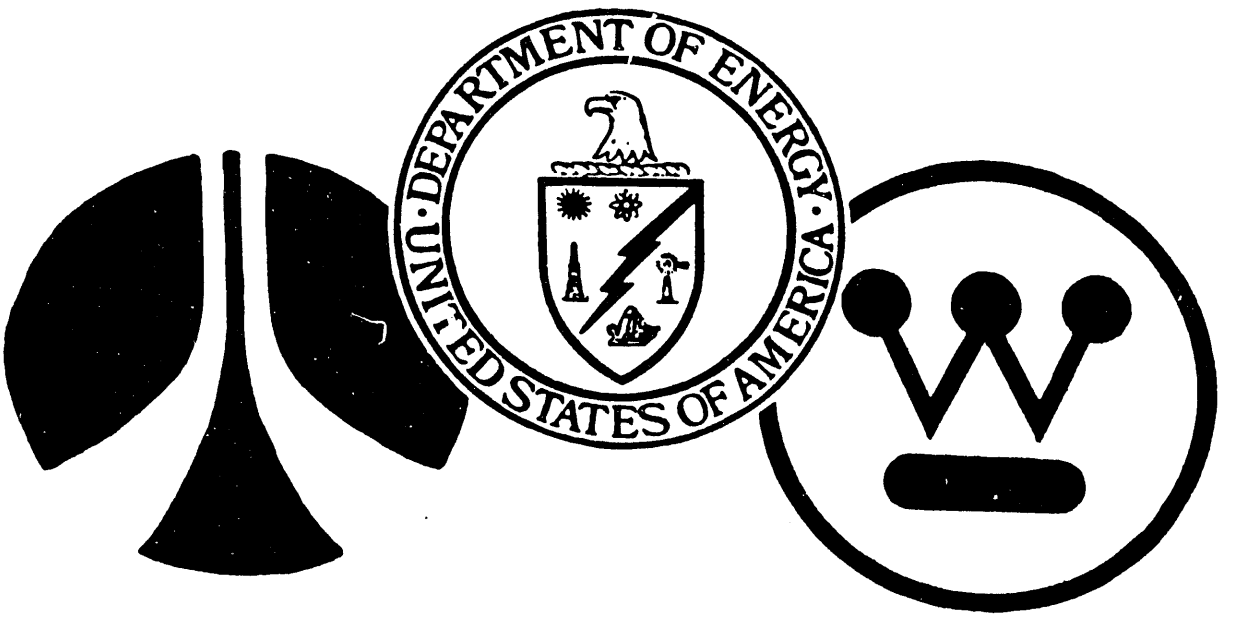
DOE-JIO-003

TRUPACT-1
IMPLEMENTATION PLAN



DEPARTMENT OF ENERGY

ROCKWELL INTERNATIONAL

WESTINGHOUSE

JOINT INTEGRATION OFFICE

ALBUQUERQUE, N.M.

DEFENSE TRANSURANIC
WASTE PROGRAM

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TRUPACT-I

IMPLEMENTATION PLAN

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TRUPACT-I IMPLEMENTATION PLAN

1.0 INTRODUCTION

TRUPACT-I, the TRansUranic PACkage Transporter is a packaging designed to transport defense contact handled transuranic (CH-TRU) waste from generating and interim TRU waste storage facilities to the Waste Isolation Pilot Plant (WIPP). Prior to fabrication and procurement of a full fleet, an initial design (TRUPACT-I) will be introduced to the defense TRU waste complex through use in an operational prototype fleet which will consist of Units 1, 2, and 3. In an effort to provide a relatively smooth introduction of the TRUPACT-I, the TRUPACT Technical Team (TTT) has developed the following implementation plan. The plan provides detailed information on user handling opportunities, schedules, equipment, responsibilities, reporting and data collection activities to be performed.

The TTT is an organization, formed with the consent of DOE/AL, that is responsible for providing interdisciplinary support for the successful implementation of the TRUPACT-I prototype fleet. The organization's 1984 charter specifies team leadership as the responsibility of the Joint Integration Office (formerly Transuranic Waste Systems Office). The major task of the TTT is to provide review and recommendation on appropriate planning tasks and to perform Transuranic Lead Organization (TLO) coordination and management activities associated with implementation of the prototype fleet.

2.0 PURPOSE

In March 1984 a document entitled "PROTOTYPE TRUPACT-I FLEET ACTIVITIES PLAN" [1] was published providing an outline for the kinds of activities to be performed when the first operational TRUPACT Unit was available. The prototype TRUPACT Fleet Activities plan addresses the TRUPACT-I design, the TRUPACT Technical Team, testing activities on TRUPACT Unit-0 and the need for package, handling and training, data collection requirements, and suggested responsibilites.

Since the publication of the plan, numerous program changes have occurred requiring revision and more thorough planning to be applied to the implementation of the TRUPACT Prototype fleet. This document is the result of the program changes and reflects additional planning.

The intent of this document is to provide users of the TRUPACT-I with a guidance document, complete with references, that will allow the smooth introduction of this new transportation system by providing the information necessary for collecting operational, performance and cost data. These data will be used in modeling and full fleet design and procurement activities. In addition, these data will help fine tune procedures in the inspection and maintenance document and the operational document. Additional objectives of this plan are to aid in the establishment of site operational, inspection and maintenance procedures as well as training of site operators and briefing state and local officials.

Contained within this plan is a brief description of the TRUPACT and the waste to be transported, an overall projected schedule for routing TRUPACT, a list of activities to be performed during the prototype operational demonstration, a listing of documents that should provide detailed information on the packaging and associated equipment, and planned training activities. In addition, an introduction of a waste transporter position monitoring system for use with CH-waste shipments and designated data to be obtained from hands-on experiences are provided.

3.0 DESCRIPTION OF TRUPACT-I

The TRansUranic PACkage Transporter (TRUPACT) has been designed specifically to transport defense contact handled transuranic waste (CH-TRU) from generators and interim storage facilities to the Waste Isolation Pilot Plant (WIPP). TRUPACT-I has been designed as a bimodal packaging that can be transported by either truck or rail. Figures 3-1 shows how the TRUPACT-I appears when loaded on a flatbed semi-trailer. Figure 3-2 shows TRUPACT-I loaded with six-packs of drums.

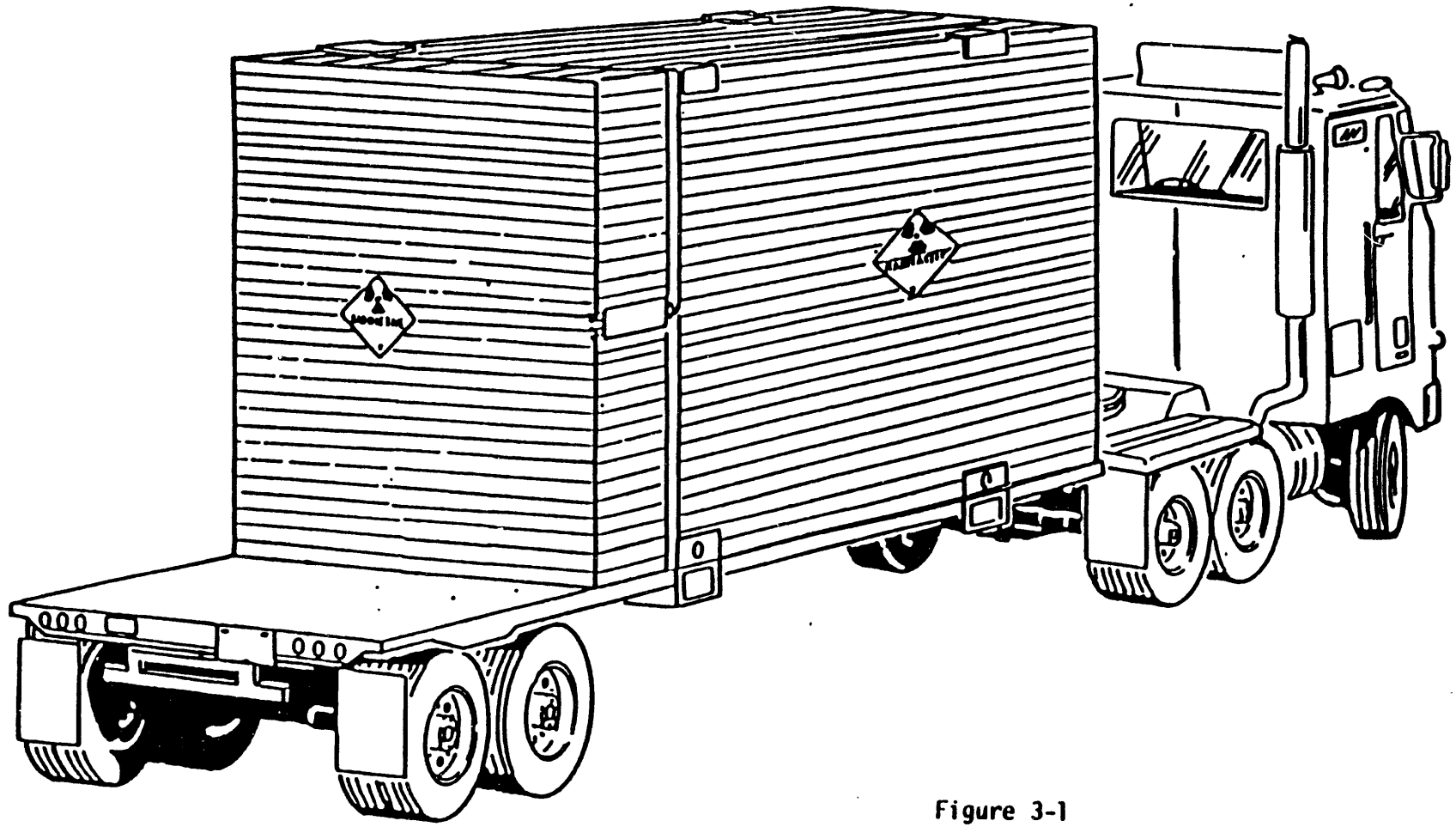


Figure 3-1

TRUPACT ON SEMI-TRAILER

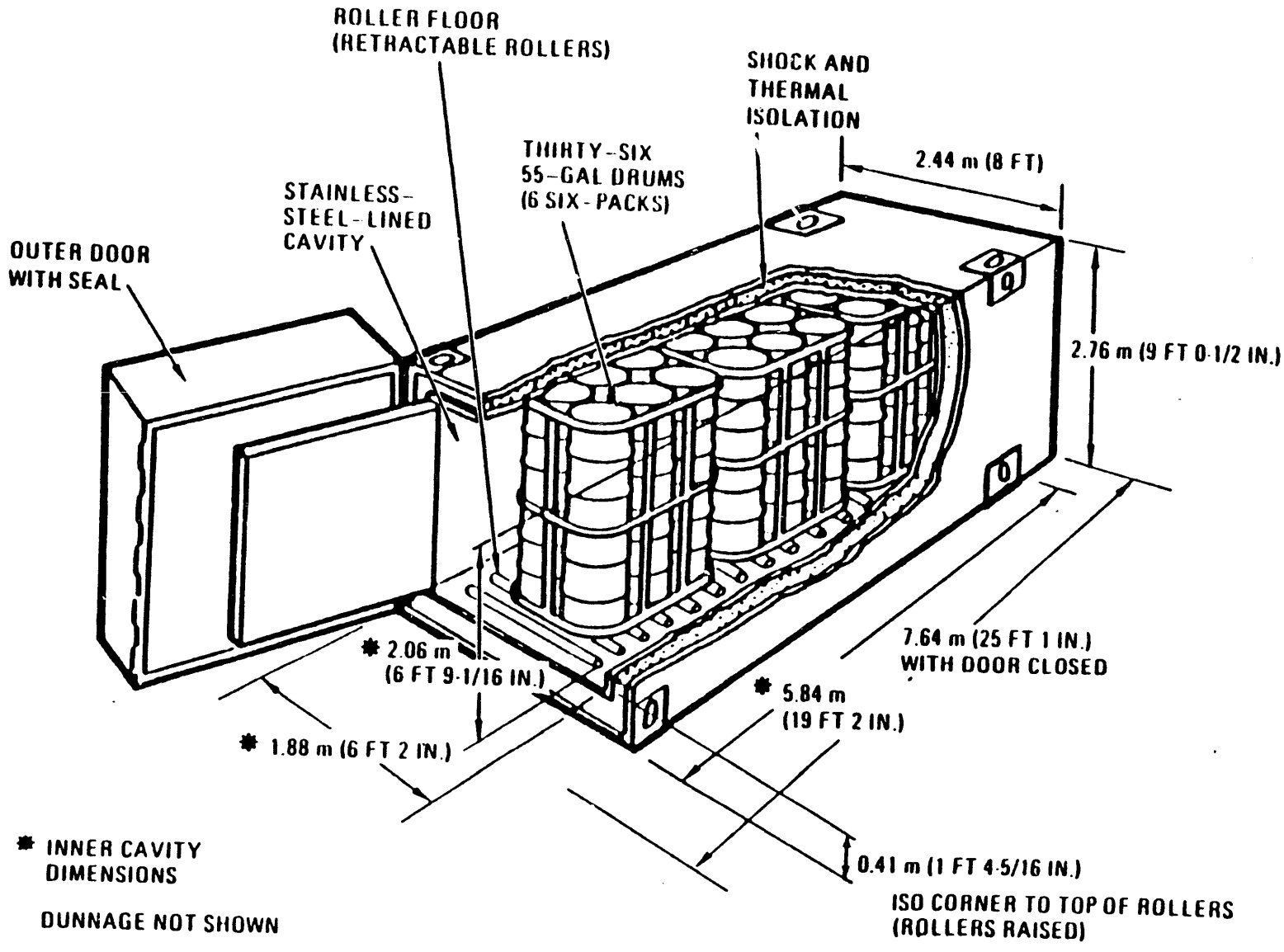


Figure 3-2

TRUPACT-I WITH "SIX PACKS"

The TRUPACT-I consists of an inner stainless steel liner supported by the inner frame and an outer frame and exterior skin. The space between the inner and outer structures is filled with rigid pour-in-place polyurethane foam with fire retardant additives. Puncture protection is provided by panels consisting of stainless steel and multiple layers of Kevlar^{R}. Thermal protection is afforded by insulation located under the exterior skin. Figure 3-3 is an exploded drawing of the TRUPACT-I.

The TRUPACT-I has a roller floor assembly, which facilitates loading and unloading and acts as a conveyor (see Figure 3-3). Loading and unloading takes place via an inner stainless steel door and outer door located at one end of the packaging. The inner door assembly includes a sealing system and is secured by thirty-six bolts. The internal structure of TRUPACT-I is vented to the exterior of the structure via a filtered port which provides "breathing" capabilities from the payload cavity to the area between the inner and outer doors.

The Gross Vehicle Weight of a TRUPACT shipment is approximately 80,000 pounds, which includes the 34,500 pound TRUPACT-I plus roller floor assembly, and approximately 15,500 pounds of payload. A more detailed description of the TRUPACT can be found in reference 2.

4.0 DESCRIPTION OF TRANSURANIC WASTES TO BE SHIPPED IN TRUPACT

Contact handled transuranic wastes (CH-TRU) are generated as a result of defense-related activities in facilities operated for the Department of Energy (DOE) and from other experimental and reactor research programs sponsored by DOE.

The wastes produced by these activities consist of laboratory wastes and by-products from production operation and reclamation processes used to recover plutonium from contaminated equipment and materials. CH-TRU waste materials are items contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100nCi/g[3]. The most common transuranic radionuclides

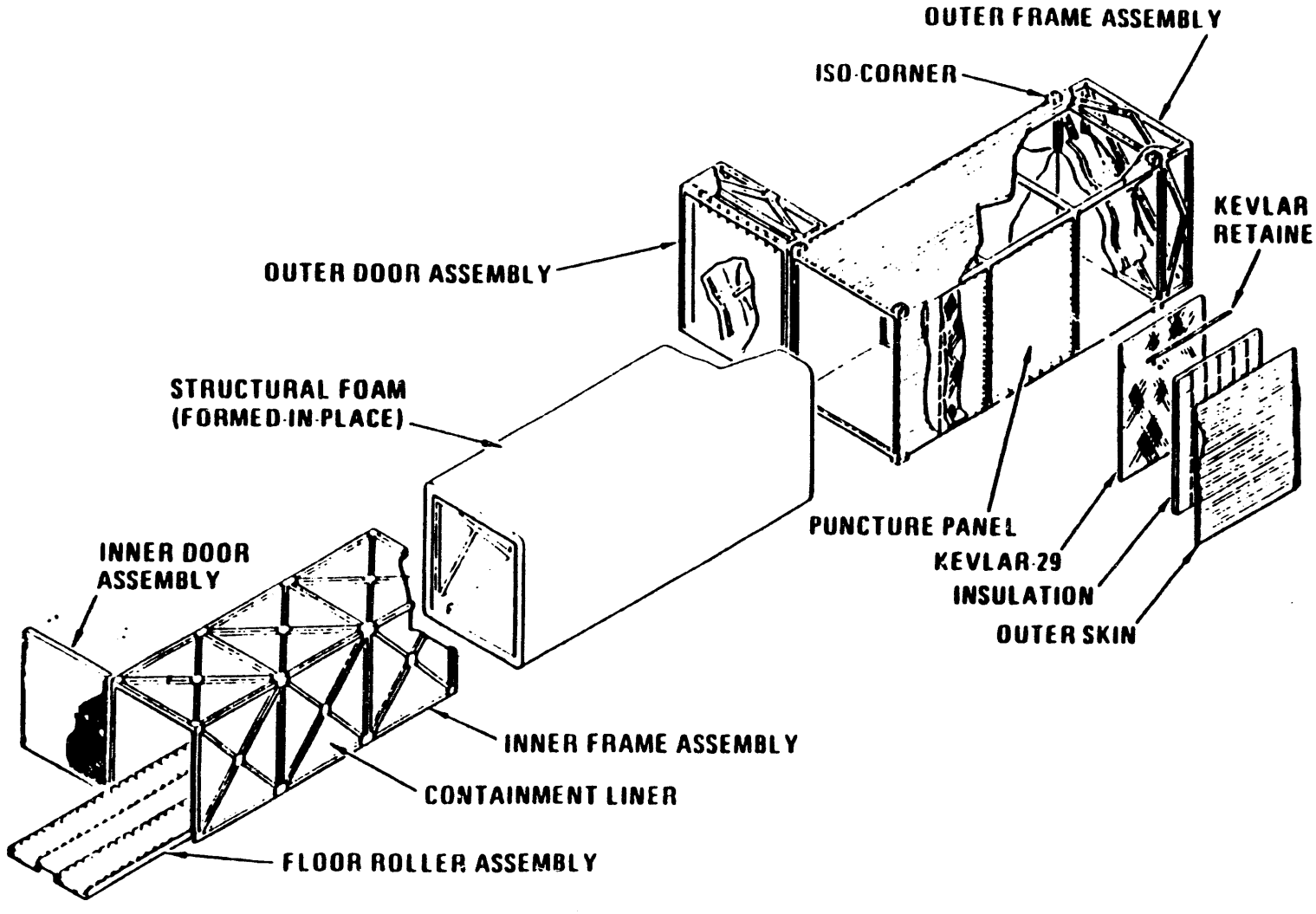


Figure 3-3

RUPACT-I PACKAGING SCHEMATIC

in these wastes are isotopes of plutonium and americium. These contaminants are usually in the form of oxides and are embedded, trapped, or otherwise attached to a variety of inert host materials.

A TRU-waste inventory survey has identified approximately 75,000 cubic meters of this CH-TRU waste to be in storage at interim defense waste storage facilities.[4] Projections are that by the year 2013, approximately 135,000 cubic meters of new waste will have been generated.

Both stored and newly generated CH-TRU waste are destined for disposal in the Waste Isolation Pilot Plant (WIPP) beginning in late calendar 1988 and ending during the year 2013. Current plans are that this waste material will be shipped to the WIPP in TRUPACT.

Additional information regarding waste to be transported in TRUPACT-I can be found in references 4 and 5.

5.0 CH-TRU WASTE CONTAINERS TO BE SHIPPED IN TRUPACT

The TRUPACT has been designed to transport CH-TRU waste containers that meet the Department of Transportation requirements for DOT 7A Type A containers and have been approved for emplacement in the WIPP. Approved waste containers will be used during the prototype fleet demonstration period. These waste containers include the standard 55-gallon (208 liter) metal drum (DOT Specification 17c) and rectangular metal boxes of the following outside dimensions: [6]

- 74.5" L x 50.5" W x 38.5" H
- 68.0" L x 54.0" W x 38.5" H
- 88.0" L x 54.0" W x 54.0" H
- 112.0" L x 68.0" W x 77.0" H

6.0 WASTE ISOLATION PILOT PLANT (WIPP)

The Waste Isolation Pilot Plant (WIPP) is located in southeastern New Mexico, approximately 25 miles east of the city of Carlsbad. The

facility site encompasses an area of 18,900 acres of state and federal lands. The authorized purpose of WIPP is to provide a research and development facility to show that the disposal of radioactive wastes from U. S. defense activities and programs can be accomplished in a safe and effective manner.[7] The WIPP is currently projected to have a twenty-five year life span, 1988 - 2013.

The WIPP facility has been included in the prototype demonstration program to gain operational handling experience along with the CH-TRU waste storage and generating facilities so that handling procedures and operations can be identified and finalized prior to receipt of CH-TRU waste.

7.0 INTRODUCTION OF THE TRUPACT FOR CH-TRU WASTE SHIPMENTS TO THE WIPP

Routine shipments of CH-TRU waste to the WIPP are scheduled to begin during late calendar year 1988. Initial shipments of the waste received at the WIPP will be shipped from the Rocky Flats Plant (RFP), and the Idaho National Engineering Laboratory (INEL). Other waste generating and storage facilities will begin routine shipments of CH-TRU waste to the WIPP in accordance with the shipping plans outlined in the "LONG-RANGE MASTER PLAN FOR DEFENSE TRANSURANIC WASTE MANAGEMENT."[4]

Shipments of CH-TRU waste to the WIPP are planned to be made in the TRUPACT. Before the TRUPACT is utilized on a routine basis for CH-TRU waste shipments to the WIPP, an operational prototype fleet of TRUPACTs will be available. Introduction of the TRUPACT-I into the CH-TRU waste transportation system will involve the use of a three-unit prototype fleet. These three units will be used to obtain design, operational and handling data from hands-on experience at CH-TRU waste generating and storage facilites. These data will be incorporated into the final design of the full TRUPACT fleet. Figure 7-1, a transportation integration logic diagram, provides a graphic representation of the activiites and estimated times required for assimilation of TRUPACT into the transportation system.

8.0 TRUPACT PROTOTYPE FLEET ACTIVITIES AND SCHEDULE - A TWO PHASE PROGRAM

The three-unit TRUPACT Protoype fleet is scheduled for delivery as follows: Unit-1, July 1985, Unit-2, January 1986, and Unit-3, in February 1986.

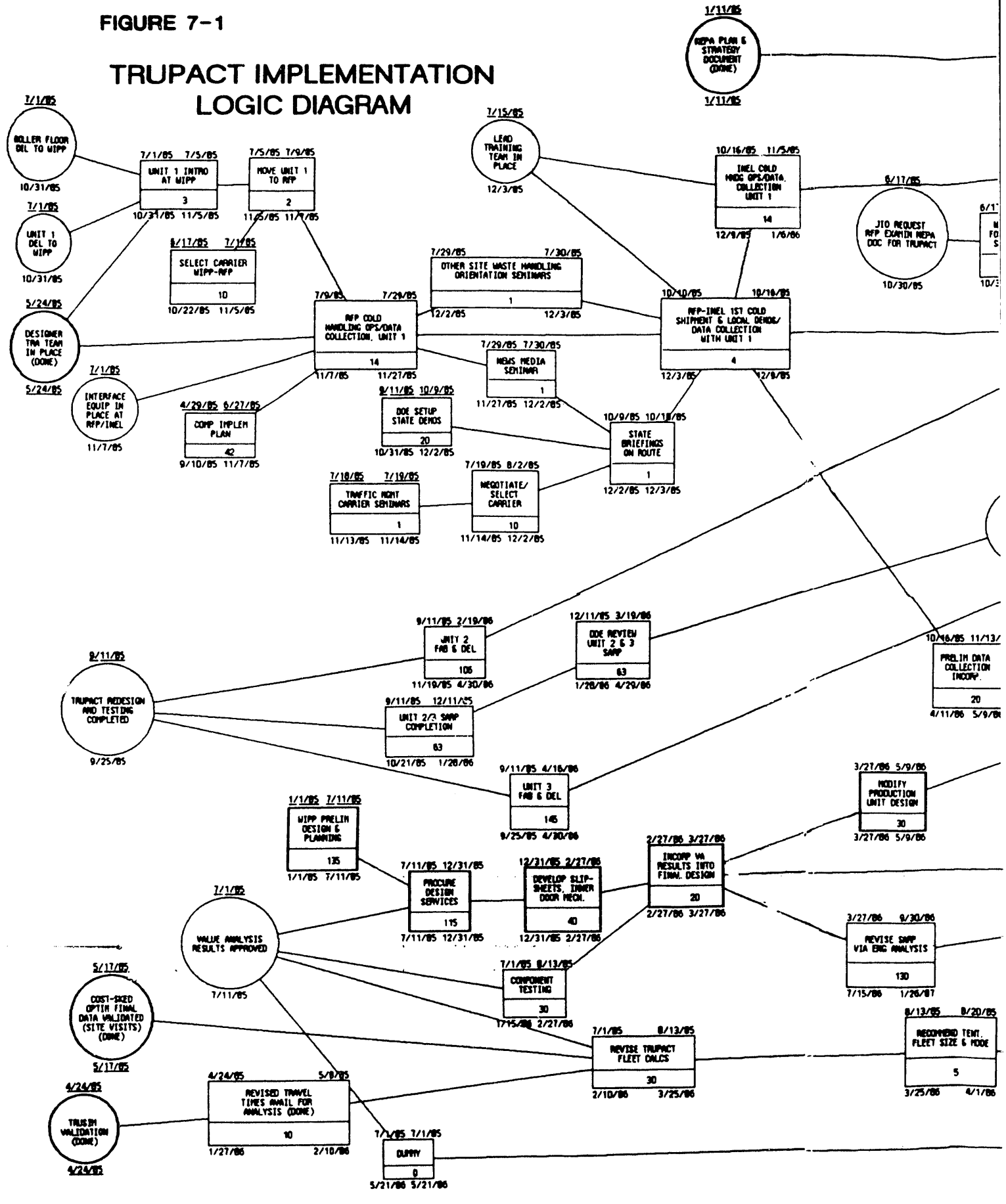
Introduction of this prototype fleet is divided into a two-phase program. The first phase involves use of TRUPACT-I, Unit-1 and nonradioactive ("cold") materials for payload to gain handling and operational performance information from the hands-on experience of TRU waste generating and storage facilities. Data will be collected on training activities and operational experiences conducted at each facility. Operational experiences are discussed in more detail in the following sections. Unit-1 will be instrumented for the acquisition of packaging pressure, thermal, and vibration data on trips between sites. Unit-1 has also been designated as the prototype unit that will be used to assist DOE officials in introducing the new contact handled waste transportation system to state and local officials during public briefings.

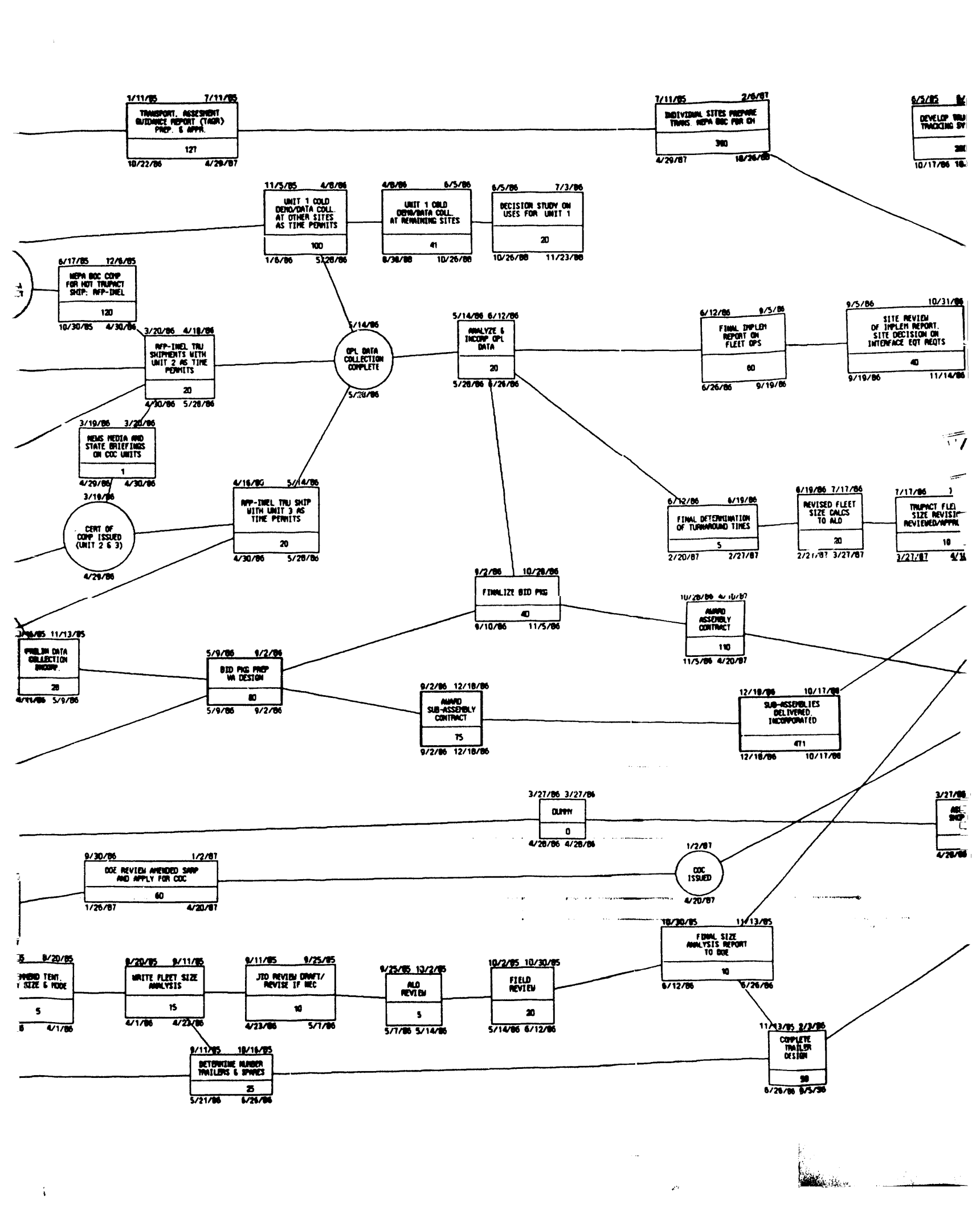
As indicated previously, Phase I of the implementation plan is designated as a "cold" handling operational demonstration. "Cold" handling operational demonstrations will utilize approved TRU waste containers (see Section 5.0) ballasted to simulate actual TRU waste weights and volumes for demonstration and training shipments.

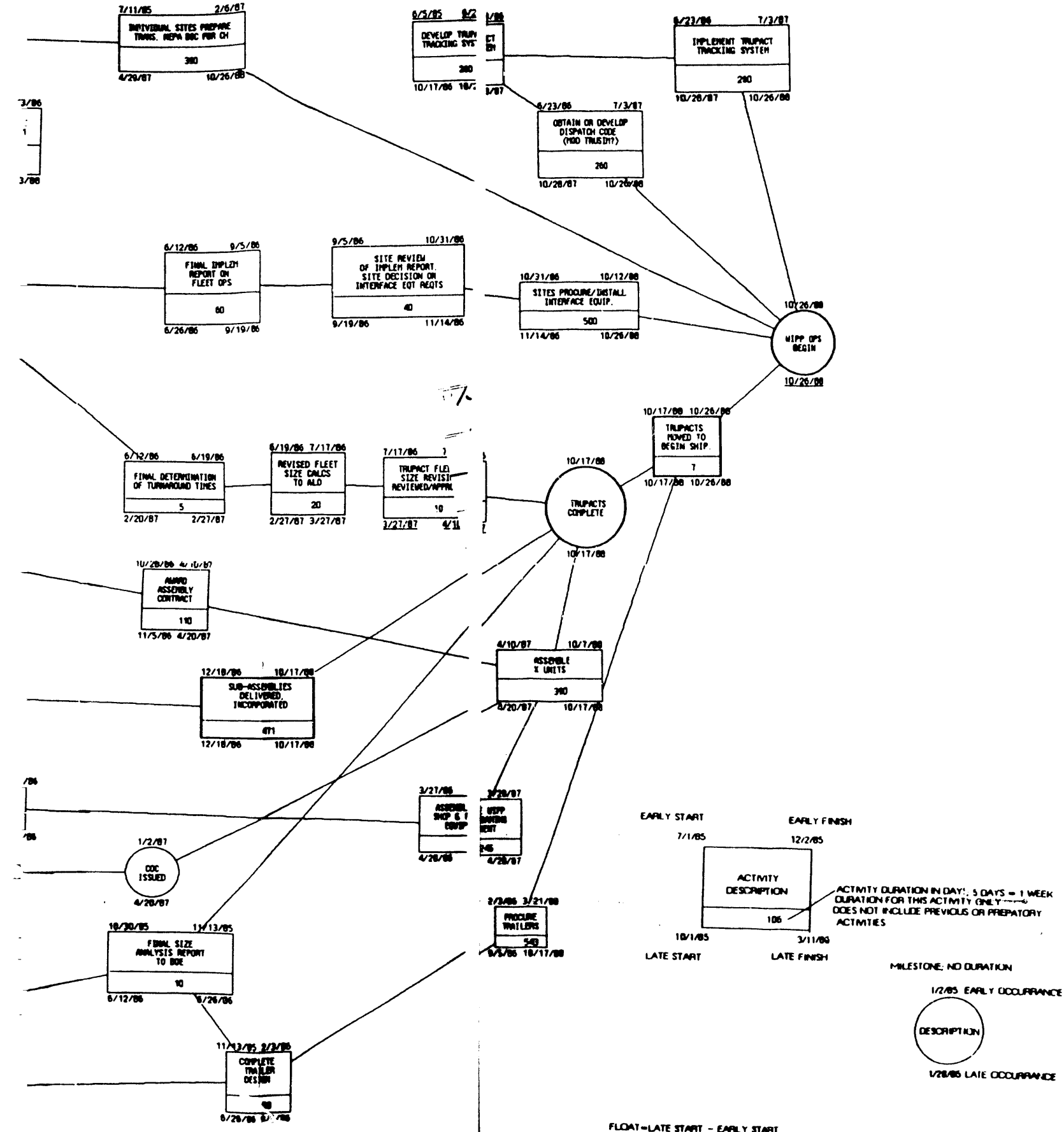
Phase II of the implementation program will utilize prototype Units 2 and 3. Units 2 and 3 will have been issued a DOE Certificate of Compliance authorizing the transport of CH-TRU waste prior to initiation of Phase II. These units will be dedicated to the transport of contact handled TRU waste from the Rocky Flats Plant (RFP), a waste generating facility to the Idaho National Engineering Laboratory (INEL), an interim storage facility. Operational performance data will be collected from these shipments and incorporated into the final design for full fleet fabrication along with information obtained from the use of Unit-1.

FIGURE 7-1

TRUPACT IMPLEMENTATION LOGIC DIAGRAM




1/11/85 7/11/85
TRANSPORT. ASSESMENT GUIDANCE REPORT (TAGR) PREP. & APPR.
127
10/22/86 4/29/87
7/11/85 2/6/87
INDIVIDUAL SITES PREPARE TRANS. NEPA DOC FOR CH
380
4/29/87 10/26/88
11/3/85 4/8/86
UNIT 1 COLD DEMO/DATA COLL. AT OTHER SITES AS TIME PERMITS
100
1/6/86 5/28/86
4/8/86 6/5/86
UNIT 1 COLD DEMO/DATA COLL. AT REMAINING SITES
41
6/30/88 10/26/88
6/5/86 7/3/86
DECISION STUDY ON USES FOR UNIT 1
20
10/26/88 11/23/88
6/17/85 12/6/85
NEPA DOC COMP FOR HOT TRUPACT SHIP: RFP-INEL
120
10/30/85 4/30/86
3/20/86 4/18/86
RFP-INEL TRU SHIPMENTS WITH UNIT 2 AS TIME PERMITS
20
4/30/86 5/28/86
5/14/86
OPL DATA COLLECTION COMPLETE
5/28/86
5/14/86 6/12/86
ANALYZE & INCORP OPL DATA
20
5/28/86 6/26/86
6/12/86 9/5/86
FINAL IMPLEM REPORT ON FLEET OPS
60
6/26/86 9/19/86
9/5/86 10/31/86
SITE REVIEW OF IMPLEM REPORT. SITE DECISION ON INTERFACE EQT REQTS
40
9/19/86 11/14/86
3/19/86 3/20/86
NEWS MEDIA AND STATE BRIEFINGS ON COC UNITS
1
4/29/86 4/30/86
3/19/86
CERT OF COMP ISSUED (UNIT 2 & 3)
4/29/86
4/18/86 5/14/86
RFP-INEL TRU SHIP WITH UNIT 3 AS TIME PERMITS
20
4/30/86 5/28/86
6/12/86 6/19/86
FINAL DETERMINATION OF TURNAROUND TIMES
5
2/20/87 2/27/87
6/19/86 7/17/86
REVISED FLEET SIZE CALCS TO ALO
20
2/27/87 3/27/87
7/17/86
TRUPACT FLEET SIZE REVISIONS REVIEWED/APPRVD
10
3/27/87 4/11/87
9/2/86 10/28/86
FINALIZE BID PKG
40
9/10/86 11/5/86
10/28/86 4/10/87
AWARD ASSEMBLY CONTRACT
110
11/5/86 4/20/87
11/13/85
PROBLEM DATA COLLECTION UNDERWAY
28
4/11/86 5/9/86
5/9/86 9/2/86
BID PKG PREP VA DESIGN
80
5/9/86 9/2/86
9/2/86 12/18/86
AWARD SUB-ASSEMBLY CONTRACT
75
9/2/86 12/18/86
12/18/86 10/17/88
SUB-ASSEMBLIES DELIVERED, INCORPORATED
471
12/18/86 10/17/88
3/27/86 3/27/86
DUMMY
0
4/20/86 4/20/86
9/30/86 1/2/87
DOE REVIEW AMENDED SARP AND APPLY FOR COC
60
1/26/87 4/20/87
1/2/87
COC ISSUED
4/20/87
10/30/85 11/13/85
FINAL SIZE ANALYSIS REPORT TO DOE
10
6/12/86 6/26/86
8/20/85
5
4/1/86
8/20/85 9/11/85
WRITE FLEET SIZE ANALYSIS
15
4/1/86 4/23/86
9/11/85 9/25/85
JTO REVIEW DRAFT/ REVISE IF NEC
10
4/23/86 5/7/86
9/25/85 10/2/85
ALO REVIEW
5
5/7/86 5/14/86
10/2/85 10/30/85
FIELD REVIEW
20
5/14/86 6/12/86
9/11/85 10/16/85
DETERMINE NUMBER TRAILERS & SPARES
25
5/21/86 6/26/86
11/13/85 2/3/86
COMPLETE TRAILER DESIGN
90
6/26/86 9/5/86


7/11/85
2/6/87
IMPLEMENT SITES PREPARE TRANS. REPN DOC FOR CH
380
4/20/87
10/26/88
6/5/85
DEVELOP TRUPA TRACKING SYS
280
10/17/86
6/23/86
7/3/87
IMPLEMENT TRUPACT TRACKING SYSTEM
280
10/26/87
10/26/88
6/23/86
7/3/87
OBTAIN OR DEVELOP DISPATCH CODE (MOD TRUSCIT)
280
10/26/87
10/26/88
6/12/86
9/5/86
FINAL IMPLEM REPORT ON FLEET OPS
60
6/26/86
9/19/86
9/5/86
10/31/86
SITE REVIEW OF IMPLEM REPORT. SITE DECISION ON INTERFACE EQT REQTS
40
9/19/86
11/14/86
10/31/86
10/12/88
SITES PROCURE/INSTALL INTERFACE EQUIP.
500
11/14/86
10/26/88
10/26/88
WIPP OPS BEGIN
10/26/88
10/17/88
10/26/88
TRUPACTS MOVED TO BEGIN SHIP.
7
10/17/88
10/26/88
6/12/86
6/19/86
FINAL DETERMINATION OF TURNAROUND TIMES
5
2/20/87
2/27/87
6/19/86
7/17/86
REVISED FLEET SIZE CALCS TO ALD
20
2/27/87
3/27/87
7/17/86
TRUPACT FLD SIZE REVISI REVIEWED/APPRV
10
3/27/87
10/17/88
TRUPACTS COMPLETE
10/17/88
10/17/88
AWARD ASSEMBLY CONTRACT
110
11/5/86
4/20/87
4/10/87
10/1/88
ASSEMBLE X UNITS
380
6/20/87
10/17/88
12/18/86
10/17/88
SUB-ASSEMBLIES DELIVERED, INCORPORATED
471
12/18/86
10/17/88
3/27/88
ASSEMBL SHIP & T
4/20/88
4/20/87
1/2/87
COC ISSUED
4/20/87
2/3/86
3/21/88
PROCURE TRAILERS
540
9/5/86
10/17/88
10/30/85
1/13/85
FINAL SIZE ANALYSIS REPORT TO DOE
10
6/12/86
6/26/86
11/13/85
2/3/86
COMPLETE TRAILER DESIGN
40
6/26/86
EARLY START
EARLY FINISH
7/1/85
12/2/85
ACTIVITY DESCRIPTION
105
10/1/85
3/11/86
LATE START
LATE FINISH
ACTIVITY DURATION IN DAYS: 5 DAYS = 1 WEEK
DURATION FOR THIS ACTIVITY ONLY
DOES NOT INCLUDE PREVIOUS OR PREPATORY ACTIVITIES
MILESTONE: NO DURATION
1/2/85 EARLY OCCURRANCE
DESCRIPTION
1/28/85 LATE OCCURRANCE
FLOAT=LATE START - EARLY START

8.1 Implementation Plan Phase I

Operation of the prototype fleet is scheduled to begin in July of 1985. Upon completion of fabrication, the packaging will be shipped directly to the WIPP, in Carlsbad, New Mexico where it will be presented during a public forum with local and state officials. Following the WIPP presentation, TRUPACT-I, Unit-1 will be shipped to waste handling facilities for prototype operation experience.

8.1.1 WIPP Project Office (WPO) Presentation

TRUPACT-I, Unit-1 arrived in Carlsbad during the second week in July. The packaging was met by the training team (see Section 10.0) and WIPP/Westinghouse personnel. The packaging was cleaned, inspected and all auxiliary equipment was installed by the training team and WIPP/Westinghouse personnel. Upon completion of these preliminary activities, the TRUPACT-I was delivered to the city of Carlsbad for the WPO presentation.

The training team was responsible for setting up the packaging for public display at the discretion of the WPO. This initial packaging set-up was not intended to be an operational demonstration. All set-up activities were completed prior to viewing by the public. Upon completion of the WPO presentations, the training team closed the packaging and prepared it for shipment to the first scheduled training site. Table 8-1 and Figure 8-1 provide the routing schedule for TRUPACT-I.

8.1.2 Phase I Operational Prototype Handling Experience

All CH-TRU waste handling facilities are being offered an opportunity to obtain operational experience in the handling

Table 8-1

PROJECTED TRUPACT-I ROUTING SCHEDULE (1)

	Site	Arrival (2) Date	Departure (2) Date	Duration (Work Days)
(1)	WIPP/Carlsbad	07-08-85	07-15-85	5 + 2-day weekend
(2)	RFP	07-16-85	09-20-85	____ (3)
(3)	NTS	09-23-85	10-11-85	14
(4)	LANL	10-14-85	11-01-85	15
(5)	SNL	11-04-85	11-21-85	14
(6)	Intransit DOE Briefing	11-22-85	11-26-85	3 + 2 Weekend
(7)	INEL	11-26-85	12-20-85	14
(8)	RHO	12-23-85	01-17-85	12 (+)
(9)	LLL	01-20-86	02-07-86	15
(10)	SRP	02-10-86	02-28-86	15
(11)	ORNL	03-03-86	03-21-86	15
(12)	MOUND	03-24-86	04-11-86	15
(13)	ANL(E)	04-14-86	05-02-86	15

(1) Schedule assumes no work on weekends except where noted and takes holidays and vacations into account

(2) Arrival and departure dates forced to fit Monday arrival/Friday departure where possible.

(3) Includes time for Unit-1 repair activities and retraining at RFP.

TRUPACT-1 ROUTING

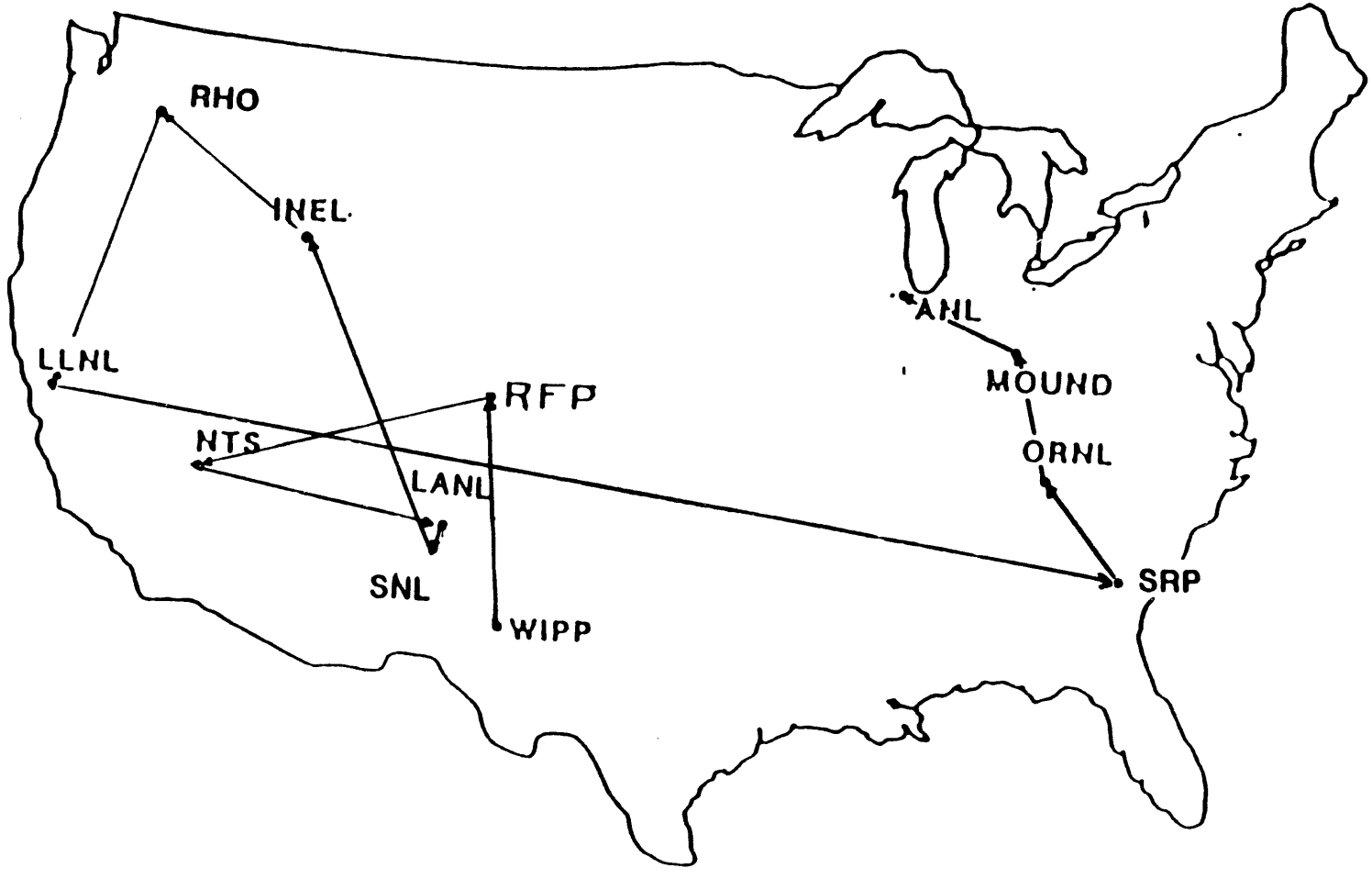


FIGURE 8-1

of TRUPACT Unit-1. The primary purpose of sending TRUPACT-I, Unit-1 to these facilities is to collect operational performance data that will be used in transportation system modeling activities and full fleet design and procurement activities. Use of Unit-1 provides opportunity to train personnel, establish site handling procedures, collect data, on packaging, and equipment verification. To accomplish this the TTT has developed a program (Figure 8-2) detailing waste handling operations to be performed by all receivers of Unit-1 during the operational prototype handling program.

Waste handling facilities are requested to identify waste operations personnel to participate in training activities provided by the TTT. Participation in the handling demonstration presented below will allow each waste handling facility an opportunity to develop necessary procedure and supportive document; evaluate and become familiar with necessary equipment; accumulate viable data on dunnage/tie-down usage and effects from limited road mileage; and develop interfaces with other waste handlers using the TRUPACT-I, i.e., the WIPP.

The goals of this effort are as follows:

- To introduce the packaging to users while simultaneously collecting and sharing data with the packaging design team for incorporation into the final bid package for full-fleet fabrication.

- To accumulate adequate video taping, time and motion study data and other pertinent information such that future operations with TRUPACT Units 2 and 3 and the production units of the full fleet will be more efficient.

DETAILED CH—TRU WASTE HANDLING PLAN FOR TRUPACT—1

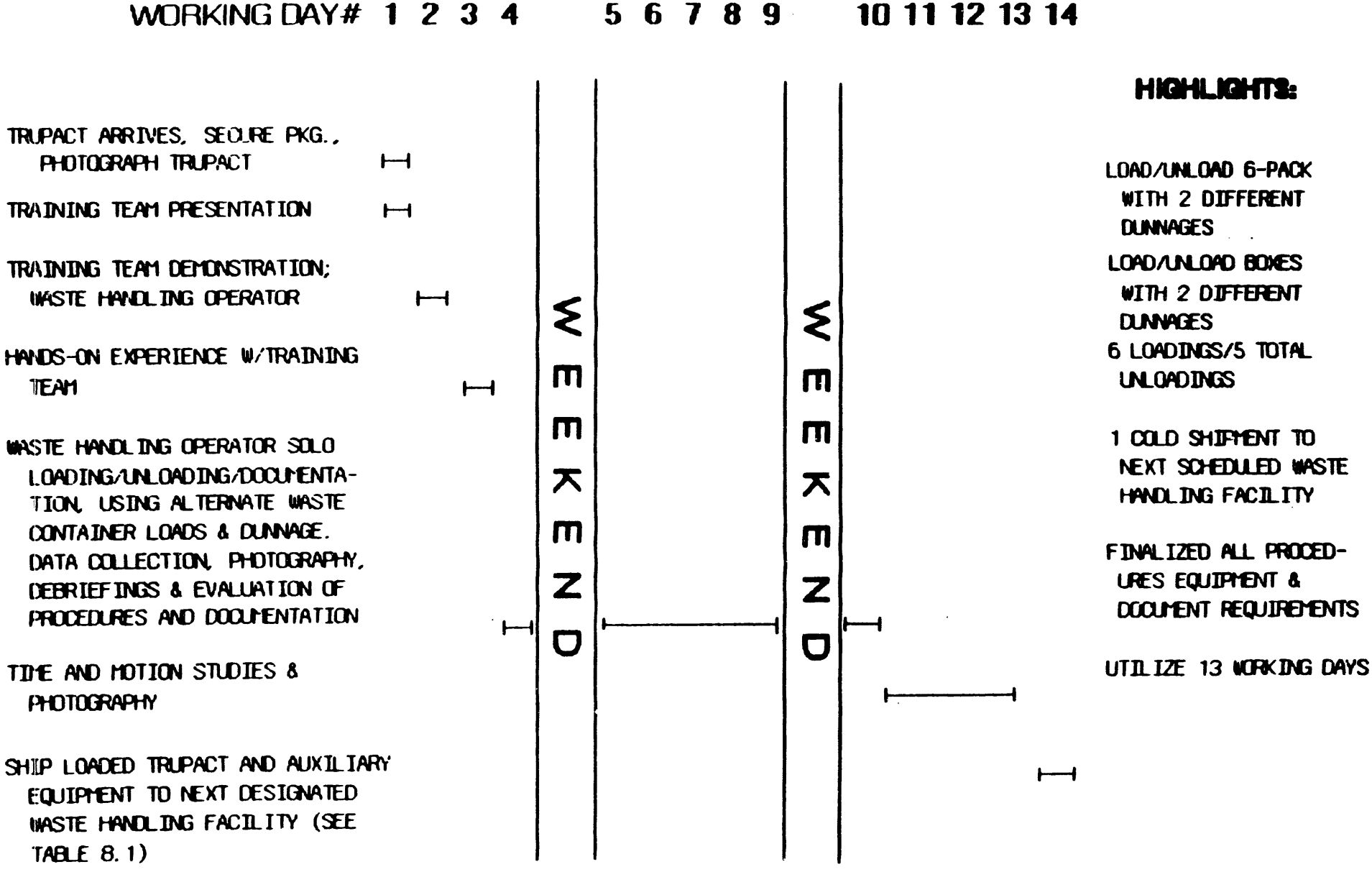


FIGURE 8—2

- To adequately familiarize other in-house organizations with procedures and operations that should facilitate use of the TRUPACT-I during routine shipping operations.

Each waste handling facility will have the responsiblity for operational management of Unit-1 during the assigned demonstration period. The receipt and shipment by the facility traffic department, i.e., handling, loading and unloading etc., are to be conducted in the same manner and procedure as any other packaging being utilized for CH-TRU waste. No special handling procedures will be used except those necessary for data collection and instrumentation.

It is suggested that each facility arrange for audio visual services to record all operations performed. A dedicated photographer, for both video-taping and still color prints, on an approximately half-time basis is recommended. A video record of handling operations at each facility is anticipated to be a valuable training tool when introducing new personnel to the waste handling operations at a facility. It is required that an industrial engineer be dedicated to time and record various operational steps (see Section 14.2 and Appendix B on Time and Motion Study Parameters) during the load/unload process. Detailed loading and unloading procedures are provided in the TRUPACT Operations and Maintenance Manual.[2] The training team will provide specific instructions on handling procedures. This data is to be analyzed by the sites and the TTT for future long-range personnel and resource requirements for site operations and TRUPACT Fleet sizing.

The site's waste operations and traffic departments are expected to handle the necessary paperwork for this demonstration period as would be done with any CH-TRU waste shipment.

Site Maintenance Department support is expected during the demonstration period as would be done with any CH-TRU waste shipment. TRUPACT-I Operations and Maintenance Manuals (O&M) will be provided. SNL/TTC will be available for instruction, support and consultation should non-routine maintenance be required (see Section 10.0).

Observation and positive contributions are expected from Quality Control and HS&E representatives in the same manner and purpose as other such operations require.

8.1.2.1 Detailed Handling Operations During the Phase I Demonstration Period

Figure 8-2 identifies the activities to be performed by all waste handling facilities participating in this hands-on demonstration period. Each facility has been allotted between 12 and 14 days for accomplishing the activities identified. The basic operation will consist of receiving the TRUPACT, completing inspection procedures identified in Figure 14-1 (see Section 14.0 for data to be collected during prototype fleet operations), photographing and securing the packaging, performing the loading and unloading experiments using different load securance techniques (dunnage/tie-downs) for waste containers, and developing and documenting procedures. At the conclusion of the test period, the packaging will be prepared for shipment to the next designated CH-TRU waste handling facility (see Table 8-1), and a formal report is to be issued by each facility to the chairman of the TRUPACT Technical Team discussing the data gathered as well as the problems encountered during this demonstration period.

8.1.2.2 Support Information for the Handling Operation

In order to encourage facilities to take advantage of this opportunity to gain hands-on experience with the TRUPACT-I,

the TRUPACT Technical Team has purchased the auxiliary equipment (Table 8-2) required for interfacing with the TRUPACT-I. The auxiliary equipment will accompany each TRUPACT shipment and will be shipped by separate tractor/trailer. The sites are responsible for the personnel and additional equipment necessary for the completion of waste container handling operations (consult O&M Manual). Suggested personnel include waste handlers, health physics technicians, audio visual support, and industrial engineers.

The empty weight of TRUPACT-I (plus roller floor assembly) is approximately 34,500 lbs. A payload of approximately 15,500 lbs. is anticipated. The payload includes weight of waste, waste container(s), six-pack frames (where applicable), and loading plates. The payload will consist of six "6-packs" of 55-gallon drums (DOT Type A Spec. 17C) ballasted with approximately 350-400 lbs. drums so that standard waste is simulated. The "6-pack" will be strapped and handled in different manners as a means of testing and evaluating design alternatives and operational technique(s). Another shipping container is the newly designed SX-231 Corrugated Metal Container (DOT-7A, Type A). The dimensions of this waste container are 68" L x 54" W x 38-1/2" H. Eight of these containers will be ballasted to an average weight of 1,975 lbs. each. A standard fork lift truck and various handling fixtures will be utilized to handle these waste containers. Waste handlers are free to experiment with loading various mixes of waste containers.

It is required that alternate forms of load securance techniques (dunnage/tie-downs) be tested during the loading experiments.

Table 8-2

LIST OF TRUPACT-I AUXILIARY HANDLING EQUIPMENT

Item	Quantity	Description
1	1	TRUPACT-I on trailer containing either item 6 or 7
2	1	Flow test and filter leak test equipment
3	1 set	Door seal covers
4	1	Intermediate roller floor conveyor
5	1	Adjustable roller floor dock conveyor
6	6	Six-packs of 55-gallon drums each drum ballasted to weigh 300-400 lbs. each
7	8	DOT Metal boxes (Rocky Flats design 68" L x 54" W x 38.5" H) ballasted to weigh 1,975 lbs. each
8	3	1/4" thickness loading plates for 6-packs
9	2	Fork lift adapters for handling 6-packs
10	1	Inner door pneumatic torque wrench.

NOTE: Tie downs will accompany the shipment. Waste handling facilities are responsible for providing dunnage. Recommended dunnages include airbags, honey-comb cardboard, and foam.

All of the above material shown in Table 8-2 will accompany the TRUPACT-I by separate tractor/trailer.

8.1.3 Operational Prototype Demonstration Phase II

Phase II of the prototype fleet activities will begin once Units 2 and 3 have received DOE certification. Upon certification, Units 2 and 3 will be utilized on a priority basis for transportation of newly generated TRU waste from the Rocky Flats Plant to the Idaho National Engineering Laboratory. Sites are responsible for all auxillary equipment and personnel required to make routine shipments. Crews trained during Phase I will load and unload the waste and maintain the TRUPACT-I using procedures and supporting documentation verified during Phase I. These shipments will be used to verify the time motion data collected during Phase I, and to obtain temperature, pressure, and load mechanical data representative of actual waste handling and shipping.

In addition to collecting data on the areas previously discussed for Phase I, data will be collected on the following areas:

- o actual waste container descriptions and weights
- o cavity air sample radioactivity
- o cavity air sample flammable gas concentration (i.e. H^2 and/or O^2)
- o decontamination activities

The data collection period for Phase II will begin with the shipment of the first certified TRUPACT-I. Phase II information will be collected and incorporated into the final design until such time as the final design team designates further input will adversely impact the fabrication schedule.

Since TRUPACT-I is intended for use by both truck and rail shipments, Phase II will include transportation of TRU waste from Rocky Flats to INEL both by rail and highway. This will enable program personnel to begin quantifying the specific

differences between the two modes of transport and will serve as reference data for production fleet procurement activities.

Data obtained during Phase II will be reported on a shipment-by-shipment basis to the TTT. Such frequent reporting is required because of the limited period allowed for completing Phase II and incorporating the information into the final design. Use of TRUPACT-I, Units 2 and 3 for shipment of CH-TRU waste between RFP and INEL are scheduled to continue through the opening of the WIPP in October of 1988. At this time, shipments will be made directly to the WIPP.

9.0 INSPECTION AND MAINTENANCE REQUIREMENTS

As part of the TRUPACT-I prototype fleet demonstration program, receiving facilities will be responsible for inspection activities as detailed in Section 14. Appendix A provides copies of the TRUPACT-I inspection forms to be completed by the receiving facility. Discrepancies from normal packaging conditions will be reported immediately to the chairman of the TTT. The general condition of TRUPACT-I will be inspected on a monthly basis by SNL/TTC to determine its operating condition. Maintenance and repairs will be performed under the direction of SNL/TTC. Inspection and test programs will include, but are not limited to visual inspection and component testing as well as leak testing. The data acquired during the period will be used to establish inspection and maintenance requirements, procedures and frequencies for the production TRUPACT fleet.

Visual inspection will require examination of all external accessible surfaces to verify they are free from grease, oil and other contaminants. In addition, the inner and outer closure seals, hinges, fasteners, packaging tie-downs and lifting points, external skin, rivets, roller floor hydraulic system, and outer door closure mechanisms will be inspected for excessive wear and degradation.

The component test includes testing of the quick-connect valves for gas sampling and purge port, filter flow testing and filter cartridge seal leak testing. Tests will be performed by SNL personnel on a periodic basis at selected sites. Testing of quick-connect valves and purge ports will be performed after loading each waste shipment. Filters will be tested periodically, in accordance with procedures specified in the Operations and Maintenance Manual. Filter cartridge seals will be leak tested every time a filter cartridge is replaced.

Leak tests on the inner closure seals will be performed by each site before opening each loaded shipment. The test will be performed again after the waste containers and all dunnage have been loaded into the inner cavity, the inner closure has been shut, and the bolts tightened to the specified torque.

Procedures for inspections and testing as well as criteria for evaluation are detailed in the Operations and Maintenance Manual; TRUPACT-I.[2]

10.0 TRAINING TEAM

To ensure the proper introduction of this transportation packaging, a TRUPACT Training and Transportation Team has been established to provide detailed instruction to waste operations personnel at the individual shipping facilities.

The training team will be responsible for ensuring that all user facilities have been properly trained in the inspection, inner and outer door opening and closure procedures, insertion and operation of the roller floor assembly, cavity sampling techniques, use of all required sampling equipment, packaging seal maintenance, waste container loading and unloading procedures, load securing techniques, use of loading platforms, mounting and dismounting the packaging and trailer, and preparation of an unloaded TRUPACT for transport. It is anticipated

that the training team will be available at each site from 1 to 3 days, depending on site specific training needs.

Learning aides in the form of films or video tapes, and formal briefings on the packaging design and performance will be prepared and provided by the training team. The TRUPACT-I O&M Manual has been provided to waste handling facilities. These materials will be used to familiarize users with the handling and operation of this transportation system.

The training team will consist of personnel from the design team (Sandia National Laboratories/Transportation Technology Center) and the Joint Integration Office/Westinghouse Electric Corporation. The training team is responsible for accompanying TRUPACT-I, Unit-1 to all facility showings and for providing packaging set-ups and demonstrations as scheduled. A detailed schedule of training and introductions for this tranportation system is presented in Table 8.1.

The training team will be responsible for providing detailed individual facility instruction to all facilities scheduled to ship waste to the WIPP. The balance of time allotted for training will be used for site personnel to refine handling and loading/unloading operations and for data collection activities. In addition to providing individual user instruction, the training team will accompany Unit-1 on DOE information briefings where the TRUPACT-I is to be shown. The training team will be responsible for all handling activities associated with showing TRUPACT-I.

11.0 SHIPPING RESPONSIBILITIES

As has been discussed previously, TRUPACT-I, Unit-1 will be shipped to all eleven sites for hands-on operational experience. The movement of this packaging is intended to be done by common carrier. The responsibility of arranging for and paying for shipment of Unit-1 and auxillary equipment from one location to the next will be that of the facility shipping the TRUPACT-I as opposed to the facility receiving the TRUPACT-I. This will require the cooperation and coordination of activities between all traffic managers.

To assist traffic managers and waste operations personnel in planning for receipt and shipping of the TRUPACT-I, the schedule shown on Table 8-1 has been included. It is important to note that this tentative schedule has been developed based on the initial arrival date of the TRUPACT at the WIPP. Any changes in the initial arrival date will impact arrival at the next scheduled facility. Due to the uncertainty surrounding the arrival of TRUPACT-I at the WIPP, users should build some flexibility into the scheduling of activities at individual facilities.

12.0 INSTRUMENTATION

One of the primary objectives of the prototype fleet operations is to gather data on the performance of the TRUPACT-I design in various operational environments. Data will be collectd by SNL on the response of TRUPACT-I to temperature, pressure, shock, and vibration. In order to obtain these data, SNL will place instrumentation in TRUPACT-I in order to record packaging response to internal heat generation, to measure changes in cavity pressure induced by changes in atmospheric pressure, and to measure shock and vibration input to the packaging tiedowns while in transit between sites. Data collected will be used to verify the design, to validate results of numerical analyses, and will be compared with results from full and subscale tests.

12.1 Thermal Data Collection

Thermal-time response in TRUPACT-I, Unit-1 will be recorded in transit and at various locations to measure the response of the cavity temperature to various internal heat generation rates. Response will be recorded on a spring-wound clock-driven temperature recorder. The recorder is capable of recording data over a seven-day period and operates over a temperature range from -40F to +220F. Each recorder is 4 inches in diameter and 3.25 inches high, and will fit in void spaces alongside the waste containers without load modification. Sandia National Laboratories/ Transportation Technology Center (SNLA/TTC) has

acquired these recorders and will install them into the six-pack frames, or provide them to the site loading the cargo and collect the data after a shipment is made.

When the TRUPACT-I arrives at SNL, the cavity will be instrumented with thermocouples; and a resistance heater will be placed in the cavity. The heat source will simulate the maximum heat generation rate of 360 watts. Inner door seals will be replaced with a set of seals that can be notched to route instrumentation leads outside of containment to attach to recording equipment. During this test period, TRUPACT-I will remain stationary. SNL/TTC will provide the heating, measuring and recording equipment; conduct the experiment; collect the data; reduce the data; and report the results to the TTT.

Measurements of cavity temperature while in transit will be made frequently and will be included on several shipments. Data from all of the tests will be collected by SNL/TTC and reported to the chairman of the TTT in quarterly reports.

12.2 Cavity Pressure Measurement

Cavity pressure as a function of external pressure will be measured for shipments over selected routes between the sites where training sessions are being conducted. Pressure monitoring devices will be placed to measure internal and external pressures and permanently record the measurements. After the recordings have been taken, the data will be reduced and reported by SNL in the bi-monthly reports.

Cavity pressure variations will also be monitored at stationary locations. At predetermined locations the difference in internal and external pressure will be recorded for daily variations in atmospheric pressure. When the package is at SNL in Albuquerque, it will be placed into an environmental chamber and subjected to an external pressure reduction of 5.0 psi, which is held until the

cavity pressure equalizes and then is returned to ambient pressure. The cavity pressure response will be monitored for slow changes in external pressure that occurs over a one-hour period to simulate possible in-transit conditions and for rapid changes that occur over a five-minute period to investigate filter performance. Pressure monitoring equipment, recording equipment, data reduction, and interpretation of results will be provided by Sandia. Information will be documented in bi-monthly reports provided to the chairman of the TTT.

12.3 Shock and Vibration Measurement

Shock and vibration input will be measured at the TRUPACT-I, Unit-1 tiedowns during over-the-road shipments and in a laboratory environment. Over-the-road data will be collected at SNL in Albuquerque and on trips between sites using active instrumentation that is triggered to record real time data.

Laboratory tests will be conducted to monitor response of the TRUPACT-I mounted on the Fontaine air suspension trailer to approximately one million miles of travel over U. S. highways and major state roads. Shock and vibration values measured in the laboratory will be compared to highway measured values to correlate results. After being subjected to the accelerated highway test, the integrity of the packaging will be examained using nondestructive methods. Instrumentation will be provided, data will be collected, data will be interpreted, and the results will be documented by SNL/TTC in bi-monthly reports provided to the chairman of the TTT.

13.0 POSITION MONITORING SYSTEM

A position monitoring system is being considered for tracking the TRUPACT-I enroute during Phase II activities. Monitoring the location of each TRUPACT-I is being considered as a means to ensure the compliance of shipping and receiving schedules, as well as to provide

indications of any unplanned deviation from the schedule or route. This monitoring includes the status of the unit at the shipper, as well as location during transit. Use of this position monitoring system is not anticipated prior to the third quarter of fiscal year 1986. Its use will be primarily with prototype operational Units 2 and 3. Information obtained from the the use of the position monitoring system in Units 2 and 3 will determine the feasibility of installing it in the full fleet. Detailed information on installation and instruction of usage will be provided as soon as the system is available.

14.0 DATA COLLECTION

During the prototype fleet activities, Unit-1 will be rotated between the sites in order to allow waste handling facilities to perform operational use tests and to record and report data accumulated during package/packaging, sampling, and handling activities. Units 2 and 3 will transport CH-TRU waste between RFP and INEL only during Phase II. Each of the participating sites will submit data from the sampling and handling programs including time and motion, operations costs and manpower requirements, and condition of the packaging upon receipt, as well as comments on packaging handling methods and design.

Data accumulated during this phase will address the following areas;

- general performance evaluation/problems/operations costs/personnel requirements
- operations procedures and documentation, including loading and unloading procedures
- damage descriptions, and repairs
- inspection results (see Section 9.0 and Standard Operating Procedures - Inspection and Maintenance Requirements)
- maintenance results (including trailer)

- o time and motion data (see Section 14.2, Time and Motion Parameters)
- o TRUPACT-I response to pressure change, shock and vibration input, and temperature changes

14.1 Standard Payload Conditions

The prototype fleet will be evaluated using a payload of approximately 15,500 lbs. The payloads will consist of six "6-packs" of 55-gallon drums (DOT-Spec 17C Type A) ballasted to approximately 350-400 lbs. each so that standard waste is simulated. The six-packs will be strapped and bounded in different manners as a means of testing and evaluating the design and operational techniques. In addition to the six-packs, the SX-231 Corrugated Metal Container will also be evaluated. The TRUPACT-I will be loaded with eight SX-231s with each SX-231 ballasted to an average weight of 1,975 lbs.

14.2 Time and Motion Study Parameters

The following section summarizes the loading/unloading procedures for TRUPACT-I. These operations and the associated time requirements are considered to be some of the most critical aspects of the implementation plan. Detailed descriptions of these procedures are found in the Operations and Maintenance Manual for TRUPACT-I[2].

The procedure for receiving and unloading TRUPACT-I and loading it consists of seven basic operations which are summarized as follows:

- o receive TRUPACT-I and conduct external inspection
- o remove TRUPACT-I from transporter (optional)
- o open TRUPACT-I and secure interface equipment
- o conduct internal inspection

- o place waste containers within TRUPACT-I
- o remove interface equipment and close TRUPACT-I
- o replace TRUPACT-I on transporter (optional)

The procedures for receipt, handling and unloading of a loaded TRUPACT-I are similar to those for an unloaded TRUPACT-I and are summarized as follows:

- o receive TRUPACT-I and conduct external inspection
- o remove TRUPACT-I from transporter (optional)
- o open TRUPACT-I and secure interface equipment
- o remove containers from within TRUPACT-I
- o remove interface equipment and close TRUPACT-I
- o replace TRUPACT-I on transporter (optional)

Detailed written procedures will be provided by the training team to ensure that handling operations are executed properly, provide acceptance criteria for all routine inspections, provide guidance in the event that abnormal conditions are encountered and to ensure that recording and reporting requirements are followed. Appendix A provides copies of TRUPACT-I inspection forms that will be utilized for inspection purposes. Appendix B provides copies of Time and Motion Data reporting forms to be used in data collection activities. These data forms are to be completed during the last three handling sessions when the site waste handling team is proficient in TRUPACT-I handling procedures.

The following is a list of parameters for which data are to be collected as part of Phase I.

Loading

inspect TRUPACT-I
remove TRUPACT-I from trailer (optional)
washdown TRUPACT-I
open outer doors
open inner doors

inspection of seals
install seal covers
required maintenance
put loading platform in place
load waste containers into TRUPACT-I
secure cargo with dunnage or load securance
remove loading platforms
close primary closure
perform leak checks
shipping papers in place
close secondary closure
transport TRUPACT-I to trailer (optional)
secure package with ISO tiedowns
perform final inspection
QA certification

TRANSPORT (data from one of the following)

truck - regular
truck - heavy haul
rail - regular

Unloading

receiving
transport to work facility
washdown TRUPACT-I
transport TRUPACT-I to unloading position
remove TRUPACT-I from trailer (optional)
open outer doors
contamination check
put loading platform in place
cavity atmosphere sampling
open inner doors
inspection of seals
disengage dunnage or deflate air bags
seal covers
remove waste containers
inspection of waste containers
contamination check on empty package
cleaning

Return Preparation

required maintenance
secure roller floor, dunnage, tie downs, and waste container
loading plates
inner doors
outer doors
load TRUPACT-I on trailer (optional)
secure TRUPACT-I to trailer
QA certification
transport TRUPACT-I

Return Transport (data from one of the following)

truck - regular
truck - heavy haul
rail - regular

15.0 REPORTING REQUIREMENTS

It is the responsibility of the receiving facility to collect and report specified data and inspection results. In the event that the TRUPACT is received in a damaged condition and/or does not perform in accordance with design specifications, the receiving facility will notify the TTT chairman or designated alternate immediately. A report, containing a photographic record (if possible), is to be provided to the Chairman of the TTT as soon as possible. The TTT chairman will be responsible for forwarding the information to the design team. The design team will advise the facility which received the TRUPACT as to the appropriate course of action.

Each facility participating in this implementation plan is expected to collect and report the specified data obtained during the training and familiarization period. This information is to be provided to the TTT chairperson by the cognizant site person. Table 15-1 presents a list of individuals who are responsible for data collection and reporting activities.

Data obtained during the prototype fleet operations program will be incorporated into the final design in several stages. For the most part, as the data is received and compiled into facility report form, it will be given to the TTT. A final report issued by the facility will be provided to the Chairman of the TTT within two weeks of completion of training activities. Figure 15-1 illustrates at what stage in the development of the final procurement package data is scheduled to be incorporated.

16.0 SHIPPING COMPLIANCE REQUIREMENTS

This section is only applicable to Phase II of the TRUPACT-I Implementation Plan. TRUPACT-I, Units 2 and 3 are the first units to receive a certificate of compliance from the Department of Energy. These two units will be used for the transport of CH-TRU waste between the Rocky Flats Plant and the Idaho National Engineering Laboratory until the WIPP opens in 1988. Because these units will be shipped as routinely as other CH-TRU waste, it is necessary to ensure that all applicable compliance procedures are followed by shipping facilities.

Of particular concern are compliance with necessary NEPA documentation and emergency response procedures. These activities will be the responsibility of the facility shipping the TRUPACT-I.

During the prototype fleet activities, the Gross Vehicle Weight (GVW) is anticipated to be 80,000 lbs. The GVW consists of the TRUPACT with roller floor, trailer, cargo, and tractor. The following weights of Unit-1 are known:

34,500 lbs. TRUPACT with roller floor
12,200 lbs. trailer
15,500 lbs. cargo
62,200 lbs.

17.0 SUMMARY

Unit-1 of the TRUPACT-I prototype fleet is scheduled to be available for user facility hands-on demonstrations the week of July 8, 1985. Prototype demonstration operations at all waste handling facilities are scheduled through early second quarter fiscal year 1986. Information collected will be incorporated into the final procurement package for the TRUPACT full fleet.

Table 15-1

KEY SITE PERSONNEL

Site	Contact	FTS Phone
RFP	James Alexander	320-7585
INEL	Lou Cook	583-4337
RHO	Randy Roberts	440-4033
LLL	Irene Meisel	342-6566
WIPP	Thomas Halverson	(505) 887-0586
LANL	John Warren	843-5398
SNL	Lavern Romesberg	844-2187
NTS	Nancy Rothermich	575-6408
SRP	Donald Helton	239-8764
ORNL	Don Box	624-6929
MOUND	Richard Blauvelt	774-3698
ANL-E	Lyle Cheever	972-3311
ANL-E	Edward Taylor	972-5866

INCORPORATION OF PROTOTYPE FLEET DATA INTO FULL FLEET PROCUREMENT PACKAGE

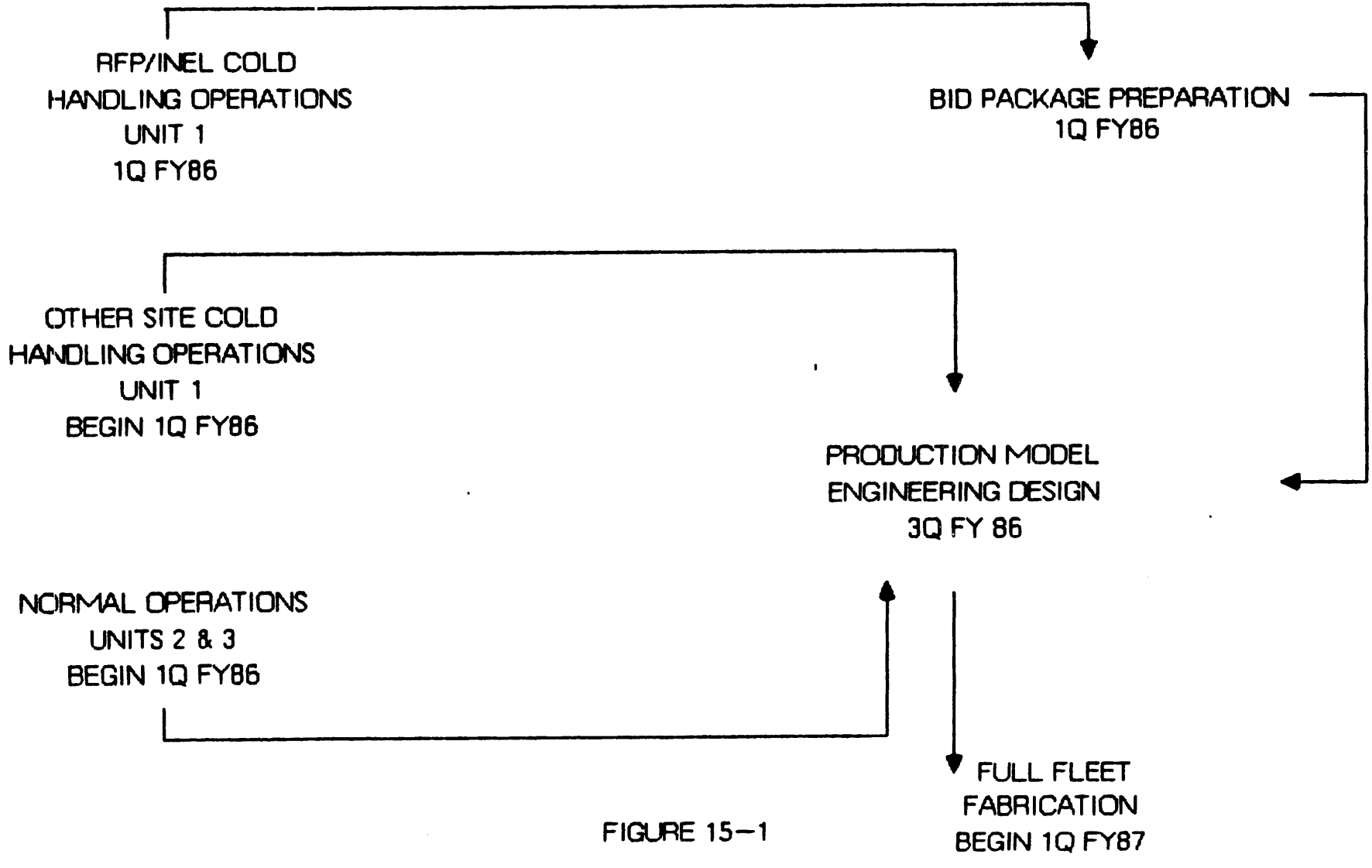


FIGURE 15–1

TRUPACT-I, Units 2 and 3 are scheduled for arrival in January 1986 and February 1986, respectively. These units will be put in service between RFP and INEL transporting CH-TRU waste for interim storage until the opening of the WIPP. Data collected from these activities will be incorporated into the final procurement package as the procurement process schedule allows.

All CH-TRU waste handling facilities are offered an opportunity to gain experience with the TRUPACT-I. To assist users with the handling of the TRUPACT-I, a training team is being provided along with a detailed TRUPACT-I handling schedule of activities. Auxiliary equipment is being provided to minimize expense incurred by any one facility. In return, each facility is expected to cooperate in the compilation of data, reporting and submission of findings to the TTT.

18.0 REFERENCES

1. Rockwell International, Prototype TRUPACT-I Fleet Activities Plan, March, 1984, U. S. Department of Energy, TW-84-6.

2. G. A. Technologies, Inc., Operations and Maintenance Manual, TRUPACT-I, December 1984, Sandia National Laboratories SAND84-7123.

3. Radioactive Waste Management, DOE Order 5820.2, U. S. Department of Energy, February 6, 1984.

4. U. S. Department of Energy, Long Range Master Plan for Defense Transuranic Waste Management, November 1984, DOE-TRU-8201 (Rev. 1).

5. U. S. Department of Energy, Spend Fuel and Radioactive Waste Inventories, Projections and Characteristics, September 1984, DOE/RW-0006.

6. Management of Transuranic Contaminated Material, DOE Order 5820.1, U. S. Department of Energy, September 1982.

7. U. S. Department of Energy, Final Environmental Impact Statement - Waste Isolation Pilot Plant, October 1980, DOE/EIS-0026.

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APPENDIX A

TRUPACT-I INSPECTIONS

FORMS

TRUPACT-I RECEIVING INSPECTION FORM

The following is a detailed receipt inspection procedure. Completion of these forms will document the condition of the TRUPACT-I on arrival at the site and disclose discrepancies if found. Any discrepancy found shall be fully documented by its corresponding number on the last page of this form, and reported to the TRUPACT Technical Team.

Date_____ TRUPACT Number_____

Received From _____ Inspected by_____

		Verified
1.	Placards properly displayed (empty, radioactive, etc.)	_____
2.	Security seal in place and secured.	_____
2a.	Record Number _____	
3.	Inspect exterior skin and surfaces observing for tears, punctures, warpage, graffiti, or other abnormalities. Note any of the above and describe:	_____
4.	General trailer inspection, noting any abnormalities or damage.	_____
5.	Any other observations, recommendations, or pertinent information noted.	

_____

_____

TRUPACT-I RECEIVING INSPECTION FORM
(Continued)

STEP NUMBER	DISCREPANCY NOTED	ACTIONS TAKEN

Signed

TRUPACT-I OPENING INSPECTION FORM

This procedure is to be followed in opening the TRUPACT-I. It is intended to document discrepancies and difficulties observed. Any findings are to be documented by their appropriate number on the last page of this form.

I. OUTER DOOR

	Inspector	Quality Assurance
1. Outer door visually inspected for tears, warpage, or other discrepancies. Note any discrepancies below:	_____	_____
2. Ratchet-Strap assembly if present and in good operating order.	_____	_____
3. Shear pin retraction was easily accomplished, no stiffness, binding, or noticeable malfunctions found.	_____	_____
4. Outer door opened freely, hinges inspected and functioned properly, no sticking on opening.	_____	_____
5. Outer door seals have no tears, holes or damage.	_____	_____
6. Gas sampling equipment present and in good operating condition. Gas sample hardware inspected and functioning properly.	_____	_____

TRUPACT-I OPENING INSPECTION FORM
(Continued)

STEP NUMBER	DISCREPANCY NOTED	ACTIONS TAKEN

Signed

TRUPACT-I OPENING INSPECTION FORM
(Continued)

II. INNER DOOR

	Inspector	Quality Assurance
1. Inner Door inspected for damage, such as, tears, warpage or other abnormalities.	_____	_____
2. Inner door bolts easily removed.	_____	_____
3. Bolt threads examined for stripping or galling of threads or other damage.	_____	_____
4. Inner door seal inspected for tears or other damage, hinges inspected for damage.	_____	_____
5. Seal covers were applied with minimal effort.	_____	_____

TRUPACT-I OPENING INSPECTION FORM
(Continued)

STEP NUMBER	DISCREPANCY NOTED	ACTIONS TAKEN

Signed

TRUPACT-I OPENING INSPECTION FORM
(Continued)

III. TRUPACT INTERIOR AND HARDWARE

	Inspector	Quality Assurance
1. Type of dunnage_____.	_____	_____
2. Dunnage material and/or tiedowns in place and in good condition.	_____	_____
3. Load/waste containers secured and in good condition. Load has not shifted or been damaged in transit.	_____	_____
4. Roller floor raises properly and rollers turn freely.	_____	_____
5. Six-packs/boxes removed from TRUPACT-I without difficulty.	_____	_____
6. Inner cavity surfaces are free of perforations, tears, or other damage.	_____	_____

7. Any other observations, recommendations, or pertinent information noted.

_____

_____

_____

TRUPACT-I OPENING INSPECTION FORM
(Continued)

STEP NUMBER	DISCREPANCY NOTED	ACTIONS TAKEN

Signed

TRUPACT-I LOADING CLOSURE INSPECTION FORM

This procedure is to be used to document discrepancies or problems encountered while loading and closing the TRUPACT-I.

		Inspector	Quality Assurance
1.	Roller floor operated (raised and lowered) properly.	_____	_____
2.	Six-packs/boxes slide into TRUPACT-I easily without excessive force required.	_____	_____
3.	Type of dunnage_____.	_____	_____
4.	Dunnage/tiedowns installed with minimal handling. Dunnage fits properly.	_____	_____
5.	Seal covers removed, seals and sealing surfaces were clean and dry.	_____	_____
6.	Inner door closed and seals properly. Leak test results recorded.	_____	_____
7.	All bolts started with no damaged threads or cross threading and the required torque was obtained without difficulty.	_____	_____
8.	Shipping papers in place in holder mounted on inner door (does not apply to empty shipments).	_____	_____
9.	Outer door seals were not damaged, seals and sealing surfaces are clean and dry.	_____	_____

TRUPACT-I LOADING CLOSURE INSPECTION FORM
(Continued)

		Inspector	Quality Assurance
10.	Outer door closed easily, with hinges operating smoothly.	_____	_____
11.	Ratchet-strap closure mechanism worked smoothly in final closure of the outer door.	_____	_____
12.	Shear pins operated smoothly and secured the outer door.	_____	_____
13.	Security seal hardware undamaged and seal installed.	_____	_____
14.	Placards installed on outside surfaces.	_____	_____

TRUPACT-I LOADING CLOSURE INSPECTION FORM
(Continued)

STEP NUMBER	DISCREPANCY NOTED	ACTIONS TAKEN

Signed

APPENDIX B

TIME AND MOTION

DATA FORMS

TRUPACT-I LOADING ACTIVITIES

ACTIVITY	TIME	COMMENTS
Receiving Inspection:		
Proper placard display		
Security seal inspection		
TRUPACT exterior inspection		
Trailer inspection		
Transport to work facility		
TRUPACT-I washdown		
Transport to unloading position		
Removal of tiedowns (optional)		
Removal of TRUPACT-I from trailer (optional)		
Outer door inspection		
Place jacks under trailer frame		
Ratchet-strap tightening		
Shear pin retraction		
Loosen ratchet strap		
Opening of outer door		
Outer door seals inspection		
Cavity atmosphere sampling		
Inner door inspection		
Inner door bolt removal and inspection		
Opening of inner door		
Inner door seal inspection		
Seal cover installation		
Required maintenance		
Raise rollers		
Loading platform placement		
Loading of waste containers		
Dunnage or load securance installation		
Lower rollers		
Removal of loading platform		

TRUPACT-I LOADING ACTIVITIES
(Continued)

ACTIVITY	TIME	COMMENTS
Removal of seal covers		
Closure of inner door		
Inner door bolts tightened to required torque		
Leak Check		
Placement of shipping papers		
Outer door seals inspection		
Closure of outer door		
Tighten ratchet strap assembly		
Shear pins insertion		
Ratchet-strap securance		
Security seal inspection and installation		
Placard placement		
Transport of TRUPACT-I on trailer (optional)		
Tiedown securance		
Final inspection		
QA certification		

TRUPACT-I UNLOADING ACTIVITIES

ACTIVITY	TIME	COMMENTS
Receiving Inspection:		
Proper placard display		
Security seal inspection		
TRUPACT exterior inspection		
Trailer inspection		
Transport to work facility		
TRUPACT-I washdown		
Transport to unloading position		
Removal of TRUPACT-I from trailer (optional)		
Removal of tiedowns (optional)		
Outer door inspection		
Place jacks under trailer frame		
Ratchet-strap tightening		
Shear pin retraction		
Opening of outer door		
Outer door seals inspection		
Contamination check		
Remove shipping papers		
Loading platform placement		
Cavity atmosphere sampling		
Inner door inspection		
Inner door bolt removal and inspection		
Opening of inner door		
Seal cover installation		
Dunnage inspection		
Dunnage disengagement or air bag deflation		
Waste container inspection		
Roller-floor inspection		
Inner panel surface inspection		
Raise rollers		
Removal of waste containers		

TRUPACT-I RETURN PREPARATION ACTIVITIES

ACTIVITY	TIME	COMMENTS
Required maintenance Securance of roller floor, dunnage, tie downs, and waste containers		
Empty package contamination check		
Empty package cleaning		
Lower rollers		
Removal of loading platform		
Removal of seal covers		
Closure of inner door		
Leak test		
Inner door bolts tightened		
Placement of shipping papers		
Outer door seal inspection		
Closure of outer door		
Tighten ratchet strap assembly		
Shear pin insertion		
Ratchet-strap securance		
Security seal inspection and installation		
Placard placement		
Transport of TRUPACT-I on trailer (optional)		
Tiedown securance		
Final inspection		
QA certification		
Transport TRUPACT-I		

END

DATE FILMED

11/2/91