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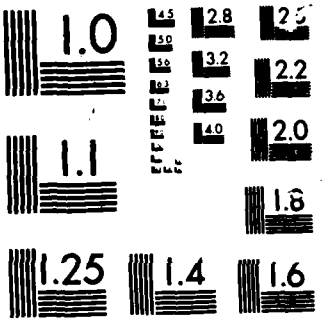

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FY 86
TECHNICAL OBJECTIVE DOCUMENT (TOD)

MARCH 1986

AFESC

ENGINEERING & SERVICES LABORATORY
AIR FORCE ENGINEERING & SERVICES CENTER
TYNDALL AIR FORCE BASE, FLORIDA 32403

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This FY-86 TOD details the Directorate of Engineering and Services Laboratory (HQ AFESC/RD) research and development program in civil engineering and environmental quality. The programs are directed toward expanding the technology base needed for developing state-of-the-art capabilities to support the wartime Engineering and Services' role in projection of aerospace power. These efforts encompass activities in the areas of facility systems, pavements, fire, and rapid runway repair (RRR) technology. In addition, environmental research is pursued to assure that compliance with material environmental regulations will not impede Air Force operations.

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PREFACE

This technical report sets forth technical objectives for civil engineering (CE) and environmental engineering (EE) research and development (R&D) conducted by the Headquarters Air Force Engineering and Services Center, Engineering and Services Laboratory (HQ AFESC/RD), Tyndall Air Force Base, Florida 32403-6001. This information is designed to provide other laboratories, industry, and the academic community with necessary information on this Laboratory's planned technology programs. Project officer for these programs is John D. Martel, HQ AFESC/RDXP.

This document is furnished for information and general guidance only; it is not to be construed as a request for proposal (RFP), or as a commitment by the United States Government to issue a contract, or as authority for the undersigned to incur expenses in anticipation of a Government contract; nor is it to be used as the basis of a claim against the Government. The furnishings of this document by the Government is not to be construed to obligate your company to furnish to the Government any experimental, developmental, research, or production articles, services or proposals, or comment with respect to such document, the Technical Objective Document (TOD) program, or any aspects of either.

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This document has been reviewed by the Public Affairs (PA) office and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nationals.

This document has been reviewed and is approved for publication.

Robert E. Boyer

ROBERT E. BOYER, Colonel, USAF
Director of Engineering and Services Laboratory

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TABLE OF CONTENTS

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SECTION I

INTRODUCTION

The Air Force TOD program is an integral part of the process by which the Air Force plans and formulates a detailed technology program to support the development and acquisition of Air Force weapons systems. Each Air Force laboratory annually prepares a research and technology (R&T) plan in response to available guidance based on USAF requirements, the identification of scientific and technological opportunities, and the needs of present and projected systems. These plans include proposed efforts to achieve desired capabilities, to resolve known technical problems, and to capitalize on new technical opportunities. The proposed efforts undergo a lengthy program formulation and review process. Generally, the criteria applied during the formulation and review are responsiveness to stated objectives and known requirements, scientific content and merit, program balance, developmental and life cycle costs, and consideration of payoff versus risk.

It is fully recognized that the development and accomplishment of the Air Force technical program is a product of teamwork on the part of the Air Force laboratories and the industrial and academic research and development (R&D) community. The TOD program is designed to provide industry and the academic community with necessary information on the Air Force laboratories' planned technology programs. Each laboratory's TOD is extracted from its R&T plan.

Specific objectives are:

1. To provide planning information for independent R&D programs.

2. To improve the quality of the unsolicited proposals (UP) and R&D procurements.

3. To encourage face-to-face discussions between nongovernment scientists and engineers (S&E) and their Air Force counterparts.

One or more TODs have been prepared by each Air Force laboratory that has responsibility for a portion of the Air Force's technical programs. Classified TODs are available from the Defense Documentation Center (DDC), and unclassified TODs are available from the National Technical Information Service (NTIS).

SECTION II

HOW TO USE THIS DOCUMENT

UPs to conduct programs leading to the attainment of any of the objectives presented in this document may be submitted directly to an Air Force laboratory. However, before submitting a formal proposal, we encourage you to discuss your approach with the laboratory point of contact. After your discussion or correspondence with the laboratory personnel, you will be better prepared to write your proposal.

As stated in the "AFSC Guide for UPs" (copies of this informative guide on UPs are available by writing to Headquarters Air Force Systems Command (HQ AFSC/PPPR, Andrews AFB DC 20334), elaborate brochures or presentations are definitely not desired. The "ABCs" of successful proposals are accuracy, brevity, and clarity. It is extremely important that your letter be prepared to encourage its reading, to facilitate its understanding, and to impart an appreciation of the ideas you desire to convey. Specifically, your letter should include the following:

1. Name and address of your organization.

2. Type of organization (profit, nonprofit).

3. Concise title and abstract of the proposed research, and the statement indicating that the submission is a UP.

4. An outline and discussion of the purpose of the research, the method of attack, and the nature of the expected results.

5. Name and research experience of the principal investigator.

6. A suggestion as to the proposed starting and completion dates.

7. An outline of the proposed budget, including information on equipment, facility, and personnel requirements.

8. Names of any other Federal agencies receiving the proposal (this is extremely important).

9. Brief description of your facilities, particularly those which would be used in your proposed research effort.

10. Brief outline of your previous work and experience in the field.

11. If available, a descriptive brochure and a financial statement.

As you read through the pages that follow, you may see a field of endeavor where your organization can contribute to the achievement of a specific technical goal. If such is the case, you are invited to discuss the objective further with the S&E identified with that objective. Further, you may have completely new ideas not considered in this document which, if brought to the attention of the proper organization, can make a significant contribution to our military technology. We will always maintain an open mind in evaluating any new concepts which, when successfully pursued, would improve our future operational capability.

On behalf of the United States Air Force (USAF), you are invited to study the objectives listed in this document and to discuss them with the responsible Air Force personnel. Your ideas and proposals, whether in response to the TODs or not, are most welcome.

SECTION III

MANAGEMENT OVERVIEW

A. LABORATORY MISSION

1. RD's mission is derived from the engineering and services (E&S) mission, as well as that of the Headquarters Air Force Systems Command (HQ AFSC). The E&S mission is to provide the necessary assets and skilled manpower to prepare and sustain worldwide installations as stationary platforms for projection of aerospace power in peace and war.

2. The HQ AFSC mission is to advance aerospace technology and apply it to aerospace systems development/improvement, and to acquire superior, cost-effective, supportable aerospace systems and equipment.

3. RD must plan and execute USAF basic research, exploratory development, advanced development, and selected research and engineering development programs to support E&S's operational missions in airbase performance and Air Force projection and employment of air power. RD is tasked with developing and providing the technology base for the tools and training of the military engineer which must be as much "state of the art" as the weapons systems he supports.

4. Principal elements of this mission include:

a. Achieving and maintaining superiority in R&T areas required to support the E&S operational mission.

b. Establishing and effectively applying laboratory capabilities to prevent technological surprises.

c. Identifying improvements that meet near- and/or long-term needs of the military engineer in support of aerospace forces.

d. Providing technical support to operational and logistics commands.

B. INVESTMENT STRATEGY

1. Our investment of R&D resources is guided by our goal of providing state-of-the-art capabilities to the E&S forces in the achievement of their wartime mission. The definition of technical requirements associated with that mission is continuing to evolve into a more structured and effective process. In the past, our investment approach has been motivated by statements of need (SON), logistics needs (LNs), technology needs (TNs), public law, and Air Force planning documents (Vanguard). In addition, our investment goals were reviewed and guided by the Engineering and Services Requirements Board (ESRB), composed of the director of E&S and his major command (MAJCOM) deputy chiefs of staff (DCS). In the future, this investment guidance will be supplemented by the results of an E&S mission area analysis (ESMAA) process established within the Air Staff. The results of the ESMAA

will form the foundation for a continuing E&S readiness technical assessment (ESRTA). The ESRTA will evaluate the operational mission taskings identified in the ESMAA to derive the capabilities and deficiencies associated with each. These derived deficiencies will play a key role in the development of future technical and technological investment strategies of this Laboratory.

2. Current emphasis in the laboratory R&D program is placed on deriving the technologies to support advancements in the areas of airbase survivability (ABS), including mission-essential facilities and aerospace launch and recovery platforms, survivable power, fire protection and recovery, and environmental control of Air Force mission activities.

3. The payoff of these R&D activities is improved readiness of our operational forces and decreased impact of national environmental regulatory requirements on Air Force peacetime operations. Our facilities survivability and postattack airbase recovery efforts will provide advanced materials, equipment, and techniques to increase the Air Force's wartime sortie generation capability. Our environmental quality (EQ) efforts will provide the Air Force with the technology required to comply with federal and state environmental regulations, while conducting training and tactical missions, operating its support facilities, and developing, producing, and deploying new weapon systems.

C. DIRECTOR'S ASSESSMENT

1. A special study of the E&S mission area performed by an Ad Hoc Committee of the Air Force Scientific Advisory Board (SAB) in 1983-84 found a serious imbalance between Air Force investments in weapons system technology and technological investments to assure the adequate performance of airbase operational support systems. The Ad Hoc Committee identified the need for a stronger R&T program to keep airbase support capabilities on a comparable readiness basis with the weapon systems they support. The results of these intensive studies have allowed this Laboratory to better understand its capabilities, limitations, and challenges. The studies confirmed the importance of the laboratory's role in developing and sustaining an adequate technology base to assure the effectiveness of E&S forces in their critical role in the projection and employment of air power.

2. Over the next 5 years, our program will have significant impact on the ability to achieve the goals established by the Ad Hoc Committee. The dominant role played by the Rapid Runway Repair (RRR) program will dwindle over this period, as that program phases down. The resources freed by this change will be directed toward building a strong technology base in the facilities system and analysis, airfield pavement, and fire protection and control areas. The Defense Environmental Restoration Program (DERP) will dominate the technological and engineering development activities of our environmental quality program over the upcoming 5-year period. Our ability to strengthen our technological base program is made possible by an anticipated higher than inflationary (12 percent) increase in our 6.2 Exploratory Development Program and maintenance of the current 6.3 engineering development funding profile after completion of the RRR engineering development activities in fiscal year 1986.

3. As we strenghten our technology base we will pursue the development of centers of excellence (COE) in the areas of (1) centrifuge testing, with application to facilities survivability and EQ; (2) pavements technology, and (3) groundwater transport mechanisms, with application to current Air Force environmental assessment and control research.

D. ORGANIZATION AND MANAGEMENT

1. RD is part of the HQ AFESC located at Tyndall AFB FL. The director of the Laboratory reports directly to the commander at AFESC, and to the Deputy Chief of Staff for Science and Technology at Headquarters Air Force Systems Command (HQ AFSC/DL), Andrews Air Force Base, District of Columbia 20334. Operations and maintenance funds are provided by the Air Staff through the Center, while R&D funds and program management direction are provided by HQ AFSC/DL.

2. This Laboratory has been organized to respond to the Air Force E&S' needs. The organization is structured to implement basic research, exploratory development, advanced development, and full-scale development in the areas of fire protection, facilities (pavements and protective construction), RRR, hazardous waste, and Air Force fuels and chemicals. The organizational chart for the Laboratory reflects these technical areas.

E. FUNDS

The Laboratory manages approximately $32 million annually. All our funds are used to obtain the expertise and capabilities of universities, industry, and other government agencies in the development of civil engineering and EQ technology. These funds support basic research, exploratory develoment, advanced development, and full-scale development programs, and include funds provided by other government agencies desiring support in these areas.

F. MANPOWER

The Laboratory consists of approximately 107 assigned military and civilian scientific, engineering, administrative, and support personnel with approximately 60 percent in the S&E category covering the full range of disciplines relevant to E&S. The high level of educational attainment of professionals is reflected by over 17 percent with doctorate degrees, and 50 percent with master's degrees. In addition to these, we have approximately 23 scientific, engineering, and support personnel who support the laboratory primarily in the areas of plans, programs, and financial management.

G. FACILITIES

The ESL is collocated with the HQ AFESC. The Lab maintains and operates an airfield soils and services evaluation track (ASSET) located at Tyndall. The Laboratory has under construction a new facility with over 33,000 square feet at a cost of $5.9 million. When complete in the spring of 1986, it

will house our EQ technology division, which is currently occupying temporary facilities. Also scheduled to occupy this new facility will be the pavements test branch of HQ AFESC.

H. SUMMARY

The following sections project the direction of our R&D activities for the next 5 years. General objectives, specific objectives, and benefits to the Air Force are explained in Sections IV and V. The projections are based on needs identified in Air Force requirements and guidance documents, as well as on technology deficiencies projected by the scientific community. For this reason, they are under constant review and revision to assure optimization of R&D resources. Technical approaches for each major technology area are provided in Appendices A through F.

SECTION IV

CIVIL ENGINEERING TECHNOLOGY PROGRAM

A. FIRE PROTECTION

1. General Objective:

Improve Air Force fire protection's effectiveness, readiness, and mobility for use in a wartime environment.

2. Specific Goals:

Improve fire detection and suppression systems, aircraft crash rescue/structural vehicles and portable equipment for use in a wartime environment; provide a more realistic and cost-effective method of proficiency training for firefighters in aircraft firefighting; improve existing firefighting agents; reduce agent and vehicle requirements by 50 percent; and develop, test and validate fire protection ensembles for firefighters in a chemical warfare (CW) environment.

3. Benefit to the Air Force:

Rapid fire suppression for aircraft and munitions; safe environment for aircrews/ground support; reduced agent damage to aircraft; safe "quick-turn" operations, reduced risk during sortie generation; extinguish fire in incipient stage; more efficient agent application; rapid entry/reduced rescue time and safety for reserves and aircrews/passengers; reduced annual training costs; increased proficiency; ability to combat fires in a CW environment; voice communications capability; and extended life and reduced quantity of protective clothing.

B. FACILITIES SYSTEMS AND ANALYSIS

1. Pavement Technology

a. General Goal: Air Force runways, taxiways, and aprons are facing the same crises as the nation's highway infrastructure--rapid deterioration. Total replacement of these aged pavements would require over $10 billion and appears unreasonable in view of annual expenditures and record budget deficits. The objective of this technical area is to develop new methods to test, evaluate, maintain, repair and manage existing pavement systems.

b. Specific Goals: Develop new pavement test and evaluation (T&E) systems for Air Force pavements; improved methods and techniques for predicting performance, and for planned maintenance and repair; develop new design, construction, and maintenance methods to ensure the most efficient expenditure of available funds; and, develop new and improved materials for expedient and nonexpedient repair and recycling.

c. Benefit to the Air Force: More cost-effective criteria to design recycled pavements for improved performance; reduced surface cracking; stronger, more foreign object damage (FOD)-free airfields; enhanced management and readiness, and cost and manpower savings.

2. Facility Technology

a. General Goal: Develop a comprehensive technology base from which to support advanced development for specific weapon systems and defense operations.

b. Specific Goals: Develop more accurate small-scale and analytical models to predict structural response to conventional weapons effects, as well as more cost-effective methods to perform experimental testing, while providing qualitative test results; develop the required technology to produce more economical structural materials and systems for construction of advanced USAF protective shelters; develop technology required to protect various facilities from small arms, mortar and conventional weapons threats; ensure survivable power and utility systems for bare base, mobility and key strategic and tactical installations; provide reliable economic energy systems for remote locations which are subject to severe environmental conditions; and support general Air Force-unique facility-related requirements.

c. Benefit to the Air Force: Enhanced survivability of critical facilities; improved readiness; sustained operational capability; reduced construction costs; and identification of substandard facilities.

C. RRR

1. General Objective:

Develop and field the capability to initiate limited fighter operations from a bomb-damaged airfield 1-hour after "all clear" and conduct sustained operations within a few hours after an attack.

2. Specific Goals:

Determine how rough airfield pavement repairs can be and still not cause an aircraft to experience excessive loads; develop alternate surfaces which would allow the Air Force to initiate operations 1-hour after attack, support 1,000 sorties in all weather conditions, and have a 20-year life span; and develop materials, equipment and procedures for rapid temporary repairs.

3. Benefit to the Air Force:

Minimize risk of damage to aircraft; reduced minimum operating strip (MOS) repair time; reduced RRR materials; improved capability after attack; and greater survivability.

SECTION V

ENVIRONMENTAL TECHNOLOGY PROGRAM

A. HAZARDOUS WASTE

1. General Objective:

Provide the technology to eliminate or reduce the generation of pollutants that adversely affect human health or welfare, and to ensure compliance with environmental regulations.

2. Specific Goals:

Provide Air Force industrial activity and waste management personnel with technologies and processes that recover and reuse hazardous waste material, reduce hazardous waste stream flows, and reduce the quantity and associated cost of hazardous waste disposal; furnish cost-effective methods of providing potable water to support the Air Force worldwide with minimal environmental contaminants on Air Force operations; reduce the cost of the Installation Restoration Program (IRP) by 33 percent by developing more efficient cost-effective technology to restore contaminated Air Force land and ground water to acceptable levels.

3. Benefit to the Air Force:

Provide regulatory compliance and reduced O&M costs; provide adequate bare-base water and reduce treatment cost; reduced IRP costs; restoration of land for mission needs, and reduced IRP investigation costs.

B. AIR FORCE FUELS AND CHEMICALS

1. General Objective:

Provide the technology to eliminate or reduce the generation of physical, chemical, and biological pollutants that adversely affect human health or welfare, and to ensure compliance with environmental regulations.

2. Specific Goals:

Build the technical base concerning the chemical properties and environmental interactions of Air Force fuels and chemicals; develop models to assess the environmental consequences of emissions from Air Force operations; develop the instrumentation necessary for valid assessment of the Air Force's effect on the environment, and investigate and develop methods for concentrating (or reducing) waste products that may affect EQ.

3. Benefit to the Air Force:

Provide the Air Force with the necessary information to develop long-range EQ strategies; allow EQ assessments and response in emergency situations; provide the Air Force a capability for tracking toxic vapor clouds, evaluation of emissions from jet engine and compliance with EQ regulations.

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APPENDIX A

FIRE PROTECTION

PROJECT TITLE: REMOTE CONTROLL FIREFIGHTER

PE: 62206 JON: 26730052
TECHNOLOGY: FIRE
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a remotely controlled machine system to combat fires and conduct salvage and overhaul operations in areas and environment hostile to human firefighters. _____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: FUEL NEUTRALIZATION

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop an additive for AFFF that will result in the inertion of aviation fuel. _____
_____
_____

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: NEXT GENERATION AGENT

PE: 62206 JON: 26730067
TECHNOLOGY: FIRE
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Originate concepts for next generation fire suppressant for multidimensional variable-class fires. _____
_____
_____

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: NEW AGENT DISPEN CONCEPTS

PE: 62206 JON: 26730068
TECHNOLOGY: FIRE
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a conceptual design for a long-range fire suppressant delivery system. _____
_____
_____

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: FIRE MODELING

PE: 62206 JON: 26730044
TECHNOLOGY: FIRE
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the development of mathematical algorithums and computer routines which model crashed aircraft fire phenomology.
_____
_____

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: IMPROVED HALON DISPEN SYSTEM

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigation of inert materials to be added to Halon 1211 to improve throw range of extinguishing agent. _____
_____
_____

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: IMPROVED TURRET SYSTEM

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop infrared sensor guided turret for crash firefighting vehicles with ranging and area control abilities superior to other IR and manual turrets.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: COMPOSITE METAL FIRES

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate a new series of agents "BORALONS" capable of extinguishing metal fires and simultaneously inerting the metal surface to prevent reignition.

START DATE: TBD
END DATE: TBD

PROJECT TITLE: HALON FREE RADICAL TRAP

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Halon free radical traps may provide a search for a new highly effective agent by disrupting free-radical pooling of fire and abruptly ending the combustion process.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: HALON FRAGMENTATION

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Halon fragmentation by the use of external perturbations to release active materials (fragmented agents) in the fire area may provide a superior fire extinguishing agent.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: NEXT GENERATION ENSEMBLE

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FIRE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Improve safety and enhance firefighter productivity in hostile or combat environments.

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: NEW CONCEPT CRASH VEHICLE

PE: 63723 JON: 21043017
TECHNOLOGY: FIRE
ELEMENT: VEHICLES

DESCRIPTION (TECHNICAL OBJECTIVE)

Apply air cushioned technology to improve ability and cost effectiveness of aircraft rescue fire fighting.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: POST ATTACK ASSESSMENT

PE: 63723 JON: 21043022
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Identify situation facing base fire department following attack; develop and priortize response; recommend an improved post attack action guide.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: ROBOT FIRE SENTRY A/C

PE: 63723 JON: 21043018
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design, construct, test and evaluate a robotic sentry fire protection system capable of detection, suppression and notification in large body aircraft.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: MAG FIRE EXTINGUISH AGENT

PE: 63723 JON: 21041033
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a suppression agent which will extinguish magnesium fire in both the horizontal and vertical configuration.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: RESPONSE DATA SYSTEM

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop, construct, test and evaluate an automatic fire protection information system.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: MUNITIONS EFFECTS IN FIRE

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Validate criteria which defines the response times and cooling/ handling procedures to be used for munitions exposed to fires.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: REMOTE CONTROLLED FIREFIGHTER

PE: 63723 JON: 21043018
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a remotely controlled machine system to combat fires and conduct salvage operations in areas/environments hostile to human fire fighters.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: REMOTE CONTROLL EXISTING APPAR

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide firefighting capability for fires involving munitions by remotely controlling existing aircraft crash rescue vehicles.

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: ROBOT FIRE SENTRY FACILITY

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a robotic sentry system that will detect and extinguish fires at an incipient state in warehouses storing critical WRM/ HI-VALUE equipment.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: COMPOSITE METAL FIRES

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a new series of agents "BORALONS" capable of extinguishing metal fires and simultaneously inerting the metal surface to prevent reignition. _____
_____

START DATE: FY 92
END DATE: FY 92

PROJECT TITLE: OPTIMUM INSPECTION PROCEDURES

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a hand held computer program for aiding inspectors in instantly determining facility fire safety requirements._____
_____
_____

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: FUEL NEUTRALIZATION

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop an additive for AFFF resulting in inertion of aviation fuel. _____
_____
_____

START DATE: TBD
END DATE: TBD

PROJECT TITLE: FIRE MODELING

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the development of mathematical algorithums and computer routines which model crashed aircraft fire phenemomology. _____
_____

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: LITHIUM BATTERY FIRES

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop an extinguishing agent for the Lithium Batteries used in Missile Silo complexes._____
_____
_____

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: MAC TRANSPORT CONTAINERS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a fire safe air transportable hazardous material contain container to be used on C-130, C-141 and C-5 aircraft. _____
_____
_____

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: IMPROVED TURRET SYSTEM

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a infrared guided discharge turret system for new or Air Force crash firefighting vehicles. _____
_____
_____

START DATE: FY 91
END DATE: FY 93

PROJECT TITLE: IMPROVE RESCUE METHODS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Enhance the rescue of aircrew and passengers through the development of a hydralic platform for the rescue vehicle that will be capable of placing the rescue team at cockpit level. ___
_____

START DATE: FY 88
END DATE: FY 90

.PROJECT TITLE: SAFECAN COMPUTER

PE: 63723 JON: 21043014
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop device that extinguishes fire in incipient stage, provide alarm to fire department and installed in computer cabinet. _____
_____

START DATE: FY 87
END DATE: FY 92

PROJECT TITLE: IMP HALON DISPENSING SYSTEM

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Development and design of an improved halon dispensing system for new halon agents with improved throw range.

START DATE: FY 91
END DATE: FY 93

PROJECT TITLE: HARDENED A/C SHELTER

PE: 64708 JON: 25051015
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop automatic fire detection/suppression system for hardened A/C shelters capable of extinguishing 3-D fires.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: HOT PIT FIRE PROTECTION

PE: 64708 JON: 25052008
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop automatic fire detection/suppression system for hot pit refueling capable of extinguishing 3-D fires.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: CW COMM HELMET

PE: 64708 JON: 25053005
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop helmet system to provide head, heat, and CW protection. Interface with 2 Hr SCBA voice-actuated communications.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: SAFECAN KITCHEN

PE: 64708 JON: 25051021
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop device to extinguish stove top fires and suppress and disconnect ignition source. _____
_____
_____

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: SITUATION SIMULATOR

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop system for training fire fighters in tactics and decision making for combating fires in large-wide bodied aircraft. _____
_____

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: TAF RESCUE VEHICLE

PE: 64708 JON: 25054002
TECHNOLOGY: FIRE
ELEMENT: VEHICLES

DESCRIPTION (TECHNICAL OBJECTIVE)

Apply air cushioned vehicle technology to improve mobility and cost effectiveness of A/C rescue fire fighting. _____
_____

START DATE: FY 85
END DATE: FY 89

PROJECT TITLE: COMBINATION ENSEMBLE

PE: 64708 JON: 25053003
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop suitable fire fighting proximity clothing for Air Force firefighters to combat fires and rescue victims in hostile environment.

START DATE: FY 86
END DATE: FY 89

PROJECT TITLE: HYDRAZINE FF AGENT EVALUATION

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide for testing and documentation needed for Air Force certification of hyperbolic propelland control foams for use as fire suppressants.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: CW ENSEMBLE DECON

PE: 64708 JON: 25053006
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and evaluate DON/DOFF techniques for the firefighter's protective ensemble in a CW environment utilizing the ensemble, chemical undergarment and breathing aparatus.

START DATE: FY 87
END DATE: FY 87

PROJECT TITLE: HALON 2402 TOXICITY TEST

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate the toxicity and corrosive effects when used in small, medium and large scale fire tests.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: VEHICLE SIMULATOR P-4/19

PE: 64708 JON: 25052004
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and construct a vehicle training simulator to augment actual vehicle use and live fire training, yet increase quality and quantity of firefighter's proficiency.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: FLEET EVAL OF AUTO TURRET

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and test an infrared sensored turret to successfully battle 3-D, inaccessible fires envolving aircraft and weapons on a carrier deck.

START DATE: TBD
END DATE: TBD

PROJECT TITLE: HALON 2402 OPERATION TEST

PE: 64708 JON: 25051022
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate the fire suppression capability and associated environmental impact on Dibromotetrafluoroethane (Halon 2402).

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: CW ENSEMBLE OT&E

PE: 64708 JON: 25053003
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop lightweight, dual-use proximity clothing with extended safe-use life.

START DATE: FY 85
END DATE: FY 89

PROJECT TITLE: 3-D AGENT

PE: 64708 JON: 25053016
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop agent capable of providing both blanketing and vaporizing properties simultaneously to control 1, 2, and 3 dimensional class B fires.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: IR GUIDED TURRET

PE: 64708 JON: 25054001
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop automatic system for mounting on vehicle capable of sensing and extinguishing fire and monitoring for flash backs.

START DATE: FY 85
END DATE: FY 89

PROJECT TITLE: IMPROVED REBREATHER

PE: 64708 JON: 25053005
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Design, construct and test a firefighter helmet which will combine head protection, heat protection, CW protection, breathing air and a voice actuated communications system. _____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: ROBOTIC FIRE SENTRY FAC

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design, construct, test and evaluate a robotic sentry fire protection system capable of detection suppression and notification in large body aircraft. _____

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: POST ATTACK ASSESSMENT

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Identify situation facing base fire department after attack; develop and prioritize response; recommend and approve post attack action guide.

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: RESPONSE DATA SYSTEM

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop, construct, test and evaluate an automated fire protection information system.

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: ROBOT FIRE SENTRY AIRCRAFT

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design, construct, test and evaluate a robotic sentry fire protection system capable of detection, suopression and notification in large body aircraft.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: DISPEN SYS FOR SOLID AFFF

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

To develop a dispensing system for crash firefighting vehicles using dehydrated AFFF.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: DEV OPT INSPEC PROCEDURES

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

To develop a software computer program which optimizes all available information required to accomplish a fire prevention facility inspection.

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: VEH TRAINING SIM P-2

PE: 64708 JON: 25052004
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop simulator for training fire fighters in driving skills and agent application.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: VEHICLE SIMULATOR P-15

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop simulator for training fire fighters in driving skills and agent application.

START DATE: FY 87
END DATE: FY 90

PROJECT TITLE: IMPROVED TRAINING PROCEDURES

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate the latest state of the art equipment to optimize the time spent in training activities.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: IMPROVED RESCUE METHODS

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop new equipment to expedite rescue procedures for both structural and aircraft fires.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: NEW CONCEPT CRASH VEHICLE

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: VEHICLES

DESCRIPTION (TECHNICAL OBJECTIVE)

Apply air cushioned vehicle technology to improve mobility and cost effectiveness of A/C rescue fire fighting.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: NEXT GENERATION AGENT

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop next generation agent for fire suppression of multiple dimensional variable-class fires.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: REMOTE CONTROL EXISTING APPAR

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide fire fighting capability for fires involving munitions by remotely controlling existing aircraft crash rescue vehicles.

START DATE: FY 92
END DATE: FY 92

PROJECT TITLE: THERMAL TANK ASSESSMENT

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop an accurate analytical prediction methodology for response of a tank containing a volatile liquid to pool fire impingement.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: DESIGN ASSESSMENT SYSTEM

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a computer program which will determine fire design features required for various structures and fire loading.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: REMOTE CONTROLL FIREFIGHTER

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a remote controll machine system to combat fires and conduct salvage/overhaul operations in environments hostile to human firefighters.

START DATE: FY 91
END DATE: FY 93

PROJECT TITLE: NEW AGENT DISPENSE CONCEPT

PE: 64708 JON: 2505XXXX
TECHNOLOGY: FIRE
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a long range delivery system compatible with liquid suppressant as well as powders or combinations thereof to effectively combat hazardous fire environments.

START DATE: FY 92
END DATE: FY 94

APPENDIX B

PAVEMENTS

PROJECT TITLE: ALTERNATE/IMPROVED BINDERS

PE: 62206 JON: 26730071
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate materials that will modify, augment, extend and replace conventional asphalt cement binders to improve/reduce asphalt; increase resistance from high pressure A/C tires; improve rheological properties and heat resistance.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: CONT NDT PAVE EVAL SYSTEM

PE: 62206 JON: 26730064
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

The objective is to determine the technological feasibility of a continuous NDT procedure for determining the IN SITU modulus of the pavement system and determining the structural capacity of the pavement system.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: GRANULAR MATERIAL RESPONSE

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine response/performance models for granula mat. layers subjected to very high shear stress states and inclusion of these models in existing pavement structural models to predict pavement deformation buildup and shear/tension failure zones.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: ASPHALT/AGGRE INTERACT IN RECY

PE: 62206 JON: 26730060
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate asphalt-aggregate compatability through laboratory studies and develop correlations leading to improved design technology for hot asphalt recycling applications.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: REFLECTIVE CRACKING MODEL

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop methodologies to prevent the costly reflective cracking in asphalt concrete when placed over jointed rigid pavements.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: APS LARGE AIRCRAFT

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Identify new and advanced concepts for sirfield pavements to support very large cargo/passenger (in excess of 1.5 million pounds). Concept will consider constructability and feasibility

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: PREIMPREGNATED AGGREGATE

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop preimpregnated aggregate for maintenance and repair activities that will improve repair performance and reduce repair time and cost.

START DATE: FY 88
END DATE: FY 89

PROJECT TITLE: ADVANCE SPALL METHODS

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a single material, method system for preventive and wartime repair of spalls to reduce total repair cost.

START DATE: FY 89
END DATE: FY 90

PROJECT TITLE: MOISTURE RESISTANT PAVEMENT

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: ENVIRONMENTAL EFF

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a fully integrated design, maintenance and repair system for airfield pavement to reduce the effects of moisture and improve pavement performance.

START DATE: FY 89
END DATE: FY 90

PROJECT TITLE: ADVANCE M&R METHODS

PE: 62206 JON: 2673XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop M&R materials, methods system and methodologies that incorporate the latest materials to improve pavement performance and reduce cost.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: EFFECTS OF HP TIRES

PE: 63723 JON: 21041007
TECHNOLOGY: PAVEMENTS
ELEMENT: A/C TRAFF LOAD EFF

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine, quantify and model the effects of High Pressure Aircraft tires (>350 psi) on the performance of asphalt concrete.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: NDT BASED ON DEFL BASIN DATA

PE: 63723 JON: 21042C07
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a mobile, self-contained non-destructive pavement evaluation and performance prediction system. Uses surface deflection basin data.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: BINDER MOD RECYCLE

PE: 63723 JON: 21041A29
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide spec for recycling agents and procedure to select optimum type recycling agent for aged asphalt.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: EVALUATE AF NDT PROCEDURES

PE: 63723 JON: 21041034
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Analyze the range of results from various NDT equipment and analytical methods for the structural evaluation of airfield pavements.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: LONG TERM O/L CRACKING

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Monitor and evaluate the effectiveness of applied stress absorbing membrane interlayer to retard/prevent reflective cracking in asphalt concrete overlays.

START DATE: FY 86
END DATE: FY 89

PROJECT TITLE: RUNWAY RUBBER REMOVAL

PE: 63723 JON: 21041A30
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop procedure to determine when to remove runway rubber deposits from different surfaces.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: MECH M&E SYSTEM FOR PAVEMENTS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a mech design and evaluation system for Airfield Pavements that employes response parameters based upon [illegible] findings.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: FIBER/GEOTECH REINFORCEMENT

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop applications for Fiber Reinforced Cement and Geotech Airfield pavements to reduce life cycle cost, increase structural capacity and improve performance.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: ALT/IMPROVED BINDERS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop modification for Asphalt Cement to improve performance and new binders for concrete to replace dwindling supplies of Asphalt Cement.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: CONTINUEOUS NDT PVMT EVAL SYS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a continuous NDT, evaluation and performance prediction system that tests new prototype moving wheel loads.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: GRANULAR FAIL CRITERIA

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate the effects of low strain-high strain on the modules of paving intervals to determine how this effect can be incorporated in evaluation criteria.

START DATE: FY 88
END DATE: FY 89

PROJECT TITLE: HEAT RESISTANT SURFACE

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: A/C TRAFF LOAD EFF

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a surface treatment/asphalt cement modifier to resist the extreme exhaust temperatures of thrust vectored aircraft.

START DATE: FY 88
END DATE: FY 89

PROJECT TITLE: REFLECT CRACK PREV METHODS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop methodologies to prevent the costly reflective cracking in asphalt concrete when placed over jointed rigid pavements.___

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: APS LARGE AIRCRAFT

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop advanced airfield pavement system to support very large cargo transport aircraft (1,000,000 - 2,000,000 lbs).___

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: PREIMPREG AGGREGATE

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop preimpregnated aggregate for maintenance and repair activities that will improve repair performance and reduce repair time and cost.___

START DATE: FY 90
END DATE: FY 91

PROJECT TITLE: ADVANCED SPALL METHODS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a single material, method system for preventive and wartime repair of spalls to reduce total repair cost.

START DATE: FY 90
END DATE: FY 91

PROJECT TITLE: MOISTURE RESISTANT PAVEMENT

PE: 63723 JON: 21043013
TECHNOLOGY: PAVEMENTS
ELEMENT: ENVIRONMENTAL EFF

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a fully integrated design, maintenance and repair system for airfield pavement to reduce the effects of moisture and improve pavement performance.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: ADVANCE M&R METHODS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop M&R materials, methods system and methodologies that incorporate the latest materials to improve pavement performance and reduce costs.

START DATE: FY 92
END DATE: FY 92

PROJECT TITLE: RECYCLE AGENT SEL. SPEC

PE: 64708 JON: 20541025
TECHNOLOGY: PAVEMENTS
ELEMENT: M&R MAT AND METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Implement criteria for modified selection (that were developed under 6.3) for hot-mix recycling at two on-going USAF projects.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: NDT DEFLECTION BASIN METHOD

PE: 64708 JON: 2054XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop test and implement methodology for testing arifield pavements with nondestructive testing device using surface deflecting basin data.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: HEAT RESISTANT SURFACE TR

PE: 64708 JON: 2054XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a surface treatment/asphalt modifer to resist the extreme exhaust temperatures of thrust vectored aircraft.

START DATE: FY 90
END DATE: FY 91

PROJECT TITLE: ALTERNATE/IMPROVED BINDERS

PE: 64708 JON: 2054XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: PAVE SYSTEMS & MAT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop modification for asphalt cement to improve performance and new binders for concrete to replace dwindling supplies of asphalt cement.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: CONTINUEOUS NDT SYSTEM

PE: 64708 JON: 2054XXXX
TECHNOLOGY: PAVEMENTS
ELEMENT: DES AND EVAL METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a continuous NDT evaluation and performance prediction system that tests new prototype moving wheel loads.

START DATE: FY 91
END DATE: FY 92

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APPENDIX C

FACILITY SYSTEMS AND ANALYSIS

PROJECT TITLE: PRESSURE WAVES IN SOIL

PE: 61101 JON: 01008306
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

To investigate the effects of soil properties on the transmission of pressure waves through soils and to assess the effects of these properties on the soil-structure interaction; assess the use of Hookinson Bar Techniques.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: SOIL STRUCTURE MODIFICATION

PE: 61101 JON: 01008313
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Assess the feasibility to use Geotechnical Centrifuge techniques in modeling soil-chemical flow and the modification of soils due to this chemical flow. Verify theoretical modeling laws and/or extend and/or develop new laws to satisfy IN SITU conditions.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: ANTENNA SOLAR ENERGY TO ELECTR

PE: 61101 JON: 01008312
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Assess the feasibility of using the antenna technology to collect microwave/solar energy in converting to electrical power.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: MOD PREFAB STRUCTURAL ELEMENTS

PE: 62206 JON: 26730039
TECHNOLOGY: FACILITIES
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop analytical structural loading and analysis models for modular prefabricated structural elements subjected to conventional weapons effects.

START DATE: FY 85
END DATE: FY 89

PROJECT TITLE: SCALE PROB OF WAVE PROPGATION

PE: 62206 JON: 26730046
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate effectiveness of scaled model gas gun experiments to study Blast Wave/Impact Loading on below ground structures.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: CENTRIFUGE TEST TECHNIQUES

PE: 62206 JON: 26730048
TECHNOLOGY: FACILITIES
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate and develop technology to do small scale model blast testing of geotechnical and structural systems using a centrifuge.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: ANALYSIS OF HYPARS

PE: 62206 JON: 26730049
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Analyze the structural response of various hyperbolic paraboloid designs and configurations subject to nearby detonations of conventional weapons effects.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: PROPERTIES OF U-STRENGTH CONC

PE: 62206 JON: 26730062
TECHNOLOGY: FACILITIES
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the fundamental and practical aspects of the various parameters affecting the final strength of mortar and concrete specimens. Develop a concrete material with a compressive strength of 20,000 PSI.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: POST ATTACK ASSESS/REPAIR

PE: 62206 JON: 26730063
TECHNOLOGY: FACILITIES
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate procedural & equipment technologies to evaluate reserve capabilities & required/feasible repairs to war/bomb damaged facilities and utilities.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: CENT MODEL OF DEBRIS FALL

PE: 62206 JON: 26730065
TECHNOLOGY: FACILITIES
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate using a centrifuge to analyze small scale soil-structure models subjected to impacting projectiles and falling debris from munition detonations in adjacent structures. (colateral damange)

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: BARE BASE/BACKUP POWER

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate/identify new power generation technology for use as emergency backup power or as rapidly deployable power.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: AFWL TRI-LAB

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

The Air Force Weapons Laboratory (AFWL) supports E&S R&D through participation in the Tri-Lab Group. AFWL performs various work units under the program. Typical are response to shock, SIFCON fundamental properties, and cratering and related effects study.

START DATE: FY 86
END DATE: FY 92

PROJECT TITLE: AFATL TRI-LAB

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

The Air Force Armament Lab (AFATL) supports DOD R&D through participation in the Tri-Lab working group. AFATL performs various work units under the program. Typical are concrete soil modelling, and shock transmission in clay studies. _____

START DATE: FY 86
END DATE: FY 92

PROJECT TITLE: EQUIP RESPONSE TECH

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FACILITIES
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop analytical techniques to predict responses of installed equipment to implusive shock loads. _____
_____
_____

START DATE: FY 88
END DATE: FY 92

PROJECT TITLE: IN-HOUSE _____

PE: 62206 JON: 2673XXXX
TECHNOLOGY: FACILITIES
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

In-house funding for software, analytical supoort._____
_____
_____
_____

START DATE: FY 86
END DATE: FY 92

PROJECT TITLE: PORTABLE AIRFIELD LIGHTING

PE: 63723 JON: 21042B97
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a portable airfield lighting system that requires no external power source and is highly mobile. Radio Luminescent Lighting (RL) system uses radiation from radioisotopes in combination with phosphors to produce visible light.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: HYPARS DEVELOPMENT

PE: 63723 JON: 21043020
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop cost-effective Blast Resistant Hyperbolic Paraboloid structure capable of resisting nearby detonations of conventional weapon threats.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: BLAST ABSORB/DISP SYSTEM

PE: 63723 JON: 21044520
TECHNOLOGY: FACILITIES
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop shielding systems capable of absorbing or dissipating blast energy from conventional weapons detonations.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: LIGHTWT ARMOR/TAC SHELTER

PE: 63723 JON: 21044S07
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop Ballastic Tactical Shelter Armor for new air mobile Tactical Weapon systems.

START DATE: FY 85
END DATE: FY 88

PROJECT TITLE: SEMIHARD FAC PROT DEVELOPMENT

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop new and/or improved structural concepts to resist semi-hardened threat criteria. Validate with full scale blast testing of threat weapons.

START DATE: FY 87
END DATE: FY 90

PROJECT TITLE: SURVIVABLE POWER/UTILITIES

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop power and utility system components that can survive conventional weapons attacks.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: WEAPON PENETRATION MODEL

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop analytical models that accurately predict projectile penetrations into targets - reinforced concrete, rock rubble, and layered systems.

START DATE: FY 87
END DATE: FY 89

PROJECT TITLE: CENTRIFUGE MODELING

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and evaluate Centrifuge Model Testing techniques for protective structures.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: MODULAR PREFAB ELEMENT

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop advanced analysis, design and construction technology for hardened facilities composed of modular prefabricated components.

START DATE: FY 88
END DATE: FY 91

PROJECT TITLE: ADVANCE CEMENTITIOUS MATERIALS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop advanced cementitious materials for use in protective structures.

START DATE: FY 89
END DATE: FY 92

PROJECT TITLE: BARE BASE POWER

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop Bare Base power generation equipment based on earlier technology studies.

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: ADVANCE ANTI-PENE SYSTEMS

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop advanced anti-penetration systems to defeat future generation threat weapons (hyper velocity missiles, etc.)

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: MATERIAL FAILURE MECH

PE: 63723 JON: 2104XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Analyze the failure mechanisms of construction materials and structural systems subjected to highly localized, impulsive loads.

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: NATO SEMIHARD DESIGN CITERIA

PE: 64708 JON: 20541019
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate and improve the NATO criteria and develop a more cost-effective solution to the problem of near-miss conventional weapons effects. Improve structural compenets (semi-hardened walls, blast doors, blast valves).

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: PROT CONSTR DESIGN MANUAL

PE: 64708 JON: 20541020
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and publish an updated design manual for structures that protect against conventional weapons effects.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: GENERIC PROTECT SHELTER DEV

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Perform field tests of protective shelter systems. Develop a modular protective personnel shelter for protection from conventional and chemical weapons.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: PROTECTIVE OVERLAYS FOR FACIL

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop the technology required to produce antipenetration barriers such as: Burster Slabs, Rock Rubble, Reinforced Earth, and other protective overlays.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: SEMIHARD FACILITY DESIGN D & T

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and test new generation semihardened facitility components for protection from near-miss conventional weapons.

START DATE: FY 88
END DATE: FY 90

PROJECT TITLE: HARDENED FACILITY DESIGN

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop design techniques for fully hardened airbase facilities for protection against direct hit of conventional weapons.

START DATE: FY 89
END DATE: FY 91

PROJECT TITLE: FAC SURVIVE/VULNER TEST

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Test fielded structural components against advanced threat systems.

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: FAC REPAIR MATERIAL DT&E

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop materials for use in rapid repair of war-damaged facilities.

START DATE: FY 90
END DATE: FY 92

PROJECT TITLE: ADVANCE CEMENT STRUCTURES

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop design criteria and field test protective strutures made of improved high strength cementitious materials.

START DATE: FY 91
END DATE: FY 92

PROJECT TITLE: BARE BASE POWER

PE: 64708 JON: 2054XXXX
TECHNOLOGY: FACILITIES
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop survivable reliable fuel-flexible bare base power system to use during expedient construction and operations of air base facilities.

START DATE: FY 90
END DATE: FY 92

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APPENDIX D

RAPID RUNWAY REPAIR (RRR)

PROJECT TITLE: FOD ANALYSIS

PE: 63723 JON: 21042C04
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Assess vulnerability of Aircraft Tires to damage caused by Foreign Damage Debris.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: HAVE BOUNCE MODELING

PE: 63723 JON: 21042C08
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

DEV Computer Program simulating Taxi, T/O, & Landing KC135, DC/KC10, 747HB. HAVE BOUNCE Test Phase 1/2.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: POLYURETHANE SHELF LIFE

PE: 63723 JON: 21042B95
TECHNOLOGY: RRR
ELEMENT: MATERIALS

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine long term storage stability of Polyurethane binder materials. Optimum conditions for storage/material fatique testing and storage facility.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: MAT ANCHORING DT&E

PE: 63723 JON: 21042B98
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design and build specialized machine to speed MAT ANCHORING activity in Fiberglass Mat and Crushed Stone repair technique.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: RRR ROBOTIC APPLICATIONS

PE: 63723 JON: 21042C03
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Assess state-of-art in robotics and artificial intelligence as it applies to control of RRR Heavy Equipment.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: NDT SYSTEM FOR ALRS (CERF)

PE: 63723 JON: 21042C07
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a mobile, self-contained non-destructive evaluation and performance system. Uses surface deflection basin data.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: RRR ANALYSIS (5.04/03)

PE: 63723 JON: 21042B87
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Operate and use BDR model to assess aspects of RRR system. Provide means to document analysis of cost/time benefits for changes/advances in RRR procedures, organization, equipment or technology.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: RRR SITUATION SIMULATOR

PE: 64617 JON: 26215008
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop interactive software to train RRR supervisors for full scale operations; will develop critical decision making skills and judgement by simulating exercise.

START DATE: FY 86
END DATE: FY 89

PROJECT TITLE: SPALL REPAIR SYSTEM

PE: 64617 JON: 26212021
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Fabricate and provide equipment, materials, and training required to validate spall repair system.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: HAVE BOUNCE TEST SUPPORT

PE: 64617 JON: 26213003
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Instrumentation of aircraft, travel costs, review test plans. Develop program to check manufacture's HAVE BOUNCE program.

START DATE: FY 86
END DATE: FY 89

PROJECT TITLE: MOS MARKING EQUIPMENT

PE: 64617 JON: 26212020
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Fabricate and test complete system for marking a MOS during FY operation.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: FIBERGLASS MAT SPECIFICATIONS

PE: 64617 JON: 26212032
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop performance based specs for mats. Conduct development and lab tests on system components for elastomer hinged, fiber-glass-reinforced polymer mats; and installation and anchoring tools.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: ADVANCED BDR SYSTEM PHASE 3

PE: 64617 JON: 26212023
TECHNOLOGY: RRR
ELEMENT: VEHICLES

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluation and Modification to binder placement unit.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: EDGE MARKING

PE: 64617 JON: 262120XX
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Identify and evaluate alternative methods of illuminating the MOS analysis of minimum lighting requirement, identify and select promising method, demonstration.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: MOS ACCESS DEVELOPMENT

PE: 64617 JON: 26214024
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Strengthening of infield surfaces to support MAT traffic to ALRS

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: SURFACE ROUGHNESS CRITERIA

PE: 64617 JON: 26213006
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop S/R charts and criteria. Operations on various crater repair profiles analysis of numerous computer simulations of aircraft.

START DATE: FY 85
END DATE: FY 89

PROJECT TITLE: RRR AREA GROUP TESTING

PE: 64617 JON: 26212033
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Multi crater repair test using polymer caps (In-house/Eg.in). __

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: DES MANUAL FOR SOIL TAXIWAYS

PE: 64617 JON: 26214016
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop manual which will provide results of Soil Airfield Fighter Environment (SAFE) program to field units. _____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: HEAVYWEIGHT TESTING-WIDE BODY

PE: 64617 JON: 26212030
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop RRR techniques to support operations of wide bodied aircraft. _____

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: INTEGRATED LOGISTIC SUPPORT

PE: 64617 JON: 26215007
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate and formalize transition of R&D products to ensure technology is translated into a field product. _____
_____
_____

START DATE: FY 86
END DATE: FY 90

PROJECT TITLE: BDR EQUIPMENT EVALUATION

PE: 64617 JON: 26212006
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate hardening equipment which will improve rapid BDR. _____
_____
_____
_____

START DATE: FY 85
END DATE: FY 88

PROJECT TITLE: PAVEMENT PROFILER (PLANER)

PE: 64617 JON: 26212029
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design modification of commercial planer for fully mechnaized system. _____
_____
_____

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: RRR ANALYSIS

PE: 64617 JON: 262150XX
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Update and use BDR model to assess aspects of RRR system.

START DATE: FY 87
END DATE: FY 88

PROJECT TITLE: HAVE BOUNCE FLIGHT TEST

PE: 64617 JON: 26213016
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

KC135, DC/KC10, 747 HAVE BOUNCE Test Phase 3/4. Validate computer model. Developed in test phase 1/2.

START DATE: FY 86
END DATE: FY 89

PROJECT TITLE: MOBILE POLYMER STORAGE

PE: 64617 JON: 26212027
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Examine feasibility of portable storage of polyurethane component used in advanced Bomb Damage Repair system.

START DATE: FY 85
END DATE: FY 88

PROJECT TITLE: BLADE/BOOM LEVEL CONTROL

PE: 64617 JON: 26212022
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop system for self contained excavator blade/boom leveling system.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: SURFACE FRICTION STUDY

PE: 64617 JON: 26214019
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Study/eval various unconventional pavement materials to determine tire/surface friction properties.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: ENHANCED EXCAVATOR CONTROLS

PE: 64617 JON: 26212028
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Design FAB and test conceptual improvements to excavator, mechanization of controls to improve training/repair times.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: ALRS LONG TERM ENVIR/MX TEST

PE: 64617 JON: 26214025
TECHNOLOGY: RRR
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate surface life for thin asphalt concrete. _____ .

START DATE: FY 86
END DATE: FY 90

PROJECT TITLE: PROFILOMETER

PE: 64617 JON: 26214022
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

RDT&E for loaded profiles/surfaces checks of crater repairs. ___

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: F-15E HAVE BOUNCE

PE: 64617 JON: 262130XX
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

HB TEST PHASE 1/2/3/4. Develop and validate computer program simulating TAXI, T/O, and landing. _____

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: AIR TRANSPORTABLE RRR

PE: 64617 JON: 26212034
TECHNOLOGY: RRR
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop and/or define air transportable RRR set.

START DATE: FY 86
END DATE: FY 87

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APPENDIX E

HAZARDOUS WASTE

PROJECT TITLE: SOIL TRANSPORT MECHANISMS

PE: 61101 JON: 01008304
TECHNOLOGY: HAZARDOUS WASTE
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Understand how fuels and solvents are transported through the soil subsurface to the groundwater. _____
_____
_____

START DATE: FY 85
END DATE: FY 88

PROJECT TITLE: WATER DISINFECTION

PE: 62206 JON: 19002060
TECHNOLOGY: HAZARDOUS WASTE
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate chlorinated and brominated heterocyclic disinfection agents for use with military field water supplies. _____
_____
_____

START DATE: FY 84
END DATE: FY 86

PROJECT TITLE: IN-PLACE IMMOB OF METALS

PE: 62206 JON: 19007026
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the IN SITU immobilization of heavy metals present in soils and underlying aquifer of several Air Force bases. ____

START DATE: FY 84
END DATE: FY 86

PROJECT TITLE: DECHLOR OF A X COMPOUNDS

PE: 62206 JON: 19007023
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Elucidate the mechanisms for the anaerobic degradation of chlorinated organic compounds. _____

START DATE: FY 84
END DATE: FY 86

PROJECT TITLE: TCE DEGRADE BY AEROBIC CULTURE

PE: 62206 JON: 19007031
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate aerobic treatment processes used with an isolated bacterial population to treat water contaminated with TCE. _____

START DATE: FY 84
END DATE: FY 86

PROJECT TITLE: CARBON ADSORB OF AIR STRIP ORG

PE: 62206 JON: 19002066
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine capacities, breakthrough curves, humidity effects and competition effects for adsorption of volatile organics. _____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: HENRY'S LAW CONSTANTS

PE: 62206 JON: 19007029
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop constants and aqueous solubilities as a function of temperature for various organic compounds of Air Force concern.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: VOLATILIZATION / UNSAT ZONE

PE: 62206 JON: 19002076
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine sorption characteristics for the vapor phase of volatile organic pollutants on unsaturated soils. _____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: CAT DESTRUCTION OF VOC'S

PE: 62206 JON: 19007032
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Assess current technology for destroying chlorinated and aromatic VOC's. _____
_____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: KINETICS/ENERGETICS OF ADSORP

PE: 62206 JON: 19002077
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Examine various techniques for measuring the kinetics and energitics of organic chemical sorption on soils and aquifer materials. _____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: CENTRIFUGE ENVIRO TESTING

PE: 62206 JON: 19007033
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the feasibility of using centrigugal modeling for predicting contaminant migration through soils. _____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: RAD FREQ THERM DECON OF FUEL

PE: 62206 JON: 19002079
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Demonstrate the ability of radiofrequency-induced heating to themally decompose and volatilize hazardous organic chemicals within the soil. _____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: JP-4 TRANSPORT THRU SUB-SURFAC

PE: 62206 JON: 1900XXW2
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the kinetic parameters (partition coefficients) associated with JP-4 transport in subsurface systems. _____
_____
_____

START DATE: FY 87
END DATE: FY 87

PROJECT TITLE: BIODEGRAD OF GND WTR CONTAMINA

PE: 62206 JON: 19007034
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the biodegradation of groundwater contaminants and develop an approach to predict biodegradation in the field. ____
In-House research by Dr Spain. _____
_____

START DATE: FY 84
END DATE: FY 88

PROJECT TITLE: SITE REMEDIATION TECH

PE: 62206 JON: 19002034
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate and develop innovative remedial acrion technologies for groundwater and soil contaminated with organic compounds. __

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: TRANS OF HYDROPHOBIC COMPOUNDS

PE: 62206 JON: 19002087
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the factors effecting the enhanced transport of chemical substance not transported or slowly transported through soils and groundwater.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: HERBICIDE ORANGE INCINERATION

PE: 63723 JON: 21037023
TECHNOLOGY: HAZ WA[illegible] DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate thermal desorption of dioxin from herbicide orange contaminated soils followed by incineration as a method of reclaiming contaminated areas. _____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: FUEL CELL POLYURETHANE FOAM

PE: 63723 JON: 21037025
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop environmentally sound, cost-effective disposal alternatives for waste foam. _____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: SIE PILOT PLANT DEMO

PE: 63723 JON: 21037031
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Demonstrate the efficiency and technology of using selective chelating resins for removing contaminants from nickle and cadimium plating baths. _____
_____

START DATE: FY 87
END DATE: FY 87

PROJECT TITLE: ENVIRO RESTORE TECHNOLOGY

PE: 63723 JON: 21039027
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop technologies capable of restoring herbicide orange/ dioxin contaminated sites. _____
_____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: IN SITU SOIL-WASHING DEMO

PE: 63723 JON: 21038026
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Demonstrate an IN SITU soil-washing technology at an Air Force site contaminated with hazardous chemicals. _____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: FLOAT FUEL RECOV/RESID CLEANUP

PE: 63723 JON: 21037039
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Demonstrate fuel-contaminated soil and groundwater cleanup by pump to recovery operation and residual component cleanup by the addition of oxygen and nutrient. _____
_____

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: PLASTIC BEAD BLASTING RESIDUE

PE: 63723 JON: 21037041
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate treatment technologies for application to the residue from plastic bead paint stripping of aircraft.

START DATE: FY 86
END DATE: FY 92

PROJECT TITLE: IN SITU TREAT OF MULTI CONTAM

PE: 64708 JON: 20543055
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Field validated IN SITU methods to remediate aquifer contaminated with multiple wastes.

START DATE: FY 85
END DATE: FY 88

PROJECT TITLE: GEOPH/GEOCHEM FIELD INVESTIGAT

PE: 64708 JON: 20543053
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate use of remote sensing and nonintrusive sampling to delineate contamination sites and to define contaminant plumes.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: GROUNDWATER MODEL FIELD TEST

PE: 64708 JON: 20543054
TECHNOLOGY: HAZ WASTE DERP
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Evaluate the simulation capability of three groundwater solute transport computer models.

START DATE: FY 86
END DATE: FY 86

APPENDIX F

FUELS AND CHEMICALS

PROJECT TITLE: CID SPECTRA OF SEL TARG MOLE

PE: 61101 JON: 01008311
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Gain a better fundamental understanding of the molecular dynamic of collision induced disociation (CID). _____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: ADDITIVES TO SUPPRESS SMOKE

PE: 61101 JON: 01008301
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the effects of fuel additives on sooting flames. ___
_____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: INTER SURF AND AIR OX HYDRAZIN

PE: 61101 JON: 01008314
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the air oxidation rate, kinetics, and mechanisims of Hydrazine fuels as a function of composition and area of different surfaces. _____
_____

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: CHEMICAL PRECURSORS OF SOOT

PE: 61101 JON: 01008315
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the kinetic behavior of intermediate - sized hydrocarbon radical caution proposed to be precursors to soot in flames. _____
_____

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: HYDRAZINE - CHEMICAL KINETICS

PE: 61101 JON: 01008316
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the kinetic mechanisms for the reactions of hydrazine in air and in the ozone. _____
_____
_____

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: TURBINE ENGINE FUELS

PE: 62206 JON: 19002040
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop computer model capable of predicting photo chemical reactivity of turbine engine fuels from storage tank emissions or jet engines exhaust. _____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: PART FORM IN JET ENG EXHAUST

PE: 62206 JON: 19002062
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop an analytical method from which a nonintrusive field useable optical instrument can be built to measure the size of particles in jet engine exhaust. _____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: HYDRAZINE FUELS-SOILS/WATER

PE: 62206 JON: 19002072
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Explore the chemical interactions of hydrazine fuel in the aqueous and soil environment. _____
_____
_____

START DATE: FY 85
END DATE: FY 87

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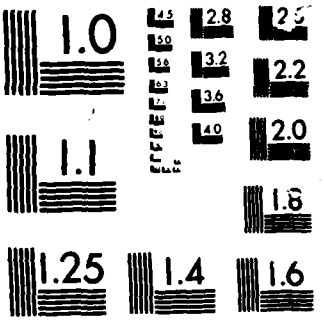

MICROCOPY CHART

PROJECT TITLE: HYDRAZINE FUELS-AIR

PE: 62206 JON: 19002073
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Characterize the atmospheric reactions of hydrazine-based fuels.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: FATE/EFFECT SHALE DERV JP-4

PE: 62206 JON: 19002075
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Understand the fate of shale-derived fuels in the environment.

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: HCL REVOLATILIZATION

PE: 62206 JON: 19004C06
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the parameters which cause the revolatilization of hydrogen chloride deposited on the launch pad after a space shuttle launch.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: HYDRAZINE FUEL DISP TECH

PE: 62206 JON: 19007030
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Examine hydrazine-base fuels disposal techniques using bleach.

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: HAZ WASTE INCINERATION

PE: 62206 JON: 19007035
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine feasibility of incineration as a disposal technique for Air Force hazardous waste.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: SOOT FORMATION

PE: 62206 JON: 19002082
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Understand soot formation in gas turbine engines by characterizing the interaction of fuel and air and mixing, diluting, evolving and sivial phenomana.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: CHEM ADSORB ON GTE EXH PART

PE: 62206 JON: 19004C08
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Identify the chemicals absorbed on gas turbine engine exhaust particles.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: DENSE GAS BEHAVIOR

PE: 62206 JON: 19005002
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a sophisticated box model which will include all phenomena that have a significant effect on the rate of dispersion of dense gases.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: SOLVENT CAPACITY

PE: 62206 JON: 19002084
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Establish easy-to-use field chemical tests to determine if a solvent is still useable.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: OPT MEAS OF SOOT FORMATION

PE: 62206 JON: 19002085
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Obtain information on the effects of fuel composition on soot formation and characterize flame structure with turbulent flow conditions.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: INCIN SURROGATE RATIO TECH

PE: 62206 JON: 19002083
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop technology to simplify proving destructive/removal efficiency (DRE) for incineration of Air Force Hazardous Waste.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: REMOTE SENSE OF HAZ WST SITE

PE: 62206 JON: 19009023
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: MODELING

DESCRIPTION (TECHNICAL OBJECTIVE)

Show the feasibility of using LIDAR to identify and quantify priority pollutants from Air Force Hazardous Waste sites.

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: COMB RESRCH IN SHOCK TUBES

PE: 62206 JON: 19002086
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Study chemical processes leading to soot formation or prevention while avoiding the complexity of actual combustion flames.

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: METAL-LIGAND SURFACE INTERACT

PE: 62206 JON: 19002090
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Characterize fundamental interactions between metal ions, soils and hazardous chemicals.

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: HYDRO CAR FUEL SPILL DISP WTR

PE: 62206 JON: 19002070
TECHNOLOGY: FUEL & CHEM DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine the kinetics of fuel distribution of a spill by studying full evaporation and dissolution rates and rate determining factors. _____
_____

START DATE: FY 86
END DATE: FY 88

PROJECT TITLE: TECH FOR MONT VOLATILE ORGANIC

PE: 62206 JON: 19002061
TECHNOLOGY: FUEL & CHEM DERP
ELEMENT: CHARACTERIZATION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a new analytical instrument and method for testing volatile organic contaminants (VOC) in groundwater. _____
_____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: PORTABLE MASS SPECTRO ANALYZER

PE: 62206 JON: 19002071
TECHNOLOGY: FUEL & CHEM DERP
ELEMENT: INTERACTION

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop portable real-time toxic or hazardous chemical analyses based on tandem mass spectrometer with an atmospheric pressure ionization source. _____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: DIFFUSION CLASSIFIER

PE: 63723 JON: 21032005
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide the AF and NAVY with a field-tested jet engine test cell particulate sampling system based on diffusional tendencies of submicron-sized particles. _____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: LOW PRESSURE IMPACTOR

PE: 63723 JON: 21032006
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide the AF with a field-tested intermediate technology jet engine test cell particulate sampling and analysis system. _____
_____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: REALTIME HCL MONITORING

PE: 63723 JON: 21037028
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop methodology for airborne monitoring of the space shuttle ground and column cloud during the first two launches at Vandenberg AFB._____
_____

START DATE: FY 85
END DATE: FY 87

PROJECT TITLE: IR SENSOR FOR HCL

PE: 63723 JON: 21032007
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a rapid-response detector for the detection of hydrogen chloride gas (HCL). _____
_____
_____

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: AF EQ MODELING NEEDS

PE: 63723 JON: 21035003
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Determine those areas in environmental quality modeling which require further R&D to meet AF needs. _____
_____
_____

START DATE: TBD
END DATE: TBD

PROJECT TITLE: FUEL ADDITIVES TEST IN J-79

PE: 63723 JON: 21037032
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Demonstrate the effectiveness of ferrocene and cerium as a fuel additive for reducing sooting in a J-79 jet engine test cell. __
_____
_____

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: RELEASE RICHARDSON NUMBER VAL

PE: 63723 JON: 21035004
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Broaden support for the RELEASE RICHARDSON number as a criterion for determining the importance of dense gas effects during accidental release of toxic gases. _____
_____

START DATE: FY 86
END DATE: FY 86

PROJECT TITLE: HAZ RESPONSE MODEL VALIDATION

PE: 63723 JON: 21035005
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Provide the Air Force with a method for validating hazardous response models. _____
_____
_____

START DATE: FY 86
END DATE: FY 87

PROJECT TITLE: ENGINE EXHAUST PLUME DYNAMICS

PE: 63723 JON: 21039019
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: METHODS

DESCRIPTION (TECHNICAL OBJECTIVE)

Investigate the extent of turbulent mixing and buoyant plume rise that occurs when an aircraft or rocket emits exhaust in the atmosphere._____
_____

START DATE: FY 85
END DATE: FY 86

PROJECT TITLE: A/C EMISSIONS CHARACTERISTICS

PE: 64708 JON: 20543052
TECHNOLOGY: FUELS AND CHEMICALS
ELEMENT: TOOLS AND EQUIPMENT

DESCRIPTION (TECHNICAL OBJECTIVE)

Develop a data base of gaseous and particulate emissions from all currently operational Air Force aircraft engines.

START DATE: FY 85
END DATE: FY 87

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