DOE-JIO-020

FISCAL YEAR 1987

PROGRAM PLAN

DEPARTMENT OF ENERGY

ROCKWELL INTERNATIONAL

WESTINGHOUSE

JOINT INTEGRATION OFFICE

ALBUQUERQUE, N.M.

MASTER

DECEMBER 1986

DISCLAIMER

DOE/JIO--020

DE92 000877

PREFACE

The Defense TRU Waste Program goals are to achieve permanent disposal and end interim storage. This document presents the FY 87 Program Plan for the Defense Transuranic Waste Program (DTWP) and is prepared under TRU budget (B&RC #AR0515200) and guidance as of November 1986. Changes in the TRU Program budget and guidance may affect the task elements described within this plan. This document also includes outyear budget projections beyond the current year.

More specifically the TLO strategy for FY 87 is to accomplish the necessary technology development, resolve the systems issues and implement opertions in order that newly generated and stored TRU waste can be certified to the Waste Isolation Pilot Plant - Waste Acceptance Criteria (WIPP-WAC). This effort also will be supported by technology development in transportation, reduced waste generation, and buried waste.

FY 87 program priorities include a concerted effort towards coordinating operations, development, and system integration. The Transuranic Waste Lead Organization (TLO) will continue to coordinate and integrate the six separate program elements of the DTWP, i. e., waste generation site activities, storage site activities, burial site activities, technology development, transportation development, and permanent disposal. An overall goal of this coordination is to support a successful demonstration of the Waste Isolation Pilot Plant (WIPP).

Providing for consistent coordination, the DTWP Strategy Document will continue to be updated as required, and the Long-Range Master Plan will be revised to reflect the latest program policies, goals, and objectives. Program activity networks are being revised to reflect the latest planning. In addition, program participant communication, including the development of interface working groups assembled to resolve specific issues, and the scheduling of contractor meetings will continue.

1.0 INTRODUCTION

The Defense TRU Waste Program (DTWP) is the focal point for the Department of Energy in national planning, integration, operation, and technical development for TRU waste management. The scope of this program extends from the point of TRU waste generation through delivery to a permanent repository. The TRU program maintains a close interface with repository development to ensure program compatibility and coordination. The defense TRU program does not directly address commercial activities that generate TRU waste. Instead, it is concerned with providing alternatives to manage existing and future defense TRU wastes.

The FY 87 Program Plan is consistent with the Defense TRU Waste Program goals and objectives stated in the Defense Transuranic Waste Program Strategy Document, January 1984. The roles of participants, the responsibilities and authorities for Operations, and Research & Development (R&D), the organizational interfaces and communication channels for R&D and the establishment of procedures for planning, reporting, and budgeting of Operations and R&D activities meet requirements stated in the Technical Management Plan for the Transuranic Waste Management Program. The Program Plan is revised as needed. The work breakdown structure is reflected in Figures 2 and 3 immediately following the Administration section and is described in the subsequent narrative. Detailed budget planning (i.e., programmatic funding and capital equipment) is presented for FY 87; outyear budget projections are presented for future years.

2.0 DEFENSE TRU WASTE PROGRAM ADMINISTRATION

The Defense TRU Waste Program is one of several DOE programs which have been "decentralized", assigning primary program responsibility to the DOE Albuquerque field office. To implement a long-term strategy, the DOE has established a Defense TRU Waste Lead Organization (TLO) consisting of the Albuquerque Operations Office (DOE/AL), which manages the program, and the Joint Integration Office (JIO) comprised of Rockwell International personnel (RI) and Westinghouse Corp. (W) personnel. The JIO has two managers, one for RI and one for W. Each is supported by an internal staff. The ALO is responsible for overall management of the program, while the JIO is responsible for development and maintenance of planning information and monitoring of Program activities against long-range plans.

The TRU Program is managed by an ALO resident program manager. The DOE/HQ contact point are program managers resident in the operations and project and waste research and development divisions. The program organization chart is shown in Figure 1 and the work breakdown structures are shown in Figures 2, 3, and 4.

Much of the technical research and related activities in the Program are performed by DOE integrated contractors operating major DOE facilities. Other tasks are assigned to contractors and qualifications to perform this work.

Primary responsibility for implementing individual tasks within the Program lies with the contractor performing the task and with the DOE field office which administers that contract. The JIO will monitor progress of each task and, if and when corrective actions are necessary, will negotiate issues with specific field contractors and/or make specific recommendations to the DOE/AL.

Field offices and contractors are responsible for providing a description of their Quality Assurance plans to TLO. These plans will identify the elements of Quality Assurance (QA) Plans for each task, and any controls which may be required to conform with guidance from lead sites. The TLO then reviews the QA plans and proposes QA levels that will be approved by DOE/HQ for the DWTP guidance.

FIGURE I

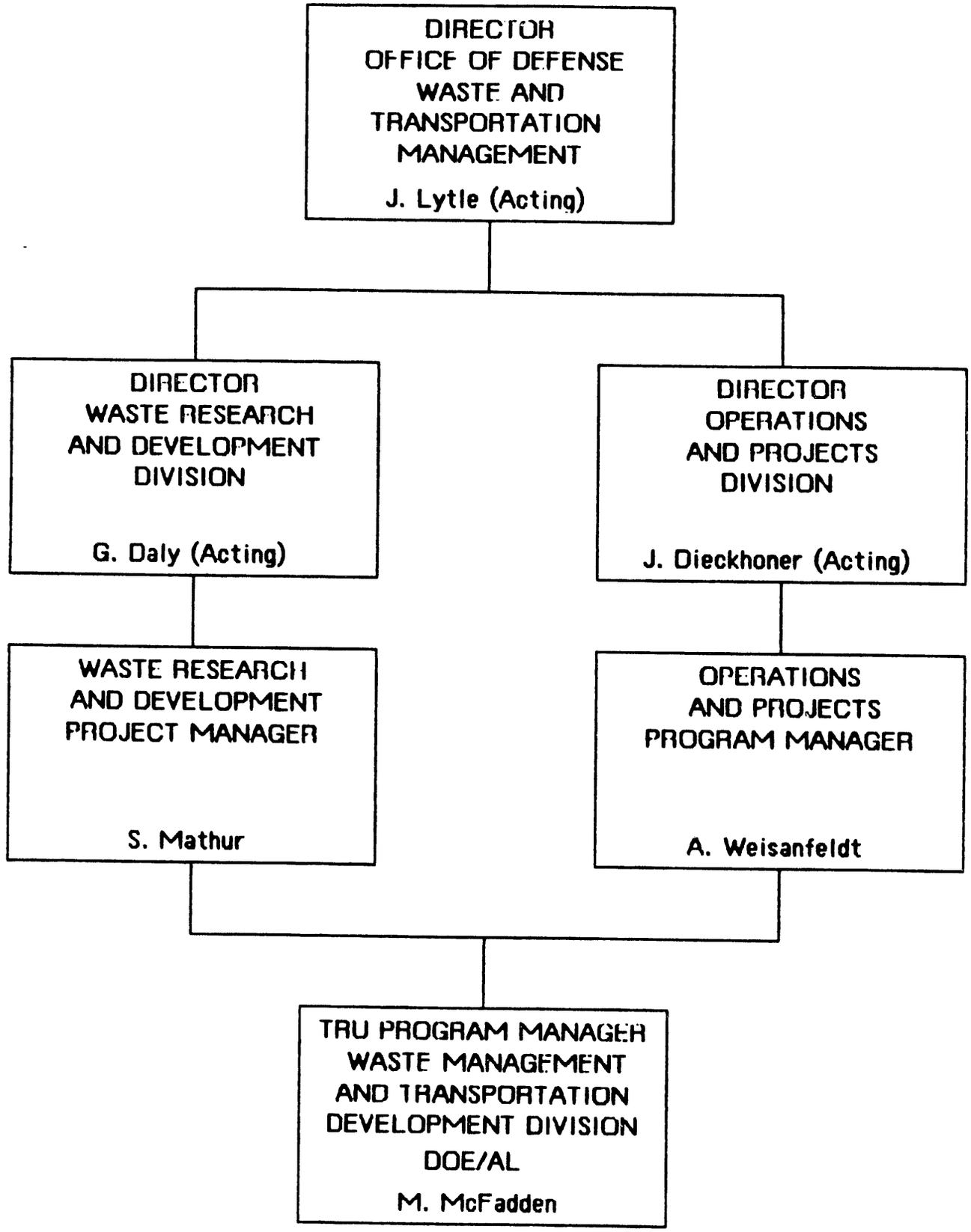
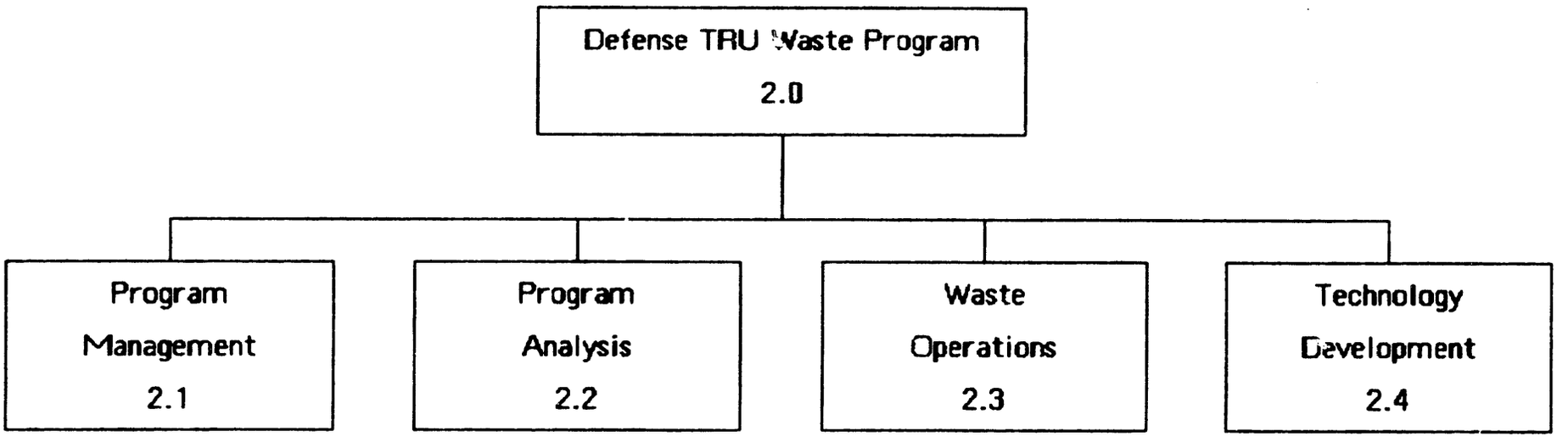

DIRECTOR
OFFICE OF DEFENSE
WASTE AND
TRANSPORTATION
MANAGEMENT
J. Lytle (Acting)
DIRECTOR
WASTE RESEARCH
AND DEVELOPMENT
DIVISION
G. Daly (Acting)
DIRECTOR
OPERATIONS
AND PROJECTS
DIVISION
J. Dieckhoner (Acting)
WASTE RESEARCH
AND DEVELOPMENT
PROJECT MANAGER
S. Mathur
OPERATIONS
AND PROJECTS
PROGRAM MANAGER
A. Weisanfeldt
TRU PROGRAM MANAGER
WASTE MANAGEMENT
AND TRANSPORTATION
DEVELOPMENT DIVISION
DOE/AL
M. McFadden

FIGURE 2


Defense TRU Waste Program
2.0
Program Management
2.1
Program Analysis
2.2
Waste Operations
2.3
Technology Development
2.4
2.1.1 JIO
2.1.2 Multi
2.1.3 JIO
2.2.1 JIO
2.2.2 JIO
2.2.3 JIO
2.2.4 LANL
2.2.5 ORNL
2.2.6 JIO
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SEE NEXT PAGES

FIGURE 3

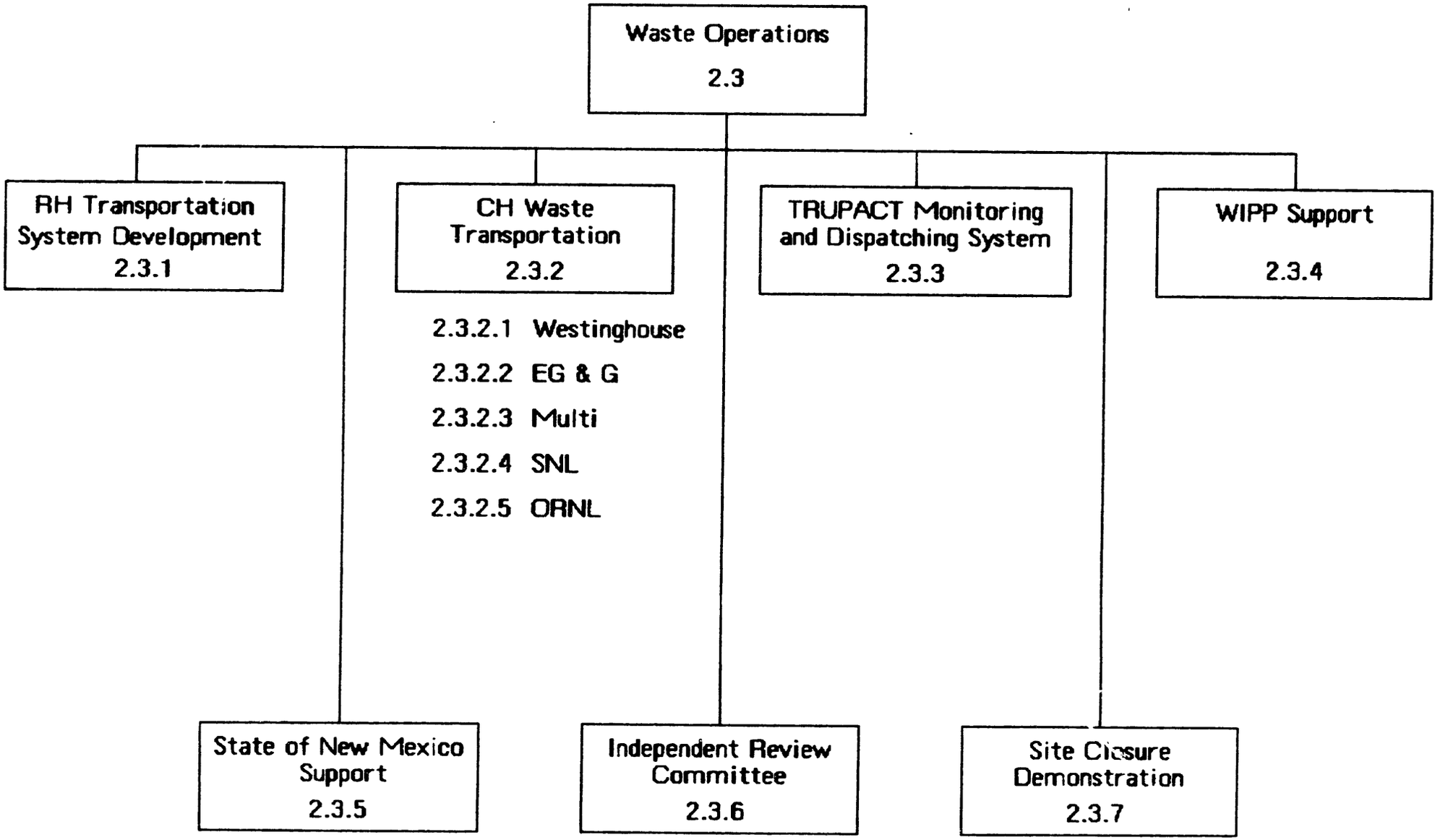
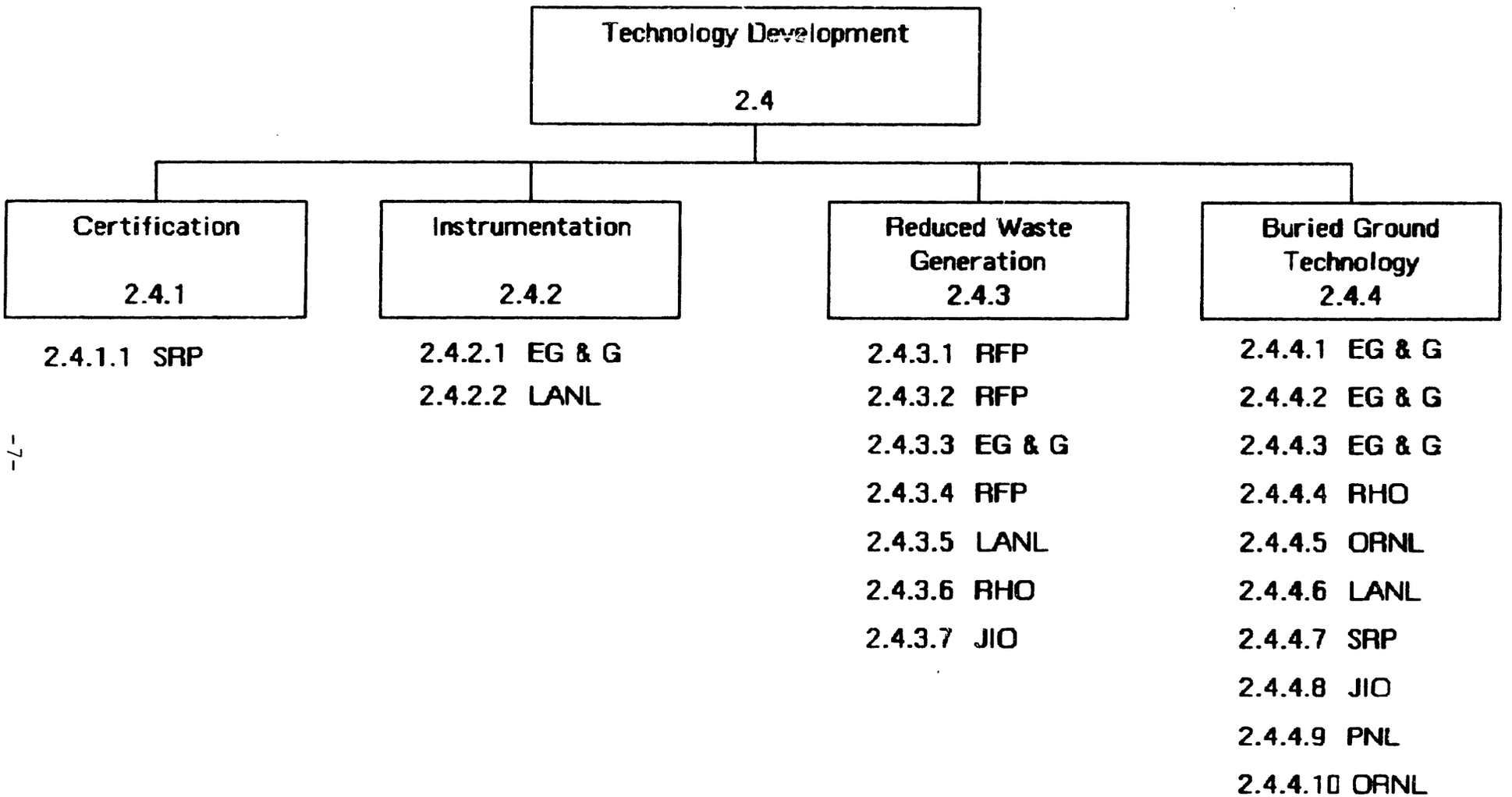

Waste Operations
2.3
RH Transportation System Development
2.3.1
CH Waste Transportation
2.3.2
2.3.2.1 Westinghouse
2.3.2.2 EG & G
2.3.2.3 Multi
2.3.2.4 SNL
2.3.2.5 ORNL
TRUPACT Monitoring and Dispatching System
2.3.3
WIPP Support
2.3.4
State of New Mexico Support
2.3.5
Independent Review Committee
2.3.6
Site Closure Demonstration
2.3.7

FIGURE 4


Technology Development
2.4
Certification
2.4.1
Instrumentation
2.4.2
Reduced Waste Generation
2.4.3
Buried Ground Technology
2.4.4
2.4.1.1 SRP
2.4.2.1 EG & G
2.4.2.2 LANL
2.4.3.1 RFP
2.4.3.2 RFP
2.4.3.3 EG & G
2.4.3.4 RFP
2.4.3.5 LANL
2.4.3.6 RHO
2.4.3.7 JIO
2.4.4.1 EG & G
2.4.4.2 EG & G
2.4.4.3 EG & G
2.4.4.4 RHO
2.4.4.5 ORNL
2.4.4.6 LANL
2.4.4.7 SRP
2.4.4.8 JIO
2.4.4.9 PNL
2.4.4.10 ORNL

2.1 PROGRAM MANAGEMENT

I. INTRODUCTION

Program Management includes technical and financial planning, program planning, document preparation, task guidance development, task monitoring, information gathering and reporting to DOE. This also includes interfacing with other lead site programs, agencies, and activities for overall guidance for the development of advanced TRU waste management capabilities.

II. GOALS AND OBJECTIVES

Goals and objectives of Program Management are:

- Short- and long-range planning based on well-defined scope of work, goals, and plans to guide technology development activities
- Planning and integration of waste management technology development and operations with considerations for technical reliability, safety, quality, cost, and timely achievement
- Organization of goals, objectives, and procedures for common use by those involved.
- Progress review and assessment of achievement
- Support reciprocal international exchange agreements for disposal of nuclear wastes.

III. STATUS

Project definitions and goals have been analyzed, and guidance has been provided for meeting objectives of a single work element. New projects have been defined to address areas where additional works is required. Contractors for this work have been identified for FY 86. A contractor reporting system has been implemented.

2.1.1 Program Management (JIO)

This program element includes program planning, task guidance and monitoring, program documentation, program integration, program review, and foreign exchange. Tasks in these areas include:

- o Identification of program requirement
- o Long-range technical planning
  Respond to Program-related urgencies and short-term information requests
- o Budget preparation
- o Preparation of program planning documents
- o Task guidance
- o Interface control activities
- o Task monitoring
- o Interfacing with related programs, agencies, and activities
- o Reporting program status
- o Prepare and distribute the status documentation for the U.K., F.R.G, and PNC-Japan agreements
- o NEPA documentation
- o Institutional activities

2.1.1 PROGRAM MANAGEMENT MILESTONES AND FUNDING

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
											7	8
Program Mgmt.		1	2		5	6						9
			3									
			4									

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	600
BO	600
CE	0
Long-Term Technology	
BA	200
BO	200
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Deliver Annual End of Year Technical Report	11/86
2.	Issue the JIO Current Year Work Plan	12/86
3.	Complete Current Fiscal Year Program Plan	12/86
4.	Complete FY 89 Budget Call	12/86
5.	Update TRU Long-Range Defense Waste Master Plan	02/87
6.	Submit FY 89 Budget to DOE/AL	03/87
7.	Issue TRU Waste Program Budget and Task Guidance for FY 88	08/87
8.	Complete Draft Responsibilities Management Plan Update	09/87
9.	Issue Final Report on RWG National Working Group	09/87

2.1.2 NEPA DOCUMENTATION

I. GOALS AND OBJECTIVES

This task is a multi-site task. Preparation of NEPA documentation requires ANL/E, LLNL, NTS, and Mound to ship their stored and newly-generated defense TRU waste to WIPP. The sites will prepare either Action Description Memoranda (ADMs) or Memos-to-File depending on the need. ORNL has prepared an EA for their CH-TRU waste. Preparation of an RH-TRU waste ADM will be completed in FY-87.

II. STATUS

Compilation of the ADMs will complete the NEPA documentation required to ship defense TRU waste to the WIPP for ANL/E, LLNL, NTS, and Mound. Pending the results of ORNL's RH ADM, it is anticipated that an EA will be prepared in FY 88 for the RH waste.

NEPA DOCUMENTATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
NEPA Documentation						1						2 3

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	225
BO	225
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Submit Draft ADM to Field Office ANL/E, LLNL, Mound, NTS	03/87
2.	Submit Final ADM to DOE/HQ ANL/E, LLNL, NTS, Mound	09/87
3.	Submit Draft RH ADM to ORNL	09/87

2.1.3 TLO/WPO IWG

I. Goals and Objectives

At present, the Interface Management Charter, directing the coordination of activities between the Joint Integration Office and the WIPP Project Office, divides interface responsibilities into two general areas. The responsibilities for policy review and decisions falls to the Interface Control Board, made up of DOE program managers. The responsibility to provide technical review and analyses of interface issues and to make recommendations to the ICB falls to individual interface working groups (IWGs). The Charter establishes four standing IWGs to address program areas of importance. Additionally, the ICB may create other IWGs focused on specific issues and with specific direction to report recommendations to the ICB.

II. Status

Formal Interface Management was first established in FY 84 and during FY 85 and FY 86 became increasingly active, contributing to identifying and resolving numerous interface issues. These issues have included wasted characterization, barcoding, TRU waste packaging requirements, RH canister design, NDA/NDE untilization, RH Transportation and TRUPACT II design. The expectation is that interface coordination must continue to play an important role in JIO and WPO activities as the period of WIPP operation draws nearer. This task will contribute to the support for interface coordination.

III. Description of the Task

The objective of this task is to support the staff requirements and the activities of interface working groups (IWGs) in carrying out directions assigned by the Interface Control Board. This

support includes travel, clerical, report production, and related costs. In additions, the task may include additional technical consultation costs as required. The task provides support for interface management provided by the JIO, including preparation of semi-annual reports, preparation of ICB meetings, workshops, and related activities.

2.1.3 TLO/WPO IWG

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
TLO/WPO IWG												1

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	75
BO	75
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Annual ICB Report	09/87

2.2 PROGRAM ANALYSIS

I. INTRODUCTION

Program analysis consists of the formal studies and planning activities that provide a foundation for long-range program goals, direction, content, and decisions. It includes system engineering activities which integrate and coordinate planning for decisions, research, facilities, and policies. In addition to long-range planning, program analysis includes studies to answer specific requirements, trade-off, impact, and optimization questions.

II. GOALS AND OBJECTIVES

Broad goals and objectives of program analysis are:

- To assemble the information needed for rational and supportable program decisions
- To identify long-range Defense TRU Waste Program goals and options
- To identify program requirements associated with the long-term management of Defense TRU Waste
- To conduct analyses of TRU waste management alternatives
- To provide rational and supportable bases for program decisions to assess impacts, provide trade-offs, and recommend optimization for Program costs and schedules
- To seek compliance with Legislative and Regulatory requirements

III. STATUS

Program analysis continues to be ongoing in support of program goals. Specific analyses have been identified, and completed; and findings are available to decision-makers. Some analyses are comprehensive enough to be identified separately in the work breakdown structure and funded as separate tasks, while others are combined for program task elements. During FY 86, significant emphasis will be placed on planning a comprehensive framework of objectives:

- o System Planning; Requirement analysis
- o Criteria and Procedures Development
- o Legislative and Regulatory Analyses
- o Impact and Trade-Off Analyses
- o Data Base

This will continue to provide for the smooth transition of contact and remote handled stored waste removal to final WIPP emplacement.

2.2.1 Program Analysis

There is a continuing need for updated planning to anticipate and to reflect results of developments in the technical, political, and institutional areas of TRU waste management. Implementation of an overall plan involves a series of decision points based on environmental reviews, regulations, and criteria/standards. Development of the planning basis consists of identifying (1) requirements of the reviews, (2) information and analyses needed for the decisions, (3) operational requirements, and (4) technology and system requirements, and then developing plans for meeting those requirements.

The Program Modeling for Systems Planning has been expanded in concept with an integrated code called TRUSYSTEM. Integrated program scheduling modeling has been incorporated into a user-interactive computer system. In the scheduling critical paths are identified for special management attention. RH waste system modeling was added to the ongoing modeling activities for CH waste. Certified waste projections will continue to be developed annually for the Integrated Data Base and JIO planning.

Buried and Special-Case (SC) waste management activities will also identify facility requirements for handling, processing, packaging, and WIPP certification. Comprehensive plans will be developed for buried and SC wastes. Development of a transporation system for transport of remote-handled (RH) waste will continue along with an RH waste transport system program plan.

Legislative and Regulatory Analyses will be ongoing to provide early warning as to how program strategy for NEPA compliance, EPA standards and Federal Radiation Protection Guidance for Management and Disposal of Transuranic Wastes, Transporation issues, CERCLA, and RCRA would be affected by proposed and pending Congressional actions, including legislation, appropriations, and hearings.

Impact and Trade-Off Analyses -- Numerous impact, trade-off, and optimization studies are necessary to organize the analysis of a large volume of relevant information and constraints defining both the operational system and the development program. A comprehensive review of RH program schedules and cost impact of changes will be made to identify major cost savings opportunities. System cost and project scheduling models will be used to optimize transportation system plans. Risk analyses will be performed in support of the development of waste acceptance criteria and in support of recommendations on transporation system development. Evolving program plans and the identification of alternative approaches in the program make it necessary to perform short-term analyses. In addition to identifying program needs, JIO will respond to requests for decision-making information from DOE/HQ and DOE/AI.

Data Base -- A TRU Waste Data Base has been developed to speed up data acquisition for program trade-off studies and analyses. The Integrated Data Bse at ORNL continues to be updated and incorporated into the annual report DOE/NE-0017. Waste characterization analyses are performed to further understanding of waste management requirements.

2.2.1 PROGRAM ANALYSIS

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Program Analysis JIO		1				2		3	4 5	6		

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	700
BO	700
CE	0
Long-Term Technology	
BA	100
BO	100
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Issue Final RH Program Status and Needs Report	11/86
2.	Compete the TRU Program (JIO) Data Base	03/87
3.	Issue Revised Transportation Assessment and Guidance Report (TAGR)	05/87
4.	Buried and SC Waste Plans	06/87
5.	Gas Generation TRUPACT Hydrogen Test Complete	06/87
2.	IDB Data Submission to ORNL	07/86

2.2.2 SYSTEM SIMULATION MODELING

I. OBJECTIVE

The objective in developing TRUSYSTEM is to provide a complete set of computer programs and data files to assist in the analyses of the defense transuranic waste (TRU) logistic system and eventually to assist in the day-to-day operations of that logistic system. TRUSYSTEM will consist of five major components: a logistic simulation model (TruSim); a TRUPACT Monitoring and Dispatching System (TMADS); a real-time data base program; an extensive database file; and a control program. The ultimate goal is to provide analytical and operational tools which will lead to the most reliable and cost-effective TRU logistic system.

II. STATUS

The development of the simulation model is finished and has been independently reviewed for reliability. The TRUPACT Monitoring and Dispatching System has been completed with the exception of the communication routines. The conceptulization and initial programming of the database program has been accomplished. The initial call for system data has been completed and the data is currently being reviewed for completeness and accuracy. The development of the control program has not begun.

III. DESCRIPTION OF TASK

The FY 87 tasks will consist of the following:

- Current software will be ported to JIO's IBM computer (this is the computer which will be used for TRUSYSTEM).

- The communications package for TMADS will be developed and installed.

- A proof-of-principal and prototype operations of TMADS will be supported.

- The database program will be completed.

- The database will be installed.

- Work on the control program will be initiated.

- Operation manual will be provided in rough draft.

2.2.2 SYSTEM SIMULATION MODELING

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
System Sim Modeling			1 2			3	4					5

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	100
BO	100
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Communications package for TMADS Completed	12/86
2.	Proof-of-Principal for TMADS Completed	12/86
3.	Database Program Completed	03/87
4.	Draft Database File	04/87
5.	Draft Operational Manuals for TRUSYSTEM	09/87

2.2.3 GAS GENERATION STUDIES

I. GOAL AND OBJECTIVES

Task A: TRUPACT II Testing and Assessment -- In support of the TRUPACT II analysis, design, and testing effort, the following subtasks will be examined: 1) TRUPACT testing, experimental testing to measure hydrogen dissipation and other loss mechanisms through the seal, hydrogen recombiner/getter performance, and gas composition and pressure versus time. 2) TRUPACT II design review, against the gas generation design criteria. 3) TRUPACT II Criteria/Regulations, pressurization from factors other than gas generation and regulatory compliance related to gas generation. 4) TRUPACT II Recombiner/Getter performance evaluation for 30 days, 60 cdays and 1 year. 5) TRUPACT II alternative approaches to containment within the unvented TRUPACT. 6) Thermal gas generation, characteristics for the 100^{o} to $250^{o}C$ temperature range, strategies for control, literature search and certification criteria related aspects, and 7) TRUPACT load profile evaluation for typical, special case and boxes versus drums.

Task B: TRUPACT II Inter-Site Impact -- Inter-site transfers of TRU waste using TRUPACT shipping containers may involve different parameters than those encountered for the shipment of WIPP certified/certifiable wastes. Impacts will be identified and evaluated.

Task C: Gas Generation Handling and Shipping Risk Analysis -- The application of risk analysis techniques to handling and shipping operations will be performed to quantify the risks associated with accidents.

Task D: Peer Review of Gas Generation Reports -- Peer review of reports relating to gas generation released both by the DOE system and others will be provided.

Task E: Inner Container Gas Properties -- The size, diffusion characteristics, and internal gas generation rates of inner containers will be evaluated.

Task F: Hardware Testing - Containers -- The hydrogen decay experimental test method will be applied to alternative vent designs, recombiners/getters, validation of specific vent systems and the development of field guidance.

Task G: Mine Inflation WIPP Support -- The mine inflation scenario of gas generation in TRU waste exceeding the capacity of the sealed facility will be evaluated to determine source terms and facility capacities, peer review of existing work on subject will also be continued.

Task H: Additional Support -- Additional assessments will be carried out on an as-needed basis to support program requirements.

II. STATUS

During the past two years research studies on gas generation have been performed through the use of extensive experimental and theoretical evaluations of gas generation issues for the TRU program. Experimental measurements of hydrogen diffusion for containers have been performed. TRUPACT II design criteria related to gas generation have been developed, validated, and provided to the design team. A multi-region gas diffusion model has been developed and applied to both TRU waste containers and the TRUPACT. Additionally, an extensive bibliography of gas generation activities has been assembled.

2.2.3 GAS GENERATION STUDIES

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
			1					2	3		6	7
									4			
									5			

FUNDING REQ ($000)	FY 87
Long-Term Technology	
BA	150
BO	150
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete Inner Cont. Eval.	12/86
2.	Complete Inter-site Impact	05/87
3.	Complete TRUPACT Testing	06/87
4.	Complete Risk Analysis	06/87
5.	Complete Hardware Testing	06/87
6.	Complete Mine Inflation	08/87
7.	Complete Peer Review	09/87

2.2.4 RH STRATEGY IMPLEMENTATION
LOS ALAMOS NATIONAL LABORATORY

I. GOALS AND OBJECTIVES

The overall goal of this project during the period FY 87-90 will be to close-out all RH-TRU waste work at Los Alamos. Included will be the certification and preparation for WIPP of all RH-TRU wastes to be generated in the decontamination of the Los Alamos TRU hot cell facilities. The prototype RH canister welding system will be obtained and modified for use with the full size RH canister, as well as for use within the Los Alamos hot cell system. RH canisters will be obtained, and will be filled with certifiable wastes generated in the cell decontamination operations, such that the resultant filled, sealed canister is fully WIPP certified. In addition, RH TRU wastes generated in recent years and currently stored in a manner compatible with final packaging in the RH canister will be retrieved, certified, and packaged for WIPP disposal. Certified RH waste canisters will be stored temporarily until able to be shipped to WIPP.

II. STATUS

FY 86 Progress to Date

During FY 86, $49K of capital equipment funding was provided by the Defense TRU Waste Program. With this, the demonstration welder and fixture developed at Hanford were obtained, and have been evaluated for suitability to operate in the space available in the Los Alamos hot cell facility. The demonstration unit, which can only operate in the vertical position, was found to be unsuitable because of lack of sufficient headroom in the facility. A conceptual design has been completed for a new fixture that incorporates the Hanford welding technology while

operating in the horizontal position. The new design incorporates a seam tracking device added to the welder; this device has been ordered.

Other work in FY 86 included design and fabrication of a fixture for remotely installing the lid and bolt ring on a 55-gal. DOT 17C steel drum.

FY 87 Projected Accomplishments

Throughout this year, the hot cell operating group will be preparing stored fuel for shipment off-site. The TRU waste produced in this operation will be certified and packaged in small containers and stored while awaiting canisterization. Two cells will have to be decontaminated and stripped to provide storage space for the waste.

Following completion of the welder redesign, an on-site transportation shield cask will be designed. The transportation shield cask is required to protect laboratory personnel and the public when the completed RH canisters are transported to the TA-54 storage site over roads accessible to the public.

When the seam tracking system is received, a temporary fixture will be built to test the welding system and to develop the necessary welding parameters.

Remotely operated handling equipment will be designed and fabricated. This equipment will be used for loading waste cans into steel drums, for handling these drums, and for moving waste into and out of the storage cells. A powered fixture for loading steel drums into the canisters must also be designed and fabricated.

Because of an anticipated long lead time, the first lot of canisters will be purchased this year.

IV. FY 88 Planned Tasks

In FY 88, the transporation cask and its powered loading attachment will be received and matched with the welding equipment for check out and cold test with a canister.

The canister storage vaults at TA-54 will be designed and constructed and canister handling equipment will be designed and procured or fabricated.

Certification procedures will be updated to incorporate canisterization and processing and decommissioning wastes.

Canisters of certified RH-TRU waste will be prepared and stored in vaults at TA-54 while awaiting availability of the DHLW cask to take them to the WIPP.

2.2.4 RH STRATEGY IMPLEMENTATION

LANL

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
					1	2					3	
											4	
											5	

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	150
BO	150
CE	150

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Build Drum Handling Fixtures	02/87
2.	Build Hot Cell Waste Handling Equipment	03/87
3.	Build Welder Fixture	08/87
4.	Order Initial RH-TRU Canister	08/87
5.	Build Welder Demo/Test Equipment	08/87

2.2.5 RH STRATEGY IMPLEMENTATION
OAK RIDGE NATIONAL LABORATORY

I. GOALS AND OBJECTIVES

The purpose of this effort is to define and implement an Oak Ridge National Laboratory (ORNL) strategy for the management of remote-handled (RH) transuranic (TRU) waste.

In addition to the continued interim management of the ORNL waste and preparation of the waste for disposal at the Waste Isolation Pilot Plant (WIPP), it now appears that ORNL will be responsible for the development of facilities which will also serve DOE RH-TRU and perhaps special case waste processing needs on a system-wide basis.

The achievement of the objective of disposal of the above described RH-TRU waste in WIPP will require the development and implementation of a integrated strategy which establishes priorities, identifies and resolves issues, and and maximizes the available funding to met the schedule and milestones established by both ORNL and the Joint Integration Office (JIO).

II. STATUS

The work to be accomplished under this task is broken into three major subtasks:

Subtask 1: Waste Handling Pilot Plant Development

The Waste Handling Pilot Plant (WHPP) has been proposed as a central processing facility located at ORNL to process, repackage, and certify DOE RH-TRU wastes.

The current conceptual understanding of the WHPP is based on work done in the preparation of an existing report, Feasibility Study for RH-TRU Waste Handling Facility, prepared by Martin Marietta Engineering in 1984. This report defined a "generic" facility that could characterize, process, package, and certify RH-TRU wastes for shipment to WIPP. It was determined, as part of the study, that the proposed facility could process greater than 95% of all RH-TRU wastes that are either stored or projected to be generated at the four primary DOE sites. It is current judgement that the WHPP could process practically all of the known inventory of RH-TRU.

This facility was proposed as a new stand-alone capital construction consisting of seven basic areas: (1) process cells, (2) access cells, (3) receiving and shipping, (4) operating and computer room, (5) equipment rooms, (6) offices, and (7) change room. Three shielded process cells and their associated equipment are the most important elements of the facility. The first process cell would be used for examination of containers of waste and for RH canister loading. Waste packaging would be done in the second cell, and the third cell would be used for decontamination purposes. Access between these cells and the facility shipping and receiving area is via the access cell. The facility documented in this study was not sited and did not include capability for processing RH-TRU sludges.

The specific tasks completed during FY 1987 will include updating and publication of a revised feasibility study, completion of sufficient alternatives analyses to proceed with site selection for the facility, preparation of a draft Waste Acceptance Criteria for other DOE users of the facility, and preparation of the design criteria for the Conceptual Design Report to be completed during FY 1988.

The above tasks completed in FY 1987 will allow for continuation of the conceptual design process and the supporting safety and environmental evaluations in FY 1988 which will support the necessary FY 1991 line item project to support an operational date for FY 1996 as identified in the RH Cost/Schedule Optimization Study, the ORNL inventory Work-Off Plan (IWOP), and the Long-Range Master Plan. The ORNL current strategy is to proceed with the development of the WHPP for processing of the solid wastes at ORNL and other DOE sites as first priority. Sludge processing in the facility will be evaluated at a later date when experience is gained on the low-level liquid solidification effort and when time has been given for the possible development of private industry "vendor service" facilities which could eliminate the need for capital construction of a sludge solidification process.

Subtask 2: RH Demonstration Support

ORNL currently stores, in Bldg. 3019, a 233_U waste stream which is being considered for classification as RH-TRU. The Bldg. 3019 facility is nearing the end of its planned use and will be placed in a shutdown mode around 1989. The classification of the subject materials as TRU and removal to WIPP would reduce a significant security and safeguards burden for an inactive facility in addition to supporting the demonstration of RH waste disposal at WIPP.

The material consists of 401 welded stainless steel cans of uranium oxide which has been processed through concentration and thermal denitrification steps as part of the CEUSP. The feed material for this program resulted from the reprocessing of a thorium-uranium fuel core that had been irradiated in the Consolidated Edison Indian Point Reactor from 1962 to 1965. The original oxide fuel pellets were produced at Hanford and Savannah River. The reprocessing was performed at West Valley and the nitrate product solution was transferred to ORNL in 1968-1969.

The material was stored in tanks until they neared the end of their original 20-year design life, at which point it was decided to solidify the materials.

A proposal has been made that this material be packaged into canisters and used to support the WIPP RH demonstration period. During FY 1986, ORNL conducted an initial evaluation of the certification requirements from the material. Some analysis will be necessary to support an exemption request. The major hurdle will be assurance of criticality safety in accordance with the Waste Acceptance Criteria.

During FY 1987, ORNL will complete the analyses necessary to support an exemption request submittal to JIO. Work will also be conducted to define the costs of the CEUSP disposal with particular emphasis towards identifying a logical source for the various elements of the toal cost. If approval of the exemption appears favorable, ORNL will proceed toward design and possibly fabrication/procurement of the equipment and facilities modifications necessary to support packaging of the material in canisters for disposal.

Subtask 3: RH Strategy Refinement/Implementation

During FY 1987, the primary emphasis of this overall task is planning. A significant effort must be expanded in the integration, coordination, and prioritization of activities related to management of RH-TRU waste. Some of the activities and/or issues to be considered include the processing techniques for the RH-TRU sludges and the relationships with the ORNL liquid low-level waste processing techniques and facilities, definition of waste characteristics of off-site wastes to be processed in the

WHPP, consideration to handling of special case wastes in the WHPP, and implementation of charge-back plans for newly generated RH-TRU waste.

Completion of the activities in Subtasks 1 and 2, along with the other considerations to be integrated under the generic umbrella of Subtask 3, should allow for the development of a supportable RH Strategy Plan by the end of FY 1987.

2.2.5 RH STRATEGY IMPLEMENTATION

ORNL

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
									1		2	3

FUNDING REQ ($000)	FY 87
Waste Operations	
BA	592
BO	592
CE	334

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete Cost Allocation Plan for CEUSP Disposal	06/87
2.	Submit Exemption Request for CEUSP Disposal to JIO	08/87
3.	Complete Site Selection for WHPP	09/87

2.2.6 TRANSPORATION ASSESSMENT AND GUIDANCE REPORT (TAGR) REVISION

I. GOALS AND OBJECTIVES

This task is to revise the Transportation and Assessment Guidance Report to reflect updated or most current data for waste volumes, waste projections, waste characteristics, and waste forms for defense TRU waste generating sites. The objective is to provide the sites with a referenceable technical report to be used in the preparation of site-specific NEPA documentation.

II. STATUS

The TAGR was first released in FY 86. The report will be updated to reflect the best available data for TRU waste volumes, characteristics, and waste forms. The TAGR will provide the TRU waste generating sites referenceable technical report on cummulative transportation risk for shipping TRU waste to WIPP.

III. DESCRIPTION OF TASK

Program objectives and overall schedules will be as stated in The Defense Waste Management Plan to achieve permanent disposal and end interim storage. The report will include a transportation risk analyses utilizing RADTRAN III, a risk assessment for TRUPACT II, a risk assessment for newly identified shipping routes, intersite shipments for centralized TRU waste processing, and ATMX railcar shipments.

2.2.6 TRANSPORATION ASSESSMENT AND GUIDANCE REPORT (TAGR) REVISION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
								1				

FUNDING REQ ($000)	FY 87
BA	100
BO	100
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Issue Revised TAGR	05/87

2.3 WASTE OPERATIONS

I. INTRODUCTION

The Waste Isolation Pilot Plant (WIPP) is scheduled to begin waste storage operations in October 1988. Operations to support the opening of the WIPP facility require contact-handled (CH) and remote-handled (RH) waste transportation systems. Support of the transportation system include integration, monitoring, maintenance and safety, and emergency response personnel training. The TRU Program provides the lead in organizing the operation needs to support the WIPP functions.

II. GOALS AND OBJECTIVES

The goal of waste operations is to provide the required support transportation equipment, documentation, training, personnel, and facilities to deliver waste to WIPP. WIPP pre-opening operations activities must be in place and operating by October 1988. The Waste Operations Program is to be used to provide the support to WIPP.

III. STATUS

Waste operations projects are being impemented to meet the operations support requirements of the WIPP facility. In FY 87 these operations primarily concentrate on transportation needs. In FY 87, operations funding provides for RH transportation, RH strategy implementation (2.2.4)(2.2.5), CH transportation, integration, maintenance, monitoring and certification, NEPA documentation, transportation guidance (2.2.6), and system operations modeling (2.2.2).

2.3.1 RH TRANSPORTATION SYSTEM DEVELOPMENT

I. GOALS AND OBJECTIVES

This task supports acquisition of casks to transport Defense High-Level Waste (DHLW) and Remote-Handled Transuranic Waste (RH-TRU). The preferred method of acquisition is through a proposal process initiated in 1985. Fixed price proposals were solicited from industry for supply of COC bearing casks for transport of either RH-TRU only or both DHLW and RH-TRU. The fallback position was to carry both waste forms in the DHLW cask that was designed by Sandia and GA Technologies. Evaluation of proposals submitted under the RFP included an assessment of life cycle costs in addition to the usual technical evaluation. The expected life cycle costs were then used to decide whether a dual purpose cask or and RH-TRU only cask, plus DHLW cask would be procured. The DHLW cask would be procured in a separate action.

II. STATUS

The current (10-86) status of this task is that the proposal received in response to the RFP have been evaluated, and two proposals for RH only casks have been placed in the competitive range. Negotiations will be carried out with both firms, then a contract will be made with that firm that provides the most desirable combination of technical merit and price.

The Draft DHLW cask SARP modification for RH-TRU waste is complete. The draft has a very limited acceptable A_2 (or total Ci) limit, restricting the content to unacceptably low levels. A plan has been generated detailing how the acceptable contents could be increased for RH-TRU waste by a factor of 10 to 100 from the original 30 Ci of Pu. Due to the pending award of the RH-TRU cask contract, this option will not be pursued. The DHLW cask SARP will be completed in final form and be submitted for certification under their funding during FY 87.

In FY 1986, work supporting the RH-TRU shipping fallback option. Sandia modified the DHLW cask SARP to include RH-TRU in the authorized contents.

III. DESCRIPTION OF TASKS

Funding under this task supports the work to be done under the RH-TRU cask contract. During FY 87, the contract will be awarded, and the design, work, certification plan, SARP, and preparation of related documentation will be initiated. The Draft SARP, Final SARP, Draft Design Report, Certification Plan, and submission of the SARP for certification will be completed during FY 87. FY 88 will see initiation of fabrication and award of the COC.

2.3.1 RH TRANSPORTATION SYSTEM DEVELOPMENT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S

NOTE: FY 87 cost plan will be completed after contract award since it is dependent on the agreements reached with the contractor selected, and will be definitized in the contract.

FUNDING REQ ($000)	FY 87
BA	1473
BO	1473
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date

NOTE: FY 87 milestones for this project will be completed after contract award since it is dependent on the agreements reached with the contractor selected, and will be definitized in the contract.

2.3.2 CH WASTE TRANSPORTATION

I. INTRODUCTION

A new transportation system for CH-TRU waste, TRUPACT, has been under development by the Transportation Technology Center (TTC) at SNL since 1978. This system has been designed to transport the majority of currently stored and newly generated CH-TRU waste packages in a transportation system that meets regulatory requirements and is to be used in the management of all defense wastes.

II. GOALS AND OBJECTIVES

The goals and objectives of this program are to develop licensable transportation systems for the shipment of transuranic defense wastes. TRUPACT Unit 1 was fabricated under preliminary design requirements and will be used for nonradioactive waste transportation handling studies. TRUPACT Units 2 & 3 were designed to the final design requirements and are bimodal to allow shipment by the most desirable mode and to assure flexibility independent of a single transport mode. The final design of these units limits inner door seal temperatures to meet acceptable leak rate levels. The need to follow-on systems to handle CH-TRU more efficiently and for RH-TRU and SH (special-handled) TRU will be evaluated.

III. STATUS

Fabrication of TRUPACT-I Unit 0 for full-scale testing was completed in June, 1984, waste handling demonstrations were conducted in July and normal hypothetical accident condition tests were conducted in July, August, and September. Results from the dynamic tests were as anticipated, deformations were as predicted, and measured seal leak rates were within the range allowed in the SARP. Post-test examination did reveal a leak in the seal track

2.3.2.1 TRUPACT INTEGRATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Trans. Integration			1			2 3 4 5 6			7			8

FUNDING REQ ($000)	FY 87
BA	470
BO	470
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete Hiring of a Central Dispatch Coordinator	12/86
2.	Develop Initial Plan for Operation of JIO Central Dispatch Office	03/87
3.	Identify Manpower and Funding Requirement for Operation of a 24-Hour Central Dispath Operation	03/87
4.	Complete Review of Background Information on RH-TRU Waste Documentation in Support of Developing a Transportation Plan	03/87
5.	Complete Retrofit of TRUPACT-I Units 2 & 3	03/87
6.	Complete Procurement of Trailers for TRUPACT-I Units 2 & 3	03/87
7.	Subcontractor Completion of Modifications to Ancillary Handling Equipment Design	06/87
8.	Integrate Activities of the Central Dispatch Office with the Activities of the Tracking System Demonstration	09/87

2.3.2.2 TRUPACT MAINTENANCE

I. DESCRIPTION OF TASK

This task provides for the maintenance of TRUPACT-I Units 1, 2, and 3. Unit-1 will be used for institutional presentations to state and city representatives that are on the waste transportation routes to WIPP. Units 2 & 3 will be utilized for transuranic waste shipments from Rocky Flats to the INEL. INEL will perform the routine maintenance function on the TRUPACTs and trailers until the WIPP maintenance facility is operational in October 1988. Quality level C.

2.3.2.2 TRUPACT MAINTENANCE

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
TRUPACT Maintenance			1				2			2		2

FUNDING REQ ($000)	FY 87
BA	70
BO	70
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Establish Maintenance Program Requirements	12/86
2.	Quarterly Maintenance Reports	04/87 07/87 09/87

2.3.2.3 TRUPACT TECHNICAL TEAM

I. DESCRIPTION OF WORK

The TRUPACT Technical Team (TTT) was formed to provide guidance for the implementation of the TRUPACT-I. Shipments between Rocky Flats and the INEL will be initiated in FY 1987 upon receipt of the Certificate of Compliance. These minifleet operations will be utilized for data collection on loading/unloading time line, monitoring TRUPACT environment during transport and tracking system development. The data will be disseminated so improvements can be incorporated into site training/operating procedures, ancillary equipment designs as well as the TRUPACT-II (production) design. Meetings of the TTT will be held as needed to provide system-wide input into resolution of problem areas.

In addition to TRUPACT work, the TTT will meet as needed to discuss other TRU transportation issues and will make recommendations as necessary to support the TRU waste transportation system development. TTT will also address transportation problems as directed by TRU program management. Quality level C.

2.3.2.3 TRUPACT TECHNICAL TEAM

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
TRUPACT Technical Meeting Reports As Requested		1										9

FUNDING REQ ($000)	FY 87
BA	78
BO	78
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Meeting Reports	When Requested
2.	Final Year-End Summary Report	09/87

2.3.2.4 TRUPACT SUPPORT

I. DESCRIPTION OF WORK

Under this task, Sandia National Laboratory (SNL) will provide periodic monitoring of TRUPACT performance; participation in TTT activities; provide technical input required to resolve comments on the SARP; provide the technical support needed during the retrofit of TRUPACT's Units 2 & 3 and technical guidance in the development of the maintenance program for these units.

II STATUS

SNLA has completed a Draft SARP and it has been submitted to DOE/AL and DOE Headquarters as part of the DOE regulatory review process. All testing has been successfully completed. SNLA support is required to implement the prototype units into use.

2.3.2.4 TRUPACT SUPPORT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
TRUPACT Support				1	When Requested							2

FUNDING REQ ($000)	FY 87
BA	120
BO	120
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Technical Support Documentation	When Requested
2.	Final Year-End Summary Report	09/87

2.3.2.5 TRUPACT CERTIFICATION

I. GOALS AND OBJECTIVES

This project will supply the support to obtain a COC for the TRUPACT.

2.3.2.5 TRUPACT CERTIFICATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S

FUNDING REQ ($000)	FY 87
BA	50
BO	50
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
	To be Defined	

2.3.3 TRUPACT MONITORING AND DISPATCHING SYSTEM

I. GOALS AND OBJECTIVES

The ultimate goal of this program is to demonstrate the feasibility and applicability of using a satellite-based system to monitor the status of and to maintain communications with TRUPACT shipments. Communications and positioning data signals will be received by an earth station and will be relayed to a host computer. This computer will have the compatibility of recording these signals and displaying vehicle position.

As part of the overall program, a prototype demonstration test-bed is scheduled to be received by DOE during the fourth quarter FY 1987.

II. STATUS

Major accomplishments during FY 1986 included the investigation of alternative satellite-based tracking/communication methods, development of system requirements and selection of a conceptual design. DOE/HQ will continue the development of the task.

III. TASK DESCRIPTIONS

This task is the identification, purchase, and receipt of the logistics management hardware and associated equipment. This task will also provide support to DOE/HQ on the development of the tracking system.

2.3.3 TRUPACT MONITORING AND DISPATCHING SYSTEM

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Logistics/Mgmt. Equip.												1
Procurement												2

FUNDING REQ ($000)	FY 87
BA	300
BO	300
CE	200

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Procure Demonstration Equipment	09/87
2.	Logistics Equipment Purchase	09/87

2.3.4 WIPP SUPPORT

I. GOALS AND OBJECTIVES

This task provides as required support to the WIPP Project. The technical support at the JIO is made available for undefined short-term tasks that arise during the funding year. The goal is to respond quickly to tasks as they become defined.

2.3.4 WIPP SUPPORT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
WIPP Support				1 as required								

FUNDING REQ ($000)	FY 87
BA	110
BO	110
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Tasks as Requested	

2.3.5 STATE OF NEW MEXICO SUPPORT

I. GOALS AND OBJECTIVES

This task is to support agreements made under Section B.3.d.(4) of the Supplemental Stipulated Agreement, between the U. S. Department of Energy and the State of New Mexico. DOE has agreed to provide either direct financial or "in-kind" assistance to the State for emergency response preparedness activities related to transportation accidents/incidents involving transuranic waste shipments to the WIPP. Assistance is due to commerce in early 1987, after further discussions with the State on specific items to be addressed. Training activities, educational materials, and public information coordination is to commence in calendar year 1987. These activities will be directed toward emergency response personnel within State of New Mexico agencies, local government response personnel, and Indian tribal representatives.

2.3.5 STATE OF NEW MEXICO SUPPORT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
State Support												1
												2

FUNDING REQ ($000)	FY 87
BA	150
BO	150
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Begin State Emergency Response Training	09/87
2.	Annual Status Report	09/87

2.3.6 INDEPENDENT REVIEW COMMITTEE

I. GOALS AND OBJECTIVES

The Independent Review Committee, comprised of seven members with background and experience with radioactive waste management issues, provides independent and objective review of Defense Transuranic Waste Program (DTWP) activities managed by the Joint Integration Office. The membership of the IRC for the coming year includes respresentatives with experience in nuclear engineering, nuclear waste transportation, industrial quality control, systems and environmental engineering and state and local government interface issues.

The scope of IRC activities includes objective overall review of JIO sponsored planned projects and activities, including a technical review of particular research and development tasks and projects. The IRC makes specific suggestions and recommendations based upon expertise in the field of TRU waste management. The Committee operates as a consulting group to the JIO, governed by a charter identifying its responsibilities and ensuring its objective status.

II. DESCRIPTION OF TASKS

The IRC will meet in committee twice in FY 87 to review program activities. The Committee will assign individual members to act as review leaders in specific technical areas and areas of specific member expertise, e.g., transportation, waste certification, and quality control. As appropriate, individual members will be requestd to review documents or participate in review activities specific to their individual expertise.

2.3.6 INDEPENDENT REVIEW COMMITTEE

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
IRC						1						2

FUNDING REQ ($000)	FY 87
BA	50
BO	50
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete Semi-Annual Meeting and Review	03/87
2.	Complete Final Meeting and Review	09/87

2.3.7 SITE CLOSURE DEMONSTRATION

I. GOALS AND OBJECTIVES

This funding is to provide partial support for an effort at LANL to apply and evaluate a cost-efficient and effective burial site closure methodology for Los Alamos. This project builds on several years of LANL research on closure methods and on an existing large scale demonstration of several closure designs on the Area B waste burial site. Changes in the integrity of the closure designs at Area B will be monitored through FY 89 by measuring changes in plant cover, soil erosion and soil water. The Area B measurements will be used in conjunction with a model to design an optimum cover for a LANL waste burial site.

2.3.7 SITE CLOSURE DEMONSTRATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Closure Demonstration				1	2				3			4

FUNDING REQ ($000)	FY 87
BA	147
BO	147
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Order Instruments and Data Acquisition Systems	01/87
2.	Install Soil Moisture Devices and Begin Measurements	02/87
3.	Write Data-Logging Programs for Hydrologic Meteoroligic and Vegetation Systems	06/87
4.	Analysis and Summary on Ongoing Measurements of Study	09/87

2.4 TECHNOLOGY DEVELOPMENT

I. INTRODUCTION

The TRU Program must assure that technology is provided to prepare DOE TRU wastes for long-term management. This requires research and development studies to ensure that all technology necessary to implement selected long-term management options is available when needed and that these technologies can be practically operated on a production basis.

II. GOALS AND OBJECTIVES

Goals and objectives of Technology Development include the research and development to investigate and advance TRU waste management technologies. The long-term technology is focused to meet the goal of providing certified waste for WIPP storage operations beginning October 1988. Also long-term technologies providing for reduced waste generation, certification and buried waste technologies are funded in FY 87. Transportation design and certification techniques dealing with gas generation in TRU waste are also part of the long-term technology development (2.2.3).

II. STATUS

Several research and development projects are being investigated to meet projected operational requirements and repository acceptance criteria for TRU waste.

Previous gas generation studies have demonstrated that gases generated in TRU waste can be maintained at safe levels by approved vent devices or chemical recombiners. This technology is being extended to shipping and design considerations for TRUPACT II. In FY 87, demonstrations of special case waste and remote-handled waste certification techniques will be carried out using NDA/NDE technology and equipment. Reduced waste generation

studies will investigate technologies to reduce volume, improve immobilization, sort at source, reduce equipment waste, and support TRUEX development. Buried waste technology studies include site special case waste and buried waste plans, immobilization by in-situ vitrification, in-situ assay, and humid site data collection.

2.4.1 CERTIFICATION

I. INTRODUCTION

All contact-handled (CH) TRU waste, remote-handled (RH) TRU waste, and special case (SC) TRU waste require certification so that it can be transferred to the WIPP. The certification task has involved the preparation and implementation of plans and procedures for WIPP certification of this waste.

II. GOALS AND OBJECTIVES

The overall goal is to initiate WIPP/WAC certification of TRU wastes and to generate a precertified inventory of waste to support WIPP operational requirements.

III. STATUS

In addition to the RH newly generated TRU waste, a large inventory of existing stored RH-TRU waste already exists. Wastes currently being generated are being placed into temporary storage pending development of both WIPP certification procedures and WIPP approved packagings. Also physical inspection of CH-TRU waste in storage must continue to be performed to acquire data on gas generation, venting, and waste container contents. The long-range technology certification related activity in FY 87 will support HEPA filter certification criteria development at SRP.

2.4.1.1 CERTIFICATION TECHNOLOGY DEVELOPMENT

I. GOALS AND OBJECTIVES

In support of the program to permanently dispose of TRU waste, the objective of this task is to provide programs/methods for certification that waste complies with WIPP-Waste Acceptance Criteria (WAC) for disposal to WIPP.

During Fy 1987, SRP will perform testing related to certification of HEPA filters. The testing will be completed to determine if HEPA filters can be directly certified as removed from the generation point or if they will require processing to comply with the WIPP-WAC. The testing will consist of a shake and measure technique to determine if the HEPA can be directly certified. If the filters are determined to be non-certifiable, further work may be completed as time and funding permit to identify processes required to certify the HEPA's.

II. STATUS

During FY 1986 SRP completed explosion testing of concrete culverts and refined a computer medel for radiolytic gas generation in TRU drums. HEPA filter testing will be a new activity.

2.4.1.1 CERTIFICATION TECHNOLGY DEVEOPMENT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Certification Technology Development												1 2

FUNDING REQ ($000)	FY 87
BA	50
BO	50
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete HEPA Filter Testing	09/87
2.	Issue Final Report	09/87

2.4.2 INSTRUMENTATION

I. INTRODUCTION

Instrumentation requirements for some TRU waste applications are not accurate, and measurements must only indicate that surface radiation or package contents are below set limits. Other requirements are restrictive and require identification of individual isotopic concentrations with state-of-the-art accuracy at low radiation levels. The measurements must often be made on large volume containers with the TRU materials dispersed in host matrices, which make accurate determinations very difficult.

Needs for instrumentation include measurement of TRU elements in waste containers of many sizes. Processing facilities require measurements for inventory and criticality control. Surface contamination require measurements in the field and in decontamination facilities.

II. GOALS AND OBJECTIVES

The goal of this program is to further develop nondestructive prototype assay instrumentation to be applied to TRU wastes generated by DOE facilities. Instrumentation systems should assay both high- and low-density wastes, with and without additional beta-gamma fission product contamination, and should minimize dependence on prior knowledge of matrix or isotopic content. Prototype systems installed at waste generators will undergo a period of field trials.

The instrumentation needs are quite varied and broad since knowledge of the transuranic content is required in all phases of waste management. Immediate objectives fall into the following three areas: (1) assay of waste containers prior to shipment or storage, (2) assay for waste processing applications, such as presorting, product monitoring, or criticality control, (3)

verification of site data for DOE and WIPP policy decisions, and (4) detection of transuranic content in the ground to determine contamination associated with burial grounds and storage areas.

III. STATUS

Active and passive neutron interrogation systems were developed and built for assay of low- and high-density TRU wastes at 100 nCi/gm. In some cases the active/passive assay systems are in use with segmented gamma scanners.

During FY 84, the need and requirements for a mobile nondestructive assay NDA and nondestructive evaluation NDE system was identified. The needs include sorting and certification support for special case waste, off sized waste, RH waste, and waste at sites without the state-of-the-art fixed systems. An engineering prototype mobile system was demonstrated at Nevada Test Site in FY 84 and performed to its design criteria.

In FY 85, verification of the performance characteristics of the passive/active neutron interrogation assay system was initiated. Many variables exist in TRU waste and waste forms. The verification of instrument performance with actual waste forms will lay the basis for WIPP and DOE to use NDA results for policy decisions.

In FY 86, the technology of assay systems was transferred to all sites. In FY 87, RH and SC waste assay demonstrations will be completed at EG&G and LANL. Buried waste in-situ assay technology assessment will begin at EG&G (2.4.4.2) and assay sorting at source will be investigated at LANL to support reduced waste generation activities.

2.4.2.1 MOBILE NDA/NDE FIELD DEMONSTRATION

I. GOALS AND OBJECTIVES

The purpose of this task is to provide the LANL Mobile NDA/NDE System's operating staff with technical and operational support during field testing at INEL. The mobile system will be tested at INEL to compare NDA/NDE results with wastes examined utilizing the SWEPP fixed units. Testing will include both mobile drum units (assay and RTR). If funding permits, the crate units will also be tested.

II. STATUS

Field demonstrations have not been performed at INEL but the drum units have experienced a large checkout demonstration at NTS and a smaller checkout deomonstration at LLNL. From lessons learned during these two checkouts, the drum units have been modified and are now ready for field testing. The crate units are now undergoing final assembly and will undergo checkout at LLNL in December. They should be ready for field demonstrations by early summer of 1987.

2.4.2.1 MOBILE NDA/NDE FIELD DEMONSTRATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
NDA/NDE Demonstration								1			2	

FUNDING REQ ($000)	FY 87
BA	70
BO	70
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Complete Demo Prep	05/87
2.	Complete Field Demo	08/87

2.4.2.2 MOBILE NDA/NDE FIELD DEMONSTRATION

I. GOALS AND OBJECTIVES

During FY 1987 this task will provide a thorough checkout, calibration, and field evaluation of the various individual mobile drum, crate and RH NDA and NDE units completed as deliverables for the FY 1986 predecessor task. To facilitate intercomparisons with several fixed installations as well as to provide verifiable calibration standards for the mobile equipment, a set of drum and crate waste matrix standards will be developed in conjunction with the various field test site hosts. These standards, as well as actual waste, will be used for extensive NDE and NDE intercomparisons during field demonstrations at such sites as INEL that has suitable fixed NDA and NDE equipment for these demonstrations. This task will conduct a field demonstration at LLNL early in FY 1987 to obtain cross comparison assay data with the small crate system (4'x4'x7') and the new large crate (8'x8'x12") scanning equipment. Finally extensive field tests will be held at LANL to test and verify operation of the RH waste NDA equipment. Testing or all corresponding NDE equipment (55-gallon drum, crate, RH) will be part of the field tests as well.

Another goal for the field tests will be to determine field operations cost estimates and equipment operations procedures and maintenance schedules in support of the actual mobile system operation task in FY 1988 and beyond.

II. STATUS

The mobile NDA/NDE system project that was begun in FY 1984 and continued through FY 1986 with an intense program of hardware procurement and fabrication will continue in FY 1987 with a campaign of field tests and QA verification. The drum NDA and NDE units are operational following field testing and modifications

during FY 1985 and FY 1986. The crate NDA and NDE units are mechanically complete and awaiting delivery of the remainder of the electronics. Complete assembly is expected by December of 1986. The hardware for the RH NDA unit is complete.

2.4.2.2 MOBILE NDA/NDE FIELD DEMONSTRATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
NDA/NDE Field Demo		1			2	3	4		5		6	7

FUNDING REQ ($000)	FY 87
BA	700
BO	700
CE	40

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Establish Plan	11/86
2.	LLNL Field Demo	02/87
3.	Start LANL RH Field Demo	03/87
4.	Letter Report	04/87
5.	Start INEL Field Demo	06/87
6.	Complete Field Demos	08/87
7.	Final Report	09/87

2.4.3 REDUCED WASTE GENERATION

I. INTRODUCTION

The Department of Energy (DOE) strategy for newly-generated TRU waste includes a program to reduce the amount and transuranic content of the waste. The Rocky Flats Plant in Golden, Colorado, is the largest generator of TRU waste in this country. A Reduced Waste Generation Program has been established there to look for ways of reducing TRU waste at the source. This program pursues the strategy of the DOE by: (1) reducing waste generation at the plant, and (2) by encouraging other sites to share and implement the methods developed within the program and elsewhere to reduce waste generation.

II. STATUS

During the past 5 years, the program has focused on projects that attack five major types of waste forms. They include combustibles, metals, sludges, graphite, and filters. New process development and administrative controls have been developed and implemented resulting in a reduction of several hundred cubic meters of waste per year. The technology transfer program has also been successful, as a number of the suggestions and projects have been adopted by other DOE sites.

In FY 1987, the Reduced Waste Generation Program at Rocky Flats will continue to address the problems of HEPA filter waste. Work began in FY 1985 on this waste. Throughout the DOE complex, large banks of High Efficiency Particulate Air (HEPA) filters are used to rid the air of plutonium contamination prior to release to the environment. Because of the plutonium contamination, the filters are added to the TRU waste inventory. For the primary bank of filters, it is reasonable to assume that the filters all fall in the TRU category. The secondary banks of filters, however, are put into the TRU inventory through administrative decree, when in

fact they are probably low-level waste. By using improved radiation detection devices to segregate these filters, a considerable savings in the generation of TRU filter waste was effected. In addition, new filter technology or the use of prefilters could prevent the filters from accruing large amounts of plutonium, thus extending their life or preventing these filters from becoming TRU waste as well. Significant savings do result when waste can be disposed of as low-level rather than TRU.

A systems analysis of filter handling at the Rocky Flats Plant provided direction for the FY 1986 work. Possible locations in gloveboxes and plenums were explored for prefilter emplacement and a positive cost benefit. Initial engineering designs were for an automated prefilter change system. In addition to the HEPA Filter Optimization task, HEPA filters were also examined and characterized, and determined there is no need to immobilze. Finally, the Equipment and Materials Replacement task evaluated new ceramic coating that can be applied to foundry equipment in the Rocky Flats Plant. Use of the coating is expected to increase equipment lifetime by a factor of 150.

II. DESCRIPTION OF TASKS

In FY 87, reduced waste generation long-term technology will continue with (1) HEPA filter implementation, (2) equipment and material replacement, (3) PREPP volume reduction, (4) immobilization improvement, (5) assay/sort at source, (6) TRUEX and (7) National Working Group activities.

2.4.3.1 RWG HEPA FILTER IMPLEMENTATION

I. GOALS AND OBJECTIVES

This task is based on the previous year's work in which prefilters placed in plenums were found to increase the lifetime of plenum HEPA filters. The FY 87 Current Year Work Plans will be for emplacement of prefilters into various plant plenum systems--as plant funds permit.

II. TASK DESCRIPTION

A final report will be prepared that will provide the design and recommendations for prefilter emplacement, projected waste volumes impacted by overall HEPA filter improvement management, anticipated cost/benefit analysis, and general improvement anticipated in filter waste management. The work for this task will be at a Quality Level C.

2.4.3.1 RWG HEPA FILTER IMPLEMENTATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
RWG		1							2		3	4
HEPA												5
Filter												

FUNDING REQ ($000)	FY 87
BA	130
BO	130
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Develop a Work Plan to Implement Prefilters for Size 5 HEPA Filters into Plenums	10/86
2.	Complete Design Criteria for Prefiltration Systems Which Will Include Functions Such as Plenum Service and Air Flow Conditions	06/87
3.	Install and Test Prefilters in Selected Plenums	08/87
4.	Install Prefiltration Systems with Plant Funds as Available	09/87
5.	Issue a Final Report	09/87

2.4.3.2 RWG - EQUIPMENT/MATERIALS REPLACEMENT

I. GOALS AND OBJECTIVES

The previous year's effort provided rare earth coatings to crucibles and molds within the plutonium foundry areas to effect longer life time usage and waste reduction. The FY 87 Current Year Work Plan will focus on examining other production hardware components for rare earth coatings with specific goals of replacing the currently used Mg Oxide crucibles with a rare earth composite coating on a steel crucible, and continue developing coating technology for other applications. The work for this task will be at Quality Level B.

2.4.3.2 RWG - EQUIPMENT/MATERIAL REPLACEMENT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
RWG Equipment/ Materials			1		2		3				4	5

FUNDING REQ ($000)	FY 87
BA	130
BO	130
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Develop and Test Substrate Layer for the New Steel Crucibles	12/86
2.	Design and Fabricate Test Crucibles	02/87
3.	Refine the Coating System	04/87
4.	Transfer Technology on Coating Systems to Production	08/87
5.	Complete Summary Report for Fiscal Year's Activities	09/87

2.4.3.3 RWG - PREPP VOLUME REDUCTION

I. GOALS AND OBJECTIVES

The Process Experimental Pilot Plant (PREPP) at INEL is a facility to demonstrate methods for processing non-certifiable TRU waste into a form that is acceptable for WIPP disposal. During this processing wastes will be shredded, incinerated, sized for particle size by passing through a rotating rommel screen, and then the fines will be immobilized with cement. This task is to determine if the waste exiting the sizing step, that are not classified as fines (greater than 1/4 inch in diameter), can be diverted from the TRU category into the LLW category.

II. TASK DESCRIPTION

Work in FY 86 proposed instrumentation modifications/additions for sorting the waste. The FY 87 Current Year Work Plan will obtain and test equipment using simulated waste. A final report will be prepared providing the data from the analysis and a recommendation for final implementation. The work for this task is Quality Level B.

2.4.3.3 PREPP VOLUME REDUCTION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
PREPP Volume Reduction						1	2				3	4

FUNDING REQ ($000)	FY 87
BA	50
BO	50
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Design and Plan a Test Program for Three Different Detection Systems	03/87
2.	Procure hardware for Supporting the Testing of the Detection System	04/87
3.	Complete Testing	08/87
4.	Prepare a Year End Summary Report	09/87

2.4.3.4 RWG - IMMOBILIZATION IMPROVEMENT

I. GOALS AND OBJECTIVES

The objective of this task is to improve methods of waste immoblization so as to reduce the overall waste volumes. The primary focus for improved immobilization will be aimed at the sludges generated at the Rocky Flats Plant. Currently, 400-500 cubic meters of sludge is generated per year which is about 15% of the total volume of TRU waste. Through improved immobilization practices, it is probable that a volume reduction in the range of 5:1 could be achieved.

II. TASK DESCRIPTION

The FY 87 Current Year Work Plan is to systematically study technologies that may be adaptable to RFP waste treatment operations which would remove the water and provide for a solidified waste form that would meet transportation and disposal requirements. This work for this task is Quality Level C.

2.4.3.4 RWG - IMMOBILIZATION IMPROVEMENT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
RWG Immoblization Improvement		1							2		3	4 5

FUNDING REQ ($000)	FY 87
BA	130
BO	130
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Provide a Work Plan to Evaluate Technologies for Immobilizing Sludge Wastes Without the Conventional Cement and Waste	10/86
2.	Identify Processes Applicable for Dry or Wet Sludge Immobilization	06/87
3.	Provide a Cost/Benefit Analysis to Measure the Value of Improved Immobilization Over Cementation of TRU Wastes	08/87
4.	Provide a Survey of DOE Defense Sites Where the Technology Would Be Applicable, and an Inventory of the Wastes Which Might Be Immobilized	09/87
5.	Prepare a Year End Summary Report	09/87

2.4.3.5 RWG - ASSAY/SORT AT SOURCE

I. GOALS AND OBJECTIVES

This task is to develop a real-time GO/NO-GO counting system for segregating low-level waste from TRU waste at the source of generation. Operational history at LANL, ORNL, RFP, Hanford, NTS, and INEL has shown that by assaying waste containers using NDA systems, LLW can be effectively segregated from TRU, thus providing a cost savings in overall waste disposal. In furthering this concept, it is envisioned that additional segregation can be realized by sorting the waste in "up stream" processing areas where waste is originally generated.

II. TASK DESCRIPTION

The FY 87 Current Year Work Plan will address this task to determine the feasibility and necessary development of an "assay/sort" NDA system at the source of generation. Factors to be considered are 1) can the equipment be emplaced without affecting current operations, 2) what are the shielding and other design requirements, and 3) if emplaced, what will be the projected volumes of wastes going to LLW instead of TRU, and what is the anticipated cost/benefit. A Quality Level C has been assigned to this task.

2.4.3.5 RWG - ASSAY/SORT AT SOURCE

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Assay/Sort at Source							1					2

FUNDING REQ ($000)	FY 87
BA	100
BO	100
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Letter Report on Site-Specific Assay/Sort Possibilities for Gamma and Neutron Systems	04/87
2.	Year End Report on Selection of Detector system	09/87

2.4.3.6 RWG - TRUEX

I. GOALS AND OBJECTIVES

This task is for the technology transfer and subsequent implementation of the TRUEX process into the Hanford facilities. Developmental work on the process has been ongoing by NAL for the past several years, and thus far, on a laboratory scale has shown to be applicable for removing actinides from process waste streams. Objectives of implementation of the process at RHO will be to demonstrate the TRUEX process for recovering transuranics that would normally be lost to the waste stream and to terminate the transfer of transuranic waste streams to underground holding tanks.

II. TASK DESCRIPTION

The FY 87 Current Year Work Plan focuses on completion of the TRUEX chemistry and process flowsheets for application to the PFP effluents. A Quality Level B has been assigned to the work for this task.

2.4.3.6 RWG - TRUEX

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
RWG - TRUEX								1				2
												3
												4
												5

FUNDING REQ ($000)	FY 87
BA	800
BO	800
CE	105

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Finalize a Selection Process for Removing Solids	05/87
2.	Optimize the TRUEX flowsheet for the PFP	09/87
3.	Determine Disposal Processing for Americium	09/87
4.	Initiate an Implementation Plan for Prototype Equipment for Full-Scale Testing	09/87
5.	Provide a Year End Summary Report	09/87

2.4.3.7 RWG - NATIONAL WORKING GROUP

I. GOALS AND OBJECTIVES

Objectives of the National Working Group for Reduction in TRU Waste Arisings (NWGRTWA) are 1) exchange ideas on ways in which waste arisings can be minimized, 2) provide analytical input for task development and implementation, and 3) establish cooperative work efforts for technical development.

II. TASK DESCRIPTION

Current Year Work Plans are to host two meetings and provide a topical report entitled "FY 1987 Summary Report -- National Working Group for Reduction in TRU Waste Arisings". A Quality Level C will be applied to the work for this task.

2.4.3.7 RWG - NATIONAL WORKING GROUP

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
			1								2	3

FUNDING REQ ($000)	FY 87
BA	90
BO	90
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Host First FY 87 NWGRWA Workshop, Salt Lake City	12/86
2.	Host Second FY 87 NWGRWA Workshop	08/87
3.	Complete Report "FY 1987 Summary Report -- National Working Group for Reduction in TRU Waste Arisings"	09/87

2.4.4 BURIAL GROUND TECHNOLOGY

I. INTRODUCTION

Defense waste management practices prior to 1970 included the shallow land burial of solid and liquid wastes contaminated with transuranics. Configurations included cribs, trenches, ponds, ditches, French drains, and reverse wells. These practices and, at times, spills and leaks, have resulted in soil contamination.

II. GOALS AND OBJECTIVES

New emphasis on federal regulations make exhumation or stabilization necessary for remedial action or site closure. Specific technologies will have to be developed to accomplish these operations. These would include excavation and handling equipment development, waste processing capabilities, and stabilization methods.

The goal of this task is to provide the technology necessary for implementing the potential alternatives for the management of buried wastes at the several TRU sites.

Major objectives are to (1) identify the nature of the buried wastes and determine burial area boundaries and locations, (2) conduct studies and tests to determine the feasibility of optional methods for containment and long-term management of the buried wastes, (3) identify and develop methods for exhumation of buried wastes, and (4) identify and develop technology for imeplementing the long-term option(s) chosen.

III. STATUS

Several studies have been completed characterizing wastes buried at Hanford, INEL, SR, and LANL. The extent of further studies required in this area could be large or small depending on the detail of information deemed necessary to make decisions on long-term management. Studies on waste exhumation methods, stabilization methods, and processing methods have identified some potentially feasible processes.

2.4.4.1 INEL BURIED WASTE STUDIES

I. INTRODUCTION

The purpose of the INEL Buried TRU Waste Studies is to provide information to support the selection of a long-term management alternative for INEL buried TRU waste. The selection of an alternative will be completed in FY 1995. For FY 1987, two alternatives are being studied:

1) Improved-Confinement Technology, and

2) Retrieved Technology

II. GOALS AND OBJECTIVES

1) Evaluation of improved-confinement technology-in-situ grouting

2) Determine if in-situ grouting is a viable long-term management alternative.

3) Determine if grouting will reduce subsidence

4) Evaluations of alternatives for waste retrieval structures

5) Heavy retrieval equipment studies

6) Investigation of tension membrane structures

III. STATUS

During FY 1986, a 2,000 ft3 simulated TRU waste fit was grouted using a microfine cement. The pit was instrumented with a neutron probe access tubes, hydrological permeability test wells, and oil psychrometers.

The Buried Waste Retrieval Studies task for retrieval technology is a new study beginning in FY 1987.

IV. DESCRIPTION OF TASK

The grouted test pit will be tested for hydrological isolation and part of the pit will be excavated and examined to determine grout penetration characteristics. If hydrological characteristics. If hydrological isolation was achieved during grouting, this test pit will be used for long-term studies to evaluate tracer and moisture movement.

The INEL equipment studies will examine the applicability of using present RWMC heavy equipment for retrieval operations. A test pit containing simulated TRU waste will be designed and characterized in FY 1987 to support retrieval experiments in FY 1988. Quality Level B.

2.4.4.1 INEL BURIED WASTE STUDIES

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Buried Waste Studies												1

FUNDING REQ ($000)	FY 87
BA	350
BO	350
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Issue Annual Report	09/87

2.4.4.2 BURIED WASTE IN-SITU ASSAY

I. GOALS AND OBJECTIVES

The purpose of this task is to determine the feasibility of using in-situ passive assay techniques to determine the plutonium content of buried TRU wastes. Information provided by the Rocky Flats Plant indicates significantly larger amounts of plutonium may have been disposed than indicated in available waste records. If funding permits, and if the techniques proves feasible, then some actual buried TRU waste locations may be assayed. Data collected from the assays will be used to (a) correct records, (b) provide better source term numbers for performing environmental and safety analyses, (c) determine if any criticality problems exist, and (d) support buried waste studies.

II. STATUS

This is a new task.

2.4.4.2 BURIED WASTE IN-SITU ASSAY

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
In-Situ Assay											1	2

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Draft Test Plan	08/87
2.	Final Test Plan	09/87

2.4.4.3 BURIED AND SC WASTE PLANS
EG&G

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response.

2) Provide the latest site characterization.

3) Applicable regulations will be outlined.

4) All information will be consistent and Inventory Work-Off Plans.

5) Input will verify that demonstration of compliance is site-specific and depends on negotiations with state and federal agencies.

6) Provide milestones and cost estimates for site-specific long-range buried waste plans.

7) Provide the latest special case waste inventories and projections.

II. STATUS

Both Buried and Special Case Waste must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is one of six whose purpose is to provide site-specific input to a Long-Range Comprehensive Implementation Plan for Buried Waste.

The site-specific inputs are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives.

The site-specific plans will be compiled by the Joint Integration Office and appended to the Buried and Special Case Implementation Plans. The plans will be used to support a DOE/HQ response to the General Accounting Office audit of the Defense TRU Waste Program.

2.4.4.3 BURIED AND SC WASTE PLANS

EG&G

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Plans			1			3		5				
EG&G			2			4		6				

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	INEL Written Input to Buried Waste Plan	12/86
2.	INEL Written Input to Special Case Waste Plan	12/86
3.	Draft INEL Site-Specific Plan for Buried Waste	03/87
4.	Draft INEL Site-Specific Plan for Special Case Waste	03/87
5.	Final INEL Site-Specific Plan for Buried Waste	05/87
6.	Final INEL Site-Specific Plan for Special Case Waste	05/87

2.4.4.4 BURIED AND SC WASTE PLANS
RHO

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response.

2) Provide the latest site characterization.

3) Applicable regulations will be outlined.

4) All information will be consistent and Inventory Work-Off Plans.

5) Input will verify that demonstration of compliance is site-specific and depends on negotiations with state and federal agencies.

6) Provide milestones and cost estimates for site-specific long-range buried waste plans.

7) Provide the latest special case waste inventories and projections.

II. STATUS

Both Buried and Special Case Waste must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is one of six whose purpose is to provide site-specific input to a Long-Range Comprehensive Implementation Plan for Buried Waste.

The site-specific inputs are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives.

The site-specific plans will be compiled by the Joint Integration Office and appended to the Buried and Special Case Implementation Plans. The plans will be used to support a DOE/HQ response to the General Accounting Office audit of the Defense TRU Waste Program.

2.4.4.4 BURIED AND SC WASTE PLANS

RHO

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Plans			1			3		5				
RHO			2			4		6				

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Hanford Written Input to Buried Waste Plan	12/86
2.	Hanford Written Input to Special Case Waste Plan	12/86
3.	Draft Hanford Site-Specific Plan for Buried Waste	03/87
4.	Draft Hanford Site-Specific Plan for Special Case Waste	03/87
5.	Final Hanford Site-Specific Plan for Buried Waste	05/87
6.	Final Hanford Site-Specific Plan for Special Case Waste	05/87

2.4.4.5 BURIED AND SC WASTE PLANS

ORNL

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response.

2) Provide the latest site characterization.

3) Applicable regulations will be outlined.

4) All information will be consistent and Inventory Work-Off Plans.

5) Input will verify that demonstration of compliance is site-specific and depends on negotiations with state and federal agencies.

6) Provide milestones and cost estimates for site-specific long-range buried waste plans.

7) Provide the latest special case waste inventories and projections.

II. STATUS

Both Buried and Special Case Waste must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is one of six whose purpose is to provide site-specific input to a Long-Range Comprehensive Implementation Plan for Buried Waste.

The site-specific inputs are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives.

The site-specific plans will be compiled by the Joint Integration Office and appended to the Buried and Special Case Implementation Plans. The plans will be used to support a DOE/HQ response to the General Accounting Office audit of the Defense TRU Waste Program.

2.4.4.5 BURIED AND SC WASTE PLANS

ORNL

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Plans			1			3		5				
ORNL			2			4		6				

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	ORNL Written Input to Buried Waste Plan	12/86
2.	ORNL Written Input to Special Case Waste Plan	12/86
3.	Draft ORNL Site-Specific Plan for Buried Waste	03/87
4.	Draft ORNL Site-Specific Plan for Special Case Waste	03/87
5.	Final ORNL Site-Specific Plan for Buried Waste	05/87
6.	Final ORNL Site-Specific Plan for Special Case Waste	05/87

2.4.4.6 BURIED AND SC WASTE PLANS
LANL

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response.

2) Provide the latest site characterization.

3) Applicable regulations will be outlined.

4) All information will be consistent and Inventory Work-Off Plans.

5) Input will verify that demonstration of compliance is site-specific and depends on negotiations with state and federal agencies.

6) Provide milestones and cost estimates for site-specific long-range buried waste plans.

7) Provide the latest special case waste inventories and projections.

II. STATUS

Both Buried and Special Case Waste must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is one of six whose purpose is to provide site-specific input to a Long-Range Comprehensive Implementation Plan for Buried Waste.

The site-specific inputs are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives.

The site-specific plans will be compiled by the Joint Integration Office and appended to the Buried and Special Case Implementation Plans. The plans will be used to support a DOE/HQ response to the General Accounting Office audit of the Defense TRU Waste Program.

2.4.4.6 BURIED AND SC WASTE PLANS

LANL

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Plans			1			3		5				
LANL			2			4		6				

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	LANL Written Input to Buried Waste Plan	12/86
2.	LANL Written Input to Special Case Waste Plan	12/86
3.	Draft LANL Site-Specific Plan for Buried Waste	03/87
4.	Draft LANL Site-Specific Plan for Special Case Waste	03/87
5.	Final LANL Site-Specific Plan for Buried Waste	05/87
6.	Final LANL Site-Specific Plan for Special Case Waste	05/87

2.4.4.7 BURIED AND SC WASTE PLANS
SRP

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response.

2) Provide the latest site characterization.

3) Applicable regulations will be outlined.

4) All information will be consistent and Inventory Work-Off Plans.

5) Input will verify that demonstration of compliance is site-specific and depends on negotiations with state and federal agencies.

6) Provide milestones and cost estimates for site-specific long-range buried waste plans.

7) Provide the latest special case waste inventories and projections.

II. STATUS

Both Buried and Special Case Waste must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is one of six whose purpose is to provide site-specific input to a Long-Range Comprehensive Implementation Plan for Buried Waste.

The site-specific inputs are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives.

The site-specific plans will be compiled by the Joint Integration Office and appended to the Buried and Special Case Implementation Plans. The plans will be used to support a DOE/HQ response to the General Accounting Office audit of the Defense TRU Waste Program.

2.4.4.7 BURIED AND SC WASTE PLANS

SRP

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Plans			1			3		5				
SRP			2			4		6				

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	SRP Written Input to Buried Waste Plan	12/86
2.	SRP Written Input to Special Case Waste Plan	12/86
3.	Draft SRP Site-Specific Plan for Buried Waste	03/87
4.	Draft SRP Site-Specific Plan for Special Case Waste	03/87
5.	Final SRP Site-Specific Plan for Buried Waste	05/87
6.	Final SRP Site-Specific Plan for Special Case Waste	05/87

2.4.4.8 BURIED AND SPECIAL CASE WASTE TECHNICAL SUPPORT

I. GOALS AND OBJECTIVES

1) Provide a description of the approach, resources, and schedules for ensuring uniform, coordinated Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response at all DOE sites.

2) Plans will contain HAZWRAP and LLW review.

3) Plans will provide latest site characterization.

4) Applicable regulations will be outlined.

5) Provide support for DOE response to GAO report on TRU Program.

6) Provide for expandability to include HAZWRAP and LLW sites in future iterations.

7) Coordinate and integrate site-specific input from five buried waste sites.

8) Assure most direct path to program goals are being followed.

II. STATUS

Both Buried and Special Case (SC) Wastes must be addressed by the Department of Energy in order to meet all commitments and regulations. This task is therefore, established to provide for the creation of two Comprehensive Waste Plans; one for Buried Waste and one for SC Waste.

These plans are a necessary function to provide for integration of the TRU Program participants in developing consistent goals, milestones, and focused objectives. To date, no formal plans have been written and approved except on a piecemeal basis. These plans will include policies, strategies, and cost estimates. All plans will be reviewed by the sites and DOE/HQ for approval.

2.4.4.8 BURIED AND SPECIAL CASE WASTE TECHNICAL SUPPORT

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Technial Support			1	2			3		4			

FUNDING REQ ($000)	FY 87
BA	125
BO	125
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Present Discussion at Workshop at TRU Update Meeting	12/86
2.	Provide Working Draft of Final Documents to DOE/AL	01/87
3.	Send Final Draft to Field Offices for Review and Comment	04/87
4.	Prepare and Distribute Final Documents	06/87

2.4.4.9 IN-SITU VITRICATION

I. INTRODUCTION

The objective of the ISV Program is to terminate the program and D & D the facility.

II. GOALS AND OBJECTIVES

1) Orderly termination of the program.

2) Place test systems in standby condition

III. STATUS

During FY 1986, performance data was analyzed and reported for the large scale operational acceptance tests, completion of the identified corrective actions, and verification of the effectiveness of the actions in the large scale verification test. Characterization of the 216-2-12 site was completed and the concentration of TRU nuclides was sufficient to meet the test criteria of 200 nCi/gr.

IV TASK DESCRIPTION

The thrust of the task will be to close out the ISV program and place all program records in a retrievable storage. Quality Level B.

2.4.4.9 IN-SITU VITRIFICATION

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
In-Situ Vitrification												1 2

FUNDING REQ ($000)	FY 87
BA	500
BO	500
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Place Data and Records in Retrievable Storage	09/87
2.	Final Close Out Report	09/87

2.4.4.10 HUMID SITE DATA COLLECTION

I. GOALS AND OBJECTIVES

The objectives of this task is to provide the field-scale development and demonstration of in-situ grouting of buried transuranic waste for its hydrologic stabilization achieved from which the applicability of the technique to other environmental situations can be assessed. This information will enable grouting to be compared with other long-term management options in a detailed plan for disposal alternatives of buried transuranic waste.

II. STATUS

Grouting is the process of forcing a fluid into the void space of a soil, rock, or waste formation which, after grout set, results in a cohesive mass which is considerably less permeable to water. The very heterogenous and permeable mixture of waste and backfill in burial trenches of transuranic solid waste would make it an ideal candidate for grouting. If the permeability of the waste-backfill can be reduced significantly, then leaching of contamination from buried waste can be reduced. In addition, by the filling of trench void space, grouting could also alleviate the longer-term problem of trench subsidence by obviating the longer-term problem of trench subsidence by obviating backfill consolidation and movement in response to collapsing waste voids.

III. DESCRIPTION OF TASK

The initial trench grouting was completed by the end of the fourth quarter of FY 1986 using a polyacrylamide formulation. Iron ethylenediamine-o-dihydracxyphenyl (EDDHA) was used as a tracer and coloring agent in the grout mixture to facilitate leaching studies with grout specimens retrieved from the trench. The grouted trench was allowed to cure for several days and the

permeability of the waste-backfilled redetermined via waste pump-in tests of the intra-trench monitoring wells. These tests will be repeated at logarithmically increasing intervals, beginning in 1987, for a period of three years after grouting. Any permeation of grout into the surrounding soil formation will also be determined by sampling the array of monitoring wells around the trench. The trench and surrounding soil (if grout permeation into the formation is indicated by well monitoring) will be cored during fiscal year 1987 to obtain samples for leaching studies.

The chemical and/or microbiological stability of the polyacrylamide and polyacrylate grout formulation will continue to be tested in the laboratory using soil grouted with ^{14}C-labelled acrylate grout. Long-term (up to one year) first-order rate constants for the evolution of $^{14}CO_2$ from grouted soils will be determined in the laboratory. Effects of variation in moisture and temperature regimes will also be determined as will any cometabolic effects of facilely-biodegradable waste constituents (e.g., cellulose) contained within the grouted waste/soil. It is anticipated that the degradation rates of the polyacrylamide and polyacrylate grout will be extremely slow but it is important that these are demonstrated so that the long-term stability of the grout can be established empirically. Evolution of small amounts of $^{14}CO_2$ from high-specific-activity polyacrylamide and polyacrylate in soil is perhaps the only facile method to measure the anticipated low degradation rate constants (i.e., microbiological degradative half-lives less than 100 years). Additional physical and hydraulic grout testing is scheduled to begin in 1987. Standard leaching test (Moore 1976) will be performed on laboratory-prepared acrylamide grout specimens containing a transuranic isotope (^{241}Am).

2.4.4.10 HUMID SITE DATA COLLECTION STUDIES

FY 87

TASK TITLE	O	N	D	J	F	M	A	M	J	J	A	S
Humid Site Data Collection												1

FUNDING REQ ($000)	FY 87
BA	50
BO	50
CE	0

MILESTONE IDENTIFICATION

No.	Accomplishment	Date
1.	Letter Report on Grout Leaching and Degradation Studies, and Field Grouting Performance	09/87

END

DATE FILMED

11/12/91