding the suitable instrumentation to use in measuring the distortion power as well as the other components of complex power in the system.</p>			
17. Key Words • Thyristor Control • Variable Voltage Power Conditioner • Linear Induction Motors		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 50	22. Price



UNLIMITED-DISTRIBUTION REPORTS
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

DOT-TSC-NHTSA-72-11

Feasibility of High-Resolution Ultrasonic Pulse-Echo Techniques for Automobile Tire Inspection,
by R. P. Ryan,
Interim Report, June 1973.

DOT-TSC-NHTSA-73-2/DOT-HS-800-970

Automobile Crash Sensor Signal Processor,
by C. J. Bader,
Final Report, March 1973.

DOT-TSC-NHTSA-73-5

PB 223141/3

Occupant Motion Sensors: Development and Testing of a Piezoresistive Mouthpiece Rotational Accelerometer,
by G. Plank, D. Ofsevit and A. Warner,
Interim Report, July 1973.

DOT-TSC-NHTSA-73-7/DOT-HS-800-969

Fabrication Techniques and Principles for Flat Plate Antennas,
by Emerson Electric Company,
Final Report, September 1973 (Contractor Report).

DOT-TSC-NHTSA-73-8/DOT-HS-800-968

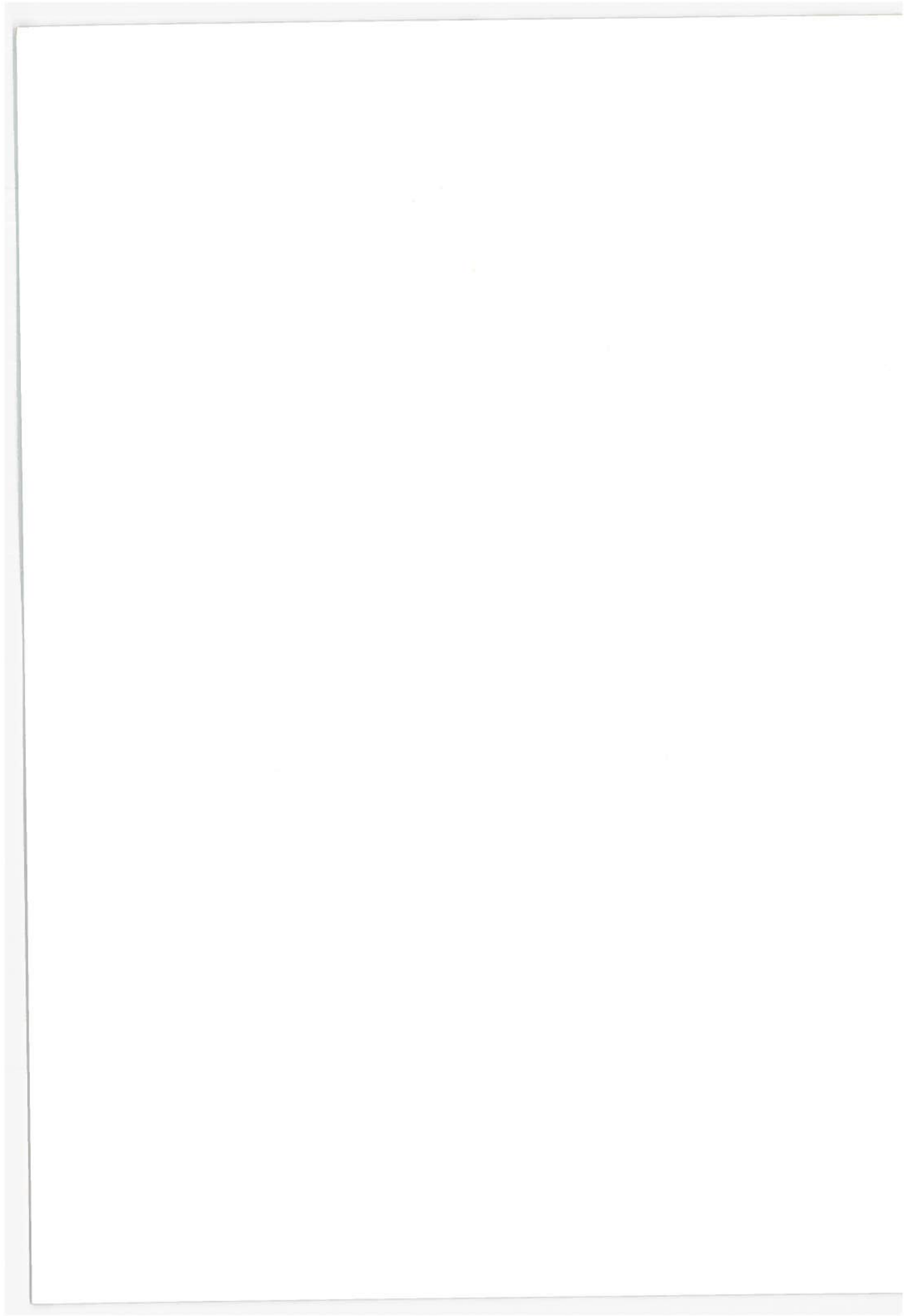
Model 0102 Flat Plate Antenna for Use in Automobile Radar Anticipatory Crash Sensors,
by K. V. Toth and R. M. Rudish,
Final Report, September, 1973 (Contractor Report).

DOT-TSC-NHTSA-73-9/DOT-HS-800-967

Experimental Evaluation of Second-Generation Alcohol Safety-Interlock Systems,
by John F. Oates, Jr.,
Interim Report, December 1973 (Contractor Report).

DOT-TSC-NHTSA-73-10/DOT-HS-801-020

Legal Issues Raised by Orbis, a Motor Vehicle Speed Detection Device Taking Photos of Speeders,
by David Glater,
Interim Report, December 1973.



1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Feasibility of High-Resolution Pulse-Echo Techniques for Automobile Tire Inspection		5. Report Date June 1973	
		6. Performing Organization Code	
7. Author(s) Robert P. Ryan		8. Performing Organization Report No. DOT-TSC-NHTSA-72-11	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square, Cambridge, MA 02142		10. Work Unit No. R3402/HS303	
		11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Research Institute Washington, D.C. 20591		13. Type of Report and Period Covered Interim Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This report presents ultrasonic A-scan reflection oscillograms and B-scan one-dimensional scanning displays for small sections of automobile tires, and for tire-like rubber and cord composite structures, using impulse excitation of 1-MHz and 5-MHz transducers. Adequate penetration and resolution are exhibited to permit depth characterization of structures and defects. Small reflections at bonding interfaces exhibit variations indicating a potential capability for detection of interface bonding anomalies in tires.			
17. Key Words Nondestructive Inspection Automobile Tires Ultrasonics		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 80	22. Price

1. Report No. DOT-HS 800 970	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle AUTOMOBILE CRASH SENSOR SIGNAL PROCESSOR		5. Report Date November 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-NHTSA-73-2	
7. Author(s) C. J. Bader		9. Performing Organization Name and Address Eurrroughs Corporation Defense, Space and Special Systems Group* Paoli, PA 19301	10. Work Unit No. HS304/R3403
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Research Institute Washington DC 20591		11. Contract or Grant No. DOT-TSC-409-1	13. Type of Report and Period Covered Final Report April 1972 - March 1973
		14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to Department of Transportation, Transportation System Center, Kendall Square, Cambridge MA 02142			
16. Abstract <p>The Crash Sensor Signal Processor described interfaces between an automobile-installed doppler radar and an air bag activating solenoid or equivalent electromechanical device. The processor utilizes both digital and analog techniques to produce an output pulse when specified input signal amplitude and frequency conditions are met. The device is intended to be implemented with monolithic MOS large scale integrated circuitry and Bipolar driver. The design and reliability studies indicate that very low cost and very high reliability can be achieved concurrently by monolithic techniques without compromising Processor performance.</p>			
17. Key Words Automobile-Crash; Crash-Sensor; Signal-Processor; Vehicle Passive Restraint System; Passenger Restraint System		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 104	22. Price

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle OCCUPANT MOTION SENSORS: DEVELOPMENT AND TESTING OF A PIEZORESISTIVE MOUTHPIECE ROTATIONAL ACCELEROMETER		5. Report Date July 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-NHTSA-73-5	
7. Author(s) G. Plank, D. Ofsevit, A. Warner		10. Work Unit No. (TRAIS) R3406/HS305	11. Contract or Grant No.
9. Performing Organization Name and Address Transportation Systems Center Kendall Square Cambridge, MA 02142		13. Type of Report and Period Covered Interim Report	
		14. Sponsoring Agency Code	
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Research Institute Washington, DC 20590		15. Supplementary Notes	
16. Abstract A miniature piezoresistive mouthpiece rotational accelerometer has been developed to measure the angular acceleration of a head during a simulated vehicle crash. Corrections have been electronically applied to the rotational accelerometer to reduce its linear sensitivity. The device has been successfully tested in the laboratory on a high speed shake table and in the field using humans and dummies. New Techniques in photogrammetry have been developed to speed the reduction of motion picture data.			
17. Key Words Occupant Motion, Crash Tests, Rotational Accelerometer, Piezoresistive, Data Reduction, Photogrammetry, High-Speed Film.		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 42	22. Price

Technical Report Documentation Page

1. Report No. DOT-HS-800969		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle FABRICATION TECHNIQUES AND PRINCIPLES FOR FLAT PLATE ANTENNAS				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s)				8. Performing Organization Report No. DOT-TSC-NHTSA-73-7	
9. Performing Organization Name and Address Rantec Division Emerson Electric Co. Calabasos CA 91302				10. Work Unit No. (TRAIS) R3403/HS304	
				11. Contract or Grant No. DOT-TSC-390	
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Structures Research Washington DC 20591				13. Type of Report and Period Covered Final Report May-August 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes Report prepared under contract to: Department of Transportation Transportation Systems Center Cambridge MA 02142					
16. Abstract <p>This final report documents the work performed by Rantec under Department of Transportation Contract No. DOT-TSC-390. Defined herein are the fabrication techniques and principles Rantec has selected to produce one million and ten million flat plate antennas per year.</p> <p>An engineering analysis of the reliability, electrical intergrity, and repeatability is made, and a cost analysis summary is included for a production run of both one and ten million units per year, and a technical discussion of the maximum RF frequency to which these fabrication techniques can be extended without performance degradation and/or major cost increase is included.</p> <p>The fabrication techniques selected by Rantec to produce 1 and 10 million flat plate antennas per year include die casting, pierce and blanking, injection molding, and cold heading. The flat plate antenna would be fabricated in six elements using these techniques. An automatic assembly center would be used to achieve the high volume production runs. One such unit operating at maximum efficiency will produce 1 million units per year at a cost of \$0.41 per unit. Two additional stations will achieve production runs in excess of 10 million per year at a cost of \$0.30 per unit, not including overhead.</p> <p>The flat plate antennas can be scaled to a frequency of 17.5 GHz with no cost impact or significant effect on performance. Scaling to a frequency of 21 GHz is possible but at a higher cost per unit.</p>					
17. Key Words Flat plate antenna			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) unclassified		20. Security Classif. (of this page) unclassified		21. No. of Pages 40	22. Price

Form DOT F 1700.7 (8-72)

Reproduction of completed page authorized

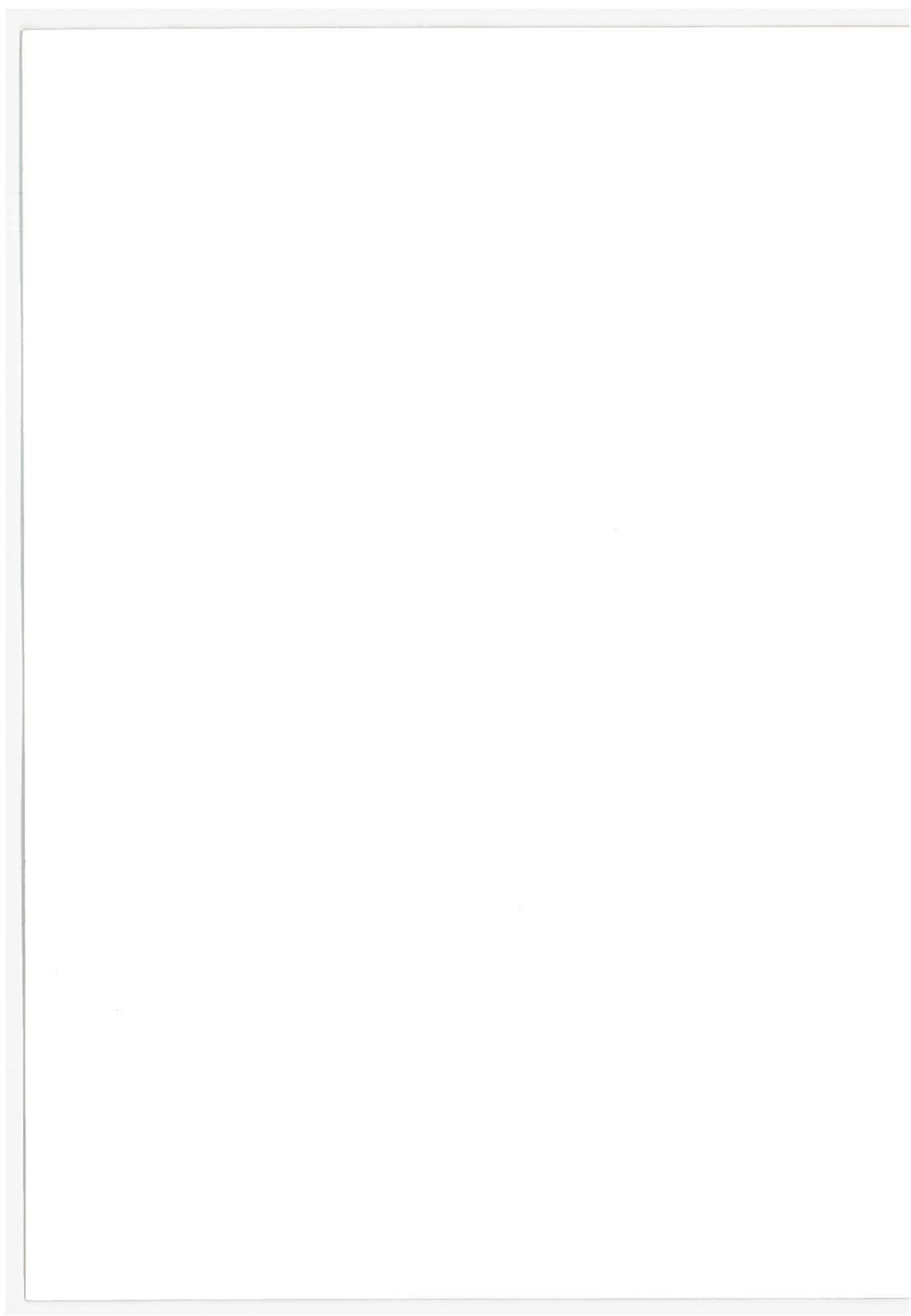
Technical Report Documentation Page

1. Report No. DOT-HS-800968		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle MODEL 0102 FLAT PLATE ANTENNA FOR USE IN AUTOMOBILE RADAR ANTICIPATORY CRASH SENSORS				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) Kalman V. Toth and Ronald M. Rudish				8. Performing Organization Report No. DOT-TSC-NHTSA-73-8	
9. Performing Organization Name and Address AIL Division Cutler Hammer Deer Park, Long Island NY 11729				10. Work Unit No. (TRAIS) R3403/HS304	
				11. Contract or Grant No. DOT-TSC-437	
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Structures Research Washington DC 20591				13. Type of Report and Period Covered Final Report June-Sept. 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes Report prepared under contract to: Department of Transportation Transportation Systems Center Cambridge MA 02142					
16. Abstract <p>AIL has analyzed alternative methods of construction and production costs for a flat plate antenna based on the use of etched circuit techniques. The antenna is proposed for use in certain new automotive radar anticipatory crash sensor systems now under development.</p> <p>The antenna is a minimal volume planar array structure, ideally suited for low cost production. Using a design approach that was previously developed for advanced battle-field radars, the antenna is unique in that the radiating elements and feed circuitry are etched on the same substrate.</p> <p>The antenna is 2-5/8 x 4-5/8 x 15/16 inches (exclusive of output connector). Although its active region is only a fraction of this space, a breadboard version of this highly efficient antenna achieves more than 13-dB gain over the required one percent region of X-band, with radiation patterns having excellent suppression of side lobes.</p> <p>A production design is postulated which is suitable for automated production processes. The resulting antenna is a simple sandwich of one printed circuit between two layers of foam; this sandwich is encased in a molded, metalized lexan housing, and is faced with a lexan radome.</p> <p>In quantities of at least one million antennas, the estimated OEM selling price is under 3 dollars each, not including the cost of preparing for large-scale production. In quantities in excess of ten million antennas, the estimated selling price is under 2 dollars each, also not including the cost of preparing for large-scale production.</p>					
17. Key Words Flat Plate Antenna, automobile radar anticipatory crash sensors				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) unclassified		20. Security Classif. (of this page) unclassified		21. No. of Pages 36	22. Price

1. Report No. DOT-HS-800967		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle EXPERIMENTAL EVALUATION OF SECOND-GENERATION ALCOHOL SAFETY-INTERLOCK SYSTEMS				5. Report Date December 1973	
				6. Performing Organization Code	
7. Author(s) John F. Oates, Jr.				8. Performing Organization Report No. DOT-TSC-NHTSA-73-9	
9. Performing Organization Name and Address *Dunlap and Associates, Inc. One Parkland Drive Darien CT 06820				10. Work Unit No.	
				11. Contract or Grant No. DOT-TSC-251-6	
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Research Institute Washington DC 20590				13. Type of Report and Period Covered Interim Report Feb. - March 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to: Department of Transportation, Transportation Systems Center, Kendall Square, Cambridge MA 02142					
16. Abstract This report documents the results of laboratory testing of four "second-generation" alcohol safety-interlock systems. As a group, these systems were found to produce appreciable discrimination between sober and intoxicated subjects.					
17. Key Words Interlock performance Alcohol measurements				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 114	22. Price

Technical Report Documentation Page

1. Report No. DOT-HS-801020		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle LEGAL ISSUES RAISED BY ORBIS, A MOTOR VEHICLE SPEED DETECTION DEVICE TAKING PHOTOS OF SPEEDERS			5. Report Date December 1973		
			6. Performing Organization Code		
7. Author(s) David Glater			8. Performing Organization Report No. DOT-TSC-NHTSA-73-10		
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142			10. Work Unit No. (TRAIS) HS409/R4406		
			11. Contract or Grant No.		
12. Sponsoring Agency Name and Address Department of Transportation National Highway Traffic Safety Administration Off. Prog. Eval. & Trf. Reg. & Adjud. Div. Washington DC 20591			13. Type of Report and Period Covered Interim Report January - June 1973		
			14. Sponsoring Agency Code		
15. Supplementary Notes					
16. Abstract <p>This report reviews the legal basis for certain potential challenges to the use of unmanned mechanical devices which (a) detect motor vehicles exceeding predetermined speed limits, and (b) photograph both the front portion of these vehicles and the faces of their drivers and passengers. In particular, the report is focused on the operation of Orbis, a member of this class of speed-detection devices manufactured by the Boeing Corporation. Three aspects of the device's legality are discussed: (1) the question of whether its operation violates individuals' right of "privacy" as protected by the Federal Constitution, State statutes, and common-law precedents; (2) the issue to unlawful inequities in traffic-law enforcement, resulting from the device's operational limitations, which permit some speeders to pass by undetected; and (3) the admissibility into evidence in speeding prosecutions of photographs taken by the device.</p>					
17. Key Words Speeding, Photographic Surveillance, Orbis, Speed Detection-Photographic, Traffic Law Enforcement Speed Measurement-Legal Aspects			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 48	22. Price



UNLIMITED-DISTRIBUTION REPORTS
OFFICE OF THE SECRETARY

DOT-TSC-OST-72-32

PB 222152/1

Analysis and Comparison of Some Automatic Vehicle Monitoring Systems,
by R. Buck, R. Esposito and M. Unkauf,
Interim Report, July 1973.

DOT-TSC-OST-72-34

Reports Bibliography, Unlimited-Distribution Reports, 1971 and 1972,
by T. F. McDonough,
Bibliography, September 1973.

DOT-TSC-OST-72-34, Supplement I

Reports Bibliography - Supplement I, Unlimited-Distribution Reports, January - June 1973,
by T. F. McDonough
Bibliography, September 1973.

DOT-TSC-OST-73-12

PB222624

Truck Noise - Via Diesel Exhaust and Air Intake Noise,
by R. E. Hund, K. C. Kirkland, and S. P. Reyle,
Final Report, July 1973 (Contractor Report).

DOT-TSC-OST-73-18

PB 224120

Wayside Noise and Vibration Signatures of High-Speed Trains in the Northeast Corridor,
by E. J. Rickley, R. W. Quinn and N. R. Sussman,
Final Report, September 1973.

DOT-TSC-OST-73-22

PB 221855

Comparative Studies of the Supersonic Jet Noise Generated by Rectangular and Axisymmetric Nozzles,
by K. C. Low and J. F. Louis,
Final Report, June 1973 (Contractor Report).

DOT-TSC-OST-72-26

Gas Turbine Engine Production Implementation Study (2 volumes),
by D. E. Lapedes, L. Forrest, F. G. Ghahremani, O. Hamberg,
W. V. Roessler, W. M. Smalley, M. Itinton, T. Iura, and J. Meltzer,
Final Report, July 1973 (Contractor Report).

DOT-TSC-OST-73-32

PB 223842

Airport Access/Egress Systems Study (2 volumes),
by E. M. Whitlock and D. B. Sanders,
Final Report, September 1973 (Contractor Report).

DOT-TSC-OST-73-34

PB 225331

Energy Statistics - A Supplement to the Summary of National
Transportation Statistics,
by G. V. Hicks,
Final Report, September 1973.

1. Report No. DOT-TSC-OST-72-32		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ANALYSIS AND COMPARISON OF SOME AUTOMATIC VEHICLE MONITORING SYSTEMS			5. Report Date July 1973		
			6. Performing Organization Code		
7. Author(s) R. Buck, R. Esposito, M. Unkauf			8. Performing Organization Report No. DOT-TSC-OST-72-32		
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142			10. Work Unit No. R-3567/OS331		
			11. Contract or Grant No.		
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Office of Telecommunications Washington, D.C. 20591			13. Type of Report and Period Covered Interim Report Sept. 1972 - Nov. 1972		
			14. Sponsoring Agency Code		
15. Supplementary Notes					
16. Abstract In 1970 UMTA solicited proposals and selected four companies to develop systems to demonstrate the feasibility of different AVM techniques. The demonstrations culminated in experiments in Philadelphia to assess the performance capabilities of each system. The purpose of this report is to analyze and compare those different AVM systems and to answer some specific questions that appear on the FCC Docket No. 18302. These questions are on the performance comparisons of the AVM systems with respect to accuracy, bandwidth, update rate, and data transmission capability. In addition some general considerations on the different AVM systems have been made with respect to performance.					
17. Key Words Automatic Vehicle Monitoring			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 72	22. Price

Technical Report Documentation Page

1. Report No. DOT-TSC-OST-72-34	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle REPORTS BIBLIOGRAPHY DECEMBER 1972 UNLIMITED-DISTRIBUTION REPORTS		5. Report Date September 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-OST-72-34	
7. Author(s) T.F. McDonough		10. Work Unit No. (TRAIS) G-2130	11. Contract or Grant No.
9. Performing Organization Name and Address Transportation Systems Center Information Services Branch Kendall Square Cambridge MA 02142		13. Type of Report and Period Covered Reports Bibliography Jul 1970 - Dec 1972	
		14. Sponsoring Agency Code	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Office of the Secretary Washington DC 20590			
15. Supplementary Notes Issued by the Transportation Systems Center, Management Services Division, Information Services Branch.			
16. Abstract This publication provides a listing of all unlimited distribution reports published by the Transportation Systems Center DOT from July 1970 through December 1972. Reports available through the National Technical Information Service are listed. The reports are classified by sponsoring agency. A copy of the title page (which contains an abstract of the report) from each report is included.			
17. Key Words Bibliography Unlimited distribution		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 204	22. Price *

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. DOT-TSC-OST-72-34 SUPPLEMENT I		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle REPORTS BIBLIOGRAPHY - SUPPLEMENT I UNLIMITED-DISTRIBUTION REPORTS				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) T.F. McDonough				8. Performing Organization Report No. DOT-TSC-OST-72-34 SUPPLEMENT I	
9. Performing Organization Name and Address Transportation Systems Center Management Services Division Information Services Branch Kendall Square, Cambridge MA 02142				10. Work Unit No. G-2130	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Washington DC 20590				13. Type of Report and Period Covered Reports Bibliography January-June 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract This publication supplements the "Reports Bibliography-December 1972," and provides a listing of all unlimited-distribution reports published by the Transportation System Center DOT from January through June 1973. Reports available through the National Technical Information Service are listed. The reports are classified by sponsoring agency. A copy of the title page (which contains an abstract of the report) from each report is included.					
17. Key Words Bibliography Limited distribution Unlimited distribution				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 84	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. DOT-TSC-OST-73-12		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle TRUCK NOISE - VIA DIESEL EXHAUST & AIR INTAKE NOISE				5. Report Date July 1973	
				6. Performing Organization Code	
7. Author(s) Raymon E. Hunt, Kenneth C. Kirkland, Stanley P. Reyle*				8. Performing Organization Report No.	
9. Performing Organization Name and Address Stemco Manufacturing Company 300-312 Industrial Blvd. Longview, Texas 75601				10. Work Unit No. OS-207/R-2519	
				11. Contract or Grant No. DOT-TSC-533	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Office of the Secretary Office of Noise Abatement Washington D.C. 20590				13. Type of Report and Period Covered Final Report October 1972-March 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under contract to: Department of Transportation Transportation Systems Center Kendall Square, Cambridge MA 02142					
16. Abstract Exhaust and air intake noise is studied on five truck and bus diesel engines; the Detroit Diesel 6-71 and 8V-71, the Cummins NHC-250 and NTC-350 and the Mack ENDT-675. The noise source is isolated and its sound level measured at a distance of 50' in accordance with SAE-J366a test site conditions. Detailed exhaust tests are conducted on all engines with three basic styles of exhaust systems. Each system is tested with several mufflers from different manufacturers. Sound levels without mufflers are also measured on each engine. The results of these tests are summarized and comparisons are made of exhaust systems, engines, and mufflers. Air intake noise tests are conducted with and without air cleaners installed. At least two different air cleaners are tested on each engine. A comparison is made of air intake sound levels between the engines and intake systems. A survey is made of muffler and air cleaner manufacturers to obtain information on size, price, and expected performance of the products tested. A survey on engine specifications is also included.					
17. Key Words Air Cleaners, Air Intake System Diesel Engine Noise, Exhaust System, Mufflers, Noise, Noise Abatement, Silencers, Transporta- tion Noise				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 328	22. Price

1. Report No. DOT-TSC-OST-73-18		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Wayside Noise and Vibration Signatures of High-Speed Trains in the Northeast Corridor				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) Edward J. Rickley, Robert W. Quinn, Norman R. Sussan				8. Performing Organization Report No. DOT-TSC-OST-73-18	
9. Performing Organization Name and Address U.S. Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. R3530/OS-307	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Office of Noise Abatement Washington D.C. 20590				13. Type of Report and Period Covered Final Report Nov 1971 - Oct 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>Measurements were made of the wayside noise and ground vibration levels generated during the passby of high-speed Metroliner and Turbo trains operating on the tracks of the Penn Central Railroad. The Metroliner in operation on the New York-to-Washington line was measured in Plainsboro, New Jersey. The Turbo train in operation on the Boston-to-New York line was measured in West Mansfield, MA. In addition, freight trains and conventional passenger trains were measured and recorded.</p> <p>This report contains tabulations of the passby noise and vibration levels measured, time history level recordings and 1/3-octave frequency analyses of representative passby data. Pertinent comments on information obtained are included.</p>					
17. Key Words Metroliner, Turbo trains, High-Speed Ground Transportation Noise, Vibration			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 144	22. Price

Technical Report Documentation Page

1. Report No. DOT-TSC-OST-73-22		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle COMPARATIVE STUDIES OF THE SUPER-SONIC JET NOISE GENERATED BY RECTANGULAR AND AXISYMMETRIC NOZZLES				5. Report Date June 1973	
				6. Performing Organization Code	
7. Author(s) Khoon Cheang Low, Jean F. Louis*				8. Performing Organization Report No. None	
9. Performing Organization Name and Address Department of Aeronautics and Astronautics Massachusetts Institute of Technology Cambridge, MA 02139				10. Work Unit No. (TRAIS) OS307/R3530	
				11. Contract or Grant No. DOT-TSC-142	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Office of Noise Abatement Washington DC 20590				13. Type of Report and Period Covered Final Report Oct. 1971-Dec. 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under Contract to: Department of Transportation Transportation Systems Center Kendall Square Cambridge, MA 02142					
16. Abstract The main purpose of this study is to develop experimental scaling laws useful for predicting the overall sound power of supersonic jets operating under a range of high stagnation temperatures and pressures and under various exit Mach numbers. A shock tube is used as a flexible tool to provide the range of high stagnation temperatures and pressures associated with the supersonic jets in this investigation. The range of stagnation pressures chosen (for a given temperature and Mach number) correspond to overexpanded, perfectly expanded and underexpanded conditions of the jet. Two different nozzle configurations: a rectangular and an axisymmetric, are examined to determine how a basic difference in shape of the jet changes the relative importance of the different noise generating mechanisms. Measured sound directivity and Mach waves propagation direction obtained from shadowgraphs indicate that Mach waves contribute importantly to the noise produced by a rectangular jet. Similar measurements made on the axisymmetric jet indicate stronger influence of shock-induced noise and in particular of shock turbulence interaction. To guide the formulation of scaling laws for the prediction of overall sound power, a theoretical model is proposed which derives expressions for the power sound level associated with Mach waves and for shock turbulence interaction. Concurrent use of the model and of experimental data allow the formulation of scaling laws for the overall sound power. The quasi two-dimensional flow from the rectangular nozzle gave an opportunity to study Mach and nozzle lip waves for both low and high temperature jets.					
17. Key Words Supersonic jet noise, Axisymmetric nozzle, Rectangular nozzle, Mach wave, Turbulence shock interaction, Scaling laws of supersonic jet noise				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 118	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. DOT-TSC-OST-73-26		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle GAS TURBINE ENGINE PRODUCTION IMPLEMENTATION STUDY, VOLUME II: TECHNICAL DISCUSSION				5. Report Date JULY 1973	
				6. Performing Organization Code	
7. Author(s) D. E. Lapedes, L. Forrest, F.G. Ghahremani O. Hamberg, W. U. Roessler, W. M. Smalley, M. Hinton, T. Iura, J. Meltzer				8. Performing Organization Report No. ATR-73(7323)-1, Vol. II	
9. Performing Organization Name and Address URBAN PROGRAMS DIVISION THE AEROSPACE CORPORATION EL SEGUNDO, CALIFORNIA 90045				10. Work Unit No. OS314/R3531	
				11. Contract or Grant No. EPA 68-01-0417	
12. Sponsoring Agency Name and Address DEPARTMENT OF TRANSPORTATION OFFICE OF THE SECRETARY, OFFICE OF SYSTEMS DEVELOPMENT AND TECHNOLOGY WASHINGTON, D. C. 20590				13. Type of Report and Period Covered FINAL REPORT JANUARY 1973 - JULY 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes CONTRACT ADMINISTERED BY: ENVIRONMENTAL PROTECTION AGENCY DIVISION OF EMISSION CONTROL TECHNOLOGY ANN ARBOR, MICHIGAN 48105					
16. Abstract <p>This report presents a summarization and assessment of available information pertaining to the potential for implementing mass production of gas turbine engine-powered automobiles. The main topic covered is the schedule requirement for that implementation. Emphasis has been directed toward identifying those critical or limiting factors affecting timely introduction of gas turbine engine concepts on a mass production basis. A description of basic automotive product development phases, engine manufacturing processes, and gas turbine engine current technology status are included to clarify and augment the discussions, and to permit the necessary understanding of the developed implementation schedules.</p> <p>Based on data acquired during the period February 28 to April 30, 1973, a period of 8 to 10 years is a best estimate of the elapsed time until 300,000 gas turbine engines are mass produced annually. This estimate is based on a postulated overall product development schedule of slightly more than 11 years. Prior to major commitment of capital resources necessary for adherence to this schedule, automobile manufacturers must resolve three major issues: 1) improvements in engine fuel economy and exhaust emissions, 2) development of new mass production fabrication processes directed at reducing engine unit cost, and 3) statistical evidence of engine durability in fleet test cars.</p>					
17. Key Words automobile design and technology engines gas turbine			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 264	22. Price

Technical Report Documentation Page

1. Report No. DOT-TSC-OST-73-32, I		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle AIRPORT ACCESS/EGRESS SYSTEMS STUDY VOLUME I - TEXT				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) Edward M. Whitlock and David B. Sanders				8. Performing Organization Report No. DOT-TSC-OST-73-32, I	
				9. Performing Organization Name and Address Wilbur Smith and Associates 1212 Avenue of the Americas New York, N.Y. 10036	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Office of R&D Policy Washington, D.C. 20590				10. Work Unit No. (TRAIS) OS305/R3502	
				11. Contract or Grant No. DOT-TSC-462-1	
13. Type of Report and Period Covered Final Report July 72 - June 73				14. Sponsoring Agency Code	
				15. Supplementary Notes Under contract to: Department of Transportation Transportation Systems Center Kendall Square, Cambridge MA 02142	
16. Abstract Studies of airport activities and user characteristics at 34 high volume U.S. Airports indicate that disbursed trip origins cannot economically justify rapid transit corridor investments dedicated to airport access travel. Generally, airports have too much off-roadway parking in central terminal areas and this concentration of vehicular activities near terminal building congests internal roadways. The study proposes a number of low-capital improvement concepts to airport access/egress. These improvements are generally directed towards improving the traffic flow in the central terminal area through better flow controls, diversion of automobile traffic from the central terminal area, and changes in travel patterns. The latter can be changes in mode and/or time of travel. Three specific operational experiments are proposed to evaluate the effectiveness of the proposed concepts. The experiments are a remote parking experiment at Detroit Metropolitan Airport, bus-rail links from LaGuardia and Kennedy Airports in New York and evaluation of a garage-baggage handling system at Seattle-Tacoma Airport. Cost of implementing all these experiments is estimated to be \$1.444 million. The report is presented in two volumes; the first includes airport and user characteristics and details on the execution of the operational experiments; and, the second, an appendix volume, describes supporting data and airport master plans collected in the field surveys.					
17. Key Words Airport Access Airport Egress Airport Parking Operational Experiments			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 172	22. Price

Technical Report Documentation Page

1. Report No. DOT-TSC-OST-73-32, II		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle AIRPORT ACCESS/EGRESS SYSTEMS STUDY VOLUME II-APPENDIXES				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s) Edward M. Whitlock and David B. Sanders				8. Performing Organization Report No. DOT-TSC-OST-73-32, II	
9. Performing Organization Name and Address Wilbur Smith and Associates 1212 Avenue of the Americas New York, N.Y. 10036				10. Work Unit No. (TRAIS) OS305/R3502	
				11. Contract or Grant No. DOT-TSC-462-2	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Office of R&D Policy Washington, D.C. 20590				13. Type of Report and Period Covered Final Report July 72 - June 73	
				14. Sponsoring Agency Code	
15. Supplementary Notes Under contract to: Department of Transportation Transportation Systems Center Kendall Square, Cambridge MA 02142					
16. Abstract Studies of airport activities and user characteristics at 34 high volume U.S. Airports indicate that disbursed trip origins cannot economically justify rapid transit corridor investments dedicated to airport access travel. Generally, airports have too much off-roadway parking in central terminal areas and this concentration of vehicular activities near terminal building congests internal roadways. The study proposes a number of low-capital improvement concepts to airport access/egress. These improvements are generally directed towards improving the traffic flow in the central terminal area through better flow controls, diversion of automobile traffic from the central terminal area, and changes in travel patterns. The latter can be changes in mode and/or time of travel. Three specific operational experiments are proposed to evaluate the effectiveness of the proposed concepts. The experiments are a remote parking experiment at Detroit Metropolitan Airport, bus-rail links from LaGuardia and Kennedy Airports in New York and evaluation of a garage-baggage handling system at Seattle-Tacoma Airport. Cost of implementing all these experiments is estimated to be \$1.444 million. The report is presented in two volumes; the first includes airport and user characteristics and details on the execution of the operational experiments; and, the second, an appendix volume, describes supporting data and airport master plans collected in the field surveys.					
17. Key Words Airport Access Airport Egress Airport Parking Operational Experiments			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 202	22. Price

Form DOT F 1700.7 (8-72)

Reproduction of completed page authorized

Technical Report Documentation Page

1. Report No. DOT-TSC-OST-73-34	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle ENERGY STATISTICS A Supplement to the Summary of National Transportation Statistics.		5. Report Date September, 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-OST-73-34	
7. Author(s) Gill V. Hicks		9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142	
12. Sponsoring Agency Name and Address Department of Transportation Office of the Secretary Assistant Secretary for Policy, Plans, and International Affairs Washington DC 20590		10. Work Unit No. (TRAIS) R4805/OP409	11. Contract or Grant No.
		13. Type of Report and Period Covered Final Report June - July, 1973	
15. Supplementary Notes		14. Sponsoring Agency Code	
16. Abstract <p>This report is a compendium of selected time-series data describing the transportation, production, processing, and consumption of energy. The statistics have been assembled from a wide variety of sources, such as the U.S. Department of the Interior, the Interstate Commerce Commission, and the American Petroleum Institute.</p> <p>The report is divided into three main sections. The first, entitled "Energy Transport", contains such items as the revenues and expenses of oil pipeline companies, number and capacities of U.S. tank ships, and the total crude oil transported in the U.S. by method of transportation.</p> <p>The second section, entitled "Reserves, Production, and Refining", reveals the growth over time of the U.S. oil and natural gas reserves, refinery capacity, and yields.</p> <p>Trends in the demand for fuel and power are displayed in the third section, entitled "Energy Consumption". Throughout this part, the transportation sector is emphasized. Included are the gasoline and oil costs of automobiles of different sizes, the consumption of petroleum by type of product, the energy intensiveness of the air carriers, the electrical energy consumed by the local transit industry, and other important statistics describing the supply and demand for energy.</p>			
17. Key Words Energy, statistics, petroleum		18. Distribution Statement Document is available to the public through the National Technical Information Service, Springfield, Virginia 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 112	22. Price

UNLIMITED-DISTRIBUTION REPORTS
URBAN MASS TRANSPORTATION ADMINISTRATION

DOT-TSC-UMTA-72-10/MA-06-0025-73

PB 222654/6

Analysis of Rail Vehicle Dynamics in Support of Development of
the Wheel Rail Dynamics Research Facility,
by H. Weinstock,
Interim Report, June 1973.

DOT-TSC-UMTA-73-8/UMTA-MA-06-0027-73-1

PB225093

Development and Test of an Eddy-Current Clutch-Propulsion System,
by G. J. Adams,
Final Report, October 1973 (Contractor Report).

DOT-TSC-UMTA-73-9/DOT-TSC-UMTA-74-1-I

MBTA Green Line Tests - Riverside Line, December 1972,
Volume I - Test Description.
by URSTP Staff,
Final Report, September 1973.

DOT-TSC-UMTA-73-9, II-V/DOT-TSC-UMTA-74-1, II-V

PB 224207

MBTA Green Line Tests - Riverside Line, December 1972:
Volume II - Track Geometry Data Plots
Volume III - East Bound Track Profile
Volume IV - West Bound Track Profile
Volume V - Gage Computer Printout,
by George Neat, Editor,
Final Report, October 1973.



TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. MA-06-0025-73		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ANALYSES OF RAIL VEHICLE DYNAMICS IN SUPPORT OF DEVELOPMENT OF THE WHEEL RAIL DYNAMICS RESEARCH FACILITY				5. Report Date June 1973	
				6. Performing Organization Code	
7. Author's Herbert Weinstock				8. Performing Organization Report No. DOT-TSC-UMTA-72-10	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge, Ma. 02142				10. Work Unit No. UM204	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research Dev. and Dem. Washington, D.C. 20590				13. Type of Report and Period Covered Interim Report Nov. 1971 - May 1972	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The development of experimental facilities for rail vehicle testing at the DOT High Speed Ground Test Center is being complemented by analytical studies conducted by Transportation System Center under the UM204 Rail Supporting Technology Program to the Urban Mass Transportation Administrations Office of Research, Development, and Demonstrations. The purpose of this effort has been to gain insight into the dynamics of rail vehicles to guide the equipment development and to establish an analytic framework for the design and interpretation of tests to be conducted at the facility. The mechanics of rail vehicle lateral guidance are reviewed on the basis of linearized models. Computer programs are developed for predicting stability and general lateral response characteristics. Computer programs for predicting vertical and pitch vehicle response to track irregularities are included. Implications of non-linear effects are discussed. The report describes the status of work currently in progress and subject to revision. Publication is intended primarily to stimulate the exchange of information.					
17. Key Words Rail Vehicle Dynamics				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 230	22. Price

Technical Report Documentation Page

1. Report No. UMTA-MA-06-0027-73-1		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle DEVELOPMENT AND TEST OF AN EDDY-CURRENT CLUTCH-PROPULSION SYSTEM				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) *G.J. Adams				8. Performing Organization Report No. DOT-TSC-UMTA-73-8	
9. Performing Organization Name and Address Mobility Systems Equipment Company 6151 West Century Boulevard Los Angeles CA 90045				10. Work Unit No. (TRAIS) UM406/R4703	
				11. Contract or Grant No. DOT-TSC-357-1	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development, & Demon. Washington DC 20591				13. Type of Report and Period Covered Final Report Phase 1	
				14. Sponsoring Agency Code	
15. Supplementary Notes *Under contract to: Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142					
16. Abstract This report covers the Phase 1 effort which is to develop and to test an AC-propulsion system for personal rapid-transit vehicles. This propulsion system incorporates an AC-induction motor in conjunction with an eddy-current clutch and brake. Also included are development of the propulsion system, fabrication of the propulsion system, description of the laboratory test program, and analysis of the test results.					
17. Key Words Eddy-current clutch AC-propulsion system			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 202	22. Price

Technical Report Documentation Page

1. Report No. DOT-TSC-UMTA-74-1, I		2. Government Accession No.		3. Recipient Catalog No.	
4. Title and Subtitle MBTA GREEN LINE TESTS-RIVERSIDE LINE, DECEMBER 1972				5. Report Date September 1973	
				6. Performing Organization Code	
7. Author(s)				8. Performing Organization Report No. DOT-TSC-UMTA-73-9	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. (TRAIS) UM304-R3764	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development & Demonstrations, Washington DC 20590				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The UMTA sponsored Urban Rail Supporting Technology Program emphasizes three major task areas; facilities development, technology development, and test program development. The test program development is composed of three sub-areas; vehicle testing, ways and structures testing, and track geometry measurement. This report presents the technical methodology, data samples, and results of tests conducted on the Massachusetts Bay Transit Authority (MBTA) Green Line in December, 1972 prior to initiation of the Green Line refurbishment effort. An instrumented revenue type car was used for the measurement of track geometry, ride roughness, and interior noise. Actual car speed was approximately the same as normal revenue speed. The objectives of the tests were to identify critical track sections for improvement to quantify the benefits produced by the track rehabilitation program, and to provide data for TSC's development of an advanced track geometry measurement system.					
17. Key Words Track Measurement Methodology Track Geometry Measurement Ride Roughness Measurement Interior Noise Measurement				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 148	22. Price

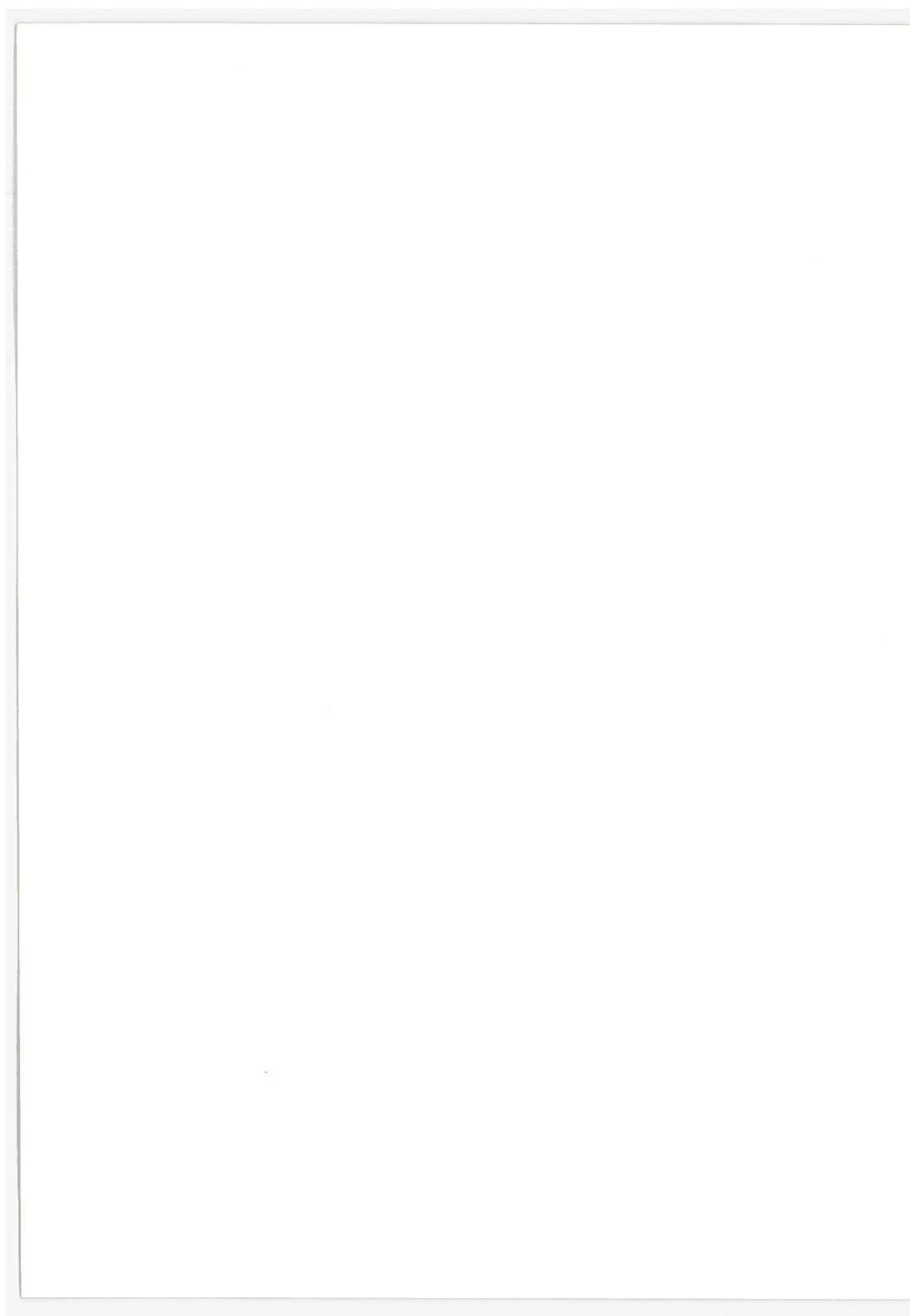
1. Report No. DOT-TSC-UMTA-74-1, II		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle MBTA GREEN LINE TESTS-RIVERSIDE LINE, DECEMBER 1972 Volume II Track Geometry Data Plots				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) George W. Neat, Editor				8. Performing Organization Report No. DOT-TSC-UMTA-73-9, II	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. UM304/R3764	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development & Demonstrations, Washington D.C. 20591				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code	
15. Supplemental Notes					
16. Abstract <p>The UMTA sponsored Urban Rail Supporting Technology Program emphasizes three major task areas; facilities development, technology development, and test program development. The test program development is composed of three sub-areas; vehicle testing, ways and structures testing, and track geometry measurement. This report, in five volumes, presents the technical methodology, data samples, and results of tests conducted on the Massachusetts Bay Transit Authority (MBTA) Green Line in December, 1972 prior to initiation of the Green Line refurbishment effort.</p> <p>An instrumented revenue type car was used for the measurement of track geometry, ride roughness, and interior noise. Actual car speed was approximately the same as normal revenue speed. The objectives of the tests were to identify critical track sections for improvement to quantify the benefits produced by the track rehabilitation program, and to provide data for TSC's development of an advanced track geometry measurement system.</p> <p>Volume II presents track geometry analog data plots for the complete length of track.</p>					
17. Key Words Track measurement methods, Track geometry measurement, Ride roughness measurement, Interior noise measurement				18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 124	22. Price

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. DOT-TSC-UMTA-74-1, III		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle MBTA GREEN LINE TESTS-RIVERSIDE LINE, DECEMBER 1972 Volume III Eastbound Track Profile				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) George W. Neat, Editor				8. Performing Organization Report No. DOT-TSC-UMTA-73-9, III	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. UM304/R3764	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development & Demonstrations, Washington D.C. 20591				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The UMTA sponsored Urban Rail Supporting Technology Program emphasizes three major task areas; facilities development, technology development, and test program development. The test program development is composed of three sub-areas; vehicle testing, ways and structures testing, and track geometry measurement. This report, in five volumes, presents the technical methodology, data samples, and results of tests conducted on the Massachusetts Bay Transit Authority (MBTA) Green Line in December, 1972 prior to initiation of the Green Line refurbishment effort. An instrumented revenue type car was used for the measurement of track geometry, ride roughness, and interior noise. Actual car speed was approximately the same as normal revenue speed. The objectives of the tests were to identify critical track sections for improvement, to quantify the benefits produced by the track rehabilitation program, and to provide data for TSC's development of an advanced track geometry measurement system. Volume III presents the track profile computer printout for the Eastbound Track.					
17. Key Words Track measurement methods, Track geometry measurement, Ride roughness measurement, Interior noise measurement			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 256	22. Price

1. Report No. DOT-TSC-UMTA-74-1, IV		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle MBTA GREEN LINE TESTS-RIVERSIDE LINE, DECEMBER 1972 Volume IV Westbound Track Profile				5. Report Date October 1973	
				6. Performing Organization Code	
7. Author(s) George W. Neat, Editor				8. Performing Organization Report No. DOT-TSC-UMTA-73-9, IV	
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142				10. Work Unit No. UM304 /R3764	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development & Demonstrations, Washington DC 20591				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract The UMTA sponsored Urban Rail Supporting Technology Program emphasizes three major task areas; facilities development, technology development, and test program development. The test program development is composed of three sub-areas; vehicle testing, ways and structures testing, and track geometry measurement. This report, in five volumes presents the technical methodology, data samples, and results of tests conducted on the Massachusetts Bay Transit Authority (MBTA) Green Line in December, 1972 prior to initiation of the Green Line refurbishment effort. An instrumented revenue type car was used for the measurement of track geometry, ride roughness, and interior noise. Actual car speed was approximately the same as normal revenue speed. The objectives of the tests were to identify critical track sections for improvement to quantify the benefits produced by the track rehabilitation program, and to provide data for TSC's development of an advanced track geometry measurement system. Volume IV presents the track profile computer printout for the Westbound Track.					
17. Key Words Track measurement methods, Track geometry measurement, Ride roughness measurement, Interior noise measurement			18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 260	22. Price

1. Report No. DOT-TSC-UMTA-74-1, V	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle MBTA GREEN LINE TESTS-RIVERSIDE LINE, DECEMBER 1972 Volume V Gage Computer Printout	5. Report Date October 1973	6. Performing Organization Code	
7. Author(s) George W. Neat, Editor	8. Performing Organization Report No. DOT-TSC-UMTA-73-9, V		
9. Performing Organization Name and Address Department of Transportation Transportation Systems Center Kendall Square Cambridge MA 02142	10. Work Unit No. UM1304/R3764	11. Contract or Grant No.	
12. Sponsoring Agency Name and Address Department of Transportation Urban Mass Transportation Administration Office of Research, Development & Demon- strations, Washington DC 20591	13. Type of Report and Period Covered Final Report		
14. Sponsoring Agency Code	15. Supplementary Notes		
16. Abstract The UMTA sponsored Urban Rail Supporting Technology Program emphasizes three major task areas; facilities development, technology development, and test program development. The test program development is composed of three sub-areas; vehicle testing, ways and structures testing, and track geometry measurement. This report, in five volumes, presents the technical methodology, data samples, and results of tests conducted on the Massachusetts Bay Transit Authority (MBTA) Green Line in December, 1972 prior to initiation of the Green Line refurbishment effort. An instrumented revenue type car was used for the measurement of track geometry, ride roughness, and interior noise. Actual car speed was approximately the same as normal revenue speed. The objectives of the tests were to identify critical track sections for improvement to quantify the benefits produced by the track rehabilitation program, and to provide data for TSC's development of an advanced track geometry measurement system. Volume V presents the gage computer printout for the complete length of track.			
17. Key Words Track measurement methods, Track geometry measurements, Ride roughness measurement, Interior noise measurement	18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.		
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 210	22. Price



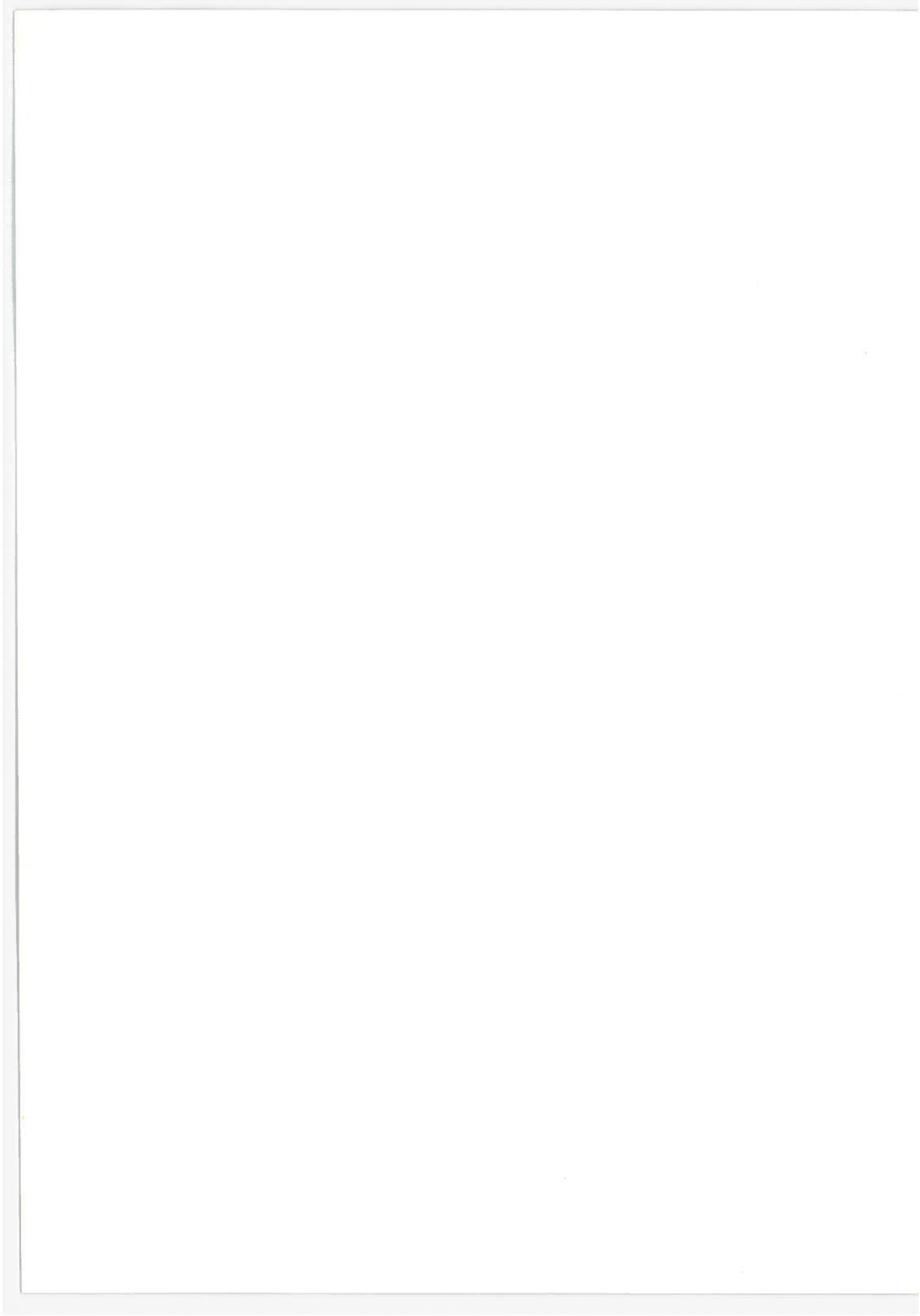
UNLIMITED-DISTRIBUTION REPORTS
UNITED STATES COAST GUARD

DOT-TSC-USCG-73-1/CG-D-13-73

A Study of Stack Emissions from Coast Guard Cutters,
by A. F. Souza,
Final Report, September 1973 (Contractor Report).

DOT-TSC-USCG-73-2/CG-D-21-74

U.S. Coast Guard Pollution Abatement Program: A Preliminary
Report on the Emissions Testing of Boat Diesel Engines,
by R. A. Walter,
Interim Report, October 1973.



Technical Report Documentation Page

1. Report No. CG-D-13-73	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle A STUDY OF STACK EMISSIONS FROM COAST GUARD CUTTERS		5. Report Date September 1973	6. Performing Organization Code
		8. Performing Organization Report No. DOT-TSC-USCG 73-1	
7. Author(s) Anthony F. Souza*	9. Performing Organization Name and Address Scott Research Laboratories Inc. Plumsteadville PA 18949		10. Work Unit No. (TRAIS) R-4401/CG407
12. Sponsoring Agency Name and Address Department of Transportation U.S. Coast Guard Office of Research and Development Washington DC 20590			11. Contract or Grant No. DOT-TSC-429
		13. Type of Report and Period Covered FY73 Final Report	
		14. Sponsoring Agency Code G-DET-1	
15. Supplementary Notes *Under Contract to DOT - Transportation Systems Center Kendall Square Cambridge MA 02142			
16. Abstract The gaseous and particulate emissions from 14 cutters and boats in the First Coast Guard District have been measured under typical operating conditions. These measurements were performed on 57 diesel engines and boilers configured as main propulsion units, ship-service generators and hotel-service boilers. The diesel engines varied in size from two-cylinder, naturally aspirated, 35 h.p. units to 3600 h.p. turbo-charged units. The gaseous emission concentrations measured were carbon monoxide, carbon dioxide, total hydrocarbons, and oxides of nitrogen. Particulate emission rates by the gravimetric technique as well as smoke levels were also documented. These measured concentrations were reduced to mass emission notes by appropriate computer programs.			
17. Key Words Emissions: Pollutants, Hydrocarbons, Diesel Engines, Particulates, Emission Sampling, Oxides of Nitrogen, Carbon Monoxide, Carbon Dioxide		18. Distribution Statement DOCUMENT IS AVAILABLE TO THE PUBLIC, THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 174	22. Price

Technical Report Documentation Page

1. Report No. CG-D-21-74	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle U.S. COAST GUARD POLLUTION ABATEMENT PROGRAM: A PRELIMINARY REPORT ON THE EMISSIONS TESTING OF BOAT DIESEL ENGINES		5. Report Date November 1973	
		6. Performing Organization Code	
7. Author(s) Robert A. Walter		8. Performing Organization Report No. DOT-TSC-USCG-73-2	
		9. Performing Organization Name and Address Transportation System Center Kendall Square Cambridge MA 02142	
12. Sponsoring Agency Name and Address Department of Transportation U.S. Coast Guard Office of Research and Development Washington DC 20591		10. Work Unit No. (TRAIS) CG407-R-4001	
		11. Contract or Grant No.	
15. Supplementary Notes		13. Type of Report and Period Covered Interim Report	
		14. Sponsoring Agency Code	
16. Abstract <p>The exhaust emission concentrations from three GM6-71's and a Cummins VT-350 diesel engines were measured on a dynamometer as a function of engine load. The GM6-71 engines were newly rebuilt by the Coast Guard; the Cummins Engine was in used condition. These engines are used as main power units in Coast Guard boats. The exhaust emission concentrations were reduced to mass emissions by the carbon balance technique. Similar emission levels were obtained from the three rebuilt GM6-71 engines with type HV injectors.</p>			
17. Key Words Gaseous Emissions Diesel Engines Air Pollution Noise Levels from Diesel Engines		18. Distribution Statement <p>DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22151.</p>	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 42	22. Price