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SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1977 ENGINEERING A--ETC(U)
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U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

AD-A034 195

SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1977
ENGINEERING AND DEVELOPMENT APPROVED PROGRAMS

FEDERAL AVIATION ADMINISTRATION, WASHINGTON, D.C.

OCTOBER 1976

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SRDS

TECHNICAL PROGRAM DOCUMENT

FISCAL YEAR 1977
ENGINEERING & DEVELOPMENT APPROVED PROGRAMS



OCTOBER 1976

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Systems Research & Development Service
Washington, D.C. 20590

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11/12/76

TECHNICAL PROGRAM DIRECTIVE

No. 77-01-01[1/ 2/ 3/] through 21

SUBJECT: FY-77 SRDS Annual Technical Program

The enclosed FY-77 SRDS Annual Technical Program Document (TPD) establishes the Subprograms approved for implementation by the Director of SRDS. The implementation of these efforts is subject to the availability of resources.

This Annual Technical Program will be under continuing review and will be updated by means of Technical Program Directives as technical and other requirements dictate. Resumes in this Technical Program Document are structured according to the FAA Engineering and Development Programs 01 through 21.

DAVID J. SHEFTEL
Director, Systems Research
and Development Service, ARD-1

1/ Fiscal Year

2/ Sequence of Technical Program Directive Issuance, coded and controlled by ARD-50/54.

3/ FAA ED Programs (per FAA-ED-00-C as amended).

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Technical Report Documentation Page

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4. Title and Subtitle	5. Report Date
SRDS TECHNICAL PROGRAM DOCUMENT, Fiscal Year 1977 Engineering and Development Approved Programs	October 1, 1976
	6. Performing Organization Code SRDS
7. Author(s)	8. Performing Organization Report No.
9. Performing Organization Name and Address U.S. DEPARTMENT OF TRANSPORTATION Federal Aviation Administration Systems Research and Development Service Washington, D. C. 20590	10. Work Unit No. (TRAIS) 11. Contract or Grant No. ARD-50
12. Sponsoring Agency Name and Address U.S. DEPARTMENT OF TRANSPORTATION Federal Aviation Administration Systems Research and Development Servic- Washington, D. C. 20590	13. Type of Report and Period Covered Technical Program Document FY-77 14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This Technical Program Document (TPD) contains Research and Technology Resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc.

The TPD is structured according to the following 21 Engineering and Development Programs:

01 System	11 ATC Systems Command Center Automation
02 Radar	12 Enroute Control
03 Beacon	13 Flight Service Stations
04 Navigation	14 Terminal/Tower Control
05 Airborne Separation Assurance	15 Weather
06 Communications	16 Technology*
07 Approach and Landing Systems	17 Satellites
08 Airport/Airside	18 Aircraft Safety
09 Airport/Landside*	19 Aviation Medicine**
10 Oceanic	20 Environment
	21 Support

*Transfered to OSEM
**Not included

17. Key Words	18. Distribution Statement
Research and Development Research and Technology Resumes Technical Program	Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22151

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
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FOREWORD

This FY-77 Technical Program Document (TPD) contains Research and Technology Resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, end-item products, and FY-76 accomplishments, and source of requirements.

The TPD is structured according to the following 21 Engineering and Development Programs:

01	System	11	ATC Systems Command Center Automation
02	Radar	12	Enroute Control
03	Beacon	13	Flight Service Stations
04	Navigation	14	Terminal/Tower Control
05	Airborne Separation Assurance	15	Weather
06	Communications	16	Technology*
07	Approach and Landing Systems	17	Satellites
08	Airport/Airside	18	Aircraft Safety
09	Airport/Landside*	19	Aviation Medicine**
10	Oceanic	20	Environment
		21	Support

The fourth Arabic number in the Current Number/Code in block 10a of the Resume (i.e., 013-150) identifies the responsible lead division in SRDS, i.e.,

1	=	ARD-100	Air Traffic Control Systems Division
2	=	ARD-200	Communications Division
3	=	ARD-300	Navigation Division
4	=	ARD-400	Airport Division
5	=	ARD-500	Aircraft and Noise Abatement Division
6	=	ARD-60	Spectrum Analysis Staff
7	=	ARD-700	Microwave Landing System Division

Comments and recommendations concerning this TPD may be directed to the Chief, Program Management Staff, ARD-50.

* Transferred to OSEM
** Not included

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OI SYSTEM

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONTROL SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY CAT. U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 012-151

10b. PRIOR NUMBER/CODE: None

11. TITLE: Terminal Interface (WVAS, TAGS, TIPS, ARTS)

12. SCIENTIFIC OR TECH. AREA	13. EVAL DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE
NA	b. NUMBER: NA c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: L. Wuebker, ARD-150
TEL: (202)426-9327

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: ~~Tower Systems Interface Documents~~

24. Technical Objective: Produce operational interface documents for systems integration of present and future terminal automation projects (WVAS, TAGS, TIPS, ARTS)

25. Approach: Identify and analyze commonalities and system interactions in current and future system designs and present terminal automation systems which will enable preparation of systems interface documents. Several programs such as Wake Vortice (WVAS) Terminal Information Processing System (TIPS) and the Airport Surface Traffic Control (ASTC) among others culminate in data being displayed in the control tower. These developments for the most part proceeded independently. This subprogram will integrate and provide a system description for total system operation.

26. Milestones Scheduled for Accomplishment:

•Complete Analysis of System's Interactions	9/76
•ARTS TIPS Interface Document	3/77

26.A Accomplishments for FY-76:

•Start System Description

27. Source of Requirement: FAA-ED-11-1 | 28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 29 Identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY CAT. U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 012-152

10b. PRIOR NUMBER/CODE: None

11. TITLE: FSS/ARTCC Collocation Study and FSS/En Route Interface

12. SCIENTIFIC OR TECH. AREA	13. START DATE 10/76	14. CMIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. AMOUNT: d. DATES:

18. GOVT LAB/INSTALLATION/ACTIVITY
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TEL: (202)426-9327

19. PERFORMING ORGANIZATION
NAME
ADDRESS
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS: FSS/En Route Interface Documents

24. Technical Objective: Produce operational interface documents for collocated FSS/ARTCC facilities.

25. Approach: A study and analysis in cooperation with ARD-440 will be conducted for the personnel functions and duties and methods of collection and presentation of weather data in a collocated FSS/ARTCC facility. Problem areas, commonalities of duties, expanded services, and all aspects of the operational facilities interactions will be examined and analyzed. System interfaces between NAS Stage A and automated FSS facilities will be defined and documented in FY-1977.

26. Milestones Scheduled for Accomplishment:

.Complete FSS/En Route Interface Documents 6/77

26.A Accomplishments for FY-76:

.ARD-440 Task Study and Analysis of collocated FSS/ARTCC Facility Completed

27. Source of Requirement FAA-ED-01-1A

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1127.

RESEARCH AND TECHNOLOGY RESUME	NA	3. GOVT ACCESSION NA	4. AGENCY ACCESSION NA	REPORTS CONTROL SYMB. RD 1755-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 012-153

10b. PRIOR NUMBER/CODE: None

11. TITLE: IPC/ATC System Interface

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CMPT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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Washington, D.C. 20591
RESP. INDIV.: Herbert A. Wachsman, ARD-150
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19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Terminal, En Route, Controller, Pilot, DABS/IPC, GAT II, DSF, TATF, SSF, Simulation

24. Technical Objective: Develop ATC procedures for utilization of IPC to increase safety in the terminal and en route ATC environments.

25. Approach: NAFEC in-house resources will be utilized to design, test, and produce data in a simulated terminal and en route ATC environment to determine pilot controller and system interactions for development of procedures for control of IFR aircraft in a mixed IFR/VFR IPC system. Determine the feasibility of using IPC as an emergency control channel. Changes to ATC techniques and procedures and possible changes to separation standards and airspace definitions are envisioned as end products. The operational IPC/ATC system interface will also be defined.

26. Milestones Scheduled for Accomplishment:

.Test Design	1/77
.Terminal Simulation	4/77
.En Route Simulation	9/77
.Operational System Simulation	2/78
.Final Report	4/78
.Recommended Changes to ATC Procedures	6/78
.Interface Definition Document	12/78

26.A Accomplishments for FY-76:
None

27. Source of Requirement: FAA-ED-01-1A

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONTROL SYMBOL RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U WRK	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 013-150

10A. PRIOR NUMBER/CODE: None

11. TITLE: In-Service ATC Simulations

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591

RESP. INDIV.: Joseph P. O'Brien, ARD-150
TEL: (202) 426-9327

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Operational Scenarios, Ames, STOL, NASA, fuel optimization

24.

Technical Objective: Provide operational scenarios to exercise high performance flight simulators at Ames Research Center, to evaluate advanced 4D electronics systems, and for live flight tests of a modified augmented wing Buffalo STOL aircraft. Assist NASA with operational inputs, test development and evaluation and with fuel optimization programs.

25.

Approach: Provide scenarios traffic models and test design for STOL simulation at Ames. Provide scenarios for live tests of augmented wing Buffalo STOL. Provide operational support to Ames for flight simulator and flight experiments at Ames Research Center.

26. Milestones Scheduled for Accomplishment:

.Phase II Simulation (includes wind shear)	10/76
.Report completed on Fuel Optimization Approaches	8/77

26A. Accomplishments for FY-76:

Scenarios for Live Tests at Crows Landing

Scenarios for Fuel Optimized Studies

27. Source of Requirement 9550 AVP 200-1	28.
29.	30. Precedence 31. Relevant Project Code

I 013-150

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 013-151

10b. PRIOR NUMBER/CODE: None

11. TITLE: Concepts Affecting Separation Standards

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCUR. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT
NA	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
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Washington, D.C. 20591
RESP. INDIV.: L. Wuebker, ARD-150
TEL: (202)426-9327

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Optimize Concepts for Reduced Terminal Radar Separation Standards

24. Technical Objective: Study and produce concept documents for maximum utilization of terminal area airspace by means of developing criteria for new terminal radar separation standards.

25. Approach: In conjunction with NAFEC simulation facilities various mixes of traffic scenarios will be tested utilizing different terminal airspace environments. Special Air Traffic Control concepts and theories will be validated in a test environment. Among these are: aircraft speed, class, sequencing, and airport size fix relationships. The results will provide validated concept documents for terminal radar separation standards.

26. Milestones Scheduled for Accomplishment:

Collection of Speed, Class, Sequencing Data	12/76
Speed, Class Sequencing Simulations and Tests Complete	8/77
Final Documentation - Speed, Class Sequencing Techniques Report	11/77

26.A Accomplishments for FY-76:

Start Concept Design

27. Source of Requirement: FAA-ED-01-1A | 28.

29.

30. Precedence

31. Relevent Project Code

I 013-151

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS (CONT.) RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 013-152	None

11. TITLE:
In-Service ATC Simulations

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Joseph P. O'Brien , ARD-150 TEL: (202) 426-9327	NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Simulation, ATC In-Service, ATC Studies

24. Technical Objective: To provide proficient development and management for Air Traffic Control simulations requested by operating services, technical services, and/or municipalities or governments. This program is based on prior years experience and to provide a vehicle to quickly initiate work on what is always a time critical request. It is established for the purpose of planning the utilization of SRDS in-house and NAFEC personnel and resources and assumes three 6 week simulations each year.

25. Approach: In-house SRDS and NAFEC resources, with contract support when required, will be used to examine ATC simulation requirements received, to provide responsive studies, to plan and perform/or direct necessary simulations and provide analysis and reports based on findings.

26. Milestones Scheduled for Accomplishment:

.Graphic vs Dynamic Simulation study completed	9/76
.Schedule Simulations as Requests are Received	Continuous

26.A Accomplishments for FY-76:

.Phase I Simulation for NASA Ames Completed
.Request for Las Vegas Study completed

27. Source of Requirement SRDS Functional Statement 28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 Identical to DD Form 1498 and NASA Form 1122.

02 RADAR

1. RESEARCH AND TECHNOLOGY RESUME		1a. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT / RMS	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 021-241			10A. PRIOR NUMBER/CODE 241-021		
11. TITLE: RADAR SUSTAINING ENGINEERING					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE	14. CRIT. COMPL. DATE	16. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:				
18. GOVT AGENCY/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV.: Kenneth E. Coonley, ARD-243 TEL: 202-426-8576			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		

23. KEYWORDS
Performance monitoring, Radar, Statistical detection, Weather analysis

24.
Technical Objective: To provide technical effort in response to requests for R&D or, as indicated by analyses, to sustain an acceptable performance level of the ASR and ARSR systems.

25 Approach: SRDS, with contractor and NAFEC support, will (a) develop, procure, and test radar monitoring systems to insure that the radars are operating within specified tolerences; (b) develop and test techniques to improve the weather detection capability of ATC radars; and (c) develop and test miscellaneous radar in-service fixes.

26. Milestones Scheduled for Accomplishment:

• Improved weather detection and display of weather data Final Report	7/77
• Intermediate Radar Performance Monitor TDP	11/77
• Full Radar Performance Monitor TDP	12/77
• ARSR Alignment/Adjustment Report	1/78

26 A. Accomplishments FY-76:
- Modified ASR-7 Enhancer PC boards and Technical Data Package delivered to AAF
- Analysis of Radar adjustments for improved weather detection completed.

27. Source of Requirement Program Plan 9350 AAT-100-33; FAA-ED-02-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

1. RESEARCH AND TECHNOLOGY RESUME	NA	2. GOVT ACCESSION	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 022-241

10A. PRIOR NUMBER/CODE: 241-022

11. TITLE: IMPROVED RADAR SUBSYSTEMS

12. SCIENTIFIC OR TECH. AREA: N A	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY FAA

16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: Kenneth E. Cooney, ARD-243
TEL: 202-426-8576

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Antenna, Radar, Pattern, Gain, Beacon

24. Technical Objective: To improve radar performance in detecting aircraft through the development of advanced antenna techniques.

25. Approach: SRDS, with contractor and NAFEC support, will provide for the development of an advanced antenna for ASR-( ) that will use polarization diversity techniques to permit radar and beacon operation with the same feed and reflector. This antenna will provide a constant gain with altitude radar pattern which will permit more uniform detection in all parts of the beam and will also provide an independent beacon coverage pattern with monopulse capability.

26. Milestones scheduled for Accomplishment:

- Program authorization to proceed — Pending

26 A. Accomplishments FY-76:

- ASR-( ) mini-program plan submitted for approval

27. Source of Requirement Program Plan FAA-ED-02-01	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

I 022-241

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 022-242

10b. PRIOR NUMBER/CODE: N A

11. TITLE: HAZARDOUS WEATHER DETECTION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N A			FAA

16. PROGRAM ELEMENT	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
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Washington, D. C. 20591
RESP. INDIV.: Kenneth E. Coonley, ARD-243
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19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Radar, Weather detection, pulse doppler

24.

Technical Objectives: Develop techniques to detect hazardous weather turbulence using existing ATC radars.

25. Approach: SRDS, with contractor and NAFEC support, will provide for an analysis and experimentation effort to determine the feasibility of using pulse doppler radar to detect hazardous weather turbulence. The techniques developed will be applicable to ASR type systems equipped with MTD.

26. Milestones Scheduled for Accomplishment:

- Contract award 10/76
- Data collection completed 8/77
- Final Report issued 11/77

26 A. Accomplishments FY-76:

- New effort

27. Source of ADA-1/AED-1/ARD-1/2 dirtection 6/25/76	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U WHS	7. R. GRADING NA	8. RELEASE LIMITATION NL
				9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 022-243

10A. PRIOR NUMBER/CODE: 023-241,241-027

11. TITLE: ARTS III/ASR INTERFACE*

12. SCIENTIFIC OR TECH. AREA: NA

13. START DATE:

14. CRIT. COMPL. DATE:

16. FUNDING AGENCY: FAA

15. PROCURE. METHOD: NA

17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS
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Washington, D. C. 20591
RESP. INDIV.: Kenneth E. Coonley, ARD-243
TEL: 202-426-8576

20. PERFORMING ORGANIZATION NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Target detection, Tracking, Blind speed, Signal processing, Digital filtering, Radar, Pulse doppler, Clutter, Micro-programmable processor.

24.

Technical Objective: Develop an advanced radar processor which will greatly improve the radar detection capability in all adverse radar clutter environments and present a target message output virtually free of false alarms.

25. Approach: SRDS, with contractor and NAFEC support, will provide for the development. test, and evaluation of a Moving Target Detector (MTD) for terminal and en route radar systems. The MTD is an advanced radar signal processor that provides greatly improved detection of aircraft in the presence of ground and precipitation clutter and also greatly improved radar tracking capability for automated systems.

26. Milestones Scheduled for Accomplishment:

- MTD-I Breadboard T&E Final Report issued 9/76
- MTD-II terminal and en route contract award 8/76
- MTD-II installed at terminal radar field site 9/77
- MTD-II Technical Data Package Complete 5/78

26A. Accomplishments FY-76:

- Test and evaluation of MTD-I breadboard completed

*Title inappropriate since effort expanded beyond ARTS III - suggest revision of title to "Moving Target Detector (MTD)."

27. Source of Requirement: Program Plan FAA-ED-02-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 022-243

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 023-241

10b. PRIOR NUMBER/CODE: NA

11. TITLE: LIMITED SURVEILLANCE RADAR (LSR) *

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: Kenneth E. Coonley, ARD-243
TEL: 202-426-8576

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Radar, Surveillance, Short range

24. Technical Objective: To develop a radar system that meets the surveillance requirements of VFR airports that do not qualify for full ASR operation.

25. Approach: SRDS, with contractor and NAFEC support, will develop and test a low power, low cost, solid state radar system that will employ state-of-the-art radar techniques. This radar will be a single channel terminal surveillance radar which will operate up to a range of 20 nautical miles with a smaller antenna than present ASR systems.

26. Milestones Scheduled for Accomplishment:

- Cost/benefits analysis initiated 10/76
- Cost/benefits analysis completed 5/77
- Program authorization to proceed 6/77

26A. Accomplishments FY-76:

- New effort

*cost/benefit analysis is being done by ASP-100 and is not currently funded in ARD-1 exhibit.

27. Source of Requirement ATF-1 letter 2/2/76	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

I 023-241

Items 1 to 26 identical to DD Form 1.7R and NASA Form 1122.

03 BEACON

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL
				9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 031-241

10b. PRIOR NUMBER/CODE: 242-008

11. TITLE: ATCRBS SUSTAINING ENGINEERING

12. SCIENTIFIC OR TECH. AREA: NA

13. START DATE:

14. CRIT. COMPL. DATE:

15. FUNDING AGENCY: FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT — a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. RESOURCES EST.	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
PRIOR FY		
CURRENT FY		

19. GOV'T LABS/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: Martin Natchipolsky, ARD-241
TEL: (202) 426-8563

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ATCRBS- Aircraft Antennas- ATCRBS Interference - Transponder- Altimeter Digitizer

24.

Technical Objective: To provide technical effort in response to requests for R&D or as indicated by analyses to sustain an acceptable performance level of the ATC Radar Beacon System.

Approach: SRDS and NAFEC with the support of Regions and contractors will (1) investigate and analyze technical problems that affect the ATCRBS system operational capability, (2) design and test "fixes" for correcting equipment or facility site problems, and (3) prepare project reports and production procurement data packages.

26. Milestones Scheduled for Accomplishment:

. Respond to field site problem investigation requests	as requested
. Respond to requests for R,D & E effort	as requested
. Mobile Siting Van Delivered to AAF	10/76

26A. Accomplishments FY-76:

. Complete report on Improved Beacon Feed
. Complete specification information and supporting documentation for mobile siting facility.

27. Source of Requirement: R&D Program Plan FAA-ED-03-2

28. Blank

29.

30. Precedence: Blank

31. Relevant Project Code:

I 031-241

Items 1 - 26 identical to DD Form 1498 and

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1759-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT. PRJ.	7. REQ. RATING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 032-241

10b. PRIOR NUMBER/CODE:

11. TITLE: ATCRBS MONITORING & POLICING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
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Washington, D.C. 20590
RESP. INDIV.: Martin Natchipolsky, ARD-241
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20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ATCRBS - ATCRBS Interference - Interrogation Density - Suppression Rates - Monitor

24. Technical Objective: To provide the instrumentation and capability to measure the beacon environment in order to detect system interference and to collect and analyze pertinent system performance indicators.

25. Approach: SRDS, with NAFEC and contractor support, will provide systems analysis of potential and measured interference to ATCRBS, either self-generated or from external sources. The means to avoid, eliminate or minimize such interference will be examined and solutions recommended.

26. Milestones Scheduled for Accomplishment:

• In-house Analysis of Collected Interrogation Environment Data	On-going
• Award Contract for Analysis of Inter-system Interference Potential	1/78
• Analysis Completed & Report Issued	11/78

26A. Accomplishments FY-76:

Flight Inspection Monitors Delivered to Flight Standards Service

27. Source of Requirement: E & D Program Plan FAA-ED-03-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 032-241

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	4. GOVT ACCESSION NA	5. AGENCY ACCESSION NA	REPORTS CONTROL SYMBOL RD 175: 1
6. DATE OF RESUME 10/1/76	8. KIND OF RESUME D	6. SECURITY ART U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 033-241

10b. PRIOR NUMBER/CODE: 242-001

11. TITLE: ATCRBS TRANSMITTER SITE EQUIPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			FAA 1

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: c. TYPE: d. AMOUNT:	18. RESOURCES EST.	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
NA	c. TYPE: NA	PRIOR FY		
		CURRENT FY		

19. GOV'T LAB./INFORMATION/ACTIVITY
NAME: FAA /SRDS
ADDRESS: 2100 Second St. S. W.
Washington, D. C. 20591
RESP. INDIV.: Martin Natchipolsky, ARD-241
TEL: (202) 426-8563

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ATCRBS - Decoder - Interrogator - Receiver - Antenna- Monitor - Monopulse

24.

Technical Objective: To improve the system performance, capability,and reliability of the ATCRBS to meet present and future ATC systems requirements through the development of new equipment and/or modifications for existing ATCRBS components and subsystems.

25. Approach: SRDS, with contractor, NAFEC, and TSC assistance, will develop, test and evaluate a new monopulse receiver/processor and enhanced models of the improved ATCRBS antennas to provide improved beacon coverage and quality of reported surveillance data for Terminal and En Route ATC. A production specification will be prepared for the new processor subsystem in order to permit procurement of the equipment for field implementation. Reports and specification change recommendations will be prepared upon completion of the range tests of the improved ATCRBS antennas.

26. Milestones Scheduled for Accomplishment:

. Separate Rotator/Hopover Tech Data Package Delivered	12/76
. Monopulse NADIF Tech Data Package Delivered	2/77
. Improved Open Array (5-ft) Field Eval Complete	3/77
. ATCRBS Monopulse Processing System (AMPS) Tech Data Pack. Dlvrd	10/77

26A Accomplishments FY-76:

. Enhanced Open array specification data package handed off
. Integral suppression and hopover T&E completed
. E-Scan antenna T&E reports completed

27. Source of Requirement 9550.1 AAF-75-01, 9550.1 AAF-75-04 & R&D Program Plan FAA-ED-03-2	28. Blank
29.	30. Precedence Blank
	31. Relevant Project Code

I 033-241

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGR. OING NA	8. RELEASE LIMITATION NL
				9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 034-241

10b. PRIOR NUMBER/CODE:

11. TITLE:
DISCRETE ADDRESS BEACON SYSTEM (DABS)

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: c. TYPE: NA d. AMOUNT:	18. RESOURCES EST.	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
NA		PRIOR FY		
		CURRENT FY		

19. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME:
ADDRESS: 2100 2nd St., S. W. Washington, DC 20591	ADDRESS:
RESP. INDIV.: P. D. Hodgkins, ARD-210	INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: (202) 426-4085	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEY WORDS: DISCRETE ADDRESS BEACON SYSTEM (DABS), ATCRBS, Data Link, IPC, Air Traffic Control, Surveillance, Communications, Transponder

24. Technical Objective: To develop a Discrete Address Beacon System, compatible with ATCRBS, which will have greater capacity, accuracy, and flexibility than the existing terminal and en route ATCRBS. Two-way data transmission via data link (not included in this subprogram) will be inherent in the design. The DABS will meet the ATC needs of the late 1970 and 1980 time period.

25. Approach: SRDS and NAFEC resources, with contractor support, will be utilized in carrying out a three-phased multi-year development effort in accordance with the DABS Technical Development Plan (TDP): Phase I, Concept Validation and System Definition; Phase II, Prototype Engineering and System Evaluation; Phase III, Operational Trials.

26. Milestones Scheduled for Accomplishment:

. Sensor Development Contract Critical Design Review (CDR)	10/76
. 1st Sensor Delivered	11/77
. Multi-sensor Network Tests Begin	8/78
. Begin Field Trials at Philadelphia	7/79
. Tech Data Package Handoff	1/80

26A. Accomplishments FY-76:

- . Sensor Development Contract Awarded
- . Sensor Development Contract Preliminary Design Review Completed

27. Source of Requirement: DOT ATCAC Report; E&D Program Plan FAA-ED-03-1	28.
29. Blank	30. Precedence
	31. Relevant Project Code

I 034-241

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U SPI PRE	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF SUMMARY Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 034-242	NA

11. TITLE: INTERMITTENT POSITIVE CONTROL (IPC)

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME:
ADDRESS: 2100 Second Street. S. W. Washington, D. C. 20590	ADDRESS:
RESP. INDIV.: Dan L. Hopson	INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: 202-426-8340	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: IPC. DABS. Upgraded Third Generation ATC System

24. Technical Objective: To develop a new safety assurance service called Intermittent Positive Control (IPC) for the projected 1995 traffic environment and allowing evolutionary implementation at low user cost by providing automatic ground-based conflict detection and resolution to VFR aircraft via two way Data Link.

25. Approach: SRDS and NAFEC, with contractor support, will carry out a multi-year development effort in accordance with IPC Program Plan FAA-ED-01-3. Effort includes development of concept and algorithms, simulation, ATC operational definition, special purpose IPC/DABS site processor design , hardware procurement, terminal and enroute system interface, test and evaluation, and preparation of production specifications. Phase I, system engineering will consist of IPC flight tests carried out at the DABS experimental facility. The IPC Hardware/Software Engineering Model Development is being carried out under subprogram 034-241 (DABS). Phase II tests, conducted at NAFEC will demonstrate and validate Phase I.

26. Milestones Scheduled for Accomplishment:

• Hardware/Software Contract Critical Design Review (CDR)	10/76
• 1st IPC Ground and Avionics Systems Delivered	11/77
• Begin Multi-Site Tests	8/78
• Begin Field Trials at Philadelphia	7/79
• Tech Data Package Handoff	1/80

26A. Accomplishments FY-76:
- IPC Hardware/Software Contract Awarded
- Revised IPC Algorithm Published

27. Source of Requirement: [illegible] Report & Program Plan FAA-ED-01-3

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 034-242

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

04 NAVIGATION

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT / PRJ	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 041-307

10b. PRIOR NUMBER/CODE: NA

11. TITLE: VOR IMPROVED/NEW SYSTEM DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: Robert Fletcher, ARD-331
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Navigation, VORTAC System, VOR, DVOR

24.

Technical Objective: To develop new VOR systems and update the present VOR system components in order to meet future needs for increased NAS capacity and reduce operational costs.

25. Approach: SRDS, in conjunction with NAFEC, the Aeronautical Center and contractor support, will develop, test and evaluate techniques and hardware necessary to achieve the technical objectives. Included are: a) develop specification data for 2nd Generation VORTAC, including remote maintenance monitor systems and; b) determination of 2nd Generation performance requirements for the 50 kHz environment.

26. Milestones Scheduled for Accomplishment:

. Wide Aperture PVOR Evaluation Compl.	10/76
. Preliminary RMMS Report by NAFEC	2/77
. 50 kHz Report	2/77
. Solid State VOR to NAFEC	3/77
. Specification for Basic VOR, 2nd Generation	4/77
. Final 2nd Generation Specification to AAF	8/77
. FM/FM VOR Evaluation Completed	9/77

26A. Accomplishments FY-76

. RMMS Test Bed to NAFEC
. 50 kHz Tests at NAFEC initiated
. EDO Design Plan (RMMS) Completed

27. Source of Requirement 9550-1 AAF-76-4, FAA-ED-04-1	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

II 041-307

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REC. (Dist.) NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-042-306

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: TACAN/DME MAINTENANCE/SUSTAINING ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:	NA

18. GOVT LAB/INSTALLATION/ACTIVITY
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ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: A. W. Randall, ARD-332
TEL: 202-426-8596

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Air Navigation, VORTAC, TACAN, DME

24. Technical Objective: To provide technical efforts and products for the correction or alleviation of field TACAN/DME problems as they arise.

25. Approach: In accordance with the needs for specific problems, SRDS and/or NAFEC resources will be utilized to provide corrective measures and products. As necessary, support will be provided through I-A agreements and contractual efforts.

26. Milestones Scheduled for Accomplishment

None.

26A. Accomplishments FY-76:

.Completed Technical Data on RTA-2 Antenna Modifications for Site and Weather Effects
.Completed Technical Data for RTC-3 15 Hz Azimuth Monitor Modifications

27. Source of Requirement Form FAA 9550-1 or recognized need.	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code None.

II-042-306

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122

RESEARCH AND TECHNOLOGY RÉSUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II-042-308

10A. PRIOR NUMBER/CODE: NA

11. TITLE: TACAN/DME IMPROVED SYSTEM DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:	NA

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: A. W. Randall, ARD-332
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Air Navigation, NAVAIDS, VORTAC System, TACAN, DME

24. Technical Objective: To develop technical requirements for second generation TACAN/DME equipment which: (1) will satisfy economic objectives and current system performance requirements; and (2) provide the capability to support increased navigation services.

25. Approach: SRDS and NAFEC resources will be utilized in development engineering efforts leading to definition of requirements for specifications. Contractor support will be used to the extent necessary.

26. Milestones Scheduled for Accomplishment:

.Preliminary specification data for second generation TACAN/DME	3/77
.Final Specification data for second generation TACAN/DME	12/77

26A. Accomplishments FY-76

.Evaluation Report on Digital Data Broadcast System
.Report on RMMS/F Sensor Interface System for Existing TACAN

27. Source of Requirement: Directive from Assoc. Admin., ESD 04-1 Nav Program Plan	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

II-042-308

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOV'T ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 043-304

10b. PRIOR NUMBER/CODE: NA

11. TITLE: VLF SUPPLEMENT FOR VOR/DME

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA c. TYPE:	a. DATE: d. AMOUNT: NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: George H. Quinn, ARD-333
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: OMEGA, Differential OMEGA, VLF

24.

Technical Objective: Determine the suitability of VLF based navigation as a supplement to the VOR/DME system, and thereby limit the necessity to expand the VOR/DME system.

25. Approach: The total effort will include studies and equipment evaluations. The work will be supported by in-house personnel, by a technical assistance contractor and other contractors as needed, by NAFEC, and by other Government agencies.

26. Milestones Scheduled for Accomplishment:

. VLF Noise cancellation antenna evaluation completed	12/76
. Study of OMEGA as VOR/DME supplement completed (SCI)	4/77
. Differential OMEGA feasibility evaluation completed (NAFEC)	5/77
. OMEGA as a VOR/DME supplement evaluation completed (NAFEC)	9/77
. Assessment of navigation requirments and systems completed (SCI)	4/77

26A. Accomplishments FY-76

. VLF/OMEGA Monitor system design report published
. Differential OMEGA feasibility evaluation interim report
. Petroleum Helicopters, Inc., OMEGA evaluation

27. Source of Requirement Prog. Plan FAA-ED-04-1 Acq. Plan TSARC Approved 4/74 28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 043-304

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 043-311

10A. PRIOR NUMBER/CODE: NA

11. TITLE: OCEANIC NAVIGATION SYSTEMS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA	a. DATE:
	c. TYPE:	d. AMOUNT: NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
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Washington, D. C. 20591
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TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS
PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: OMEGA, INS, VLF

24.

Technical Objective: Evaluate the suitability of VLF based navigation as a replacement for LORAN-A on oceanic routes, and subsequently as a partial or complete replacement of inertial navigation on oceanic routes.

25. Approach: The total effort will include studies and equipment evaluation. The work will be supported by in-house personnel by a technical assistance contractor and other contractors as needed, by NAFEC, and by other government agencies.

26. Milestones Scheduled for Accomplishment:

- 3.4 kHz OMEGA receiver evaluation completed 12/76
- Combined INS/VLF system evaluation completed 5/77
- OMEGA as a LORAN-A replacement evaluation completed (NAFEC) 1/77
- INS/VLF combined system equipment delivered 8/76
- Evaluation Report Civil OMEGA/VLF Airborne System 8/79

26A. Accomplishments FY-76:

- 3.4 kHz receiver installed in Pan American aircraft
- INS/VLF combined system contract awarded

27. Source of Requirement: Program Plan FAA-ED-04-28, 1 Acq. Plan TSARC Approval 4/74. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code

I 043-311

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT WRK	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 044-326

10A. PRIOR NUMBER/CODE: NA

11. TITLE: RNAV SYSTEM DESIGN

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT: NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
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TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Air Traffic Control, Navigation, Airways, Automation, Avionics

24. Technical Objective: The objective is to accomplish the R&D effort outlined in the RNAV Task Force Report, "Application of Area Navigation in the National Airspace System," February 1973, necessary to support the implementation of RNAV.

25. Approach: In FY-74, 75 and 76 the RNAV implementation concepts were evaluated and modified and the substantial payoffs to RNAV were documented to support an implementation decision in FY-76. In FY-77 and ensuing years, a system contractor, SRDS in-house, NAFEC, and other contractors will be used to support RNAV implementation and finish the implementation tasks identified in the Task Force Report. The approach includes studies, enroute/terminal master plan, flight simulation/tests and real time/fast time simulations.

26. Milestones Scheduled for Accomplishment:

26.

. 2D/3D avionics standards	6/77
. 4D avionics standards	1/78
. Master Route Structure Submission	9/79
. Post 1982 enroute simulation	5/79

26A. Accomplishments FY-76

- 2D/3D JFK simulation complete
- FAA/Industry Task Force Briefing
- High altitude fast time simulation report
- High altitude network study report

27. Source of Requirement FAA/Industry Task Force Report	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

II 044-326

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 047-309

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: NAVIGATION SYSTEM ACCURACY AND PERFORMANCE

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	N/A	N/A	N/A

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D. C. 20591
RESP. INDIV.: A. Simolunas, ARD-330
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Navigation, Accuracy, Requirements, Separation STDS

24.

Technical Objective: To determine navigation requirements of the national Airspace system for CONUS, remote areas, off-shore and oceanic. This effort considers optimal use of all types of NAVAIDS including VOR, DME, TACAN, OMEGA, LORAN-C and GPS. Also considered are operational and cost/benefits factor such as RNAV, surveillance, route widths separation standards, etc. In addition, in response to request for accurate navigation system data, SRDS will develop and implement an airborne data collection analysis system for use at low altitudes for all type of NAVAIDS.

25. Approach: NAFEC support will use to collect data on various NAVAIDS system; both those already in existence and also proposed systems. This data will be used to determine basic accuracies and reliabilities of these system. Using coverage, for different types, number and location of NAVAIDS the utility of various NAVAIDS will be determined based on cost/benefit factors. SRDS, in conjunction with NAFEC, will procure and develop the hardware and software required and integrate both into viable Navigation Flight Test System to efficiently evaluate navigation system at low altitudes. This will include items which will be delivered from Grumman upon closing of their contract.

26. Milestones Scheduled for Accomplishments:

o Installation in Aircraft	4/77
o Test and Evaluation	7/77
o Letter Report (NAFEC)	8/77

26A. Accomplishments FY-76:
Final report, Alaskan Air Navigation Requirement

27. Source of Requirement E&D Program Plan04-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U (OPT) (SRH)	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10. CURRENT NUMBER/CODE: II 048-312

10A. PRIOR NUMBER/CODE: NA

11. TITLE: OPERATIONAL USE OF LORAN-C IN AVIATION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CMT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	
NA	a. NUMBER: NA	a. DATE:
	c. TYPE:	d. AMOUNT:

NA

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
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2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: George H. Quinn, ARD-333
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: LORAN-C

24. Technical Objective: Evalute LORAN-C navigation as possible replacement for LORAN-A in oceanic areas, as a supplement VOR/DME in the domestic area, and as a potential replacement for VOR/DME in the U.S.

25. Approach: The total effort will include studies and equipment evaluations.
The work will be supported by in-house personnel, by a technical assistance contractor and other contractors as needed, by NAFEC, and by other government agencies.

26. Milestones Scheduled for Accomplishment

. Purchase of Teledyne LORAN-C airborne systems	1/77
. Systems Control, Inc., LORAN-C system study complete	6/77
. NAFEC LORAN-C Technical Evaluation Report	8/79
. ADL-81 LORAN-C receiver evaluation report (NAFEC)	10/76
. LORAN-C signal analysis system procurement contract	10/77

26A. Accomplishments FY-76

. Continental Airlines LORAN-C evaluation - North Pacific
. FAA/USCG Memorandum of Agreement - LORAN-C Development
. FAA/USCG Coordinated LORAN-C Development Plan

27. Source of Requirement: AED-1 Memo of Agreement FAA/USCG, 2/76

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code

II 048-312

Items 1 to 26 identical to DD Form 1498 and NAS Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME A	6. SECURITY OPT U MRR	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 049-330

10A. PRIOR NUMBER/CODE: N/A

11. TITLE: SATELLITE NAVIGATION DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	NA	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:	
NA	b. NUMBER: NA	c. TYPE:	d. AMOUNT: NA

16. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: A. A. Simolunas, ARD-330
TEL: 202-426-8596

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS
PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Satellite, Navigation, GPS/NAVSTAR, Timation

24. Technical Objective: To determine the optimal characteristics of a satellite referenced radio navigation system which are required to satisfy the greatest possible segment of the civil aviation user community.

25. Approach: Current satellite systems such as GPS/NAVSTAR, AEROSAT, MARISAT, etc., will be studied to determine their applicability. Modifications to these systems to allow use by low cost user groups will be determined.

26. Milestones Scheduled for Accomplishment:

. Preliminary report on GPS Applications	10/76
. GPS Hardware (ITRS Mods) Decision Point	6/77

26A. Accomplishments FY-76:

28. . Proposals received for DABS Engineering Development Test Bed

27. Source of Requirement FAA-ED-04-01	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

05 AIRBORNE SEPARATION ASSURANCE

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 051-241

10b. PRIOR NUMBER/CODE:

11. TITLE: Airborne Proximity Warning Indicator

12. SCIENTIFIC OR TECH. AREA	13. ENTRY DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A			FAA

16. PROCURE MEYHOD	17. CONTRACT/GRANT	a. DATED
NA	b. NUMBER: NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd St., SW
Washington, D. C. 2059.
RESP. INDIV.: Owen R. Lutts, ARD-250
TEL: (202) 426-9382

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVEST. OR PRINCIPAL
ALSO:
TEL:

21. TECHNOLOGY UTILIZATION	22. COOPERATING
NA	NA

23. KEYWORDS: Airborne Proximity Warning Indicator (APWI)

24. Technical Objective: To determine the feasibility of implementing an economical and operational airborne means to help the pilot reduce the probability of near-miss/midair collisions under Visual Flight Rules (VFR) conditions.

25. Technical Approach: SRDS with contractor support will obtain APWI equipment, install in selected aircraft, and acquire operational flight information.

26. Milestones Scheduled for Accomplishment:

- Preliminary Information Available 9/79
- Rock APWI Operational Evaluation Completed 12/79
- Summary Report 10/77

26A. Accomplishments FY-76.

- Agreements with Participating User (4) Organizations
- Acquired Rock APWI Systems (3) Optical (1)

27. Source of Requirement: Draft Program Plan FAA-ED-[illegible]	28. Blank
29. Blank	30. Precedence: Blank
	31. Relevant Project Code

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 051-242

10b. PRIOR NUMBER/CODE: 241-003, 051-241(partial)

11. TITLE: Aircraft Visual Enhancement

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd St., SW
Washington, D. C. 20591
RESP. INDIV.: Owen McIntire, ARD-250
TEL: (202) 426-9382

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Anti-collision lights, Navigation lights, Conspicuity Enhancement (CE)

24. Technical Objective: Provide digest of technical background and recommendations on the topics requested by AFS-130 for their present and future work in ICAO and on U.S. regulations dealing with aircraft revelation lights, including anti-collision and navigation or position lights. Information will be obtained from on-site personal contacts for current R&D programs at military and civil research centers, from literature searches for recent (10 or 15 years) technical reports, from contacts with and the files of specialists, and from ICAO plus FAA documents, and texts.

25. Approach: By 9/30/76 milestone for ICAO work, complete a report with recommendations, based only on literature search, acquisition, and digest (of all recent technical reports) related to anti-collision lights. Use 9/30/76 report to determine what further work the 9550 request from AFS would need.

26. Milestones Scheduled for Accomplishment:

- Report on anti-collision lights — 9/76
- Determine further work needed to complete aircraft revelation lights support to AFS — 10/76

26A. Accomplishments FY-76:

- Coordinated Program Plan with AFS-130

27. Source of Requirement: 9550-FS-100-74-139 Draft Program Plan FAA-ED-05-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. N/A	2. GOVT ACCESSION N/A	3. AGENCY ACCESSION N/A	REPORTS CONT. SYMB. RD
4. DATE OF RESUME Oct. 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING N/A	8. RELEASE LIMITATION N/L
				9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 052-241

10b. PRIOR NUMBER/CODE: 241-003

11. TITLE: Collision Avoidance System

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: c. TYPE:	d. AMOUNT:
N/A	N/A	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
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TEL: (202) 426-9382

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: BCAS, Passive, Active, Semi-Active

24. Technical Objective: To conduct the required R&D program which will lead to an operationally and economically sound all-weather airborne collision avoidance system.

25. Approach: SRDS/NAFEC/TSC efforts and contract support will be utilized to conduct studies and analysis relating to theoretical applications of CAS techniques and to develop and/or test hardware to prove the technical, operational, and economic feasibility of these techniques.

26. Milestones Scheduled for Accomplishment:

. Semi-Active BCAS delivered for government T&E	9/76
. Final T&E Report, Active & Semi-Active BCAS Systems (Experimental)	12/76
. Deliver Enhanced Active BCAS	11/76
. Active & semi-active BCAS Contract Award	6/77
. Draft BCAS National Standard	7/77
. Final BCAS Report	3/80

26A. Accomplishments FY-76

. Basic Active BCAS Feasibility Demonstrated
. Semi-Active BCAS (Experimental) T&E Begin
. Basic Active BCAS Report

27. Source of Requirement: Draft Program Plan FAA-ED-05-1	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

06 COMMUNICATIONS

RESEARCH AND TECHNOLOGY RESUME		NA	7. GOVT ACCESSION NA	8. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1/76.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U OBT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-061-222

10b. PAIN NUMBER/CODE:

11. TITLE: ATC TELECOMMUNICATION COMMUNICATIONS STANDARDIZATION

12. SCIENTIFIC OR TECH. AREA N/A	13. START DATE	14. ANT. COMPL. DATE	15. FUNDING AGENCY

16. RESOURCE REQ'MTS: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20590
RESP. INDIV.: David G. Rhoades
TEL.: (202) 426-9354

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATES:
TEL.: TYPE:

20. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: COMMUNICATIONS STANDARDS, VOICE COMMUNICATIONS STANDARDS, DIGITAL COMMUNICATION STANDARDS, FEDERAL STANDARDS, INTERNATIONAL STANDARDS.

24. Technical Objective: To assist in the development and design of federal and international communication standards and procedures and determine the impact of FAA utilization of developed standards.

25. Approach: SRDS, with contractor support, will participate on federal, national, and international standards groups. FAA's communications requirements will be made known and considered in the formation of standards.

26 Federal Standard Milestones Scheduled for Accomplishment

- Telecommunications systems performance standard - drafted 11/76
- 9600 baud MODEM standard - drafted 12/76
- Data link control procedures standard - finalized 8/77
- Message formats standards - drafted 9/77

Accomplishments FY 76:

26A
- Telecommunications glossary - drafted
- Data Link control procedures - drafted
- MODEMS (2400/4800 baud) drafted
- Telephone signaling/supervision - drafted

27. Source of Requirement: NCS ltr. 10/6/72 to AAT-360

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code:

I-061-222

Items 1-6 are identical to DOT Form [illegible] NASA Form [illegible]

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: 1062-221

10b. PRIOR NUMBER/CODE:

11. TITLE:

AIR/GROUND COMMUNICATION FACILITIES

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A			FAA

16. PROCURE. METHOD	17. CONTRACT, GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
A/G, RADIO COMMUNICATIONS, VOICE TRANSMISSION, REMOTE SITE, RADIO CONTROL, ANTENNA

24.

Technical Objective: To improve the effectiveness of ATC Communications by modernizing the design and flexibility of air/ground facilities and to develop equipments and techniques that will provide reliable, economical operations consistent with the future NAS. A compatible control and remote site equipment complement for the various ATC services is the objective.

25. Approach: SRDS with NAFEC, other FAA services and contractor support, will develop, evaluate and provide for field use, advanced radio and radio control systems suitable for A/G communications through new or updated multi-purpose air/ground facilities. Efforts will include a replacement radio communication control system, an improved antenna system and an effective monitoring capability.

26. Milestones scheduled for accomplishment

Complete Antenna System Study	9/77
Complete Radio Control Procurement Pkg	7/77
Production RCCS Specification	4/80

26A. Accomplishments FY 76:

25 kHz equipment mods completed
Phase I of multi-purpose A/G facility study completed

27. Source of Requirement 9550-1.AAF-76-6	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

1 062-221

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. NMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 063-221

10A. PRIOR NUMBER/CODE: 062-223

11. TITLE:

COMMUNICATION SWITCHING AND CONTROL SYSTEM DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A			

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT
NA	NA

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME:
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590	ADDRESS:
RESP. INDIV.: James R. Monnie, ARD-223	INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: (202) 426-0986	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

COMMUNICATIONS, TERMINAL SWITCHING, RADIO CONTROL

24. Technical Objective: To provide the agency with reliable and consolidated terminal communications switching subsystems of the Integrated Communications System, embodying all the intercom, interphone, administrative and air-ground radio switching functions that are required to permit effective and timely air-traffic-control operations, between ARTCCs, TRACONs, ATCTs, FSSs and their respective trunk, remote, and inter-station operational points.

25. Approach: SRDS, with NAFEC and contractor support, will develop and evaluate a communications switching system for use in large Flight Service Stations, providing a technical data package to the operating services.

26. Milestones Scheduled for Accomplishment:

. Engineering Requirement	1/77
. Prototype Contract Awarded	4/77
. Delivery of System	4/78
. Test and Evaluation of System	6/78
. Completion of T&E	8/78
. Technical Data Package	10/78

26a. Accomplishments FY-76:

Draft Final Terminal Communications Switching System Specification delivered

27. Source of Requirement: 95501, AAT-100-30 dtd 11/20/74

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

1 063-221

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1729-1

4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U PGT THR	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE
I 064-221

10b. PRIOR NUMBER/CODE

11. TITLE:
Ground/Ground Networks and Switching Centers

12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:			

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20590
RESP. INDIV.: Arthur K. Kingsley, ARD-222
TEL: 202 - 426-8500

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS
Digital Communications Network, Message Switching Systems, Automation

24. Technical Objective: To design and develop a digital communication switching subsystem and ground-to-ground data networks which integrate and serve the total ground-to-ground digital communications requirements of an agency integrated communications system.

25. Approach: SRDS, with contractor support, has developed a Technical Data Package for the initial National Airspace Data Interchange Network (baseline NADIN). Design definition will continue to provide additional functions and services to accommodate required NADIN enhancements. These enhancements will be met through in-house contractor aided support as a continuation of the work being performed under baseline NADIN.

26. Milestones Scheduled for Accomplishment:

. Initial Technical Data Package hand-off to AAF for NADIN Enhancement Phase I	5/77
. Final data package hand-off to AAF for NADIN Enhancement Phase I	11/77
. Provide technical support to AAF during initial NADIN procurement and implementation	Continuing

26a. Accomplishments FY-76:

. Completed the initial NADIN study and design
. Issued the initial baseline NADIN Technical Data Package

27. Source of Requirement ARD-1 ltr to AAT, 9/17/75	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 065-221

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: AUTOMATED COMMUNICATIONS SYSTEM CONTROL DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA

13. START DATE

14. CRIT. COMPL. DATE

16. FUNDING AGENCY

15. PROCURE. METHOD: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 Second St. S.W.
Washington, D.C. 20591
PROJ. MGR. C. J. Beam, ARD-223
TEL: 202 - 426-0986

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Technical Control, Communication Systems, Maintenance Concept

24. Technical Objective: To provide hardware, software and techniques to permit the voice, radio, and data subsystems of the ATC communication system to interface with centralized technical control facilities to allow effective systemwide monitoring, control, restoration, and maintenance activities.

25. Approach: Studies will be conducted by SRDS, NAFEC, and TSC resources to assess the performance parameters and economic aspects of hardware/software/techniques for automatic status monitoring, fault trend detection, and control of existing and future ATC communication systems. Validation models will be developed where required. SRDS, with AAT and AAF, will study each interfacing subsystem to determine its relative restoration priority.

26. Milestones Scheduled for Accomplishment:

Study of improvements to current system control concept completed 12/77
Draft system control concept for upgraded comm system 6/78
PR for single thread validation models completed 12/78

26. a. Accomplishments for FY-76:

N/A

27. Source of Requirement: Draft E&D Program Plan, FAA-ED-06-1

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code:

Same as (1) for recall to DD Form 1498 or NASA Form 1322

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 066-221

10b. PRIOR NUMBER/CODE: 062-221-03

11. TITLE: COMMUNICATIONS SUSTAINING ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROJECTING METHOD: NA

17. CONTRACT/GRANT a. DATE b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20590
RESP. INDIV.: N.R. Anderson, ARD-220
TEL: 202-426-8500

19. PERFORMING ORGANIZATION
NAME: FAA/NAFEC
ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE: Jack Muller, ANA-330
TEL: 346-3808 TYPE:

20. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: INTERFERENCE CANCELLATION SYSTEM (ICS) LOW VOLTAGE RECORDER, AUDIO AMPLITUDE SELECTOR UNIT

24. Technical Objective: To provide the operational services with enhancements and modifications to existing communications systems to improve operational capability, reduce cost or improve maintainability.

25. Approach: NAFEC, with contract support, will carry out assigned communications sustaining engineering efforts. They will investigate problems, develop and test "fixes" for correcting problems, and prepare reports and/or technical data packages.

26. Milestones Scheduled for Accomplishment:

Letter Report on Field Test and Evaluation of Interference Cancellation System	4/77
DC Recorder/AC Reproducer Technical Data Package completed	1/77
Audio Amplitude Selector Unit Technical Data Package completed	2/78

26. a. Accomplishments FY-76:

ICS equipment delivered

27. Source of Requirement 9550-1 AAF-76-9

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1121

4/2

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 066-222

10b. PRIOR NUMBER/CODE: Partial, 062-221, 064-221, 064-223

11. TITLE:

COMMUNICATIONS IMPROVEMENTS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT KEYWORD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second St. S.W.
Washington, D.C. 20591
RESP. INDIV.: Newel R. Anderson, ARD-220
TEL: 202-426-8500

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: RCAG MONITORING, EMERGENCY LOCATOR TRANSMITTER, RADAR REMOTING, WEATHER MESSAGE SWITCHING CENTER (WMSC)

24. Technical Objective: To develop improvements in existing communications system elements or subsystems in order to support the ongoing operational communications systems by improving operational capability, reducing cost, or improving maintainability.

25. Approach: SRDS, with contractor, NAFEC and other FAA support will: develop/specify RCAG monitoring equipments; develop sensor specifications and procedures for aircraft emergency locator transmitter (ELT); upgrade the computerized WMSC and network as required; modernize and improve performance specifications for microwave links (RML).

26. Milestones Scheduled for Accomplishment:

NAFEC RCAG monitor sensors Phase I study completed	8/76
ELT sensor specification and procedures completed	11/76
WMSC multipoint procedures ready for implementation	11/76
Final RML project report completed	1/77

26a. Accomplishments FY-76:

RCAG monitoring sensor investigation initiated
ELT contract DOT-FA76WA-3842 awarded

27. Source of Requirement 9550s: AAT-300-17, AAF-74-5, AFS-106-75-149

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1127

07 APPROACH AND LANDING SYSTEMS

RESEARCH AND TECHNOLOGY RESUME

1.	2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS IDENT. SYMB.
NA	NA	NA	RD 1750-1

4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME
10/1/76	D	U (DoT FAA)	NA	NL	Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
II 071-312	430-209

11. TITLE:
VISUAL GUIDANCE SUSTAINING ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:
NA	b. NUMBER: NA c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 2nd St. S.W.
Wash. D.C. 20591
RESP. INDIV.: W.C. Fisher, ARD-421
TEL: 426-8454

20. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N. J. 08405
INVESTIGATORS PRINCIPAL/ASSOCIATE: Leon Reamer, ANA-440
TEL: 8-346-3712 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Lighting Equipment, Marker Lights, Visibility, Visual Signals

24.

Technical Objective: To provide technical effort in response to requests for R&D or as indicated by analysis to sustain an acceptable performance level of visual aids.

Approach: SRDS with NAFEC and contractor support will (a) investigate and improve systems and equipment in order to provide safer, more reliable and lower cost installations, and (2) provide critical short term engineering assistance to operating services.

Milestones scheduled for Accomplishment:

Report on testing of fiberglass approach light supports	3/77
Report on lime green runway marking	8/77
Baffle for MALSR sequence flashing light	9/77
Specification data on lighting and marking for turf runways	6/78
Night only VASI spec data for General Aviation airports	8/78

End-Item Product Accomplishments

Consolidated final report on tests accomplished (1971-1975) and reported by letter

Report on Runway Lights for Non-Precision Instrument Approaches

27. Source of Requirement: 9550-1, AAS-502-76-1, 28AFS-200-75-1, AAS-502-76-3, AAS-502-76-2, Letter Request from State of New Jersey, FAA-ED-07-3

29. Blank

30. Precedence Blank

31. Relevant Project Code

II 071-312

Items 1 to 26 identical to DD Form [illegible]
NASA Form [illegible]

RESEARCH AND TECHNOLOGY RESUME	1. NA	4. GOVT ACCESSION NA	5. AGENCY ACCESSION NA	REPORTS CONTROL SYMBOL RD 1219-1
2. LEVEL OF RESUME 1-76	3. KIND OF RESUME D	6. SECURITY PPT U WRK	7. DOWNGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF EFFORT Subprogram

10a. CURRENT NUMBER/CODE: II 071-313

10b. PRIOR NUMBER/CODE: 320-101

11. TITLE: ILS Sustaining Engineering

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

19. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA ADDRESS: 2100 2nd St. S.W. Wash. D.C. 20590 RESP. INDIV.: H.H. Butts, ARD-741 TEL: (202)426-8605	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Instruments Landing System, ILS, Glide Slope, Localizer, Cat I-III

24.

Technical Objective: Resolve special field problems so as to sustain an acceptance perf. level of the Cat I-III ILS; provide technical data req'd in the dev. and promulgation of nat'l and int'l stds and reqs.

25. Approach: SRDS w/NAFEC Reg. & contractual support will investigate, analyze tech. probs. that affect the overall operational capability of the ILS; dev. & test "fixes" for correcting equip., mon., or siting probls; prepare reports & specs. req. in the issuance & rev. of Cat I-III system stds.

Milestones Scheduled for Accomplishment:

26. Cont. rapid response to spec. fld. probs. Operate scale model ILS facility at NAFEC. 10/77
Cont. NBS certification/calibration of ILS Mod. equipment and update/maintain Primary Standard. Gather GS snow data at fld. sites. 10/77
Eval. SS ILS at NAFEC for lighting/transient "fixes" & maint. move
Install & assist in com. mod. WG GS at Boston for Cat II. 10/76

Accomplishments-FY-76:

Completed first phase of GS environmental statistical analysis. Tested R&D monitor mods. for snow effects at several northern GS sites. Initial evaluation of auto RTT. GS environmental data collection from EA, GL & RM Regions. NBS primary ILS Mod. standard available.

27. Source of Requirements: FAA-ED-07-3 | 28. [illegible]

29. [illegible]

30. [illegible]

31. Relevant project code

II 071-313

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORT ISSUE: RD 1710-1
4. DATE OF RESUME: 1-76	5. KIND OF RESUME: D	6. SECURITY: RPT U	7. REGRADING: NA	8. RELEASE LIMITATION: NL
9. LEVEL OF RESUME: Subprogram				

10a. CURRENT NUMBER/CODE: II 072-321

10b. PRIOR NUMBER/CODE: 320-101

11. TITLE: ILS Improvements

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CMIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 2nd St. S.W.
Wash. D.C. 20590
RESP. INDIV.: H.H. Butts, ARD-741
TEL: (202) 426-8605

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Instrument Landing System Glide Slope Localizer Cat I-III

24.
Technical Objective: To develop equip., tech. & stand. to insure Cat I-III performance of the conventional ILS under all conditions of siting & weather

Approach: In-house SRDS/NAFEC/TSC effort w/contractural support will: develop, test & evaluate new ILS systems, antennas & monitors to operate under severe siting & weather conditions; provide math & physical modeling
25 & simulation studies to predict sys. performance under typical airport siting environments.

Milestones Scheduled for Accomplishment:
Dev. Far Fld. Loc & GS Monitors, 1/78 - Dev. Boradside, End Fire & Opt. Image Arrays, 4/79 - Dev. large aperture TW/slotted cable and squinted backcourse localizer, 12/77 - Update/operate Scal Model ILS, 1/78 - Validate & Exercise Math Models. Use Model to Invest. FF Mon., 6/77 - Dev. doppler/ILS distance technique, 4/78 - Resolve SS ILS lightning/ transient problems, 10/76 - Dev. automated maintenance data and control
26 system, 6/78 -Dev. Improved remote ILS Status & Control Syste, 6/79

Accomplishment for FY-76
SS ILS Lightning/transient protection system implemented. Complete small/med slotted cable loc. arrays. Installed end-fire GS at NAFEC for environmental testing. Preliminary ILS math model available. Installed 14/6 combined loc. array at LaGuardia. Loc. math model in operation NAFEC/AAF Completed precision ILS calibrator deve. Specs. ILS TW antenna open/short detector. ILS scale model installed at NAFEC. Interim report on ILS doppler tec. Installed/tested frangible GS masts & antenna loops at NAFEC.

27. Source of Requirement: FAA-ED-07-3	28. Blank
29. Blank	30. Precedence: Blank 31. Relevant Project Code:

Previous Edition is Obsolete to DD Form 1498

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT / SUM	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 072-324

10b. PRIOR NUMBER/CODE: 430-301

11. TITLE: VISUAL GUIDANCE IMPROVEMENTS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA
2100 2nd St. S.W.
Wash. D.C. 20590
RESP. INDIV.: W.C. Fisher, ARD-421
TEL: (202) 426-8454

19. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N. J. 08405
INVESTIGATORS PRINCIPAL/ASSOCIATE: Leon Reamer, ANA-440
TEL: 8-346-3712 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Lighting Equipment Frangible Structures Airport Beacons, Visibility

24.

Technical Objective: To develop new and improved lighting systems for use under all weather conditions (except Cat III) to make safer, more reliable or less costly systems.

Approach: SRDS w/NAFEC & contract support will develop and redesign systems which are safer, more reliable & less costly including a) frangible ALS, b) Displaced threshold ALS c) Improved circling guidance d) control equipment e) Taxiway & runway lighting f) Visual vertical guidance, g) New light sources, h) IFR marking, i) Lighting and marking for VFR airports.

Milestones Scheduled for Accomplishments:

Contract for Low Visibility vertical visual guidance investigation	4/77
Data for spec. on ALSF-1 Threshold improvement	12/76
Wire Obstruction lighting and marking for airport approaches	4/78
Data for marking and lighting turf runways	5/78
Improved VASI design and configuration	8/78

End Item Product Accomplishments

Report on Spatial Disorientation issued (Lake Front Airport)
Report on improved runway edge lights
Mimic Panel Study completed

27. Source of Requirement In house, FS-400-70-2A, ED-07-04, AFS-1 ltr. 6/16/75 AAT-240 ltr 5/15/75, AFS-200-75-2, AAS letter request 1/76

29. Blank

30. Precedence Blank

31. Relevant Project Code

II 072-324

Items 1 to 31 identical to DD Form [illegible] and NASA Form [illegible]

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 073-323

10A. PRIOR NUMBER/CODE: 430-302

11. TITLE: CATEGORY III VISUAL GUIDANCE

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA
2100 2nd St. S.W.
Wash. D.C. 20590
RESP. INDIV.: W.C. Fisher, ARD-421
TEL: (202) 426-8454

20. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATORS PRINCIPAL ASSOCIATE: Leon Reamer, ANA-440
TEL: 8-346-3712 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Lighting Equipment, Marker Lights, Visibility, Flight Test Data

24.

Technical Objective: To develop improved lighting systems for visual guidance to aircraft during landing, rollout and taxiing in Category III weather.

Approach: SRDS with NAFEC and contractor support will develop improvements to Category III lighting system to provide better guidance for large aircraft and to meet ICAO requirements. The necessary additions and changes to the Category III lighting system will be determined. In order to allow testing of the system in good weather and to provide expeditious results, the low visibility cockpit fog simulator will be used when conditions are suitable. Taxi intersection guidance lighting will be developed. Improved flight test data by use of Video Tape recording and adaption of the cockpit fog simulator will be developed.

25. Milestones Scheduled for Accomplishment:

Category III Centerline Lighting System Criteria	2/77
Modification of Cockpit Fog Simulator	11/77
Video Tape Recording for Flight testing	12/77

End-Item Product Accomplishments

None

27. Source of Requirement FAA-ED-07-3	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

II 073-323

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONTROL SYMBOL RD 1709-1
4. DATE OF RESUME: 76	5. KIND OF RESUME: D	6. SECURITY: U	7. DOWNGRADING: NA	8. RELEASE LIMITATION: NL
9. LEVEL OF RESUME: Subprogram				

10a. CURRENT NUMBER/CODE: II 075-725

10b. PRIOR NUMBER/CODE: NA

11. TITLE: Microwave Landing System (MLS)

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:	
NA	b. NUMBER: NA		
	c. TYPE:	d. AMOUNT:	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd St. S.W.
Wash. D.C. 20590
RESP. INDIV.: Frank L. Frisbie, ARD-700
TEL: (202) 426-3633

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS
PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Microwave/Scanning Beam/All Weather Landing Guidance System

24. Technical Objective: Develop a Microwave Landing System (MLS) having a family of configurations that will meet the range of operational requirements for all aircraft, weather & environmental conditions.

25. Approach: SRDS and NAFEC in conjunction with DOD and NASA and with contractor support will in accordance with the National Plan for development of the MLS, develop a MLS in a three phase program. Phase I, Technical Analysis and contract definition, followed by Phase II, Feasibility Demonstration, and Phase III Prototype Systems Development test and evaluation resulting in a set of production specifications. Concurrently, investigations and studies involving system requirements, component development will be conducted independently in support of total development effort.

Milestones Scheduled for Accomplishment

ICAO/AWOP Selection of International System	2/77
System Draft Specification Available	3/77

Accomplished FY-76
Phase III Prototype Letter Contracts
US Candidate System submitted to ICAO
Phase III development contracts definitized
First prototype system delivered

26. Reports: National Plan for the Development of a MLS

27. Publications:

28. Relevant Project Code:

II 075-725

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. RD 1750-1
4. DT OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT PRJ	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: II 076-311

10A. PRIOR NUMBER/CODE: 076-311

11. TITLE: Approach and Landing Altimetry

12. SCIENTIFIC OR TECH. AREA	13. START DATE 1/71	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 2nd St. S.W.
Wash. D.C. 20590
RESP. INDIV.: John F. Hendrickson, ARD-743
TEL: (202) 426-8605

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS: Altimetry, Approach and Landing, Flight Safety

24.

Technical Objective: To perform studies and develop systems to eliminate errors in altitude information as a contributing cause of approach and landing accidents.

25. Approach: Using contractor support, operational systems and improved instrumentation will be developed to eliminate or reduce the probability of occurrence of errors in altitude information as utilized by the flight crew. Improved cockpit displays and independent altitude monitoring systems will be investigated.

Milestones Scheduled for Accomplishment:

Report - Collation and Analysis of Alerting Systems Data

26. Definition and assessment of candidate alerting subsystem concepts contract award

Definition and demonstration of a standardized alerting system

Accomplishments FY-76:

Alerting systems Data Analysis Contract Award

27. Source of Requirement FAA-ED-07-3	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

II 076-311

Items 1 to 26 identical to DOT Form 1470.1 (11/72) NASA Form 1151

08 AIRPORT/AIRSIDE

RESEARCH AND TECHNOLOGY RESUME	1. NA	4. GOVT ACCESSION NA	5. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
2. DATE OF RESUME 10/1/76	3. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 081-431

10b. PRIOR NUMBER/CODE: NA

11. TITLE: AIRPORT SAFETY SUPPORT SYSTEM

12. SCIENTIFIC OR TECH. AREA	13. BVARY DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA		NA	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT
NA	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20590
RESP. INDIV.: Herman D'Aulerio, ARD-420
TEL: (202) 426-3687

20. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATORS PRINCIPAL/ ASSOCIATE: G. B. Geyer, ANA-420
TEL: 8-346-2645 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Airport Safety, Firefighting Equipment, Agents and Techniques.

24. Technical Objectives: Develop aircraft ground firefighting equipment and techniques to provide protection following a crash landing to insure survival of the crew and passengers.

25. Approach: Provide projects, studies, selections, procurements and test and evaluate systems necessary to accomplish the objectives. NAFEC/IA/Contract Support.

Milestones Scheduled for Accomplishment:

- Final Report, Airport Crash Fire Rescue System Improvement Needs 6/77
- Final Report on New Firefighting Agents & Techniques 6/80

Accomplishments for FY-76

26. Final Report "State-of-the-Art Review" (Draft)

27. Source of Requirement AAS-700-73-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U SEC / MIL	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 081-461

10b. PRIOR NUMBER/CODE: 081-261

11. TITLE: FOG DISPERSAL

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT — a. NUMBER: NA; b. TYPE:; c. DATE:; d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 Second St., S.W.
Washington, D.C. 20591
RESP. INDIV.: Frank Melewicz, ARD-451
TEL: (202) 426-8427

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Meteorology, Weather Modification, Environmental Quality, Warm Fog

24.

Technical Objective: Increase airport capacity and safety by fostering the development of operational fog dispersal systems.

25. Approach: This effort will identify a ground-based fog dispersal system, for use at U.S. civil airports, which is cost-effective and meets environmental quality standards. Development, design, test and evaluation of a thermal fog dispersal system for civilian airports will be made in a joint development program with the USAF.*

26.

*Final Report on Combuster Development including technical data complete — 12/77

*System tests at Otis AFB, Mass. & Operational Spec complete — 12/78

Accomplishments

Final in-house report published "Ground-Based Warm Fog Dispersal Systems - Technique Selection and Feasibility Determination with Cost Estimates."

27. Source of Requirement Mission-oriented	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122

*Joint program with USAF provided funds are available.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRAD NO NA	8. RELEASE LIMITATION NA	9. LEVEL OF RESUME subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 082-420	450-702, 082-120

11. TITLE:
AIRPORT PAVEMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA			

16. PROCURE METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: c. TYPE: d. AMOUNT:	18. RESOURCES EST.	a. PROFESSIONAL MAN-YEARS	b. FUNDS (in thousands)
NA		PRIOR FY		
		CURRENT FY		

19. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA ADDRESS: 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: Fred Horn, ARD-430 TEL: 426-9396	NAME: ADDRESS: INVESTIGATOR'S PRINCIPAL ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS Airport pavement design and construction, nondestructive testing, flexible and rigid pavement.

24. Technical Objective: Provide criteria for airport design and construction using new techniques and materials. Provide quick-response to research needs generated by ADAP.

Approach: Negotiate Interagency Agreements and contracts with industry as appropriate. Jointly funded investigations with DOD and other DOT agencies will be implemented. NAFEC will provide field test environment.

25. Milestonses Scheduled for Accomplishment FY-77: The following reports:

Soil Moduli	11/76	Roughness Criteria	12/76
Light Aircraft Criteria	12/76	Roughness Repair Plan	12/76
Improved Drainage Criteria	12/76	Frost Predictive Techniques	2/77
Roughness Simulation Code	12/76	Nighttime Construction-Asphalt Pave.	3/77

Accomplishments for FY-76: The following reports were issued:

26. Aircraft Dynamic Loads, I
Nondestructive Testing, I, & II
Statistical Quality Control.
Porous Friction Course.
Expansive Soils.
Study of Dynamic Stiffness and Application to NDT.
Design Procedures for Flexible Pavements
State-of-the-Art in Predicting Pavement Reliability from Input Variability.
State-of-the-Art for prediction of Pavement Response.
State-of-the Art in Variability of Material Properties for Airport Pavement Systems.
Shrinkage Compensating Cement.

27. Source of Requirement	28.
E&D Program Plan FAA-ED-08-2 & 9550's	
29.	30. Precedence
	31. Relevent Project Code

Items 1 to 22 correspond to DD Form 1498 and

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1

4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME
10/1/76	D	U (RPT / TTR)	NA	NL	Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 082-421	430-003;160-201;160-205;082-121;082-122

11. TITLE:
AIRPORT CONFIGURATION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY	19. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME: NAFEC
ADDRESS: 2100 2nd St., S.W. Washington, D.C. 20591	ADDRESS:
RESP. INDIV.: Max Coggins, ARD-410	INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: (202) 426-3685	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Airport, Airside, Increasing Capacity

24. Technical Objective: Develop improved analytical tools, handbooks, techniques, procedures and designs for increasing capacity and reducing delay of the airport airside. Apply capacity/delay measuring techniques to identification of R&D requirements and assessment of benefit potential for development items.

25. Approach: In-house SRDS/NAFEC effort with contract support to develop a coordinated airside increased capacity program including studies, simulations, design guidance, prototype development and field demonstration and evaluation.

25B. Milestones Scheduled for Accomplishment:

Model and Handbook for Capacity Determination Complete	10/75
Fast Time Airport Simulation Model Complete (with documentation)	11/75
High-Speed Exit and Entrance Taxiways Analysis Complete	12/75
Design Criteria for High-Speed Taxiways Completed	3/77
VAS Evaluation of Capacity Impact	2/77
Model User Manual	11/76

26. Accomplishments - FY-76:
Airport Capacity and Delay Models Delivered
Annual Delay Model Delivered
Hourly Delay Model Delivered

27. Source of Requirement: FAAR 5090.2; ATCAC Report 12/69; Incr. Cap. Report 5/70	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

I 082-421

Items 1 to 26 identical to DD Form 1498 and NASA Form 1128.

54

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL

9. LEVEL OF RESUME: Subprogram

10a. CURRENT NUMBER/CODE: I 082-431

10b. PRIOR NUMBER/CODE:

11. TITLE:
RUNWAY SURFACE TRACTION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second St., S.W.
Washington, D.C. 20591
RESP. INDIV.: Herman D'Aulerio ARD-420
TEL: 426-3687

20. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATORS PRINCIPAL/ASSOCIATE: Hector DAiutolo, ANA-440
TEL: 8-346-2283 TYPE:

21. TECHNOLOGY UTILIZATION: NA

24. COORDINATION: NA

23. KEYWORDS: Runway - Landing Gear - Loads - Hydroplaning Launch vehicle, Slab specimens Groove Shape - Configuration

24.

Technical Objective: Develop improved runway groove shape and configuration which will be cost-effective. Develop cost-effective method of installing grooves in existing and new runways.

25. Approach: NAFEC to conduct and monitor test program using NATF, Lakehurst, facility. Fabricate and Instrument the dynamometer and install on test vehicle. Provide slab specimen material and groove configurations to be tested. Monitor all test. Determine most cost effective configuration and method installation on new and existing pavements.

Milestones Scheduled for Accomplishment:

Tests Complete	12/76
Final Report	7/77

26. Accomplishments FY-76
Tests and Evaluations Initiated

27. Source of Requirement 9550 AS-72-580-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 Identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 083-401

10b. PRIOR NUMBER/CODE: 083-601

11. TITLE:
AIRPORT SURFACE TRAFFIC CONTROL

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

19. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME: TSC
ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591	ADDRESS: Boston, Mass.
RESP. INDIV.: Herman D'Aulerio, ARD-420	INVESTIGATORS PRINCIPAL/ ASSOCIATES: John W. O'Grady, TSC-413
TEL: (202) 426-3687	TEL: 8-837-2026 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Radar, Beacon Trilateration, Airport Surface Detection

24. Technical Objective: Develop an Airport Surface Traffic Control System, to increase surface traffic handling capacity, minimize surface traffic delays and provide all weather control and guidance and prepare specifications for hand off to the Operating Services.

25. Approach: Consists of two types of tasks:
(1) Short Term Products with little development risk and for which the requirement can be defined at this time and
(2) Tasks which require laying the ground work for longer term products through parallel Systems Definition and Supporting technology activities.

Milestones Scheduled for Accomplishment:

26.

ASDE-3 Prototype, System Design Operational System Description	9/78
Decision on Surveillance System for TAGS	6/81
Final Operational TAGS System Technical Data Package	6/85

Accomplishments FY-76:

Installation of improved ASDE-2 and new ASDE Bright Display at ORD, JFK, and SFO

27. Source of Requirement ED-08-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 25 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 084-451

10b. PRIOR NUMBER/CODE: 214-531

11. TITLE: WAKE VORTEX AVOIDANCE SYSTEM

12. SCIENTIFIC OR TECH. AREA	13. SUMRY DATE: Continuing	14. CRIT. COMPL. DATE: N/A	15. FUNDING AGENCY: FAA

16. PROCURE. METHOD: NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:	

19. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20590

RESP. INDIV.: Henry G. Tinsley ARD-402
TEL: 426-9350

20. PERFORMING ORGANIZATION
NAME: Transportation Systems Center
ADDRESS: Kendall Square
Cambridge, Mass. 02142

INVESTIGATORS PRINCIPAL/ASSOCIATE: Mr. William Wood
TEL: 837-2181 (FTS) TYPE:

21. TECHNOLOGY UTILIZATION: NA	22. COORDINATION: NA

23. KEYWORDS: Vortices, Turbulence, Prediction, Dissipation, Anemometers, Acoustics, Sensors Hazard, Vortex Behavior, Laser Velocimeter, Airport Capacity

24. Technical Objective: Minimize or eliminate aircraft wake vortices to allow increased runway capacity without degrading current safety standards.

Approach: In joint coordination with Transportation Systems Center, NAFEC testing facilities, and NASA, a systems engineering and design of an operational system to detect/predict the presence of aircraft generated wake vortices, evaluate the extent of hazard existance and provide avoidance guidance as an integral part of the air
25. traffic system will be developed and evaluated for NAS implementation. A meteorological vortex advisory system has been developed. A fully automated wake vortex avoidance system is still under development. Contractual support is being utilized to supplement in-house capabilities.

Milestones Scheduled for Accomplishment:

. Vortex Descent Analysis - Final Report	11/76
. Technical Data Package for VAS	1/77
. Reports on O'Hare VAS tests	3/77
. Toronto Data Collection Report	3/77
26 . Refined Predictive Model for WVAS Developed	6/77
. Operational Suitability Testing of O'Hare VAS and Final Report issued	Complete 6/77

Accomplishments for FY-76 & 76T

- Heathrow Data Analysis Completed and Final Report Published
- Mobile Vortex Facility Completed
- Toronto Vortex Test Facility Established
- Vortex Advisory System - O'Hare

27. Source of Requirement FAA-ED-21-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

09 AIRPORT/LANDSIDE

(Transferred to OSEM)

10 OCEANIC

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONTROL SYMBOL RD 1710-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 102-150

10A. PRIOR NUMBER/CODE: None

11. TITLE: Oceanic Automation

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second Street, S. W.
Washington, D. C. 20591
RESP. INDIV.: G. Hassing, ARD-150
TEL: (202) 426-9327

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Advanced Oceanic Automation, ATC, Engineering Requirement, System Software/Hardware

24. Technical Objective: Provide the Air Traffic Controller with operational features to match control requirements. These features include among others, extrapolation of aircraft flight plan positions, computed aircraft ground speed, plotting flight plan routes, presentation of aircraft position reports, transfer of control, alert warning for aircraft overdue at reporting points, and planned conflict avoidance. Prepare Engineering Requirements and Operational Computer Program Descriptions for hardware, software development and the total system implementation. Provide interface control documents for NAS, 1130/System 7 ARINC, International Flight Service Stations, ADC and other interfaces. Prepare for future functional enhancements maintaining close coordination with AEROSAT Program.

25. Approach: In-house SRDS/NAFEC personnel and contract support will be used to develop software and hardware Engineering Requirements, Operational Computer Program Descriptions, interface control documents, console configuration and other technical reference documents to accomplish the above objective. Procure first article hardware.

26. Milestones Scheduled for Accomplishment:

Engineering Requirement Revisions Complete (4 months after program restart)
PR/RFP Prepared (8 months after program restart)

26.A Accomplishments for FY-76:

None

27. Source of Requirement FAA-ED-10-1	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

II ATC SYSTEMS COMMAND CENTER AUTOMATION

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 8/11/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 111-102	I 111-150

11. TITLE: Central Flow Control

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	10/76	NA	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA ADDRESS: 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: Dr. Carlo Broglio, ARD-102 TEL: (202) 426-9325	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Flow Control, Traffic Prediction, Energy Conservation, System Command Center

24. Technical Objective: Provide automated support to the Central Flow Control's System Command Center (SCC) to (a) improve the SCC's capability to match air traffic flow to the traffic handling capacities of the en route and terminal facilities, (b) reduce "in-flight" delays by assigning ground delays thereby reducing fuel consumption, and (c) enhance the safety of air traffic in congested airspace by providing an automated status monitoring of selected en route fixes thereby allowing overloads to be predicted so that corrective action may be taken.

25. Approach: An FAA in-house design team will produce a computer program functional specification (CPFS). This CPFS will then be supplied to an implementation contractor who will code the system using the 9020A in the SSF at NAFEC. AAF will procure and install the necessary hardware to configure a 9020A processing facility at the JAX ARTCC. When the JAX facility becomes available for use, the implementation contractor will move to the site and complete the integration testing work there.

26. Milestones Scheduled for Accomplishment:

1.	Award contract for Software Implementation	Feb. 1977
2.	Computing Facility available at JAX	Sep. 1977
3.	Basic System Operational	Dec. 1978

26A. Accomplishments for FY-76: A Definitized requirement was received from AAT. This requirement was analyzed in depth by an FAA design team and a computer program functional specification was produced.

27. Source of Requirement AAT ltr subj: New Definition of ATCSCC Auto. Rqmts, 12/24/75

29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

12 ENROUTE CONTROL

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. NO. RD 1759-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT NUMBER/CODE: I 122-109

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: SOFTWARE TECHNICAL SUPPORT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/76	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT
NA	a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Michael Deliman, ARD-112
TEL: (202) 426-9372

20. PERFORMING ORGANIZATION
NAME: FAA/NAFEC
ADDRESS: Atlantic City, N.J.
INVESTIGATORS PRINCIPAL: Harry Haugan, ARD-140
ASSOCIATE:
TEL: 8-346-3011 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Software, Simulation Models, design studies

24. Technical Objective: To provide software technical support in areas of NAS en route operational and operational support development programming on those projects assigned to ARD-140 which are contained in the approved technical plan.

25. Approach: Various software projects will be assigned to this organization for developmental activity. End products will be a software production specification or a design study. SRDS in-house, with contractor support, will be used to accomplish the objective.

26. Milestones:

1.	Update/maintain ECSS simulation and simscript	3/77
2.	Update/maintain en route CCC simulation model to 3d2.3	4/77
3.	Update/maintain en route systems simulation model to 3d2.3	4/77
4.	Post-1982 RNAV Design Study.	6/77

26A. Accomplishments for FY-76

En route minimum safe altitude study for non-approach control airports
Tracking Improvement Study and Draft Report
NAS CCC Compute Performance Evaluation

27. Source of Requirement FAA-ED-12-2 A	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT [illegible]	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 122-110

10b. PRIOR NUMBER/CODE: NA

11. TITLE: PROGRAM PLANNING & SYSTEM ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76	NA	FAA I

16. PROCURE. METHOD	17. CONTRACT/GRANT	18. RESOURCES EST.	c. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
NA	a. NUMBER: c. TYPE: NA d. AMOUNT: c. DATE:	PRIOR FY		
		CURRENT FY		

19. GOV'T LAB/INSTALLATION/ACTIVITY
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Washington, DC 20591
RESP. INDIV.: Robert P. Pringle, ARD-110
TEL: (202) 426-1394

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: System Improvements, Analysis, Concept Formulation, Design Development

24. Technical Objective: To formulate design concepts, perform system planning and accomplish system engineering activities to ensure that overall en route development efforts result in a viable upgraded third generation system design which provides sufficient capacity, improved performance and increased productivity.

25 Approach: SRDS in-house, with MITRE Corporation support, will provide: (1) system and subsystem analyses, program formulation and planning, design definition, and experimentation/validation testing of the functional and engineering design; (2) identification of interface requirements with other development projects and subsystems; and packaging and specification of implementable designs.

26 Milestones Schedule:

IPC Phase II Interface Design Specification	12/76
Engineering Requirements Electronic Tabular Display (ETABS)	12/76
Initial Design Definition Conflict Resolution	2/77
Initial Design Specification En Route Metering	3/77
Specification (NCP & CPFS) Conflict Alert Enhancements	4/77

26A Accomplishment for FY-76: Pre-1982 RNAV impact analysis report, technical data package for 9020A Storage Element Expansion, DABS/IPC Phase I integration test plan, initial design specification flight plan probe, specifications (NCP & CPFS) low altitude conflict alert, system testing & DR&A plan for controller productivity measurements.

27. Source of Requirements: FAA-ED-12-2A

28.

29.

30. Precedence

31. Relevant Project Code: N/A

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

FAA Form 1750-1 (6-[illegible])

I-122-110

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. PD 1710.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 122-111

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: NAS Stage A Improvements (Model 3)

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/76	N/A	FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS
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Washington, D.C. 20591
RESP. INDIV.: Parker Harris, ARD-111
TEL: (202) 426-9372

19. PERFORMING ORGANIZATION NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Develop, Display, Recording, Beacon Processing, Target Detection

23. Technical Objective: To develop for implementation software techniques and hardware improvements to achieve better system reliability, logging, and record keeping of operational data, and for improving the processing and interpretation of radar data for the surveillance functions.

25. Approach: A breadboard radar display (PVD) record and playback system will be developed and evaluated by both NAFEC and a contractor under SRDS management direction. A contractor designed system will be evaluated and an analysis of both systems will be completed. CCC software which will eliminate false beacon reports will be developed and evaluated.

26. Milestones Scheduled for Accomplishment:

Begin evaluation of CCC Software change	11/76
Delivery of Beacon Improvment Tech Data Package	1/77
Display Recording comparative evaluation completed	3/77
Tech Data Package CCC Software Beacon False report fix	3/77
Final Report for prototype display recording evaluation	8/77

26b. Accomplishment for FY-76:
Delivered technical data package for ACE modification to Common Digitizer (CD).
Delivered technical data package for Automatic Lead Edge select feature on CD.
Completed evaluation of moving Target Extractor and Rank Order Quantizer.
Delivered interim report for display recording.

27. Source of Requirement: FAA-ED-12-2A, AAT-100-31 9550 | 28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 122-112

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: UPGRADED THIRD ATC FUNCTION (Model 4)

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/76	N/A	FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
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20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Conflict Alert, Conflict Resolution, Flight Plan Probe, Metering, RNAV, Local Flow

24.

Technical Objective: To provide automation aid to controllers working in the en route system beyond that presently provided for in the 3d2 system. Goals are to provide further automation capabilities and functions such as:
(1) conflict alert; (2) conflict resolution; (3) flight plan probe; (4) en route metering; (5) local flow control; (6) RNAV and; (7) to improve the man-machine interface in the sector position environment; (8) En Route MSAW.

25. Approach: SRDS and NAFEC with MITRE and other contractor support will define, specify, develop, test, and evaluate the many aspects and applications of the automation enhancement efforts specified under Item 24. Software and hardware specifications, as well as procedural changes, will be developed for incorporating the changes into the en route environment.

26. Milestones:

ETABS Concept Test and Evaluation at MITRE DDC Complete	12/76
Complete Conflict Alert Enhancement Development	4/77
Complete Post-1982 RNAV Study	6/77
Deliver Initial Flight Plan Probe Test Report	7/77
Deliver Local Flow Control Test Report for Fifth Update	9/77

26A. Accomplishments for FY-76
E-MSAW Experimental demonstration complete
Pre-1982 RNAV Computer Impact Study complete
Conflict Alert Low Analysis and Recommendations complete

27. Source of Requirement: FAA-ED-12-2A

28.

29.

30. Precedence

31. Relevant Project Code

I-122-112

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT / PRES.	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 122-113			10A. PRIOR NUMBER/CODE NA	

11. TITLE:

COMPUTER CAPACITY RECOVERY

12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE 10/76	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:			

18. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Hugh McConnell, ARD-112 TEL: (202) 426-0960	20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:
21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS

Compute Power

24 Objective: Determine at what time the introduction of additional processors for accomplishment of the CCC function will be justified by processing power demands, obsolescence or other considerations. When requirement for additional processors is evident, develop a data package for procurement.

25 Approach: Determine future processing requirements based on traffic growth and the demands of new functions. Investigate the application of distributive and associative processing concepts to future system architecture. Determine the likely breakpoint between costs of resource recovery and costs of additional hardware. MITRE support and the products of other project efforts will be used. NAFEC will provide T&E Support.

26 Milestone Schedule:

Study Report published	8/77
Decision Point - Whether or not to proceed with Engr Model	10/77
Deliver Engineering Model	12/79
Delfver Technical Data Package	6/81

26A Accomplishments for FY-76

Evaluation of 9020A Storage Expansion Modification Completed

27. Source of Requirement FAA-ED-12-2A	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1729-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: I-122-114

10B. PRIOR NUMBER/CODE: N/A

11. TITLE: UPGRADED THIRD SYSTEM DEVELOPMENT (Model 5)

12. SCIENTIFIC OR TECHN. AREA	13. START DATE	14. CPLT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76	NA	FAA

16. PROCUREMENT REVIEW: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY: NAME: FAA ADDRESS: 2100 Second Street, SW, Washington, DC 20591 RESP. INDIV.: James P. Dugan, ARD-112 TEL: (202) 426-9372

19. PERFORMING ORGANIZATION: NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Software, Model, Operational System

24.

Technical Objective: To develop, test, and evaluate automation concepts, methods and criteria for improving functional capabilities for the en route Air Traffic Control System. Generally these developments are long-range and are based on acquisition of new system hardware such as DABS and data link.

25. Approach: SRDS, NAFEC with MITRE and other contractor support will define, specify, develop, test, and evaluate the many aspects and applications of the automation enhancement efforts specified under Item 24. Software and hardware specifications, as well as procedural changes, will be developed for incorporating the changes into the en route environment.

26. Milestones Scheduled for Accomplishment:

Phase I IPC/ATC Interaction Report	10/76
DCU/SMMC NCP Testing Complete	12/76
DABS/SSF POFA Testing	3/77
IPC Phase II Design	9/77

26A. Accomplishments for FY-76:

En Route/IPC Interface Input and Display Improvement Tests Complete
IPC Phase I En Route Interface Design and Testing Complete

27. Source of Requirement FAA-ED-12-2A	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORT CONTROL RD 1710.1
4. DATE OF RESUME 9/1/76	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 122-115

10A. PRIOR NUMBER/CODE: NA

11. TITLE:

Interface Development

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76	NA	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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19. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

Interface, Hardware, and Software Changes

24. Technical Objective: Interface the en route automation system with the products of other SRDS development efforts.

25. Approach: SRDS, with NAFEC support, will maintain liason with other E&D programs to establish new interface characteristics and requirements. Control documentation will be prepared as necessary. System modifications will be developed, tested, evaluated and handed off to the implementing services

26. Milestones :

Prepare NCP for DEN Metering and Spacing Design	10/77
Interface Processor development decision	10/77
Prepare NCP for TIPS Interface Design	7/78
Interface Processor Engineering Model delivered	7/79
Interface Processor TDP to AAF	5/80

26A. Accomplishments for FY-76:
NADIN/9020 Interface Control Document Issued
Integrated National Airspace Communication System concept report reviewed
Documentation requirements for DABS Interface established

27. Source of Requirement FAA-ED-12-2A

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identified by [illegible]

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U WP	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE 1-122-116		10b. PRIOR NUMBER/CODE N/A		

11. TITLE:
System Support Facility

12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE 10/76	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. ACCOUNT:			

18. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street S.W. Wash., D.C. 20591 RESP. INDIV.: Hugh McConnell, ARD-112 TEL: (202) 426-0960	20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:
21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS
System Support Facility, Software Production Tools

24. Technical Objective: Establish, operate, and maintain an Air Traffic Control Test Bed environment necessary to accomplish en route hardware and software development, experimentation and testing.

25. Approach: Fund SRDS use of the NAFEC SSF and first year transition of experimental hardware to the SSF. Improve software production tools by introducing interactive techniques.

26. Milestones Scheduled for Accomplishment

Unit Test Driver (UTD) Requirements Definition	10/76
UTD specification delivered	7/77

26A. Accomplishments for FY-76

Transferred Job Shop Computer System to NAFEC

27. Source of Requirement FAA-ED-12-2A	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-122-117

10b. PRIOR NUMBER/CODE: NA

11. TITLE: UTG Redesign

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CMPL. DATE	15. FUNDING AGENCY
N/A	10/76	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT
NA	a. NUMBER: NA; b. TYPE: ; c. DATE: ; d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
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19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE: Harry Haugan
TEL: 8-346-3011 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: computer efficiency, software, hardware

24. Technical Objective: To make more efficient use of the Central Computer Complex and and associated hardware by means of improvements to the design of the software.

25. Approach: All aspects of the software architecture and the operational computer programs will be analyzed to determine feasible methods of increasing computer capacity. From previous studies several areas of redesign have been identified as low-risk, high-payoff candidates. These initial candidates plus others which will be agreed upon by a working group of SRDS and personnel from the user services will be developed and tested at NAFEC. The end product will be a technical data package which will be handed off to AAT/AAF for implementation.

26. Milestones:

Design plan complete	3/77
First build design spec.	4/77
First build coding and testing	6/77
First build design verification	8/77
First build operational evaluation	11/77
First build technical data package delivery	12/77

26A. Accomplishments for FY-76: None

27. Source of Requirement FAA-ED-12-2A	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1121.

RESEARCH AND TECHNOLOGY RESUME

1.	2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS IDENT. SYMB.
N/A	N/A	N/A	RD 1750-1

4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY (RPT / SUBJ)	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME
10/1/76	D	U /	N/A	N/L	Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 124-111	N/A

11. TITLE:
En Route Sustaining Engineering

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/1/76	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE:	b. NUMBER: N/A	c. TYPE:	d. AMOUNT:
N/A				

18. RESOURCES EST.	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
PRIOR FY		
CURRENT FY		

19. GOV'T LAB/INSTALLATION/ACTIVITY
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20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION
N/A

22. COORDINATION

23. KEYWORDS
In Service Improvements

24. Technical Objective: Increase air traffic controller capability by equipment improvements and arrangements including correction of design deficiencies in new and existing equipment, upgrading the performance equipment and modifications to improve maintenance effectiveness.

25. Approach: Problem areas will be identified and defined by field reports, 9550's and/or the Engineering Development Program Plan. Corrective designs will then be developed, tested, and technically documented for implementation by AAF utilizing NAFEC T&E support under SRDS management guidance.

26. Milestones:

Report on CRT Rebuild feasibility	12/76
Lighting Study Final Report	2/77
Anti-reflection CRT Contract	6/77
Laminar Flow Gun CRT evaluation complete	8/77
Portable CRT test set evaluation complete	10/77
Final report and Technical Data Package to AAF	12/77

26A Accomplishments FY-76:
Lighting Study Boston ARTCC completed
Report CRT rebuild evaluation
Keyboard specification
Preproduction CRT tester

27. REMARKS
Source of Requirement: FAA-ED-12-2A Engineering & Development Program Plan
En Route Control

Relevant Project Code

Items 1 to 28 identical to DD Form 1498 and NASA Form 1122

FAA Form 1750-1 (6-68)

13 FLIGHT SERVICE STATIONS

RESEARCH AND TECHNOLOGY RÉSUMÉ	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U RPT / PRG	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME

10a. CURRENT NUMBER/CODE: I 131-440

10A. PRIOR NUMBER/CODE: I 131-451

11. TITLE: FSS ENGINEERING DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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RESP. INDIV.: Vince Costantino, ARD-444
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20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: FSS Hardware/Software Evaluation Analysis

24.

TECHNICAL OBJECTIVE: To increase the Flight Service Station System productivity and provide better service to users during the intermediate and modernization phase of FSS improvements.

25.

APPROACH: Provide a FSS laboratory work environment prior to establishment of the modernized FSS lab wherein new equipment can be installed, tested and evaluated. Define and validate concepts for FSS improvements through analysis, tests, and demonstrations. Apply digital technology to the mass dissemination of Meteorological and Aeronautical information through PATWAS/TWEB outlets. Develope, evaluate and demonstrate a mass weather dissemination digital system utilizing NAFEC facilities and resources.

26.

MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

Define Automation Message Computer System	10/76
New York PATWAS test report	11/76
Chicago FSS Data Collection	12/76
Leesburg Data Collection Report	12/76
Final report DF System Configuration	3/77
Demo Mass Weather System Synchro access	6/77
Mass weather system Tech Data package	4/78

ACCOMPLISHMENTS: FY-1976

ARD Near Term Plan	Completed
Bldg 171 Mods and equipment installed	Completed

27. Source of Requirement: Master Plan for the FSS Modernization Program.

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME

10a. CURRENT NUMBER/CODE: I 132-442

10b. PRIOR NUMBER/CODE: I 132-421

11. TITLE: SYSTEM ENHANCEMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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TEL: 202-426-9393

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Flight Service System, Automation, Enhanced System, Self Briefing, Direct Access

24. OBJECTIVE: Provide expansion capability to the Baseline System such that system capacity can be increased, system function/specialist operations can be improved and future service quality and timeliness can be enhanced.

25. APPROACH: This subprogram will identify necessary developments required to accomplish FSS enhancements. The principle projects included in the subprogram are 132-442-104, Automated User Access and 132-442-204, Operational Products Enhancement. Primary developments in this subprogram will address features to enable users to directly access the Aviation Weather data base through utilization of various types of remote terminals. TSC and contract support will be utilized for technical development.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENTS

Enhancement Development Contract - Statement of Work	12/76
Automated User Access Test Bed Operating	1/77
Definition of Weather Requirements for Enhanced Capabilities	Continuous
Enhancement Contract Award	1/78
Enhancement Test Bed Established at NAFEC	5/80
Procurement Spec. for Enhancements	9/80

27. Source of Requirement DOT/FAA Study 8/73 "A Proposal for the Future of Flight Service Stations"

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME

10a. CURRENT NUMBER/CODE: I 132-440

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: SYSTEM ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, SW
Washington, DC
RESP. INDIV.: Donald Johnson, ARD-442
TEL: 202-426-9393

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Requirements Analysis, System Configuration Design

24. TECHNICAL OBJECTIVE: Design a cost effective modular automated national system that will allow implementation in an orderly manner.

25. APPROACH: Analysis will be performed to provide for an optimum system configuration. Optimum techniques will be determined for performing the required functions of the National Flight Service System and a collocated prototype Automated Flight Service Facility will be tested and evaluated at the Leesburg ARTCC. MITRE Corporation will provide technical support.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENTS:

Emergency Service Analysis Report (NAFEC)	1/76
Leesburg AWANS Operational	1/77
Direct User Access Analysis	7/77
Joint Use Design Complete	12/77

ACCOMPLISHMENTS: FY-1976

System RMA Spec (RADC)	5/76

27. Source of Requirement DOT/FAA Study "A Proposal for the Future of FSS."

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY RPT U DOC	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME				

10a. CURRENT NUMBER/CODE: I 132-441

10b. PRIOR NUMBER/CODE: I 132-421

11. TITLE: BASELINE SYSTEM DEVELOPMENT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: SRDS/FAA
ADDRESS: 2100 Second Street, SW
Washington, DC 20590
RESP. INDIV.: W. L. Young, ARD-442
TEL: 202-426-9393

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: FSS, Automation, System Design

24.

TECHNICAL OBJECTIVE: Develop a baseline automated system capable of modular expansion to include user demand increases, user access methods, and functional improvements.

25. APPROACH: SRDS/NAFEC in-house personnel, with MITRE Corporation support, will be used to provide: (1) system and subsystem analysis, design definition and experimentation/validation testing of the functional prototype system (AWANS); (2) packaging and specification of the Baseline System design; and (3) contract monitoring of the Baseline System contract.

MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

26.

Complete preparation of Baseline System specification	12/76
Handoff of AWANS to Southern Region	3/77
Baseline System contract award	12/77
System initial operating capability	3/81

ACCOMPLISHMENTS: FY-1976

AWANS installation complete at Atlanta
Completion of AWANS operational test and evaluation

27. Source of Requirement DOT/FAA Study 8/73 "A Proposal for the Future of FSSs"	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

14 TERMINAL/TOWER CONTROL

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 142-120

10b. PRIOR NUMBER/CODE:

11. TITLE: SOFTWARE TECHNICAL SUPPORT

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. SRVNGS	17. CONTRACT/GRANT	a. DATE:
NA	b. NUMBER: NA	
	c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: J. R. Talley, ARD-120
TEL: (202) 426-9336

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Software Expertise and Support

24. Technical Objective: Provide the software support and technical expertise in the Terminal Development program.

25. Approach: SRDS/ARD-140 will provide the manpower/software resources to support the terminal development program with contract technical monitors; to review design and study data; participate in experiments at NAFEC and field sites; produce limited software for preliminary interfacing of subsystem and systems when contractual resources are not available.

26. Milestones Scheduled for Accomplishment:

1. Metering and Spacing field evaluation - Report 3/77
2. Support of ARTS III Phase II 9/77

26A. Accomplishments for FY-76:

1. Support of MSAW tests - Report
2. DR&A Program for M&S and Conflict Alert - Report

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 142-121

10b. PRIOR NUMBER/CODE:

11. TITLE: PROGRAM PLANNING AND SYSTEM ENGINEERING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER NA b. TYPE c. DATE d. AMOUNT
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: H. McEvoy, ARD-120
TEL: (202) 426-9334

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL ASSOCIATES:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: ARTS III Program Planning and System Engineering

24. Technical Objective: Support activity to perform Program 14 system planning and engineering to ensure that overall terminal automation development efforts result in an upgraded third generation system design.

25. Approach: SRDS with contractor and NAFEC support will perform required analyses and design studies to prepare test plans, engineering requirement specifications and system test reports.

26. Milestones Scheduled for Accomplishment:

1. Conflict Alert Design Verification Test Plan	9/76
2. Test Analysis of Metering and Spacing at NAFEC	4/77
3. TIPS/NAS/ARTS III Interface Design Data	6/77
4. TIPS NAFEC Test Requirements	12/77

26A. Accomplishments for FY-76:

Test Plan for Terminal DABS/IPC Phase I
Software Requirements for IPC Phase I Test
TIPS Engineering Requirement Specification
Conflict Alert Stage I Design Analysis

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY RPT U PRJ	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 142-171

10b. PRIOR NUMBER/CODE:

11. TITLE: ARTS III EXPANSION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE
NA	a. NUMBER: NA	
	c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: A. Millhollon, ARD-120
TEL: (202) 426-9338

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ARTS III, Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development

24. Technical Objective: Develop, demonstrate and prepare specifications for hardware and software expansion of ARTS III to provide Multisensor Tracking, Digital Remoting and All Digital System improvements.

25. Approach: SRDS/NAFEC effort with contractor support will be utilized to achieve the above objective. The development efforts will utilize the Terminal Automation Test Facility (TATF) at NAFEC.

26. Milestones Scheduled for Accomplishment:

1. Test and Evaluation of Multisensor Tracking System Phase II Completed	5/77
2. Test and Evaluation of Radar Remoting System Completed	3/77
3. Test and Evaluation of Sensor Receiver and Processor (SRAP) Completed	6/77
4. Test and Evaluation of MTD/monopulse SRAP completed	9/77
5. Test and Evaluation of Remote Tower Display System Completed	11/77
6. Test and Evaluation of All-Digital System Phase II Completed	6/78

26A. Accomplishments for FY-76:

1. Test and Evaluation of RVD-4 - Report
2. Test and Evaluation of DROQ - Report
3. Test and Evaluation of Improved VQR - Report
4. Test and Evaluation of All-Digital System Phase I - Report

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: I 142-172

10B. PRIOR NUMBER/CODE:

11. TITLE: METERING AND SPACING

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CNTR. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
BAND:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: G. Hurst, ARD-120
TEL: (202) 426-9338

19. PERFORMING ORGANIZATION
BAND:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: ARTS III Enhancement, Processing/Software Development

24. Technical Objective: Develop Metering and Spacing computer programs for integration and implementation at ARTS III locations to optimize airspace utilization, reduce delays, improve airport capacity and enhance safety by providing decision assistance to controllers.

25. Approach: SRDS/NAFEC effort with contractor support will be utilized. Developed programs will be tested and demonstrated using the TATF at NAFEC and programs will be integrated and implemented at the Denver ARTS III site.

26. Milestones Scheduled for Accomplishment:

1. NAFEC Test Plan	11/76
2. UNIVAC System Demonstration	12/76
3. NAFEC Test/Evaluation Complete	3/77
4. Denver Test Plan	5/77
5. Denver Test/Evaluation Complete	12/77
6. Final Report Documentation	2/78
7. Phase II Contract Modification	1/77
8. Phase II Design Data	7/78

26A. Accomplishments for FY-76:

Design Data Completed
Contract Modification to Extend Schedule
Decision Regarding Denver Field Tests

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1121.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 142-173			10b. PRIOR NUMBER/CODE		

11. TITLE:

TOWER INFORMATION PROCESSING SYSTEM

12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10-76	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PERFORM. REVIEW NA	17. CONTRACT/GRANT a. NUMBER NA b. TYPE	a. DATE c. AMOUNT			

18. GOV'T LAB/INSTALLATION/ACTIVITY (NAME)		19. PERFORMING ORGANIZATION (NAME)	
ADDRESS	FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591	ADDRESS	
PROJ. MGR.:	K. Cohen, ARD-120	INVESTIGATORS PRINCIPAL ASSOCIATE:	
TEL:	(202) 426-9342	TEL:	TYPE:
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA	

23. KEYWORDS

Terminal Automation, Flight Data Handling, ARTS III Enhancement

24. Technical Objective: Develop capability for automated flight plan processing, distribution and issuance of clearances in high density ARTS III facilities.

25. Approach: SRDS/NAFEC effort with contractor support will be utilized. The development system will be tested and evaluated with the TATF at NAFEC and at a designated field facility.

26. Milestones Scheduled for Accomplishment:

1. RFP Issuance	5/77
2. Proposed Contract Award for Prototype	12/77
3. Delivery of Prototype at NAFEC	9/78
4. Test/Evaluation Complete (NAFEC)	12/78
5. Test/Evaluation Complete (Field Site)	3/79
6. Technical Data Package Documentation	4/79

26A. Accomplishments for FY-76:

Engineering Requirement Completed
ER Review by AAT Completed
ER Revision Completed

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: I 142-174

10A. PRIOR NUMBER/CODE:

11. TITLE: CONFLICT ALERT & RESOLUTION

12. SCIENTIFIC OR TECH. AREA	13. EVENT DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: G. Rowland, ARD-120
TEL: (202) 426-9342

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: ARTS III, Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development

24. Technical Objective: Develop a four stage conflict alert and resolution program to support all ARTS III field sites in both current and future levels of sophistication

25. Approach: SRDS/NAFEC effort with contractor support to design, code and demonstrate the programs for single and dual beacon ARTS III sites. Contractor will assist during NAFEC and field evaluation.

26. Milestones Scheduled for Accomplishment:

1. Stage I Technical Data Package	7/77
2. Decision Required on Implementation - Stage I	10/77
3. Stage II Technical Data Package	3/78
4. Decision Required on Implementation - Stage II	6/78
5. Stage III Technical Data Package	4/79
6. Decision Required on Implementation - Stage III	7/79
7. Stage IV Technical Data Package	4/79
8. Decision Required on Implementation - Stage IV	7/79

26A. Accomplishments for FY-76:

Conflict Alert Design Requirements
Contract Mod #3 Negotiations
Draft Design Data
Draft Test Plan Operational T&E at NAFEC

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: I 142-175

10B. PRIOR NUMBER/CODE:

11. TITLE: ARTS II ENHANCEMENTS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. ORIT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCUREMENT REVIEW	17. CONTRACT/GRANT	a. DATE
NA	a. NUMBER NA	
	b. TYPE	c. AMOUNT

18. GOVT LAB/INSTALLATION/ACTIVITY
BAND:
ADDRESS: FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: D. Vogel, ARD-120
TEL.: (202) 426-1336

19. PERFORMING ORGANIZATION
BAND:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE
TEL.: TYPE:

20. TECHNOLOGY UTILIZATION	21. COORDINATION
NA	NA

22. KEYWORDS: ARTS II, Radar Beacon/Tracking, Data Acquisition Subsystem, Radar Processing Development

24. Technical Objective: Development of enhanced hardware and software capabilities for ARTS II systems to provide MSAW, Conflict Alert and other functional operational system requirements.

25. Approach: SRDS/NAFEC effort with contractor support will be utilized. Developed functional package enhancements will be tested and evaluated in the ARTS II Lab/ TATF at NAFEC and at designated field site.

26. Milestones Scheduled for Accomplishment:

1. Acquisition Paper Approval	4/77
2. Engineering Requirement Completed	5/77
3. Procurement Request Issued	5/77
4. Request for Proposals Issued	8/77
5. Contract Award	2/78
6. Package A (beacon tracking, MSAW, Conflict Alert)	2/79
7. Package B (training simulator, TIPS Interface)	1/80
8. Package C (DABS Interface, Radar Tracking)	1/81

26A. Accomplishments for FY-76:

Preliminary Design/Preparation & Review of Acquisition Paper

27. Source of Requirement FAA-ED-14-2

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 142-176		10b. PRIOR NUMBER/CODE None		
11. TITLE: ATC APPLICATIONS OF MESSAGE AUTOMATION				
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10-76	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:			
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591 RESP. INDIV.: J. D. Horrocks, ARD-120 TEL: (202) 426-1328		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA		
23. KEYWORDS Controller/Computer Interface, ATC, ARTS III Enhancement, Intermittent Positive Control				

24. Technical Objective: To support and conduct development, test and evaluation of methods and computer programs developed in the subprogram effort through use of the TATF and DSF facilities. Provide data reduction and analysis programs in support of Phase IIB experiments. Provide support in testing efforts for IPC and Conflict Prediction related subprogram activities.

25. Approach: SRDS/NAFEC will support simulation and design modification activities as required for the development of a controller/computer interface with an ARTS III and simulated link aircraft. Data link evaluation with the ARTS III enhanced target generator will be conducted on the TATF system. IPC and Conflict Prediction evaluation will be conducted on the TATF and DSF systems.

26. Milestones Scheduled for Accomplishment:

1. IPC Phase I Testing Completed - Report 12/77

26A. Accomplishments for FY-76:

1. Data Link Final Report Completed
2. Software Requirements for IPC Phase I Testing - Specification

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

I 142-176

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

AD-A034 195 FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTE--ETC F/G 17/7
SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1977 ENGINEERING A--ETC(U)
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DATE
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2-15-77
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RESEARCH AND TECHNOLOGY RESUME		NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 142-177			10B. PRIOR NUMBER/CODE		
11. TITLE: CONFIGURATION AND PROCEDURES					
12A. SCIENTIFIC OR TECHN. AREA NA			13. START DATE 10-76	14. CMPL. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER NA b. TYPE c. DATE d. AMOUNT				
18. GOVT LAB/INSTALLATION/ACTIVITY NAME ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591 RESP. INDIV.: N. Houska, ARD-120 TEL: (202) 426-9338			19. PERFORMING ORGANIZATION NAME ADDRESS INVESTIGATORS PRINCIPAL/ ASSOCIATE TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Special tests, data collection and analysis					

24. Technical Objective: Accomplish special tests, data collection and analysis efforts related to various procedural and airspace utilization aspects of terminal operations. Develop information that will enable determination of the operational/procedural implications and considerations relevant to implementation of proposed changes affecting air traffic management and determine procedures and operating techniques necessary for the application of a new concept of substantial change in terminal airspace utilization methods.

25. Approach:

SRDS/NAFEC in-house support will be provided to support the technical objective, as required.

26. Milestones Scheduled for Accomplishment:

To be determined.

26A. Accomplishments for FY-76:

No activity scheduled in FY-76.

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

I 142-177

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1730-1
4. DATE OF RESUME 10-1-76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: I 142-179

10B. PRIOR NUMBER/CODE:

11. TITLE: TERMINAL AUTOMATED TEST FACILITY

12. SCIENTIFIC OR TECH. AREA: NA

13. EVENT DATE: 10-76

14. CONT. COMPL. DATE: NA

15. FUNDING AGENCY: NA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. NUMBER NA; b. TYPE; c. DATE; d. AMOUNT

18. GOV'T LAB/INSTALLATION/ACTIVITY: NAME; ADDRESS: FAA/SRDS, 2100 2nd St. S.W., Washington, D.C. 20591; PROG. MGR.: J. Cawley, ARD-120; TEL.: (202) 426-9338

19. PERFORMING ORGANIZATION: NAME; ADDRESS; INVESTIGATOR: PRINCIPAL/ASSOCIATE; TEL.; TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ARTS III, Test Evaluation, Integration, System Enhancement

24. Technical Objective: Establish, maintain, and operate a Terminal Automation Test Facility (TATF) at NAFEC for use in the development, test, evaluation and integration of advanced Terminal/Tower ATC software and hardware systems.

25. Approach: NAFEC technical and operational resources supplemented with contract technical services will be used to manage, maintain, operate and schedule the TATF.

26. Milestones Scheduled for Accomplishment:

1. Installation of IOP	11/75
2. TATF Control Tower Construction Complete	1/77
3. TATF Control Tower Available for R&D Programs	3/77
4. Installation of IOPAs (2)	9/77
5. Installation of PEC (1)	9/77
6. Installation of CEC (1)	9/77
7. Installation of Memory Modules (4)	9/77

26A. Accomplishments for FY-76:

Specification for Implementation of Modular Expandable TATF Concept
Installation of Additional Memory Modules (4)

27. Source of Requirement FAA-ED-14-2	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY REPORT		NA	NA	NA	REPORTS IDENT. SYMB. RD 1750.1
10-1-76	D	U	NA	NL	Subprogram

10A. CURRENT NUMBER/CODE: I 144-170

10B. PRIOR NUMBER/CODE:

11. TITLE: TERMINAL/TOWER SUSTAINING ENGINEERING

12. SCIENTIFIC DISCIPLINE AREA	13. EFFORT DATE	14. CONT. COMPL. DATE	15. FUNDING AGENCY
NA	10-76	NA	NA

16. PROCURE. SERVICE	17. CONTRACT/GRANT a. NUMBER	b. TYPE	c. DATE	d. AMOUNT
NA	NA			

18. GOVT LAB/INSTALLATION/ACTIVITY NAME/ADDRESS:
FAA/SRDS
2100 2nd St. S.W.
Washington, D.C. 20591
RESP. INDIV.: R. Simon, ARD-120
TEL.: (202) 426-9342

19. PERFORMING ORGANIZATION NAME/ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE:
TEL.: TYPE:

20. TECHNOLOGY UTILIZATION: NA

21. COORDINATION: NA

22. KEYWORDS: ARTS,I Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development

24. Technical Objective: Develop, test and install (5) ARTS III BRITE A/N remote control systems at designated ATC facilities. Provide design service for ATC facility improvements for FAA, other governmental departments as required.

25. Approach: SRDS with contractor support will develop and procure 5 remote control systems, test/evaluate and implement for field operational use. Perform experimentation and evaluation of mock-ups and/or live test beds using NAFEC facilities.

26. Milestones Scheduled for Accomplishment:

1. Complete Los Angeles Installation	10/76
2. Complete Phoenix Installation	10/76
3. Complete Chicago Installation	11/76
4. Complete Ft. Lauderdale Installation	11/76
5. Deliver Instruction Books/Spares	12/76

26A. Accomplishments for FY-76:

Contract Awarded
Factory Tests Completed
Completed San Francisco Installation
Report on Windsor Locks TRACON Mock-up
Report on Baltimore Tower/TRACON Mock-up
Report on Dulles Tower Cab Reconfiguration

27. Source of Requirement FAA-ED-14-2

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1121

15 WEATHER

RESEARCH AND TECHNOLOGY RESUME	NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: III 151-451

10b. PRIOR NUMBER/CODE: NA

11. TITLE:
AVIATION WEATHER DEVICES

12. SCIENTIFIC OR TECH. AREA	13. BEGIN DATE	14. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER b. TYPE c. DATE d. AMOUNT
NA	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second St., S.W.
Washington, D.C. 20591
RESP. INDIV.: A. J. Larsson, ARD-451
TEL: (202) 426-8427

19. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATORS PRINCIPAL/ASSOCIATE: E. Schlatter, ANA-440
TEL: 8-346-2759 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

24.
Technical Objective: The objective of this effort is to examine state-of-the-art weather devices to determine suitability for possible use in the NAS. This evaluation will first consider need, cost/benefit analysis before any actual experimentation will be conducted.

25. Approach: This will be an in-house effort with support from NAFEC.

26. Milestones Scheduled for Accomplishment:

Preparation of project plan initiated.	10/76
Project plan completed.	1/77
Potential candidate equipments for weather support identified.	7/77
Analysis completed.	12/77

Accomplishments:
This is a new effort - first funded in FY-77.

27. Source of Requirement Mission oriented	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. FUND. RD 77-...
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: III 151-461

10B. PRIOR NUMBER/CODE: 151-261

11. TITLE:

AVIATION WEATHER SUSTAINING ENGINEERING

12. SCIENTIFIC OR TECH. AREA

13. EVARV DATE

14. CNTR. COMPL. DATE

15. FUNDING AGENCY

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. NUMBER: NA; b. TYPE; c. DATE; d. AMOUNT

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd St., SW
Washington, DC 20591
RESP. INDIV.: A. J. Larsson, ARD-451
TEL: (202) 426-8427

19. PERFORMING ORGANIZATION
NAME: NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATOR PRINCIPAL/ ASSOCIATE: E. Schlatter, ANA-440
TEL: 8-346-2759 TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS

Cloud Height, Altimeter, Transmissometer, Ceilometer, Pressure, Visibility

20.

Technical Objective: The objective of this effort is to provide for sustaining engineering support and equipment improvements for aviation weather measurement system presently installed at FAA facilities. Improve availability and provide more cost effective operations and maintenance for such systems as: Transmissometers, RVR signal data converters and related items, altimeter setting indicators, wind measurement and indicating devices, ceilometers, temperature and dewpoint measurement equipment.

Approach: An in-house effort with support from NWS, NAFEC and TSC.

Milestones Scheduled for Accomplishment:

Initial procurement specs provided AGL-4 for regional procurement of RVR recorder. (ATF-76-01)	1/77
Report to AAS on wind direction indicators (AAS-502-76-81)	2/77
Letter report forwarded to AAF giving recommendations for calibration of digital ASI systems. (AAF-76-12)	4/77
Report to AGA on application of Woodhouse Wind Measuring Devices (AGA-76-1)	4/77

Accomplishments for FY-76:

RVR reference manual draft report submitted
Tests initiated on Transmissometer Calibrator
Report on Tasker 500 RVR system submitted by NAFEC

27. Source of Requirement: Mission oriented and 9550's as received

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1125

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT NUMBER/CODE: III 151-462

10b. PRIOR NUMBER/CODE: 151-262

11. TITLE:
VISIBILITY AND CEILING

12. SCIENTIFIC OR TECH. AREA	13. EVERY SEVE	14. CONT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT	
NA	NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second St., S.W.
Washington, D.C. 20591
RESP. INDIV.: Arthur Hilsenrod, ARD-451
TEL: (202) 426-8427

19. PERFORMING ORGANIZATION
NAME: NAFEC/TSC
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Visibility, Ceiling, RVR, SVR

24.
Technical Objective: Improve visibility information available to pilots for takeoff and landing operations; provide slant visual range information; provide for RVR measurement below 600 feet RVR; aid in developing international standards for RVR.

25. Approach: Funding permitting two RVR systems will be evaluated at operational airports. TSC will monitor laser techniques for application to SVR and RVR measurements. TSC will provide cost deployment study of visibility equipment.

26. Milestones Scheduled for Accomplishment:

Initiate procurement of slant range visibility equipment for test.	11/76
Publish final report on SVR development tests.	12/76
Publish report on international RVR comparisons.	1/77
Publish cost-deployment study on visibility equipment.	2/77

Accomplishments for FY-76:
Specs for prototype procurement of SVR system completed.
Specs for solid state modification of transmissometers completed.
Report prepared on comparison on foreign RVR systems.

27. Source of Requirement AFS-400-74-7 FAAR 5335.1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	NA	NA	NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME: 10/1/76	5. KIND OF RESUME: D	6. SECURITY: U	7. REGRADING: NA	8. RELEASE LIMITATION: NL	9. LEVEL OF RESUME: Subprogram

10a. CURRENT NUMBER/CODE: III 152-460

10b. PRIOR NUMBER/CODE: NA

11. TITLE:
SUSTAINING ENGINEERING FOR WEATHER DATA PROCESSING & DISTRIBUTION

12. SCIENTIFIC OR TECH. AREA	13. SUMRY SKYE	14. CNTR. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE MEYNDS	17. CONTRACT/GRANT a. DATE b. NUMBER NA c. TYPE d. AMOUNT
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY NAME/ADDRESS	19. PERFORMING ORGANIZATION NAME/ADDRESS
FAA/SRDS 2100 Second St., S.W. Washington, D.C. 20591	INVESTIGATORS PRINCIPAL/ ASSOCIATE
RESP. INDIV. Carroll Workman, ARD-451 TEL: (202) 426-8427	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

24.

Technical Objective: The objective of this effort is to improve existing weather processing equipment, and to evaluate such equipment in an operational environment.

25. Approach: This effort will first implement and evaluate recommendations made in final reports of work completed in FY-76 under 152-462. This effort will be conducted by interagency agreement and by open procurement as noted below.

26. Milestone Schedule:

Initiate follow-on effort to permit forecasting thunderstorms from digital radar extrapolation.	10/76
Initiate coordination of equipment installation in Systems Command Center.	5/77
Installation in Systems Command Center completed.	12/78
Update of digital radar extrapolation specs forwarded to AAF.	3/79

Accomplishments:
Specifications completed for digital display of weather radar from a remote site.

27. Source of Requirement	28.
Mission oriented and 9550's as received	Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT NUMBER/CODE: III 152-461

10b. PRIOR NUMBER/CODE: 152-261

11. TITLE: IMPROVED AVIATION WEATHER FORECASTING

12. SCIENTIFIC OR TECH. AREA	13. EVERY DEVE	14. CNT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT:
NA	NA

18. GOVT LAB/INSTALLATION/ACTIVITY	19. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE:
RESP. INDIV.: Arthur Hilsenrod, ARD-451 TEL: (202) 426-8427	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

24.

Technical Objective: Improve accuracy, timeliness and availability of aviation weather forecasts in time period now to six hours from now.

25. Approach: Through an IAA with National Weather Service and utilizing available terminal and enroute meteorological observation data, apply new processing techniques and data analysis to improve short range aviation weather forecast products.

26. Milestones Scheduled for Accomplishment:

Development plan for short range forecasts published.	10/77
Publish final report on 0-2 and 2-6 hour thunderstorm forecast technique.	11/76

Accomplishments for FY-76:

Interim report on thunderstorm forecasting published.

Improved technique for 2-6 hour thunderstorm forecasting implemented by NWS.

27. Source of Requirement Program Plan ED-15-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	4. RECIPIENT'S CATALOG NO.
5. DATE OF RESUME 10/1/76	6. KIND OF RESUME D	7. SECURITY U	8. REGRADING NA	9. RELEASE LIMITATION NL
10. LEVEL OF RESUME Subprogram				
10a. CURRENT NUMBER/CODE III 152-462		10b. PRIOR NUMBER/CODE 152-262		

11. TITLE:
INTEGRATED AVIATION WEATHER SYSTEM FOR NAS

12. SCIENTIFIC OR TECH. AREA	13. EVENT DATE	14. CONT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER NA b. TYPE c. DATE d. AMOUNT
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY NAME ADDRESS	19. PERFORMING ORGANIZATION NAME NAFEC ADDRESS
FAA/SRDS 2100 Second St., S.W. Washington, D.C. 20591	
PROJ. INVEST.: Carroll Workman, ARD-451 TEL: (202) 426-8427	INVESTIGATORS PRINCIPAL/ ASSOCIATES TEL: TYPE:
21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS

24.

Technical Objective: This effort is in support of the Upgraded Third Generation Air Traffic Control System and has an objective of integrating improved aviation weather information needed to upgrade weather data support to the various ATC facilities. The effort adapts the existing techniques of sensing and reporting weather to ATC and pilot needs.

25.

Approach: The program will be accomplished by in-house, NAFEC and thru inter- and intra- agency agreements. Prime emphasis will be to upgrade the availability and quality of hazardous weather information into the NAS.

26. Milestone Schedule:

Report on radar detection of thunderstorm hazards for ATC.	8/76
Report on hazardous weather forecast procedure improvement.	9/76
Implement plan for integrated weather support subsystem.	9/77

Accomplishments for FY-76:

A concept and plan for development of a weather support subsystem for ATC.

27. Source of Requirement Program Plan 15-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		2. GOVT ACCESSION NO.	3. AGENCY ACCESSION NO.	4. REPORTS CONTROL SYMBOL
	NA	NA	NA	RD 1750.1

5. DATE OF RESUME	6. KIND OF RESUME	7. SECURITY	8. REGRADING	9. RELEASE LIMITATION	10. LEVEL OF RESUME
10/1/76	D	U	NA	NL	Subprogram

11a. CURRENT NUMBER/CODE	11b. PRIOR NUMBER/CODE
III 153-451	151-465

12. TITLE:
AUTOMATED WEATHER OBSERVATION SYSTEM

13. SCIENTIFIC OR TECH. AREA	14. EVERY SAVE	15. ORIG. CONTR. DATE	16. FUNDING AGENCY
	1/74	8/78	FAA

17. PROCURE. METHOD	18. CONTRACT/GRANT	a. DATE	b. NUMBER	c. TYPE	d. AMOUNT
NA		NA			

19. GOVT LAB/INSTALLATION/ACTIVITY
NAME:
ADDRESS: FAA/SRDS
2100 Second St., S.W.
Washington, D.C. 20591
REQ. INDIV.: Warren F. Ottinger, ARD-452
TEL: (202) 426-8427

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS:
Lidar, Automation, Weather Observation

24.
Technical Objective: To design, test and evaluate a fully automated aviation weather observation system. The final configuration will provide a complete weather observation previously provided by an FSS and is intended for implementation at consolidated FSS locations where a requirement continues for a complete weather observation.

25.
Approach: Under an interagency agreement the National Weather Service (NWS) is developing the automated system for the FAA. NWS has contracted with industry to fabricate, install and test the prototype system. SRDS will then relocate system to Salisbury, MD, for operational test and evaluation for one year and then turn system over to operating Services as the first article AV-AWOS.

26.
Milestones Scheduled for Accomplishment:

Cloud algorithm verification complete.	11/76
Prototype field test completed.	6/77
Technical data package delivered to AAF.	7/77
Operational test complete - system to operating Services.	8/78

Accomplishments for FY-76:
Development system installed at Sterling, VA.
First cut ceiling and visibility algorithms completed.
Development system operational demonstrations conducted.

27. Source of Requirement	Program Plan 19-1	28.	Blank

29. Blank	30. Precedence	Blank
	31. Relevant Project Code	

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE III 153-452		10b. PRIOR NUMBER/CODE NA		

11. TITLE:
SEMI-AUTOMATED WEATHER DATA SYSTEM

12. SCIENTIFIC OR TECH. AREA	13. EVARY DATE 7/76	14. CRIT. COMPL. DATE 6/77	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. AMOUNT: a. DATE:		

18. GOV'T LAB/INSTALLATION/ACTIVITY	19. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591	NAME: ADDRESS:
PRIN. INVS.: Warren F. Ottinger, ARD-452 TEL: (202) 426-8427	INVESTIGATORS PRINCIPAL/ ASSOCIATES: TEL: TYPE:
21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS

24.

Technical Objective: To design, test and evaluate a semi-automated weather observation system for increasing the efficiency of the surface observation function at limited aviation weather observation stations (LAWRS) control towers.

25. Approach: Under an interagency agreement with the National Weather Service a prototype semi-automated weather observation system will be installed and evaluated at the Clarksburg, W.VA., control tower.

26. Milestones Scheduled for Accomplishment:

System installed at operational site.	1/77
System evaluation completed.	4/77
Final technical data package to AAF.	6/77

Accomplishments for FY-76:
Agreement signed with NWS.

27. Source of Requirement 9550 - AAT-40-1 Program Plan 15-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT SYMB RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
III-154-451	III 151-464

11. TITLE: WIND SHEAR

12. SCIENTIFIC OR TECH. AREA	13. BEGIN DATE	14. ORIG. COMPL. DATE	15. FUNDING AGENCY
	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT
NA	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 Second St. S.W. Washington, D.C. 20591	NAME: TSC/NAFEC ADDRESS:
RESP. INDIV.: H. G. Tinsley TEL: (202) 426-9350	INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Wind, Wind Shear, Wind Shear Hazard, Acoustics, Laser Anemometry, Gust Fronts, Pressure Jump Sensors, Ground Speed, Aircraft Simulations.

24. Technical Objectives: Develop a Wind Shear warning system to alert pilots and controllers regarding the location and severity of potentially hazardous wind shears in the terminal area.

Approach: Employing the resources of the National Oceanic and Atmospheric Administration (NOAA), the Transportation System Center (TSC) and NASA with support from knowledgeable industrial firms, the hazards posed by wind shear to various classes of aircraft will be quantified and a system for the detection of wind shear will be developed and evaluated for NAS implementation. Both airborne and ground-based solutions will be considered. A data base will be established to provide a source for wind shear climatology.

Milestones Scheduled for Accomplishment:

. Aircraft Wind Shear Simulation Studies Complete	12/76
. Hazard Definition Final Report (NASA AMES Simulations)	9/77
. Airborne System Recommendations	12/77
. Final Ground System Recommendations	5/78
26. System Implementation Recommendations (includes W/S Prediction)	6/78

Accomplishments for FY-76 & 76T

Dulles Acoustic Installation Completed
Initital ACFT Wind Shear Simulation Completed
Initital Gust Front Analysis Completed
Prototype CW Laser delivered

27. Source of Requirement Program Plan ED-15-2	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

16 TECHNOLOGY

(Transferred to OSEM)

17 SATELLITES

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1259-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U WORK	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 171-252

10b. PRIOR NUMBER/CODE:

11. TITLE:
COMMUNICATIONS/SURVEILLANCE DESIGN FOR OCEANIC SATELLITE SYSTEMS

12. SCIENTIFIC OR TECH. AREA NA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY FAA
16. PROCUREMENT METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:		

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591

RESP. INDIV.: David G. Spokely, ARD-233
TEL: (202) 755-4995

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS
Oceanic Systems, Air Traffic Control, Satellites

24. Technical Objective: To develop the operational characteristics of an oceanic ATC system in a satellite environment which will meet the aviation needs of the 1990's.

25. Approach: SRDS, with NAFEC and contractor support, will develop (1) traffic forecast data, (2) airspace and ground network configurations, (3) air/ground communication requirements, and (4) ATC surveillance and control concepts; and (5) assessment of benefits and effectiveness of Satellite ATC & Communication System.

26. Milestones Scheduled for Accomplishment:

. Complete International Aviation Forecast	11/76
. Complete Peak Two-Hour Scripts/Progress Strip	12/76
. Complete Channel Access Simulation Effort	1/77
. Complete Two-Hour Peak Period Data Analysis (NAFEC)	4/77
. Acquire SRI Forecast Computer Program	5/77
. Complete System Simulation Study	8/78
. Complete Updated Traffic Forecasts/Communication Study	11/79
. Complete Oceanic System Benefit Study	12/84

26A. Accomplishments FY-76:

. Communication Requirement Study Completed (ARINC)
. Atlantic Basin Aviation Forecast Completed (SRI)

27. Source of Requirement F&D Program Plan FAA-ED-17-2	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

1. RESEARCH AND TECHNOLOGY RESUME	1a.	2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS ELEMENT SYMB.
	NA	NA	NA	RD 1759.1

4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY RPT / PMS	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME
10/1/76	D	U	NA	NL	Subprogram

10a. CURRENT ELEMENT/CODE	10b. PRIOR ELEMENT/CODE
I 172-251	172-142

11. TITLE:
OCEANIC/CONUS ATC SYSTEM EXPERIMENTS

12. SCIENTIFIC OR TECH. AREA	14. START DATE	14. CMIT. COMPL. DATE	15. FUNDING AGENCY
			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT
NA	a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Robert W. Granville, ARD-232 TEL: (202) 755-4995	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

Satellite System, Experimentation, ATS-5, ATS-6

24. Technical Objective: To gather, reduce, and analyze experimental data to support technical design of oceanic and CONUS satellite systems and as a part of AEROSAT enhancement.

25. Approach: SRDS with TSC, NAFEC and contractor support will develop and test advanced aircraft antennas, input/output devices, modems, a microprocessor, and other devices as necessary to support the experimentation and enhancement of Satellite Communications Systems.

26. Milestones Scheduled for Accomplishment:

. Issue RFP's Modem Modification and L-Band Antenna	11/76
. Award Contract, Modem Modification	7/77
. Award Contract, L-Band A/C Antenna	7/77
. Deliver Modems	9/79
. Deliver Microprocessor, I/O Device, & A/C Antenna	9/80
. Complete Experimentation Program & Issue Report	12/84

26A. Accomplishments FY-76:

. Completed ATS-6 Final Report

27. Source of Requirement	28.
E&D Program Plan FAA-ED-17-1	Blank

29.	30. Precedence	31. Relevant Project Code
Blank	Blank	

I 172-251

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY REPORT	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORT CONT. SYMB. RD 1759-1
4. DATE OF REVISION 10/1/76	5. KIND OF REVISION D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT ACCESSION/CODE: I 173-251

10b. PRIOR ACCESSION/CODE: 101-140, 101-141

11. TITLE: ATC SYSTEMS INTEGRATION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CNTR. COMPL. DATE	15. FUNDING AGENCY
			FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

19. GOVT LAC/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME:
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591	ADDRESS:
RESP. INDIV.: Robert T. Bergmann, ARD-231	INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: (202) 426-8496	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: AEROSAT, System Integration

24. Technical Objectives: To perform system engineering and coordination functions necessary to assure total system compatibility of the three major AEROSAT segment (space, ground, and airborne) and to integrate services provided (voice, data, and surveillance) into the oceanic ATC configuration including engineering associated with installation of airborne avionics. To provide system studies of AEROSAT in conjunction with other proposed satellite systems (GPS, INMARSAT, etc.).

25. Approach: SRDS/TSC effort, with contract support, will be used to develop interface standards and to identify the various ways of integrating voice, data, and surveillance functions. The primary effort consists of support contracts effected through the issuance of task descriptions involving the overall system design and avionics installation engineering.

26. Milestones Scheduled for Accomplishment:

. Award New SEC Contract	9/76
. Re-establish ACO in U.S.	8/77
. Complete A/C Avionics Installation	6/81
. Complete AEROSAT Data, Reduction & Analysis	12/83
. Complete AEROSAT Refinement - Submit Study Paper to DOT, Congress, ICAO	12/84

26A. Accomplishments FY-76:

. AEROSAT Coordination Office Established (Holland)
. AEROSAT Interface Standards Completed

27. Source of Requirement: E&D Program Plan FAA-ED-17-2

28. Blank

29. Blank

30. Precedence: Blank

31. Relevent Project Code

I 173-251

Items 1 to 26 Identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY RPT U PRJ	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 173-252

10b. PRIOR NUMBER/CODE:

11. TITLE: SPACE SEGMENT

12. SCIENTIFIC OR TECH. AREA:

13. START DATE:

14. CRIT. COMPL. DATE:

15. FUNDING AGENCY:

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. NUMBER: NA; b. TYPE:; c. DATE:; d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY:
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Robert T. Bergmann, ARD-231
TEL: (202) 426-8496

19. PERFORMING ORGANIZATION:
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: AEROSAT, Spacecraft

24. Technical Objective: To assure that the relay functions (to be provided by a lease contract) of the AEROSAT space segment support the experimental and operational requirements of aviation and meet the necessary interface requirements for integration with the other segments of the system (ground and airborne).

25. Approach: SRDS, with contractor lease support of satellite services from the U.S. Co-Owner, COMSAT General, will provide the space segment channels and management and integration of this space segment with the ground and avionics segments to meet the terms of reference of the Memorandum of Understanding (MOU) agreed upon between the U. S., Canada and ESA. Considerable effort is required in management of the satellite services and spacecraft design liaison and coordination with the AEROSAT Coordination Office (ACO), the SPO owner's group representing the COMSAT General, ESA, and Canada to insure that FAA commitments are being met during the AEROSAT Test and Evaluation and experimentation program.

26. Milestones Scheduled for Accomplishment:

- Satellite Contract Award, FAA Lease Contract 1/77
- Launch First Satellite 11/79
- Launch Second Satellite 7/80
- Complete Satellite Usage, Issue Final Space Segment Report 7/85

26A. Accomplishments FY-76:
- AEROSAT Satellite RFP Released

27. Source of Requirement: E&D Program Plan FAA-ED-17-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 173-252

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	c. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMBOL RD 1759-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CONTRACT PROJ. NO./CODE: I 173-253

10b. PRIOR PROJ. NO./CODE:

11. TITLE: GROUND SEGMENT

12. SCIENTIFIC OR TECH. AREA:

13. START DATE | 14. CNTR. COMPL. DATE | 15. FUNDING AGENCY

16. PROCUREMENT METHOD: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Robert Bergmann, ARD-231
TEL: (202) 426-8496

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Aeronautical Satellite Communications Center (ASCC), Aeronautical Service Earth Terminal and Mini-ASET (SPATS)

24. Technical Objective: To define the elements involved in the AEROSAT system ground segment, show their interrelation, and provide for design, procurement, and implementation.

25. Approach: SRDS with NAFEC and contractor support, will develop and provide ground equipment consisting of the Aeronautical Satellite Control Center (ASCC), the Aeronautical Services Earth Terminal (ASET), the Electronic Test Set (ETS), and the Mini-ASET (SPATS).

26. Milestones Scheduled for Accomplishment:

• Issue 1/2 ASET RFP	12/76
• Award ASCC Contract	11/76
• ASCC and 1/2 ASET Installed at NAFEC	7/78
• I&T Systems Complete	11/78
• ETS/Mini-ASET's Deployed, Issue Report	6/80

26A. Accomplishments FY-76:

- ASCC Proposal Evaluated

27. Source of Requirement: E&D Program Plan FAA-ED-17-2

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code

I 173-253

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10A. PRIOR NUMBER/CODE
I 173-254	101-231

11. TITLE:
AVIONICS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Robert T. Bergmann TEL: (202) 426-8496	NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Evaluation Avionics, Engineering Development Models

24. Technical Objective: To provide for engineering and development and evaluation of L-Band and VHF avionics that will be used in the experimentation and evaluation of AEROSAT systems.

25. Approach: SRDS/TSC/NAFEC and contract support will be used to carry out system studies and to procure and evaluate avionics equipment. Initial engineering and evaluation models will be subjected to laboratory and flight tests in conjunction with the ATS-6 and AEROSAT test programs. Subsequently approximately 20 to 50 L-Band and 10 to 20 VHF avionics systems will be developed for installation in air carrier and FAA test aircraft for AEROSAT system experimentation and evaluation.

26. Milestones Scheduled for Accomplishment:

- L-Band Avionics Contract Award 10/76
- Deliver L-Band/VHF EDM Avionics 9/78
- Deliver L-Band/VHF Evaluation Avionics, Hardware for Aircraft 6/81

26A. Accomplishments FY-76:

- L-Band Avionics Proposals Evaluated

27. Source of Requirement
E&D Program Plan FAA-ED-17-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

I 173-254

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESOURCE	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORT CONT. SYMB. RD 1259-1
4. DATE OF RESOURCE 10/1/76	5. KIND OF RESOURCE D	6. SECURITY a. CLASS U b. MARK	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESOURCE Subprogram

10. CURRENT RESOURCE/CODE: I 173-255

10A. PRIOR RESOURCE/CODE:

11. TITLE: TEST AND EVALUATION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CNTR. COMPL. DATE	15. FUNDING AGENCY

16. PROCUREMENT METHOD: NA

17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Frederic W. Pickett, ARD-232
TEL: (202) 426-8496

20. PERFORMING ORGANIZATION
NAME: FAA/NAFEC
ADDRESS: Atlantic City, N.J. 08405
INVESTIGATORS PRINCIPAL/ ASSOCIATE)
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: AEROSAT Test and Evaluation

24. Technical Objective: To provide supporting technical and operational data employing voice and data communications and surveillance information via satellites, for an improved oceanic air traffic control system.

25. Approach: SRDS with NAFEC and TSC support will develop a T&E Program Description which will be coordinated with Canada and ESA. From the T&E Program Description, a Test Plan will be developed and the resultant tests and experimentations will be conducted. Simulation requirements will be defined, and the capability developed in order to support the operational and technical tests that will be conducted during the pre-launch and on-orbit testing phases.

26. Milestones Scheduled for Accomplishment:

. Complete Test Plan (Draft)	1/77
. Complete RFP for T&E Contractor	1/77
. T&E Simulation Decision	2/77
. T&E Contract Decision Point	4/77
. Start Traffic Sample & Script Preparation	5/77
. Begin AEROSAT T&E Program	1/80
. Complete AEROSAT T&E Program, Issue Evaluation Report	12/83

26A. Accomplishments FY-76:

. AEROSAT T&E Plan Initiated.

27. Source of Requirement: E&D Program Plan FAA-ED-17-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevent Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

18 AIRCRAFT SAFETY

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. RD 1990-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV-181-520

10b. PRIOR NUMBER/CODE: N/A

11. TITLE: MODIFIED FUEL

12. SCIENTIFIC OR TECH. AREA: N/A

13. START DATE: Continuing | 14. CRIT. COMPL. DATE: N/A | 15. FUNDING AGENCY: FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT — a. NUMBER: NA; b. TYPE:; c. DATE:; d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: T. G. Horeff, ARD-520
TEL: (202) 426-8416

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Modified Fuel, Crash Fires, Fire Safety

24. TECHNICAL OBJECTIVE: To evaluate a modified turbine fuel for helicopters and commercial transport aircraft which will reduce the probability and severity of a post crash fire and extend the time available for passenger evacuation and reduce the fatalities due to fire.

25. APPROACH: Small and large scale tests will be conducted to evaluate and demonstrate the safety benefits of modified fuel by inhibiting the formation of highly flammable mists when fuel is released under survivable crash conditions. These test will establish the basis for engine and fuel system compatibility tests and the preparation of a modified fuel specification for qualification of engines and aircraft to use modified fuel. NAFEC, U.S. Navy and contractual effort supports this activity.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Simulated Crash Fuel Release Tests	10/77
. Preliminary Fuel System Compatibility Tests	4/77
. Large Scale Crash Fuel Release Tests	5/77
. Modified Fuel Specification published	11/77

26A ACCOMPLISHMENTS FOR FY-76

. Publish Modified Fuel Rheology Report
. Publish Report on Photographic Investigation of Modified Fuel Ignition.

27. Source of Requirement FAA-ED-18-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS SCHED. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 181-521

10b. PRIOR NUMBER/CODE: NA

11. TITLE: CABIN CRASH SAFETY

12. SCIENTIFIC OR TECH. AREA	13. EVAL DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA

16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:	

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
PRIN. INVGR.: R. C. McGuire, C. Troha, ARD-520
TEL: (202) 426-8416

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS: Cabin-Fire/Materials, Smoke, Toxic-Gas, Flammability

24. TECHNICAL OBJECTIVE: Develop and/or demonstrate criteria, equipment, systems, fabrics and materials which will minimize hazards to passengers and crew under post-crash conditions.

25. APPROACH: Investigate fuselage compartmentation/fire suppression/detector systems and interior cabin materials to determine what contribution each concept has to reduce the post-crash fire hazard. Investigate effectiveness of cabin partition configurations to control cabin fire propagation; develop equipment/criteria to assess fire potential of polymeric materials; establish criteria to measure smoke/toxic gas emissions hazard of burning polymeric materials; develop flammability specification for flight attendant uniforms. Validate math model of burning cabin interior using a full-scale facility and develop a practical combined fire hazard criteria.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Develop a Full-Scale Fire Test Facility	12/76
. Evaluate a Cabin Fire Suppressant System	12/78
. Interim Cabin Material Toxicity Ranking Index	12/76
. Cabin Compartmentation Fire Management System Evaluation	12/78
. Cabin Fire Model Validation	11/77
. Develop Combined Material Fire Hazard Methodology	12/78

26A ACCOMPLISHMENTS FOR FY-76

. Flight Attendant Uniform Flammability Specification published.
. Preliminary Cabin Compartmentation Feasibility Report
. Complete Animal and Gas Analysis of Currently used Interior Cabin Material for Relative Toxicity.
. Feasibility Report on Halon 1301 as a post-crash fire suppressant.

27. Source of Requirement 2550.1, AFS-100-74-2 (1/74) AFS-100-74-137 (5/74) AFS-100-73-134 (5/73)

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY RPT U MRL	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT NUMBER/CODE: IV 181-522

10b. PRIOR NUMBER/CODE: NA

11. TITLE: INFLIGHT FIRE SAFETY

12. SCIENTIFIC OR TECH. AREA	13. EVARY DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: J. J. Shea, ARD-520
TEL: (202) 426-8416

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: In-Flight Fires, Powerplant, Detection, Control, Extinguishment

24. TECHNICAL OBJECTIVE: To develop means of reducing the hazards of in-flight aircraft fire through prevention, early detection and rapid extinguishment.

25. APPROACH: Studies and tests to develop improved fire detection, control and prevention for aircraft powerplant and fuel systems will be conducted via NAFEC in-house and SRDS/Industry contractual efforts.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Nitrogen Inerting Full-Scale Prototype Tests	9/77
. Electrostatic Charge Tendency of Fuel Filters investigated	8/78
. Designer's Guide to Titanium use in Turbine Engines	12/77

26A ACCOMPLISHMENTS FOR FY-76

- Inerted Fuel Tank Oxygen Concentration Requirements Report
- Report - Electrical Charge Level of Aircraft Fuel
- Nitrogen Inerting Breadboard System Development completed
- Burner Standards for Fire Resistance Testing Published

27. Source of Requirement FS-100-70-107 FS-100-73-132	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 25 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 182-520

10b. PRIOR NUMBER/CODE: NA

11. TITLE: AIRCRAFT AIRWORTHINESS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Herbert C. Spicer, Jr., C. Troha, ARD-520
TEL: (202) 426-8416

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Aircraft, Flight Loads, Ground Loads, Aircraft Structures, Maintenance

24. TECHNICAL OBJECTIVES: To develop and adapt new safety technology in the areas of flight and ground loads, aircraft structures and systems, and maintenance and inspection technology for transport aircraft. To prepare recommendations to the various agency services for new or improved airworthiness certification and/or operational requirements, as well as acceptable methods to comply with the requirements.

25. APPROACH: Accident statistics, service information, and new design concepts, materials applications and manufacturing techniques will be continually analyzed to identify areas where safety improvements are necessary to yield the maximum benefits to reducing the likelihood of accidents and improving the crashworthiness of the structure. Promising areas will be investigated to identify technology adaptation or improvements and R&D will be conducted to yield proposals for new or improved airworthiness regulations. Efforts will be initiated to answer safety needs expressed by other components of the agency. NAFEC and contractual effort supports this activity.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Structural Inspection Simulation Program Report	12/76
. Transport Crashworthiness Simulation Methodology Report	12/78
. Least Risk Bomb Placement Studies for Transport Aircraft	12/76
. Explosion Tests Within a Pressurized Fuselage for Design Criteria	12/77
. Develop Methodology for the Analysis of Complex Mechanical Systems	8/77

26A ACCOMPLISHMENTS FOR FY-76
. L-1011 & DC-8 Tests completed

27. Source of Requirement FS-100-73-133, CS-200-1-73 R&D Program Plan

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 182-521

10A PRIOR NUMBER/CODE: NA

11. TITLE: PROPULSION AIRWORTHINESS

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:	
NA	b. NUMBER: NA		
	c. TYPE:	d. AMOUNT:	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591

RESP. INDIV.: J. J. Shea, ARD-520
TEL: (202) 426-9416

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Engine Reliability

24. TECHNICAL OBJECTIVE: To develop methods and equipments to improve propulsion systems reliability and safety.

25. APPROACH: Data generated by analysis and tests to develop improved propulsion systems, conducted via NAFEC inhouse, SRDS/Industry contractual efforts and NASA support will form the technical base for proposed new and/or revised airworthiness and operational requirements. Specific areas of interest are improved turbine rotor blade containment, resistance to bird ingestion, anti-ice system design criteria and the study of higher temperature engines using the USAF engine nacelle fire test simulator.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Turbine Rotor Blade Containment Study	9/77
. Criteria for Improved Engine-Bird Ingestion Standards	4/77
. Engine Anti-Icing Design Criteria Report	6/77

26A ACCOMPLISHMENTS FOR FY-76

. Contracts awarded for containment, bird ingestion and engine anti-ice criteria.

27. Source of Requirement FAA-ED-18-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1730-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT / PROJ	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 182-530

10b. PRIOR NUMBER/CODE: NA

11. TITLE: FLIGHT PERFORMANCE/OPERATION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing		FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: c. TYPE: d. AMOUNT:
NA	NA

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME:
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2100 2nd St., S.W.
Washington, DC 20591
RESP. INDIV.: T. Kolankiewicz ARD-530
TEL: (202) 426-3290

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Transports, Airworthiness, Flying Qualities, Flight Simulation

24.

TECHNICAL OBJECTIVE: To develop aircraft-pilot and system performance flight characteristics criteria for new or improved airworthiness certification standards and associated operating limitations for all forms of transport aircraft. Explore greater utilization of simulation methods in the aircraft certification process.

25. APPROACH: Analysis, ground-based and in-flight simulation and experimental flight testing of powered-lift and conventional transports. Examination of emerging technology such as active control systems. Obtain flight characteristics and operational data related to development of advanced design data and regulatory standards. NASA-Ames simulation facilities, NAFEC and contractual support will be utilized for accomplishment of this effort.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

Complete Joint Canada/FAA Variable Stability Helicopter Flight Tests	11/76
Use of Simulators in Aircraft Certification - Phase I Report	3/77
Improved helicopter instrument display (IFR) - report	4/77
Large aircraft structural loads criteria - report	9/77

26A ACCOMPLISHMENTS FY-76

Simulation complete on wake vortex encounters
Simulator evaluation of FAA Sabreliner flight inspection airplane
Wake Vortex Hazard Definition
Testing started on PRFAX-H Control Display Program
Powered-Lift STOL Certification developed for Approach Flight Path Control

27. Source of Requirement FS-100-75-142 FAA-ED-18-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS (CONT. SYND.) RD
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 184-520

10b. PRIOR NUMBER/CODE: NA

11. TITLE: GENERAL AVIATION FLIGHT SAFETY

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd St., S.W.
Washington, D.C. 20591
RESP. INDIV.: Joseph W. Howell ARD-530
TEL: (202) 426-3290

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS

Aircraft Safety Stall/Spin, Stall Avoidance, Gust Analysis, Structural Loads

24. TECHNICAL OBJECTIVE: Develop and apply advanced technology in aircraft design to general aviation to improve light, general aviation aerodynamic characteristics, performance, stability and control and structural design criteria to general aviation flight safety. Provide technology base for new or improved airworthiness and operational requirements. Determine characteristics of cockpit layouts contributing to pilot error.

25. APPROACH: Perform analyses, ground-based and in-flight simulation operational flight testing of personal owner and business oriented general aviation airplanes. Obtain flight characteristics and operational data related to development of advanced design data and regulatory standards. Develop standards for cockpit control features. NAFEC and contract effort supports this activity.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT

. Evaluation of Rigid Airplane Gust Analyses - Report	12/76
. Phase II Report - Cockpit Standardization	1/77
. Final Report - Lightplane Longitudinal Control Criteria	12/76
. Develop Small Aircraft Structural Loads Criteria - Report	9/77

26A. ACCOMPLISHMENTS - FY-76

. NASA Final Report - Airplane Gust Analysis
. Phase I Report - Cockpit Standardization
. Final Report - Lightplane Stall Avoidance
. Final Report - Stall Characteristics Analysis

27. Source of Requirement FS-100-73-131 FS-100-65-73 ED-18-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

IV 184-520

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U RPT	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE IV 184-521		10b. PRIOR NUMBER/CODE NA		
11. TITLE: GENERAL AVIATION CRASH SAFETY				
12. SCIENTIFIC OR TECH. AREA		13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE. MEYHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:			
18. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Herbert C. Spicer, Jr., ARD-520 TEL: (202) 426-8416		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA		
23. KEYWORDS Aircraft Safety, Crash Survivability, Crashworthiness				

24. TECHNICAL OBJECTIVE: To develop a validated basis for standards leading to improved occupant survivability in aircraft accidents. To develop effective and practical means of packaging aircraft occupants during a crash to minimize injury, and to reduce the likelihood of a fire after a crash. Prepare recommendations to Flight Standards for new or improved certification requirements.

25. APPROACH: The approach for the General Aviation Program is three-phased. Phase I includes technical studies and theoretical research leading to a scientific analytical basis for the development of design standards. Phase II involves full-scale crash tests to refine and validate Phase I basic data. Phase III applies the analytical techniques to general aviation aircraft designs to identify possible and practical crashworthiness improvements. Work will be accomplished through contracts and NAFEC tests.

26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

- General Aviation Crash Survivability Criteria
  - Phase I Aircraft Crash Simulation Studies completed 10/76
  - Phase II Full Scale Crash Validation Test Report 7/77
  - Phase III Application of Analytical Techniques - Criteria Report 8/78
- Validation Man/Seat/Restraint System Tests Complete - Report 12/76
- General Aviation Crash Resistant Fuel System Construction & Test-Rpt. 12/76

26A ACCOMPLISHMENTS FOR FY-76

- Completed Man/Seat/Restraint Report & Users Manual
- Contract Award for G. A. Crash Resistant Fuel System

27. Source of Requirement FAA-ED-18-1	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 Identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RÉSUMÉ	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10A. CURRENT NUMBER/CODE: IV 184-530

10A. PRIOR NUMBER/CODE: NA

11. TITLE: GENERAL AVIATION PILOT COMPETENCE

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY
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Washington, D.C. 20591
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TEL: (202) 426-3290

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Accident analysis, certification, simulators (Ground Trainers) currence, judgement, computers stalls.

24. TECHNICAL OBJECTIVE: To develop data to support Flight Standards regulatory and advisory action as regards pilot certification training and currency requirements.

25. APPROACH: Projects involving general aviation accident analysis; pilot judgement studies; and evaluation of experimental training and certification methods (simulators ground trainers), computer aided education, etc., will develop supporting data. Contractual activity will be required to supplement inhouse effort of this program.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

1. Completion report - stall awareness training experimental syllabus 9/76
2. Pilot Judgement Study Phase I Report 10/77
3. Completed Improved Pilot Training Syllabus Report 2/79

26A. ACCOMPLISHMENTS - FY-76

1. Completion of specialized simulator (pilot ground trainer) evaluation for VFR/IFR training. Phase II report

27. Requirement FAA-ED-18-1	AGA-ARD-76-1	28. Blank
29. Blank		30. Precedence Blank
		31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 185-561

10b. PRIOR NUMBER/CODE:

11. TITLE:

EXPLOSIVE/SABOTAGE DETECTION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	Continuing	NA	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:
NA	b. NUMBER: NA c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
Washington, D.C. 20591

RESP. INDIV.: W. Richardson, Jr., ARD-510
J. R. Whittaker, ARD-510
TEL: 426-6794

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS
PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Civil Aviation Security

24. TECHNICAL OBJECTIVE: Conceive, design, develop, test and evaluate new devices and ancillary equipment and assess existing devices directed towards the detection and prevention of weapons and explosives being introduced into the aircraft/airport environment.

25. APPROACH: Expand and expedite those efforts already underway and to initiate new efforts in those areas indicated as promising by studies and laboratory tests.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT

- Vapor Detection Test Guidelines, Established-Report 12/76
- Existing Detectors Evaluated-Report 1/77
- Checked Baggage Prototype Explosive System Evaluated-Report 3/77
- Advanced Tech. Studies Initiated 3/77
- Decompression Screening System Delivered-Engineering model 4/77
- Feasibility of Pattern Logic Transfer Established -Report 6/77
- Feasibility of X-Ray Absorption Application to Explosive Detection Established-Report 9/77
- Feasibility of X-Ray Fluorescence Explosive Detection Established-Report 9/77
- Storage Locker Tests Complete-Report 12/77

26A. ACCOMPLISHMENTS FOR FY-76

- Developed Personnel Explosive Vapor Detector
- Completed 1st Phase Explosive Locker Experimentation
- Complete Airport Evaluation of X-Ray Absorption
- Devise for Hand-Carried Luggage
- Complete 1st Phase of Operational Analysis of Security Devices

27. Source of Requirement FAA ED-18-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

IV 185-561

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

19 AVIATION MEDICINE

(Not included)

20 ENVIRONMENT

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 201-521

10A. PRIOR NUMBER/CODE: NA

11. TITLE: AIRCRAFT PROPULSION SYSTEMS AIR POLLUTION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	Continuing	N/AA	FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 Second Street, S.W.
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RESP. INDIV.: William T. Westfield, ARD-550
TEL: 426-3314

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Aircraft, Pollution, Powerplant, Measurement, Reduction

24. TECHNICAL OBJECTIVE: To develop the means to measure, reduce, and control air pollution from aircraft powerplants and support systems in consonance with the responsibilities and authorities placed on the FAA by the Clean Air Amendments of 1970 (Public Law 91-604).

25. APPROACH: With NAFEC test support, intergovernmental cooperative efforts, and contractual efforts with industry, conduct research and development aimed at improving the pollution characteristics of CTOL, RTOL, etc. powerplants and support systems while maintaining adequate safety characteristics. Analyze and apply these developments to improve airport air quality levels.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:
- o Report-Turbine Engine Exhaust Emission Time-Degradation Factors Defined - 3/77
- o Award Contract--Development of Time-Degradation Factors For Piston Engine Exhaust Emissions - 12/76
- o Certification Test Procedures For Turbine Engine Emissions - 8/77

26A. ACCOMPLISHMENTS FY-76:
- o Piston engine baseline emission tests to define possible hazards were completed.
- o Air quality impact analysis of runway modification at Anchorage Alaska International Airport completed.
- o Air quality impact analysis of Concorde operations at JFK & Dulles Completed for Final Environmental Impact Analysis
- o Interim report on SO_2/SO_3 levels in turbine engine exhausts published.

27. Source of Requirement FAA-ED-20-1 EQ-74-1 EQ-74-2	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 202-551

10b. PRIOR NUMBER/CODE: NA

11. TITLE: SOURCE NOISE REDUCTION

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
	Continuing		FAA

16. PREVIOUS REVIEW	17. CONTRACT/GRANT a. DATE	b. NUMBER: NA	c. TYPE:	d. AMOUNT:
NA				

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 - 2nd Street, S.W.
Washington, D.C. 20591

RESP. INDIV.: Robert S. Zuckerman, ARD-550
TEL: 42-63314

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:

INVESTIGATORS
PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Aircraft Noise, Jet Noise, Core Engine Noise, Sound Absorption Treatment

24. TECHNICAL OBJECTIVE: Determination of Aircraft/engine performance and configuration variables that influence generation or propagation of noise, development of prediction techniques and establishment of guidelines for noise reduction.

25. APPROACH: Analytical and experimental investigations of mechanisms of generation and suppression of engine noise sources and of installation effects of nacelle and airframe on noise propagation and reduction -- Contract support.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

- P&WA Combustor Noise Prediction Model (Low-Emissions Combustors) - 11/76
- GE Core Engine Component Noise Up-Date, Including Low-Emissions Combustors 11/76
- Jet Noise Suppression Design Guide - 11/77
- Airframe Noise Prediction and Reduction Model - 5/77
- JT8D Mixer Study Report - 11/77

26A ACCOMPLISHMENTS FY-76

- Jet Noise Suppression, Reports for Task I, & IV Published
- Configuration Effects Report Published
- STOL Configuration, Jet/Flap Investigation Report Published
- Business/Executive Jet, Evaluation of Noise Abatement Alternatives Report Published
- V/STOL Noise Predictions for YC-14, YC-15 and Optimized STOL Craft Completed
- B-727 Flyover Jet Noise Analysis for Suppressed & Unsuppressed Nozzle Published
- V/STOL Rotary Propulsors Prediction Model Completed, Report Published

27. Source of Requirement FAA-ED-20-2	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME P	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
IV 202-552	NA

11. TITLE: OPERATIONAL NOISE REDUCTION

12. SCIENTIFIC OR TECH. AREA	13. BY/ANY DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	Continuing	N/A	FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT
NA	NA

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 - 2nd Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Robert J. Koenig, ARD-550 TEL: 42-63314	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Noise Abatement Operations, Atmospheric Attenuation, Noise Measurements

24. TECHNICAL OBJECTIVE: Determination of significant aircraft performance characteristics that influence noise exposure on the ground, development of prediction techniques, evaluation of the effects of the atmosphere on sound propagation, and development of noise measurement techniques.

25. APPROACH: Theoretical and experimental investigations of effects of aircraft operating procedures, meteorological conditions, and ground terrain on transmission of sound. Analysis, design, and testing of noise measurement systems. In-house and contractual effort supports this activity.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

- General Aviation and Helicopter Aircraft Certification Studies, Tip Corrections and Weather Restriction Tests Complete -8/77

26A ACCOMPLISHMENTS FY-76

- Report, Effect of Temperature and Humidity On Aircraft Noise Propagation
- Report, Aircraft Noise Measurement and Monitoring Systems
- Reports, Certification Research

27. Source of Requirement FAA-ED-20-2	28. Blank
29. Blank	30. Precedence Blank 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1750.1
4. DATE OF RESUME July 1,1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 202-553

10b. PRIOR NUMBER/CODE: NA

11. TITLE: NOISE EVALUATION AND RESPONSE

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	Continuing	N/A	FAA

16. PROCUREMENT METHOD: NA

17. CONTRACT/GRANT: a. NUMBER: NA; b. TYPE:; c. DATE:; d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 - 2nd Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: Thomas H. Higgins, ARD-550
TEL: 42-63314

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

20. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Aircraft and Community Noise, Psychoacoustic Procedures, Noise Certification, Calculation, Aircraft Flyover Noise Signals, Noise Compatible Land Use Planning

24. TECHNICAL OBJECTIVE: To obtain certification and design criteria for aircraft and airports. Determination of significant variables that influence response to noise, development of psychoacoustic measures procedures and guidelines for control of noise exposure within the requirements of Public Law 90-411.

25. APPROACH: Conduct Psychoacoustic Tests in laboratories and family homes regarding the effects of noise on man and the development of acceptable procedures and yardsticks for evaluating aircraft noise and community noise exposure.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT

- Psychoacoustic tests of alternative operational procedures - report 9/77
- Psychoacoustic tests regarding significant changes in level and number of operations for airport planning - report 9/77

26A ACCOMPLISHMENTS FY-76

Review of Studies Investigation Human Response to Commercial Aircraft Noise Report No. FAA-RD-75-182 published.

Establishing Noise Criteria for Residential Living in Areas Surround Commercial Aviation Airports, Report No. FAA-RD-75-211 published.

Noise Certification and Implementation Consideration for V/STOL Aircraft Report No. FAA RD-75-190 published.

27. Source of Requirement PL-90-411/ FAA-ED-20-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1127

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 202-554

10b. PRIOR NUMBER/CODE: NA

11. TITLE: SONIC BOOM RESEARCH

12. SCIENTIFIC OR TECH. AREA: N/A

13. START DATE: Continuing

14. CRIT. COMPL. DATE: N/A

15. FUNDING AGENCY: FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. NUMBER: NA; b. TYPE:; c. DATE:; d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY: NAME: FAA/SRDS; ADDRESS: 2100 - 2nd Street, S.W., Washington, D. C. 20591; RESP. INDIV.: Thomas H. Higgins, ARD-550; TEL.: 42-63314

19. PERFORMING ORGANIZATION: NAME:; ADDRESS:; INVESTIGATORS PRINCIPAL/ASSOCIATE:; TEL.:; TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Sonic Boom Research, Certification Criteria, Design Criteria

24. TECHNICAL OBJECTIVE: To obtain Certification Criteria required by Public Law 90-411, aircraft design criteria and operational criteria regarding sonic boom environmental effects.

25. APPROACH: This is an in-house and contract effort coordinated by Interagency agreements with NASA, NOAA, DOI, and U.S. Air Force to determine the effects of sonic boom on man and his environment. Support is provided by NAFEC in the processing of TDR-1 Sonic Boom recorder data and by the Aeronautical Center in the maintenance of TDR-1 recorders.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT

- F-111 Supersonic Boomless Flight Demonstrations - 12/76
- System Definition-Transcontinental Boomless Flight System - 12/76
- NOAA Report on Atmospheric Effects On Sonic Boom Lateral Propagation - 6/77

26A ACCOMPLISHMENTS FY-76

- Completed Sonic Boom Recorder Tests.
- In-House FAA Report: Recorded Seismic Compression Waves Preceding Sonic Booms
- Obtained USAF Support To Furnish F-111 Boomless Flight Demonstration Aircraft.

27. Source of Requirement PL-90-411 ED-20-2

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 28 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME July 1, 1976	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: IV 204-551/

10b. PRIOR NUMBER/CODE: NA

11. TITLE: ENGINE EMISSIONS

12. SCIENTIFIC OR TECH. AREA	13. START DATE: Continuing	14. CRIT. COMPL. DATE: NA	15. FUNDING AGENCY: FAA

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT: a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
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ADDRESS: 2100 - Second St. S.W.
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RESP. INDIV.: Joseph Gwiazdowski, ARD-550
TEL: 426-4922

20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Climatic Impact, Stratosphere, Troposphere, Engine Emissions, Monitoring, Fuel Sulfur

24. TECHNICAL OBJECTIVE: To develop accurate, current engine exhaust emission and fuel sulfur loading characteristics for the world fleet of aircraft that operate in the stratospheric regions. This compilation will be used as input data to a global modeling effort to predict aircraft impact on the stratosphere.

25. APPROACH: Where available, actual emission factors will be compiled from data taken by various government and industry sources. If data at altitude is not available, sea level information will be corrected to the proper conditions using appropriate relationships. Fuel sulfur content will be monitored and coupled with the time spent in the stratosphere, calculations of the amount of sulfur oxides will be maintained.

26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:

o Initial up-date of existing engine emission factors completed and reported - 9/76

ACCOMPLISHMENT FY-76:

o Initial assessment of world fleet emission burden in the stratosphere issued.

27. Source of Requirement - Directed Action S-1

28. Blank

29. Blank

30. Precedence Blank

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

21 SUPPORT

RESEARCH AND TECHNOLOGY R ME	1. NA	2. GOVT ACCESSION NA	AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
5. DATE OF RESUME 7/1/76	6. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE I-213-620	10b. PRIOR NUMBER/CODE 213-620, 213-621, 213-622

11. TITLE: SPECTRUM APPLICATIONS ENGINEERING

12. SCIENTIFIC OR TECH. AREA Air Facilities 001500, Computers 004200, Wave Propagation 017000 Test Equipment 008700	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY

16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:	

18. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA ADDRESS: 2100 Second St., S. W. Washington, D. C. 20590 RESP. INDIV.: Raymond Johnson, ARD-61 TEL: 202-426-3628	20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS: RF Propagation, spectrum, OTP, IRAC, ICAO, ITU, CCIR

24. Technical Objective: To continue the development of technical expertise in the highly specialized field of RF propagation; To develop the sophisticated test equipment and measurement procedures needed to more accurately certify facility operation and resolve interference situations in a more timely manner; To obtain/retain spectrum support for new/existing FAA systems in the OTP/IRAC and ICAO/ITU/CCIR forums where we must compete with all other users for spectrum support.

25. Approach: Propagation computer models will be developed/refined for solving a wide variety of day-to-day spectrum management problems (field and Headquarters). Propagation studies will be conducted as required in support of WARC '79 preparation. A self-contained test van and associated test procedures will be developed for use by Regional and Headquarters frequency management personnel. National and International spectrum management forums will be participated in to the extent necessary to satisfy the spectrum needs of the agency.

26. Milestones Scheduled for Accomplishment:

SCAM Vehicle delivered per specification FAA-ER-620-001	10/76
Special Purpose RML antenna alignment receiver delivered	12/76
Report on RML swamp path study issued	12/76
Publication of report on propagation model refinements	1/77
Development of Phase I remote terminal capability with ECAC	2/77

26a. FY-76 Accomplishments:

Published Report FAA-RD-75-136 entitled "Effects of High Latitude Geophysical Events on VHF Aeronautical Navigation Aids."

Published Report FAA-RD-75-198 entitled "Effects of High Latitude Geophysical Events in the Aeronautical Radio Frequency Bands."

27. Source of Requirement Administrator (functional responsibility)	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY R. ...E	1. NA	2. GOVT ACCESSION NA	AGCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME A	6. SECURITY U OPT FMS	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-213- 621

10b. PRIOR NUMBER/CODE:

11. TITLE: RADAR/BEACON SPECTRUM PLANNING

12. SCIENTIFIC OR TECHN. AREA: Radar Detection 013700
Air Facilities 001500 Computer 004200

13. START DATE:

14. CRIT. COMPL. DATE:

15. FUNDING AGENCY:

16. PROCURE. DEVICE: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second St., S. W.
Washington, D. C. 20590
RESP. INDIV.: Joseph L. Pierzga, ARD-62
TEL: 202-426-3628

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: Electromagnetic Compatibility, radar, ATCRBS, DABS, spectrum

24. Technical Objective: To conduct studies and make recommendations for improving the overall electromagnetic compatibility (EMC) of existing and new radar and radar beacon (ATCRBS and DABS) systems. To upgrade the existing capability for predicting ATCRBS performance in a given environment and validate the resultant model. To develop a DABS performance prediction model.

25. Approach: An EMC analysis will be performed to support the introduction of the ASDE-3 radar into the 15.7 to 16.2 GHz band. Band studies will be conducted as required to insure continued spectrum support for the agency's ASR and ARSR operations (existing and planned). Specific problems at terminal and enroute ATCRBS sites will be investigated and proposed solutions will be developed utilizing the latest performance prediction models. An EMC study will be performed to determine the impact of DABS on TACAN/DME.

26. Milestones Scheduled for Accomplishment:

ARSR EMC Analysis Report released	11/76
ASDE-3 EMC Analysis Report released	11/76
Development of DABS Performance Prediction Model completed	2/77
Report on DABS impact on TACAN/DME issued	2/77
Report on ATCRBS/BCAS EMC Analysis issued	2/77
ATCRBS Problem Site Analysis completed	9/77

26a. FY-76 Accomplishments:

Report FAA-RD-75-109 entitled "Interference Potential of the Discrete Address Beacon System (DABS) Provisional Signal Formats on X and Y Mode TACAN Equipment" published
ATCRBS Airborne Antenna Model developed

27. Source of Requirement: Administrator (functional responsibility)

28. Blank

29. Blank

30. Precedence: Blank

31. Relevant Project Code:

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY R...ME	1. NA	2. GOVT ACCESSION NA	...ENCY ACCESSION NA	REPORTS IDENT. ...YMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME A	6. SECURITY U DOT ...	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-213-1622

10b. PRIOR NUMBER/CODE:

11. TITLE: COMMUNICATIONS/NAVIGATION SPECTRUM PLANNING

12. SCIENTIFIC OR TECH. AREAS	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
Air Facilities 001500 Computers 004200 Navigation & Guidance 010800 Communications 003900			

16. DOCUMENT REVISED	17. CONTRACT/GRANT	a. DATE
NA	b. NUMBER: NA c. TYPE: d. AMOUNT:	

18. GOV'T LAB/INSTALLATION/ACTIVITY
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INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: RNAV, Communication, Navigation, VOR, TACAN, DME

24. Technical Objectives: To develop a frequency assignment/station selection model for RNAV routes. To perform computer analyses/studies to support the continued implementation of 25 kHz VHF air/ground frequency assignments. To develop an implementation plan for 25 kHz UHF air/ground frequency assignments. To update/refine frequency assignment criteria for both communications and navigation facilities and incorporate same in appropriate Handbook revisions or replacements.

25. Approach: A computer model will be developed which takes into consideration existing frequency protected VOR/TACAN/DME service volumes in evaluating proposed RNAV way points. An existing computer model at ECAC will be exercised, as required, in providing "real world" frequency assignment and frequency change guidance to AAF-30 and Regional Frequency Management Offices. A new model will be developed to select UHF assignments in a manner similar to the existing VHF model. Existing propagation prediction models will be exercised considering new hardware characteristics, to provide the basis for refined NAV/COMM frequency assignment criteria.

26. Milestones Scheduled for Accomplishment:

Development of UHF Frequency Assignment Model completed	12/76
Revised Navigation Frequency Management Handbook Issued	6/77
Issue Final Report on UHF Implementation Plan	6/77

26a. FY-76 Accomplishments:

Completion of NAFEC Testing to Identify ILS Antenna Patterns Resulting in Draft Data Report
Completed Development of Phase I 25 kHz VHF air/ground communications Plan

27. Source of Requirement Administrator (functional requirement)	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
9. LEVEL OF RESUME Subprogram				

10a. CURRENT NUMBER/CODE: I 215-307

10b. PRIOR NUMBER/CODE: 215-607

11. TITLE: RELIABILITY SUPPORT ACTIVITIES

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	N/A	N/A	N/A

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE b. NUMBER c. TYPE d. AMOUNT	18.
NA	NA	NA

19. GOVT LAB/INSTALLATION/ACTIVITY
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20. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL:
ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Reliability, Maintainability, Electromagnetic Protection, Electromagnetic Compatibility, Grounding, Lightning Protection

24. Technical Objective: Development of basic reliability, maintainability, EMC, EMP, Lightning and Grounding standards for FAA NAS System. Establish guidelines and procedures for evaluation of reliability, maintainability, electromagnetic compatibility, electromagnetic protection, lightning protection and grounding. Necessary engineering support to R&D and AAF will be provided.

25. Approach: By in-house and contract support, establish guidelines for design analysis and evaluation, generate handbooks and expand technology as applicable toward complete functional reliability, maintainability, EMC, EMP, lightning protection and grounding for FAA equipment and systems.

26. Milestones Scheduled for Accomplishment

*Engineering Support to ARD and AAF - continuing	
.Vacuum tube study	1/77
.VOR Cost vs. benefit tube study	7/76
.Power Conditioning Systems Criteria	2/77

26a. Accomplishment for FY-1976

.Lightning and transient protection systems for RCAG, ASR-7, CAT III ILS
.EMC Handbook and Specification
.Grounding Handbook

27. Source of Requirement SM 5-69-28/AF-75-15A 9550; AF-76-14	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code -1

I215-307

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		NA	2. GOVT ACCESSION NA	AGENCY ACCESSION IV.	REPORTS ISSUANCE SYMB. RD 1750.1
4. DATE OF RESUME 7/1/76	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I-215-620

10b. PRIOR NUMBER/CODE:

11. TITLE: ELECTROMAGNETIC RADIATION MEASUREMENT

12. SCIENTIFIC OR TECH. AREA: Air Facilities 001500
Test Equipment 008700 Wave Propagation 017000

13. START DATE:

14. CRIT. COMPL. DATE:

15. FUNDING AGENCY:

16. PROCURE. METHOD: NA

17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY
NAME: FAA
ADDRESS: 2100 Second St., S. W.
Washington, D. C. 20590

RESP. INDIV.: Raymond Johnson, ARD-61
TEL: 202-426-3628

19. PERFORMING ORGANIZATION
NAME:
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INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION: NA

22. COORDINATION: NA

23. KEYWORDS: ERMAC, OTP, Electromagnetic, biological

24. Technical Objective: To perform power density surveys in and around FAA facilities, airport environments and the interior of aircraft in support of OTP's Electromagnetic Radiation Management Advisory Council (ERMAC). ERMAC's goal is the assessment of biological and non-biological hazards of non-ionizing electromagnetic radiation.

25. Approach: National Bureau of Standards is performing the field measurements with emphasis on valid techniques and instrumentation for accurate power density surveys. This is a contract effort.

26. Milestones Scheduled for Accomplishment:

Delivery of Phase III (Final) EM Field Intensity Report 1/77

26a. FY-76 Accomplishments:

Phase I & II EM Field Intensity Reports received

27. Source of Requirement: Administrator (functional responsibility)	28. Blank
29. Blank	30. Precedence: Blank
	31. Relevant Project Code:

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. NO. RD 1750-1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U DOT / OTHER	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 216-101

10b. PRIOR NUMBER/CODE: None

11. TITLE: ATCS Selection and Performance Measurement

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:
NA	

19. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME:
ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20591	ADDRESS:
RESP. INDIV.: George A. Scott, ARD-150	INVESTIGATORS PRINCIPAL/ ASSOCIATE:
TEL: (202) 426-9327	TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Air Traffic Control, Personnel Measurements, Performance Tests

24. Technical Objective: Develop and validate a measurement system that will objectively rate the radar control performance of a developmental or journeyman level ATCS.

25. Approach: SRDS in conjunction with NAFEC will develop, test and validate techniques, hardware and software necessary to achieve the technical objectives. End products will consist of reports, specifications and support for Academy/ field implementation.

26. Milestones Scheduled for Accomplishment:

.Commence CPM Field Validation	3/77
.CPM Data Bank Completed	7/77
.CPM Field Validations Completed	8/77
.Academy Adaptation Specification Completed	8/77
.Field Validation Final Report Completed	8/77

26.A Accomplishments for FY-76:

.CPM En Route Experiments Completed	8/76

27. Source of Requirement FAA-ED-21-3	28.
29.	30. Precedence 31. Relevant Project Code

I 216-101

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. NUMBER RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U RPT / RES	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10b. PRIOR NUMBER/CODE
I 216-102	None

11. TITLE:
FAA Academy ATCS Training

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
N/A	10/76		FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE
NA	b. NUMBER: NA c. TYPE:	d. AMOUNT:

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20591 RESP. INDIV.: George A. Scott, ARD-150 TEL: (202) 426-9327	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Air Traffic Control, Simulation, Training, Academy, Tower

24. Technical Objective: Support the agencies effort to acquire realistic ATC training simulators for the FAA Academy. Two types of simulators to be considered (1) En Route and ARTS III radar environment (2) control tower environment.

25. Approach: SRDS in conjunction with the Office of Personnel and Training, Air Traffic Service, FAA Academy and NAFEC will conduct engineering studies, develop the functional specifications for procurement of the Academy simulators, and provide technical expertise during the acquisition and implementation of the system.

26. Milestones Scheduled for Accomplishment:

.Tower Simulator Technical Feasibility Report	4/77
.Award Contract for Radar Training Facility	4/77

26.A Accomplishments for FY-76

.Functional Specifications for ATC Radar Simulator	4/76
.RFP Issued ATC Radar Simulator	8/76

27. Source of Requirement FAA-ED-21-3

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY U DOT / OTHER	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE	10A. PRIOR NUMBER/CODE
I 216-103	None

11. TITLE:
ATC Facility ATCS Training

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. ACCOUNT:
NA	

18. GOVT LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20591 RESP. INDIV.: George A. Scott, ARD-150 TEL: (202) 426-9327	NAME: ADDRESS: INVESTIGATORS PRINCIPAL/ ASSOCIATE: TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS
Air Traffic Control, Simulation, ATC Facility Training

24.

Technical Objective: Support the upgrading of training simulation capabilities at ATC facilities. This includes: investigation of simulator pilot consoles; enhancement of En Route (DYNSIM) and ARTS III (ETG) simulator programs; development of training capability for ARTS II facilities.

25. Approach: SRDS in conjunction with NAFEC will investigate, develop, test and validate techniques, hardware and software necessary to achieve the technical objectives. End products will consist of reports, specifications and support for field implementation.

26. Milestones Scheduled for Accomplishment:

.Pilot Console Engineering Model Development	11/76
.NAFEC Pilot Console Evaluation Complete	1/77
.Facility Training Software Enhancement Studies	1/77
.Pilot Console Technical Data Package/Specifications	3/77
.ARTS II Training Cost/Benefit Analysis	3/77
.ARTS II Training Functional Specification	9/77

26.A Accomplishments for FY-76

.Feasibility and Cost Analysis	9/76

27. Source of Requirement FAA-ED-21-3	28.
29.	30. Precedence 31. Relevant Project Code

I 216-103

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. NO. RD 1710.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 216-104		10A PRIOR NUMBER/CODE None		

11. TITLE:
Upgraded ATC System Training

12. SCIENTIFIC OR TECH. AREA NA	13. START DATE 10/76	14. CRIT. COMPL. DATE	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. ACCOUNT:		

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA/SRDS
ADDRESS: 2100 2nd Street, S.W.
Washington, D.C. 20591
RESP. INDIV.: George A. Scott, ARD-150
TEL: (202) 426-9327

19. PERFORMING ORGANIZATION
NAME:
ADDRESS:
INVESTIGATORS PRINCIPAL: ASSOCIATE:
TEL: TYPE:

21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA

23. KEYWORDS
Air Traffic Control, Simulation, Training

24.

Technical Objective: Provide engineering analysis for identification and specification of long-term En Route (DYNSIM) and ARTS III (ETG) facility training.

25. Approach: Recognizing the deficiencies of the DYNSIM and the ETG and the increased processing demands placed on the En Route and ARTS III automation systems SRDS and NAFEC will develop, test and validate techniques, hardware and software for providing a more efficient training system. End products will consist of reports, specifications and support for field implementation.

26.. Milestones Scheduled for Accomplishment:

.Analysis and Operational Requirement	6/77
.Evaluation of ETG/DYNSIM Adequacy	8/77
.Recommendations for Upgrading Facility Simulation Capabilities	12/77

26.A Accomplishments for FY-76

None

27. Source of Requirement FAA-ED-21-3	28.
29.	30. Precedence 31. Relevant Project Code

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS CONT. SYMB. RD 1710.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME A	6. SECURITY APT U GRP	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10. CURRENT NUMBER/CODE: I 216-105

10A. PRIOR NUMBER/CODE: None

11. TITLE: Productivity in Advance ATC Automation Packages

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		FAA

16. PROCURE. METHOD	17. CONTRACT/GRANT a. DATE: b. NUMBER: NA c. TYPE: d. AMOUNT:
NA	

18. GOV'T LAB/INSTALLATION/ACTIVITY	20. PERFORMING ORGANIZATION
NAME: FAA/SRDS	NAME: DOT/TSC
ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20591	ADDRESS: Kendall Square Cambridge Mass. 02142
RESP. INDIV.: George A. Scott, ARD-150	INVESTIGATORS PRINCIPAL/ ASSOCIATE: Robert Wiseman
TEL: (202) 426-9327	TEL: 8-837-2014 TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Air Traffic Control, Productivity, Personnel & System Performance and Measurements

24. Technical Objective: Develop and validate ATC controller productivity benefits as they apply to selected ATC En Route and ARTS III automation enhancement packages. At least six of the enhancement packages that intend to increase productivity will be evaluated with a technique that includes effects of safety, capacity and sustained service.

25. Approach: TSC shall develop a fast-time simulation to serve as a predictive tool in assessing productivity gains due to NAS En Route and ARTS III enhancement packages. Correlate the measures of productivity used in simulation studies to observations of ATC controller work pace in real-time simulations completed at NAFEC and in actual operations in the field.

26. Milestones Scheduled for Accomplishment:

.Award Fast Time Simulation Software Contract	10/76
.Validate Accuracy of Model at Terminal Sites	7/77
.Develop Automatic Processing of Field Data	9/77

26.A Accomplishments for FY-76:

.Complete Development of Fast-Time Simulation	7/76
.Deliver Fast-Time En Route Model to SRDS	9/76

27. Source of Requirement: OST Review of UG3rd

28.

29.

30. Precedence

31. Relevant Project Code

Items 1 to 28 identical to DD Form 1498 and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME	1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORT RD 1715.1
4. DATE OF RESUME 10/1/76	5. KIND OF RESUME	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram

10a. CURRENT NUMBER/CODE: I 217-150

10b. PRIOR NUMBER/CODE: 112-150

11. TITLE: National Flight Data Center - Instrument Approach Procedure Automation

12. SCIENTIFIC OR TECH. AREA	13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
NA	10/76		

16. PROCURE. METHOD	17. CONTRACT/GRANT	a. DATE:	
NA	b. NUMBER: NA	c. TYPE:	d. AMOUNT:

18. GOV'T LAB/INSTALLATION/ACTIVITY
NAME: FAA
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TEL: TYPE:

21. TECHNOLOGY UTILIZATION	22. COORDINATION
NA	NA

23. KEYWORDS: Instrument Approach Procedure, Automated Validation, Data Management System, National Flight Data Center

24. Technical Objective: Develop and validate a subsystem to the National Flight Data Center data system to provide automated assistance in the:

1. Development and revision of instrument approach procedures.
2. Verification and processing of that data in the field offices of the Flight Standards Service.
3. Validation of that data in the National Flight Data Center of the Air Traffic Service, and interface with the aeronautical chart production facilities of the National Oceanic Survey.

25. Approach: Contract services to design, develop, and demonstrate the operational subsystem. In-house FAA support to provide the hardware and computer system required for the test and evaluation. Interagency support as follows:

1. National Ocean Survey to assist in the definition and design of the required interface.
2. United States Air Force to assist in the software production and documentation of the criteria for Terminal Instrument Procedures (TERPS).

26. Milestones Scheduled for Accomplishment:

.Subsystem Design and Specification	1/77
.Operational Demonstration for AAT/AFS	10/77

26.A Accomplishments for FY-76:

Contract Award to TRW Systems Group	10/75
Memorandum of Agreement with USAF	12/75
Completion of System Studies	8/76

27. Source of Requirement: FAA-ED-11-1

28.

29.

30. Precedence

31. Relevant Project Code

I 217-150

Items 1 to 26 identical to DD Form 1498 and NASA Form 1122.

GPO 911-228