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RPT10 Revision

DOE/EIS-0229

Data Report

on

Upgrade Alternative

for the

Pantex Plant
Pu Storage Operations

December 1995

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Amari o, Texas 79177

4.0 Pu Storage Process Description 4-1
4.1 Pu Storage Functions 4-1
4.1.1 Shipping/Receiving and Preparation System 4-1
4.1.2 Material Storage System 4-3
4.2 Pu Storage Waste Management System 4-5
4.2.1 Waste Management Function 4-5
4.2.2 Waste Management Feeds 4-7
4.2.3 Waste Management Products 4-8
4.2.4 Waste Management Utilities Required 4-8
4.2.5 Waste Management Chemicals Required 4-9
4.2.6 Waste Management Special Requirements 4-9

5.0 Resource Needs 5-1
5.1 Materials/Resources Consumed During Operation 5-1
5.1.1 Utilities Consumed 5-1
5.1.2 Chemicals Consumed 5-2
5.2 Materials/Resources Consumed During Construction 5-3

6.0 Employment Needs 6-1
6.1 Employment Needs During Operation 6-1
6.1.1 Badged Employees at Risk of Radiological Exposure 6-1
6.1.2 Labor Category Description 6-2
6.2 Construction 6-4

7.0 Wastes and Emissions from the Pu Storage Operations 7-1
7.1 Wastes and Emissions During Operation 7-1
7.1.1 Emissions 7-1
7.1.2 Solid and Liquid Wastes 7-1
7.2 Wastes and Emissions Generated During Construction 7-3
7.2.1 Emissions 7-3
7.2.2 Solid and Liquid Wastes 7-3

8.0 Intra-Site Transportation of Radiological/Hazardous Materials 8-1

9.0 References 9-1

10.0 Glossary 10-1
10.1 Unique Terms 10-1
10.2 Acronyms and Abbreviations 10-1

A.0 Design Process for Accident Mitigation A-1
A.1 Background A-1
A.2 Design Process/Safety Analysis A-1
A.2.1 Pantex Plant A-1
A.2.2 Pu Storage Plant A-3
A.2.3 Safety Goal A-5

List of Figures

Figure 2-1 Plutonium Storage Block Flow Diagram 2-3
Figure 2-2 Incremental Pu Storage Upgrade Plot Plan 2-5
Figure 2-3 Fissile Material Storage Facility Layout 2-9
Figure 3-1 Incremental Pu Storage Upgrade Site Map 3-2
Figure 4-1 Pantex Incremental Waste Management Block Flow Diagram 4-6
Figure 8-1 Pu Storage Intrasite Transportation Diagram 8-2

List of Tables

Table 2-1A Incremental Pu Storage Upgrade Existing Facilities Data 2-6
Table 2-1B Incremental Pu Storage Upgrade New Facility Data 2-7
Table 2-2 Upgrade Data - Pu Storage Existing Facilities 2-11
Table 5-1 Incremental Pu Storage Upgrade Utilities Consumed During Surge Operation 5-1
Table 5-2 Incremental Pu Storage Upgrade Annual Chemicals Consumed During Surge Operation 5-2
Table 5-3 Incremental Pu Storage Upgrade Materials/Resources Consumed During Construction 5-3
Table 6-1 Incremental Pu Storage Employment During Surge Operation 6-1
Table 6-2 Incremental Pu Storage Number of Construction Employees Needed by Craft and by Year 6-4
Table 7-1 Incremental Pu Storage Annual Emissions During Surge Operations . . 7-2
Table 7-2 Incremental Pu Storage Annual Wastes Generated During Surge Operations 7-2
Table 7-3 Incremental Pu Storage Emissions During a Peak Construction Year . 7-3
Table 7-4 Incremental Pu Storage Total Wastes During Construction 7-4

The major functional elements addressed in these PEIS Data Reports are as follows:

a. Plutonium recovery, processing and fabrication

b. Plutonium storage

c. Enriched uranium (EU) recovery, manufacturing, and storage

d. Depleted uranium (DU) manufacturing

e. Lithium production

f. Nonnuclear manufacturing

g. Tritium processing

h. Explosives manufacturing

i. Weapons assembly and disassembly

The nonnuclear manufacturing functional element listed above is different than the NNM element described in Section 1.1.1.

1.1.3 Research, Development, and Testing

The mission of the Complex-21 RD&T element is to design and test nuclear weapons, support manufacturing engineering, conduct exploratory research to avoid technological surprise, create advanced designs, and support national arms control objectives.

i. The complex shall be capable of producing materials and assembling new build components for two weapon systems in any given year. This capability may be achieved by either simultaneous or sequential campaigns, as long as the sum of the product shipments for the year meets the annual production goals.

j. Complex-21 upgrade shall not be required to provide an overall capability to produce at higher than surge rates. Consequently, partial facilities such as foundation slabs, utility mains, and empty structures are not provided.

k. Spare equipment and facilities shall be required to preclude a production loss in excess of three months. Spare equipment and facilities shall not be provided as a backup in case of low probability catastrophic natural or industrial events.

l. Facility features, including additional floor space, shall be provided to accommodate future changes in product design, process technology, and process equipment.

m. The Complex-21 upgrades shall not impact the ongoing plant missions, either during construction or during the life of the upgrade plant (i.e. until the year 2055). Ongoing plant missions are defined as those functions performed today.

n. The Complex-21 upgrade sites shall only be required to incorporate new technologies where those technologies are necessary to meet ES&H and Guidance D requirements.

1.2.2 Plant Operating Basis

a. Existing Complex-21 facilities may be operated according to the shift system currently in use at the plant so long as surge capacity can also be accommodated through use of multiple shifts. New facilities shall be designed to comply with the Programmatic Design Criteria (PDC) criteria for supporting normal production rates with single shift operations.

b. The complex upgrade shall be designed for a 50-year operating life beginning January 2005. Upgraded facilities may be replaced any time during the 50-year plant operating life span.

c. Facilities may be operated under existing site labor agreements.

b. Public exposure to radiation at the site boundary from routine operations shall not exceed 100 millirem EDE per year per DOE 5400.5, Radiological Protection of the Public and Environment and the Radiological Control Manual. The ALARA process will be implemented in the design for radiation exposure of the public.

c. Worker exposure to chemical and/or physical hazards should not exceed applicable permissible exposure limits.

d. Facility upgrade design shall not require operators to wear respiratory protection in order to meet radiological exposure limits while conducting routine operations.

e. The number of personnel required to work in contaminated areas is minimized and controlled.

f. The use of carcinogens is minimized or eliminated, where possible, in weapons materials manufacturing and processing.

1.2.4.4 Waste Management

The waste quantities stated in this document represent best estimates using data from current Weapon Complex storage sites. The quantities are conservative so as to provide an upper bound. Once built and operating, the facility is expected to reduce the quantity of waste generation significantly over that stated in this report by incorporating design features that minimize waste generation and facilitate volume reduction.

Waste and residues generated at the Pantex Upgrade shall be disposed of as described:

a. Generation of all wastes shall be minimized subject to the constraints of ALARA.

b. Mixed low level wastes shall be treated and disposed of in accordance with an Agreed Order with the Texas Natural Resource Conservation Commission (TNRCC).

c. LLW shall be disposed of at an approved site.

d. Transuranic (TRU) waste and mixed TRU waste shall be packaged to meet acceptance criteria for an off-site approved disposal facility. The waste shall be stored on an interim basis and then shipped off-site to an approved DOE disposal facility.

e. Hazardous waste, sanitary wastewater, sanitary and industrial solid waste may be treated the same as is the current practice at the site as long as it complies with the PDC.

f. Storm water management system shall be designed to reduce pollutant discharges, to the maximum extent practicable, through the site management practices, control techniques and systems, design and engineering methods, and other appropriate methods.

1.2.5 Site Conditions

The upgrade PEIS data and cost estimate shall be based on the following site conditions:

a. Off site resources (e.g. electricity, natural gas, and diesel fuel) shall be evaluated for compliance with the PDC and Guidance D. If improvements are required, the upgrade shall be included in the PEIS data and cost estimate.

b. Process, utility, and HVAC systems shall be designed to site specific ambient temperatures.

c. Meteorological data shall be based on regional conditions.

d. Adequate electrical power and gas is available from local utilities. Fuel for the steam boilers is natural gas. Process water is obtained from underground wells.

1.2.6 National Environmental Policy Act Compliance

Facilities requiring construction, or modifications to support the storage and disposition of weapons-usable fissile materials at specific sites would be evaluated through the National Environmental Policy Act (NEPA) process to identify potential environmental effects, historical facility issues, and mitigating measures if applicable.

1.3 Plutonium Storage Missions

The Plutonium Storage mission is to provide safe, secure long-term storage of Plutonium material.

1.4 Pantex Plant Assumptions

Pantex Plant requirements and assumptions for the Plutonium Storage Upgrade are listed in the subsections below.

1.4.1 Pu Storage Capacity/Capability

a. Stored Pu items shall be in the form of pits, metal ingots, and oxide. Weapon, power and fuel grade plutonium shall be stored.

i. Surveillance and evaluation capabilities shall be provided to monitor the condition of pits, metals, and oxides.

j. The non-contaminated waste data from the receiving facility shall be based on the assumption that 5% of the containers handled during intra-site receipts have damaged packaging materials.

k. Waste generated by the processing support facilities shall be based on processing 0.1% of the metal and oxide containers stored or minimum one storage container per year. The processing and repackaging of a container shall nominally take two weeks.

l. Pantex shall be the location for strategic material storage and shall consist of pits, metals and oxides. Five thousand (5,000) storage positions shall be allowed for strategic reserve. The strategic reserve will be stored within the existing Material Access Area. Pantex shall also store surplus material. Forty Thousand (40,000) storage positions shall be allowed for surplus pits, metals and oxides. The surplus material will be stored in a new facility located within Zone 12 South or Zone 4. Strategic and surplus plutonium materials shall be stored in separate vaults.

m. For criticality control, the total quantity of metals and oxides in each storage container in the storage vaults shall not exceed 4.5 kgs.

n. The storage vaults are designed to store the material using the Pantex Plant staging technology called "Stage Right" in which containers are stacked in stable 4 and 6 pack configurations using remotely controlled vehicles called Automated Guided Vehicles.

o. Waste management functions are provided by existing on-site facilities. Analytical laboratory functions are provided by existing on-site facilities.

2.0 Pu Storage Operations and Facilities Descriptions

2.1 General Plant Description

Pu Storage Upgrade at the Pantex Plant is comprised of an incremental upgrade:

> *Incremental* Pu Storage Upgrade is dependent upon the Assembly/Disassembly Operations Upgrade at the Pantex Plant. The Incremental Pu Storage Upgrade is integrated into the Pantex Plant infrastructure, security, waste, and Assembly/Disassembly Operating Systems. The Pantex Plant Assembly/Disassembly Operations Upgrade includes the upgrade of all support, security, and infrastructure systems needed by the Pu Storage operations. With the Incremental Pu Storage Upgrade, no additional upgrades of support systems beyond those identified in the Pantex Plant Assembly/Disassembly Upgrade Alternative are required. The incremental Pu Storage Upgrade is accomplished by constructing a new Fissile Material Storage Facility to augment upgraded and modified existing buildings for storage and storage support, and by using existing Balance of Plant (BOP) facilities at the Pantex site for support functions.

The Pu Storage Upgrade alternative is designed to comply with site-specific design criteria and DOE Orders covering design, construction, and safety of nonreactor nuclear Pu facilities. Facility layouts incorporates the safety, security, and environmental protection considerations as mandated by the DOE Weapons Complex. In addition, flexibility is designed into the facility to accommodate unknown changes in operational requirements.

2.1.1 Pu Storage Functional Description

The primary objective of the Pu Storage operation is to provide safe long-term storage of the Pu material. The Pu material consists of pits disassembled from nuclear weapons and metals and oxides received from Rocky Flats and other nuclear weapon complexes. The Pantex Upgrade material handling, storage and storage support functions are provided by upgrading Building 12-066 for strategic reserve storage, upgrading Building 12-082 for storage support, upgrading Buildings 12-116 and 12-117 for unpackaging/packaging and loading dock area, and constructing a new Fissile Material Storage Facility (FMSF) for the material handling, support functions, and storage of surplus pits, metals, and oxides. The new FMSF will be located in the northwest part of Zone 12 South or in Zone 4. The option to construct the facility aboveground or underground is available in either location. The primary systems included in the Pu Storage facilities are described as follows:

1. Shipping/Receiving & Preparation System - The Shipping/Receiving and Preparation operations shall include receiving/shipping, unloading/loading, unpackaging/packaging, material accountability and staging of nuclear materials.

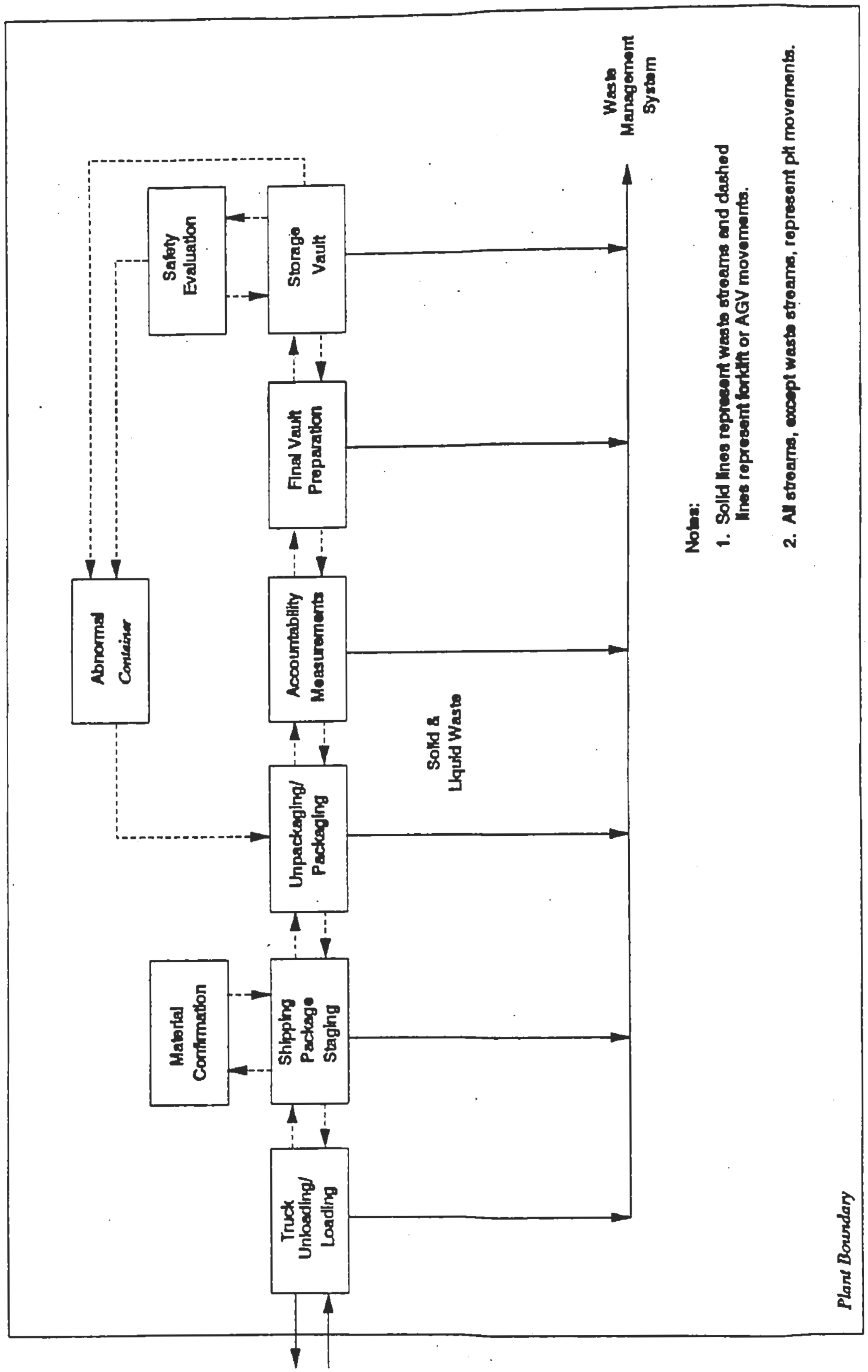


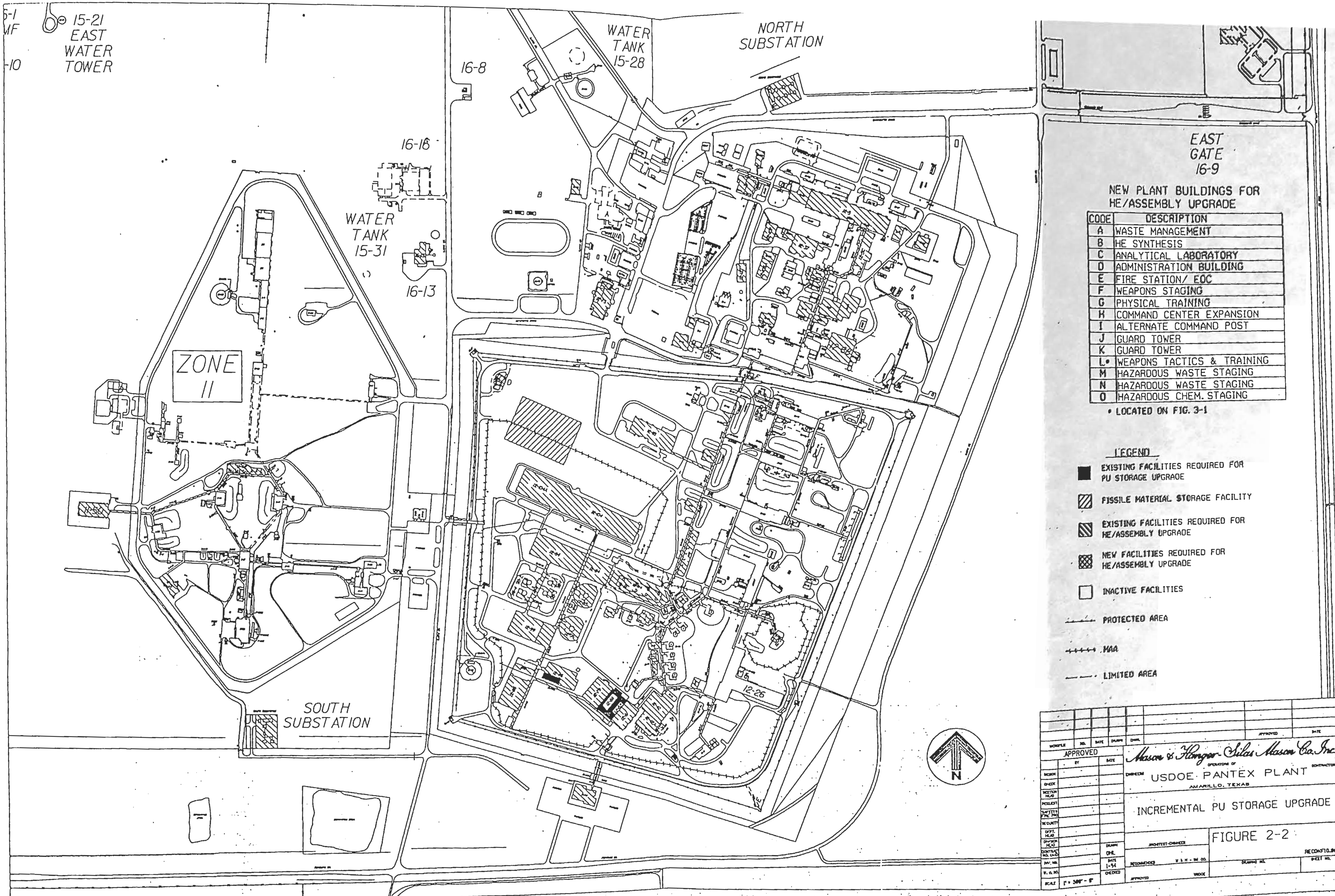
FIGURE 2-1
PLUTONIUM STORAGE
BLOCK FLOW DIAGRAM

Solid waste collected from the Pu Storage Operations are routed to the Waste Management System. Solid wastes are characterized, segregated into LLW, hazardous, mixed, and TRU wastes, immobilized, and packaged for disposal. The Pu Storage Operations and Waste Management Systems are supported by an analytical laboratory. The laboratory facilities are essentially self-sufficient, and have the capability to perform all analyses required to support processing, and waste operations from Pu Storage operations.

2.1.2 Plot Plans

The plot plan for the Incremental Pu Storage operations is shown on Figure 2-2. This figure depicts the arrangement of plant buildings and site support areas anticipated for the upgrade of the HE/Assembly Operations at the Pantex Plant. The Plutonium Storage facilities are shown as additional upgrades to the HE/Assembly Operations at the upgraded Pantex Plant.

Also shown in the figure is the Material Access Area (MAA), Protected Area (PA), Limited Area (LA), and the Property Protection Area (PPA). The MAA contains all Special Nuclear Material (SNM) and is secured with a fence and personnel security screening devices. The PA is secured with a double fence and intruder detection systems. The PA and operations involving classified materials are contained within the LA. The PPA surrounds the LA and includes the buffer zone.



15-21
EAST
WATER
TOWER
16-8
WATER
TANK
15-28
NORTH
SUBSTATION
16-16
WATER
TANK
15-31
16-13
ZONE
II
SOUTH
SUBSTATION
12-26
EAST
GATE
16-9
NEW PLANT BUILDINGS FOR
HE/ASSEMBLY UPGRADE
CODE DESCRIPTION
A WASTE MANAGEMENT
B HE SYNTHESIS
C ANALYTICAL LABORATORY
D ADMINISTRATION BUILDING
E FIRE STATION/ EOC
F WEAPONS STAGING
G PHYSICAL TRAINING
H COMMAND CENTER EXPANSION
I ALTERNATE COMMAND POST
J GUARD TOWER
K GUARD TOWER
L• WEAPONS TACTICS & TRAINING
M HAZARDOUS WASTE STAGING
N HAZARDOUS WASTE STAGING
O HAZARDOUS CHEM. STAGING
• LOCATED ON FIG. 3-1
LEGEND
EXISTING FACILITIES REQUIRED FOR PU STORAGE UPGRADE
FISSILE MATERIAL STORAGE FACILITY
EXISTING FACILITIES REQUIRED FOR HE/ASSEMBLY UPGRADE
NEW FACILITIES REQUIRED FOR HE/ASSEMBLY UPGRADE
INACTIVE FACILITIES
PROTECTED AREA
MAA
LIMITED AREA
N
APPROVED
Mason & Hanger-Silas Mason Co. Inc.
USDOE PANTEX PLANT
AMARILLO, TEXAS
INCREMENTAL PU STORAGE UPGRADE
FIGURE 2-2

2.1.3 Facilities Descriptions

This section describes the Pu Storage facilities required for the Incremental upgrade.

2.1.3.1 Incremental Pu Storage Upgrade Facilities Data

This section describes the Incremental Pu Storage Upgrade alternative at the Pantex Plant. The upgrade consists of using portions of existing facilities for strategic reserves and constructing a new Fissile Material Storage Facility for surplus pits, metals, and oxides and associated ramps. The existing facilities required and the new construction are listed in Tables 2-1A and 2-1B. The tables provide building number, description, type of building construction, gross square feet, additional square feet required, security access area, number of levels, and special operating materials for each existing facility required for the Incremental Pu Storage Upgrade.

Table 2-1A Incremental Pu Storage Upgrade Existing Facilities Data

Bldg. No.	Description	Type of Constr.	Gross Sq Ft	Access Area	No. of Levels	Special Mat'l
12-066	Vault	Concrete	8,500[1]	MAA	1	SNM
12-082	AGV Service	Concrete	3,400[2]	MAA	1	SNM
12-116	Unpackaging/ Packaging	Concrete	4,000[3]	MAA	2	SNM
12-117	Loading Area/Dock	Steel	6,200	MAA	1	None
	Ramps	Conc/Stl	3,300	MAA	1	None

1 Only this portion of the 25,900 sq. ft. facility is being utilized.
2 Only this portion of the 6,800 sq. ft. facility is being utilized.
3 Only this portion of the 48,000 sq. ft. facility is being utilized.

Table 2-1B Incremental Pu Storage Upgrade
New Facility Data

Bldg. No.	Description	Type of Constr.	Gross Sq Ft	Access Area	No. of Levels	Special Mat'l
12-XXX	Loading Dock\ Preparation\ Storage vault	Concrete	164,600	MAA	1	SNM

2.1.3.1.1 Strategic Reserve Storage

Building 12-066 will be modified and upgraded to serve as the strategic reserve storage vault. Modifications to the facility will be the construction of a concrete wall to separate the facility into two areas. One area will be used for the storage vault for strategic reserves and the other area will be used for secondary storage. The strategic reserve vault will be 6,100 sq ft with an additional 2,400 sq ft two story equipment room to house primary and secondary HVAC systems and HEPA filters. The strategic vault will store pits in AT-400A containers.

The Vault Support Building is immediately adjacent to the vault and provides areas required to support operations within the vault. The building contains the AGV service area and storage areas, accountability/verification measurement area, control rooms, long-term safety evaluation area, inventory area, utility systems, HVAC equipment, and other support functions. Building 12-082 will be modified and upgraded to provide these functions.

2.1.3.1.2 Surplus Storage

The new Fissile Material Storage Facility (Figure 2-3) will be placed within the existing Zone 12 South Protected Area or in Zone 4. In order to ensure isolation of any multilateral and\or bilateral inspection activities, the proposed new facility will be physically separated from the weapons assembly/disassembly areas within the Zone 12 South MAA. Isolation will be accomplished through the use of facility-specific access portals/gates and security procedures, as well as the installation of new MAA security fencing if located in Zone 12 South. In the case of using Zone 4, isolation will be accomplished by having zone separation. The new facility can be constructed underground or aboveground in either location.

The main area of the FMSF will be comprised of two vaults. One vault (40,200 sq ft) will be used to store up to 25,000 containers of surplus pits and the other vault (26,200 sq ft) will be used to store up to 15,000 containers of surplus metals and oxides. The pits will be stored in AT-400A containers and the metals and oxides will be in containers that are comparable with the AT-400A package handling system or in the primary containment vessel. The surplus pit vault will use "Stage Right" in a warehouse arrangement for storing the surplus pits in the AT-400A containers. The surplus metals and oxides vault can be designed to store the metals and oxides in one of the three following methods:

1). Storing metals and oxides in AT-400A or comparable containers using "Stage Right" in a warehouse arrangement,

2). Storing metals and oxides in the primary containment vessel on pegs in the walls or racks in bays,

3). Storing metals and oxides in the primary containment vessels in tubes.

Both vaults will be entirely encircled by walkways such that the vaults are physically isolated from each other. The walkways will provide for ready and complete verification, by the international inspectors, of the vaults' isolation.

Each vault will be provided with a vault preparation area adjacent to its entrance and an area for international inspectors.

An evaluation/shipping preparation area will be included for routine evaluation and handling of suspect containers. This area will contain five glove boxes, as part of a laboratory, for shipping/receiving evaluation and container examination, as well as international inspection and verification activities. The facility will be configured such that both vaults are provided with access to this area. The ability to secure complete isolation, from the non-using vault, will be included in the design.

Loading and unloading of tractor trailers/SST's will be accomplished at separate docks (one for each vault) each residing within an enclosed structure.

Equipment/mechanical rooms will be hardened to the same level of protection afforded the vaults. There will be redundancy of critical HVAC/HEPA equipment and functions to assure uninterrupted service.

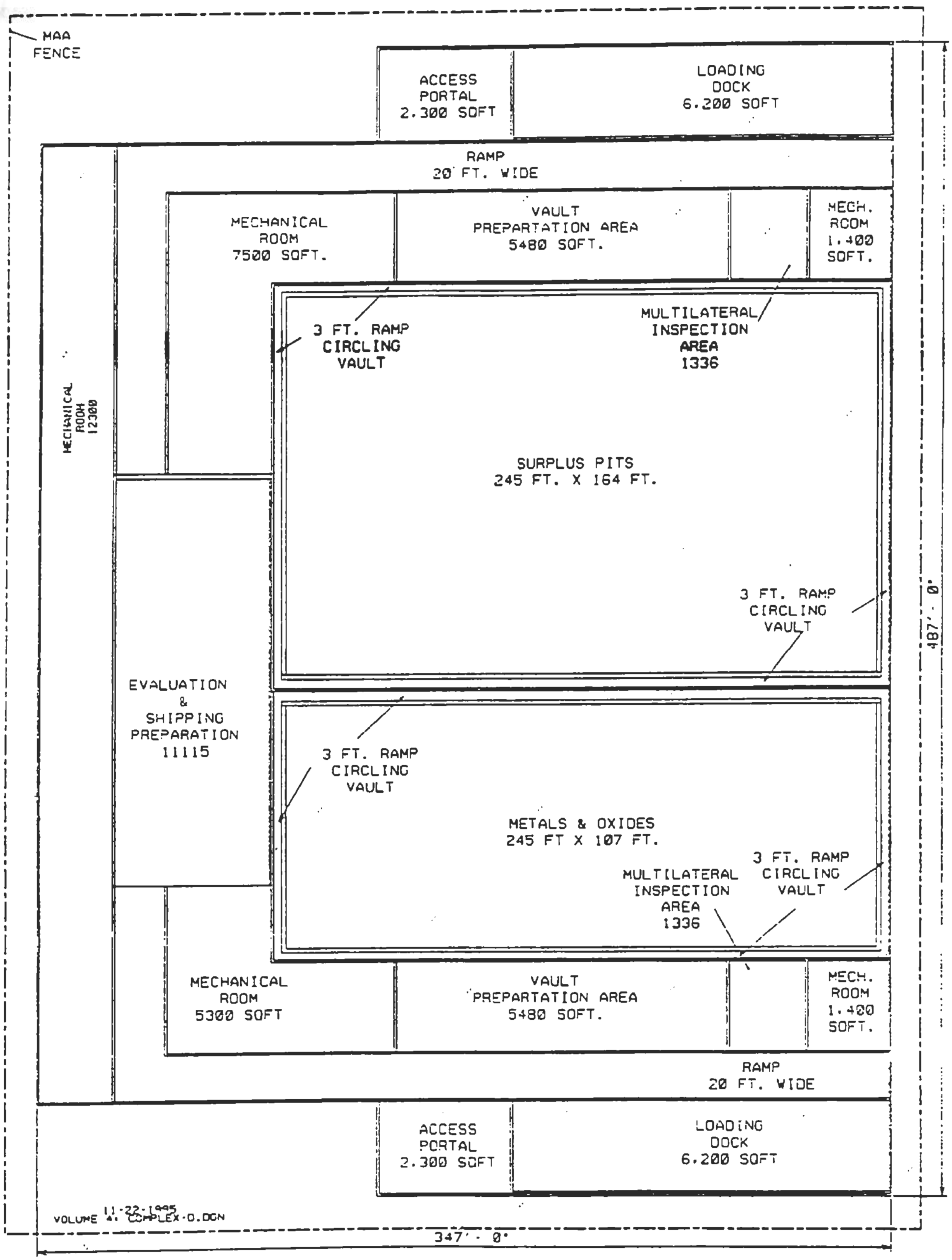


Figure 2-3 Fissile Material Storage Facility Layout

2.1.4 Existing Facilities Upgrade Descriptions

Modification or upgrading of some existing facilities is necessary to meet the Programmatic Design Criteria requirements. Existing facilities at the Pantex Plant required for the Upgraded Pu Storage operations will be evaluated individually to determine the degree of modification or upgrade needed. The following codes are used in the tables for items that are required in most of the facilities:

SB	Seismic Bracing for the fire suppression and other components
ADA	Building hardware, access/egress routes, visual/audio alarms, and toilet facilities to be brought into compliance with the Americans with Disabilities Act (ADA)
WC	Water closets, urinals, sinks, faucets and showers to be reconditioned, refitted or replaced to provide water conservation measures
EL	Additional exit and emergency lights to comply with NFPA 101
FA	Bring facility fire alarm into compliance with ADA
CSA	New component support and anchorage (piping, HVAC ducts, equipment, electrical, etc.)

These codes as well as additional upgrade facility information based on structural, architectural, mechanical, and electrical requirements for the Pu Storage upgrade are given in Table 2-2.

Table 2-2 Upgrade Data - Pu Storage Existing Facilities

Bldg. Number	Building Function	Required Upgrade Description			
		Structural	Architectural	Mechanical	Electrical
12-066	Vault	SB,CSA, Construct additional wall and modify rest room	Provide rad. shielding	Expand Mech. room, add HVAC, HEPA filter banks, remove fire protection	Replace electrical system
12-082	AGV Service	SB,CSA Construct walls	Provide rad. shielding	Replace HVAC, add HEPA filter banks	Replace electrical system
12-116	Unpackaging Packaging Accountability	CSA	ADA; WC	No work	FA
12-117	Loading Area/Dock	SB,CSA	ADA; WC	No work	FA

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2.2.4 Fire Protection

The fire protection features for the plant and its associated support buildings are in accordance with DOE Orders and the National Fire Protection Association (NFPA) Fire Codes and Standards.

Redundant firewater supplies and pumping capabilities (electric motor drivers with diesel backup) will be installed to supply the automatic and manual fire protection systems located throughout the site. One supply tank and one set of pumps will be designed to meet DBE requirements. Appropriate types of fire protection systems will be installed to provide life safety, prevent large-loss fires, prevent production delay, ensure that fire does not cause an unacceptable on-site or off-site release of hazardous material that will threaten the public health and safety or the environment, and minimize the potential for the occurrence of a fire and related perils.

Specific production areas and/or equipment will be provided with the appropriate fire detection and suppression features as required with respect to the unique hazard characteristics of the product or process.

A fire hazards analysis will be performed to assess the risk from fire within the individual fire areas of the facility.

All fire sprinkler water that has been discharged in process areas during and after a fire will be contained, monitored, sampled, and if required, retained until it can be disposed.

2.2.5 Safety Class Instrumentation and Control

The safety classification of instrumentation and controls will be derived from the safety functions performed. This safety classification is based on DOE 6430.1A and DOE 5481.1B.

Safety class instrumentation will be designed to monitor identified safety related variables in safety class systems and equipment over expected ranges for normal operation, accident conditions and for safe shutdown. Safety class controls will be provided, when required, to control these variables.

Suitable redundancy and diversity will be used when designing safety class instrumentation to insure that safety functions can be completed, when required, and that a single point failure will not cause loss of protective functions. Redundant safety class signals must also be physically protected or separated to prevent a common event from causing a complete failure of the redundant signals. IEEE 379 and IEEE 384 are the design basis for redundancy and separation criteria. Safety class instrumentation will be designed to fail in a safe mode following a component or channel failure. Safety class UPS power will be provided when appropriate.

2.2.6 Nuclear Criticality

Where potential for nuclear criticality exists, the design of the facilities will include the basic controls for assuring nuclear criticality safety. Designs will satisfy the double contingency principle, i.e., "process designs shall incorporate sufficient safety factors so that at least two unlikely, independent, and concurrent changes in process conditions must occur before a criticality accident is possible" from DOE 6430.1A. Basic control methods for the prevention of nuclear criticality include:

1. Provision of safe geometry (preferred)
2. Engineered density and/or mass limitation
3. Provision of fixed neutron absorbers
4. Provision of soluble neutron absorbers
5. Use of administrative controls

Although geometric controls are used extensively wherever practical, there are cases where geometric control alone cannot practically provide assurance of criticality safety. In these cases, engineered controls can be used to control moderation, nuclear poisons, mass, and density.

2.2.7 Ventilation

The HVAC system design of the new and upgraded facilities will meet all general design requirements in accordance with DOE 6430.1A, Section 1550, and ASHRAE guides.

The HVAC system provides environmental conditions for the health and comfort of personnel and for equipment protection. In addition, the HVAC systems will provide temperature and humidity control for the pits (strategic and surplus), metals, and oxides. Typically, the ventilation system will be designed to maintain confinement to preclude the spread of airborne radioactive particulates or hazardous chemicals within the facilities and to the outside environment.

The design includes engineered safety features to prevent or mitigate the potential consequences of postulated design basis accident events.

3.0 Site Maps and Land Use Requirements

3.1 Site Maps

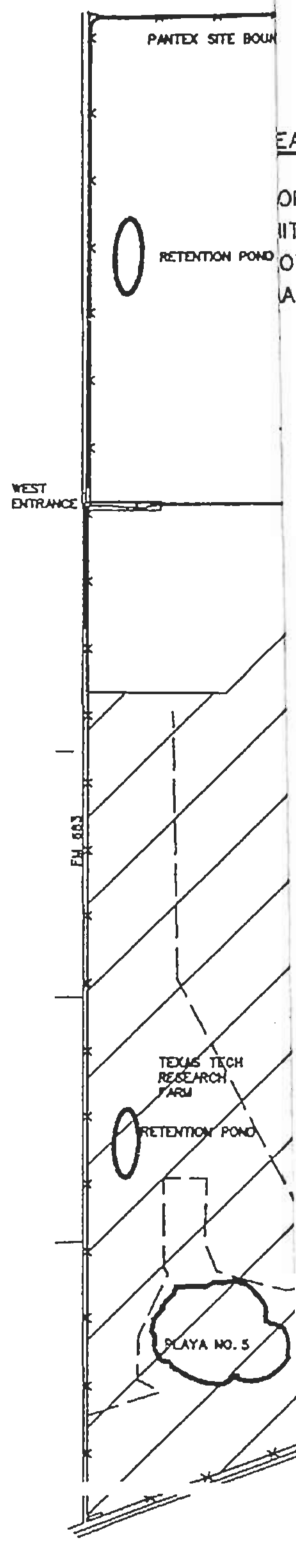
The site map for the Pu Storage Upgrade is shown in Figure 3-1. This figure shows the Incremental Pu Storage Upgrade integrated into the Pantex Plant infrastructure, security, waste and HE/Assembly Operating systems. The Pantex Plant HE/Assembly Operations Upgrade includes the upgrade of all support, security, and infrastructure systems required for the Incremental Pu Storage Upgrade.

3.2 Land Area Requirements During Operation

Tables 2-1A & 2-1B lists the required facilities for the Incremental Pu Storage operations and the area occupied by each building. The Incremental Pu Storage Upgrade at the Pantex Plant requires 1.6 hectare of land beyond that identified for the upgrade of the HE/Assembly operations.

3.3 Land Area Requirements During Construction

Construction of the Incremental Pu Storage Upgrade requires 0.8 hectare of land for construction laydown and warehousing, and 0.4 hectare for construction parking.



EA TABULATIONS

OPERTY PROTECTED AREA-	14808 ACRES
IITED AREA-	1124 ACRES
OTECTED AREA-	260 ACRES
A AREA-	139 ACRES

LEGEND

- DOE OWNED LAND
- DOE LEASED LAND
- OPERATIONAL AREA
- PROPERTY PROTECTED AREA
- LIMITED AREA
- PROTECTED AREA
- MAA AREA

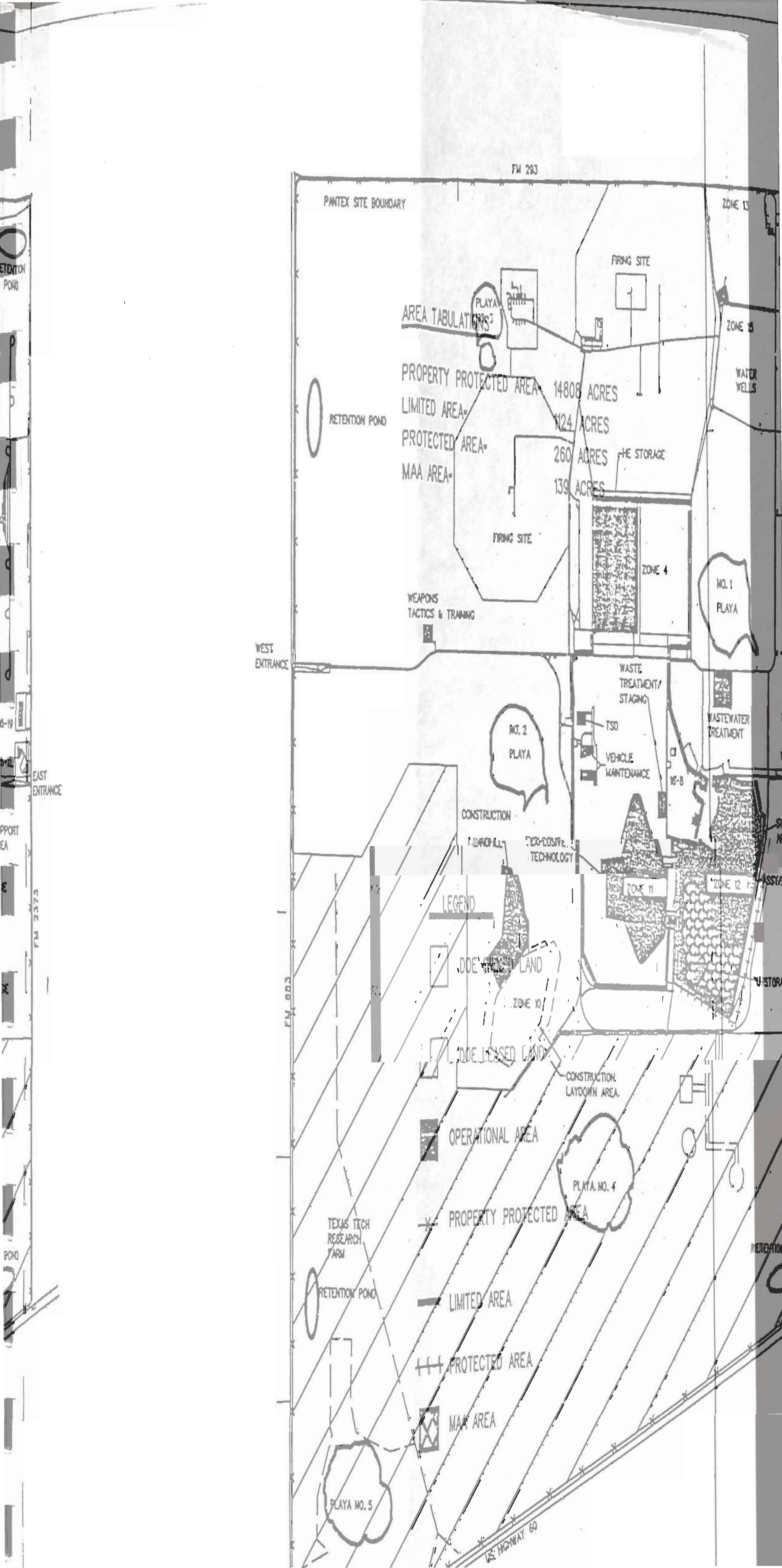
MASON & HANGER - SILAS MASON COMPANY INC.
PANTEX PLANT, AMARILLO, TEXAS

INCREMENTAL PU STORAGE UPGRADE

RECONFIG.005

1-94

FIGURE: 3-1



FM 293
PANTEX SITE BOUNDARY
ZONE 13
FIRING SITE
PLAYA
AREA TABULATIONS
ZONE 15
WATER WELLS
PROPERTY PROTECTED AREA= 14808 ACRES
LIMITED AREA= 1124 ACRES
PROTECTED AREA= 260 ACRES
MAA AREA= 139 ACRES
RETENTION POND
HE STORAGE
FIRING SITE
ZONE 4
NO. 1 PLAYA
WEAPONS TACTICS & TRAINING
WEST ENTRANCE
WASTE TREATMENT/ STAGING
TSD
WASTEWATER TREATMENT
NO. 2 PLAYA
VEHICLE MAINTENANCE
CONSTRUCTION
TECHNOLOGY
ZONE 11
ZONE 12
LEGEND
DOE OWNED LAND
ZONE 10
DOE LEASED LAND
CONSTRUCTION LAYDOWN AREA
OPERATIONAL AREA
PLAYA NO. 4
PROPERTY PROTECTED AREA
TEXAS TECH RESEARCH FARM
RETENTION POND
LIMITED AREA
PROTECTED AREA
MAA AREA
PLAYA NO. 5
US HIGHWAY 60
FM 683
FM 2373
EAST ENTRANCE
RETENTION POND

4.1.1.7 Shipping/Receiving and Preparation Wastes

Solids:

Glovebox Panels
Windows and gaskets
Filters
Batteries
Damaged AT-400A containers
Damaged overpack materials
Damaged Primary containment vessels
Noncontaminated cleaning materials
Gloves
Wipes
Masks
Plastic bottles
Overalls
Damaged ESFs
Failed equipment and instruments
Laydown plastic

Liquids:

Decontamination solutions
Lubricants
Process waste water
Hydraulic fluids

Gases:

Glovebox and hood exhaust

4.1.2 Material Storage System

4.1.2.1 Material Storage Function

The material storage function is to store strategic reserve pits and surplus pits, metals, and oxides in AT-400A or comparable containers or the primary containment vessels for the life of the facility and to prepare the storage container packages for return to shipping/receiving. The AT-400A or comparable containers or the primary containment vessels are transported through enclosed ramps via shielded forklifts to protect the operator and surrounding environment. Once in the vault storage area, the containers with pits are stored using "Stage Right" technology in which AGVs are used to move the 4 and 6 pack configurations of containers between the storage vault and the vault Preparation area. The containers with metals and oxides are stored using one of the three methods discussed in section 2.1.3.1.2 using some type of AGV to move the containers between the storage vault and the vault preparation area.

4.1.2.2 Material Storage Feeds

AT-400A containers or comparable
Primary containment vessels

4.1.2.3 Material Storage Products

AT-400A containers or comparable
Primary containment vessels

4.1.2.4 Material Storage Utilities Required

Nitrogen
Breathing air
Instrument air
Plant air
Plant water
Potable water
Demineralized water
Electricity

4.1.2.5 Material Storage Chemicals Required

Liquids
Decontamination Solutions
Detergents

4.1.2.6 Material Storage Special Requirements

The vault requires capability to meet inventory and surveillance requirements during the life of the facility. This requirement includes weighing, gamma fingerprinting, verification of bar codes of in-place primary containers, and verification of empty storage locations. The vault does not require routine entry by personnel. Operations are performed by remotely operated equipment to meet ALARA requirements. Temperature and humidity control are required for the stored SNM and instruments.

4.1.2.7 Material Storage Waste

Solids:

Glovebox panels
Windows and gaskets
Filters

Batteries
Laydown plastic
Gloves

Wipes
Masks
Plastic bottles

Overalls
Failed equipment
Failed instruments
Noncontaminated cleaning materials

Liquids:

Lubricants
Hydraulic fluids
Decontamination solutions

Gases:

Glovebox and hood exhaust

4.2 Pu Storage Waste Management System

4.2.1 Waste Management Function

The Waste Management System involves the collection, assaying, sorting, treatment, packaging, storage and shipment of radioactive, hazardous and mixed wastes from Pu operations, and hazardous and non-RCRA hazardous from the support operations.

a. Initial sorting of solid waste transuranic (TRU), low-level waste (LLW), mixed TRU waste, mixed LLW, and hazardous waste is performed at the generation source. Classified shapes are mechanically destroyed, then segregated into separate streams (mixed, unmixed, organic, etc.) for processing. Solid wastes are treated by a variety of processes to ensure that they are in compliance with EPA, RCRA, and DOE requirements. The treatment processes include thermal treatment for combustibles and passivation for reactive metals. Waste products are immobilized and packaged to meet DOT and DOE requirements. Liquid organic wastes are separated and dispositioned, along with solid organics.

b. Radioactive liquid wastes (aqueous chloride, aqueous nitrate, and laundry waste) are neutralized, filtered, precipitated, concentrated by evaporation, immobilized, and packaged for appropriate disposal.

c. Mixed LLW will be handled as stated in the Agreed Order with the TNRCC for treatment of mixed wastes.

d. Nonhazardous, nonradioactive solid, aqueous and gaseous wastes are treated in conformance with standard industrial practice. Solid wastes are either disposed of off-site or sent to a commercial recycle center. Aqueous wastes are discharged to natural drainage channels. Gaseous wastes are released to the atmosphere.

Block flow diagrams depicting the incremental upgrade Waste Management System is shown on Figures 4-1.

4.1.2.4 Material Storage Utilities Required

Nitrogen
Breathing air
Instrument air
Plant air
Plant water
Potable water
Demineralized water
Electricity

4.1.2.5 Material Storage Chemicals Required

Liquids
Decontamination Solutions
Detergents

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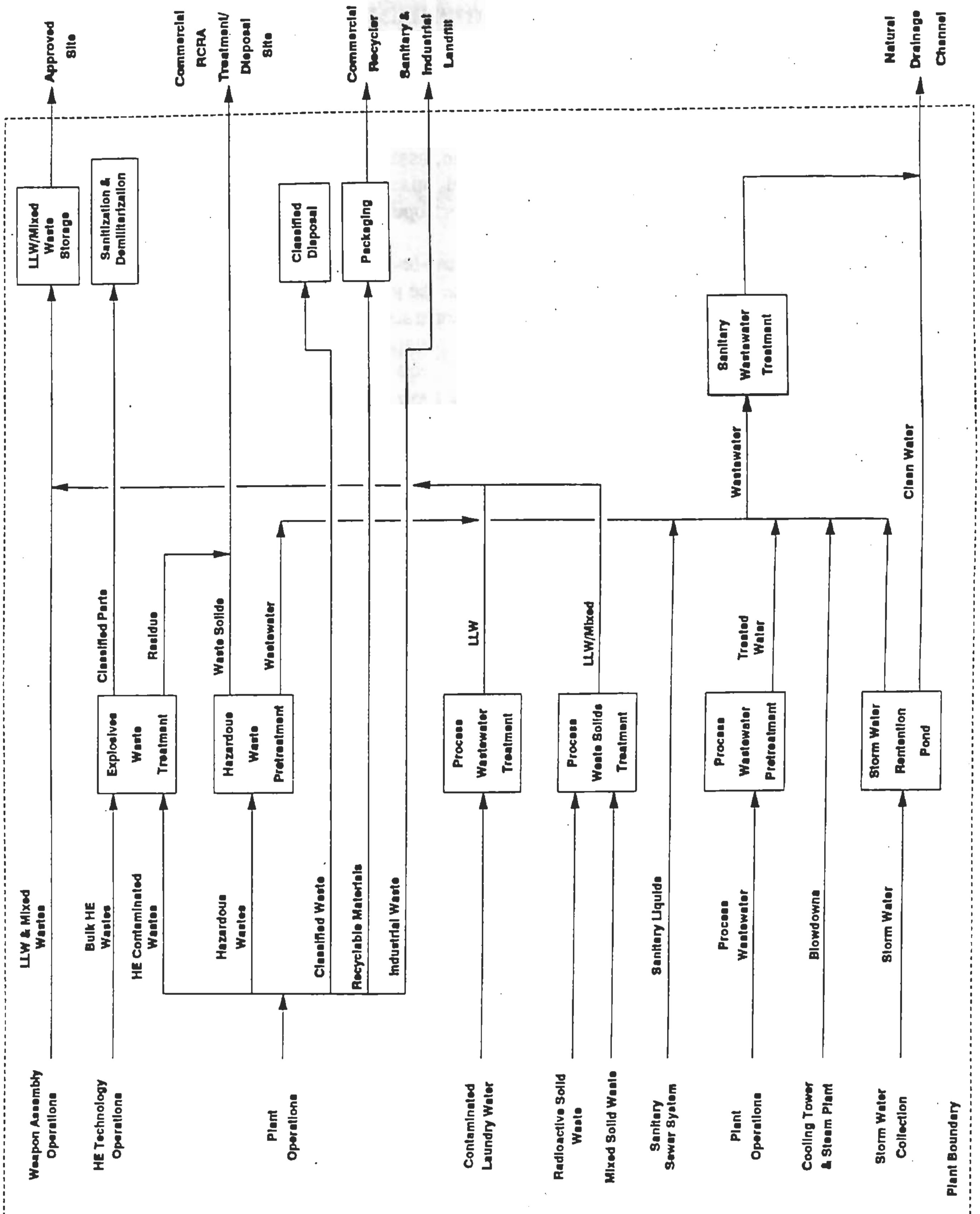

Figure 4-1 Pantex Incremental Waste Management Block Flow Diagram

4.2.2 Waste Management Feeds

Radioactive Waste

Solid (TRU or LLW):

Failed equipment/parts
Plywood boxes
Contaminated tools
Plastics
Batteries
Gloves
Wipes/Rags
Filters
Scrubber waste
Failed instruments
Packaging
Metal drums/containers
Overalls
Air masks
Insulation
Paper
Damaged ESFs
Spent crucibles

Liquids (TRU or LLW):

Decontamination solution
Contaminated fire water
Cleaning solutions
Spent lubricants
Laboratory wastes
Laundry wastewater
Hydraulic fluids
Paints

Hazardous Wastes

Solids:

Rags with hazardous components

Liquids:

Cleaning solvents
Hydraulic fluids
Paints
Pump oils

Nonhazardous, Nonradioactive Wastes

Solids:

Industrial waste from utility and maintenance operations
Office and cafeteria wastes

Liquids:

Sanitary water
Blowdown water
Rainwater

4.2.3 Waste Management Products

The waste management products include radioactive and nonradioactive waste that are generated in the Pu Storage and associated support facilities. The products are:

1. Solid TRU, LLW, and mixed wastes.

2. Hazardous liquids and solids.

3. Nonhazardous, nonradioactive solid wastes such as compacted industrial and sanitary waste, and recyclable materials; liquid wastes such as treated waste water and rain runoff.

These wastes are handled and disposed of in accordance with approved storage and disposal methods. These include:

1. Immobilized TRU and mixed TRU wastes sent to WIPP.

2. Immobilized LLW deposited in on-site disposal modules.

3. Mixed LLW stored on-site in storage buildings.

4. Solid industrial/sanitary waste deposited in an off-site industrial landfill.

5. Recyclable solid wastes are sent to off-site commercial recycle center.

6. Solid and liquid hazardous wastes sent to an off-site RCRA disposal site.

7. Rain runoff discharged to natural drainage channels.

8. Nonhazardous, nonradioactive clean gases discharged to the atmosphere.

4.2.4 Waste Management Utilities Required

Plant water
Demineralized/distilled water
Closed loop cooling water system
    Positive pressure chilled water
    Cooling water
Instrument air
Plant air
Breathing air
Diesel fuel
Low pressure steam
Condensate
Dry vacuum
Fire water
Electricity

4.2.5 Waste Management Chemicals Required

Sodium Chloride
Polyphosphate
Sodium sulfite
Aluminum sulfate
Bentonite
Organic Phosphate
Hydrazine
Calcium hydroxide
Hydrogen peroxide
Polyelectrolyte
Sulfuric acid
Phosphoric acid
Diethylaminoethanol
Inorganic Phosphate
Nitrogen
Chlorine

4.2.6 Waste Management Special Requirements

Some operations are conducted in gloveboxes and are provided with scrubbers to clean gaseous effluents.

5.0 Resource Needs

5.1 Materials/Resources Consumed During Surge Operation

This section presents the significant utility and chemical resource needs during surge operation for the Incremental Pu Storage Upgrade Operations at the Pantex Plant.

5.1.1 Utilities Consumed

The utilities consumed during operations include electric power, liquids fuels, natural gas and water. Annual utility consumption rates and peak electric power rates are shown in Table 5-1. The column titled "Plant" presents the actual utilities consumed in during 1994. The column titled "additional" presents the incremental utilities consumption associated with the addition of Pu storage at the plant.

Table 5-1 Incremental Pu Storage Upgrade Utilities Consumed During Surge Operation

Utilities	Annual Average Consumption	
	Plant (1994)	Additional
Electrical		
Consumption (MWh)	94,420	6,950
Peak Load (MW)	13	1.1
Oil (l/yr)	1,775,720	0
Natural Gas (million m^3/yr)	14.6	0.8
Water (million l/yr)	840	14

5.1.2 Chemicals Consumed

The additional quantities of chemicals and materials consumed during Pu Storage Operations are summarized in Table 5-2.

Table 5-2 Incremental Pu Storage Upgrade Annual Chemicals Consumed During Surge Operation

Chemical	Quantity (kgs)
SOLID CHEMICALS	**SOLID CHEMICALS**
Sodium Sulfite	54
LIQUID CHEMICALS	**LIQUID CHEMICALS**
Sulfuric Acid	277
Oils & Lubricants	3
Polyphosphate	82
Liquid Nitrogen	118
GASEOUS CHEMICALS	**GASEOUS CHEMICALS**
Argon	2,500
Chlorine	168
Helium	50

5.2 Materials/Resources Consumed During Construction

This section presents the significant materials/resources consumed during construction of the Plutonium Storage Upgrade at the Pantex Plant. These resources include utilities, construction materials, liquid fuels and industrial gases. The total quantities consumed during the entire construction period and the peak electric power and water consumption are shown in Table 5-3.

Table 5-3 Incremental Pu Storage Upgrade Materials/Resources Consumed During Construction

Material/Resources	Total Consumption
Electrical	
Consumption (MWh)	6,700
Peak Load (MW)	50
Water	
Consumption (l)	7,500,000
Peak Demand (l/day)	6,400
Concrete (m^3)	9,200
Steel (tonne)	1,850
Gasoline,Diesel & Lube Oil (l)	158,000
Industrial Gases (m^3)	3,400

6.1.2 Labor Category Description

The labor categories used in Table 6-1 are defined below. These categories are standard Equal Employment Opportunity (EEO) categories.

Officials and Managers

Occupations requiring administrative and managerial personnel who set broad policies, exercise overall responsibility for execution of these policies, and direct individual departments or special phases of a firm's operations. Included in this category are: officials, executives, middle management, plant managers, salaried supervisors who are members of management, and purchasing agents and buyers.

Professionals

Occupations requiring either a college degree or experience of such kind and amount as to provide a comparable background degree. Included in this category are: accountants and auditors, architects, artists, chemists, designers, editors, engineers, lawyers, librarians, mathematicians, scientists, nurses, personnel and labor relations specialists, physicians, and teachers.

Technicians

Occupations requiring a combination of basic scientific knowledge and manual skill which can be obtained through two years of post high school education, such as is offered in many technical institutions and junior colleges, or through equivalent on-the-job training. Included in these occupations are: computer programmers, drafters, engineering aides, junior engineers, mathematical aides, practical or vocational nurses, photographers, radio operators, scientific assistants, surveyors, technical illustrators, and technicians (medical, dental, electronic, physical science).

Office and Clerical

This category includes all clerical-type work, regardless of level of difficulty, where the activities are predominantly nonmanual, though some manual work not directly involved with altering or transporting the products is included. Included in this category are: bookkeepers, collectors, messengers and office helpers, office machine operators, shipping and receiving clerks, stenographers, typists and secretaries, telephone operators, and legal assistants.

6.2 Construction

The number of craftworkers, as well as construction management and support staff required during each year of construction to upgrade the Plutonium Storage Operations at the Pantex Plant are presented in Table 6-2.

Table 6-2 Incremental Pu Storage
Number of Construction Employees Needed by Craft and by Year

Employees	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Craftworkers						
Carpenter	2	9	3	0	0	0
Concrete Mason	2	7	2	0	0	0
Electrician	0	9	7	0	0	0
Iron Worker	2	11	2	0	0	0
Laborer	2	9	2	0	0	0
Millwright	0	3	2	0	0	0
Operator	1	4	1	0	0	0
Sheet Metal Worker	0	9	2	0	0	0
Pipe Fitter	1	6	4	0	0	0
Sprinkler Fitter	1	7	2	0	0	0
Teamster	1	5	2	0	0	0
Other Craftworkers	1	6	4	0	0	0
Total Craftworkers	13	85	33	0	0	0
Construction Management & Support Staff	1	9	3	0	0	0
Total Employment	14	94	36	0	0	0

Table 7-1 Incremental Pu Storage
Annual Emissions During Surge Operations

Chemical	Quantity (kgs)
Carbon Monoxide	590
Nitrogen Oxides	3865
Volatile Organic Compounds (VOC)	1800
Particulate Matter (PM_{10})	140
Sulfur Dioxide	22
Ammonia	32

Table 7-2 Incremental Pu Storage
Annual Wastes Generated During Surge Operations

Waste Category	Solid (m^3)	Liquid (l)
Radioactive Wastes		
High Level Waste (HLW)	NA	NA
Transuranic Waste (TRU)	1	0
Low Level Waste (LLW)	70	0
Mixed Wastes		
Transuranic Mixed Waste (TRU) *	1	0
Low Level Mixed Waste	8	190
Hazardous Waste	1	1,000
Nonhazardous Nonradioactive Wastes		
Recyclable	345	0
Sanitary/Industrial	140	4,500,000

* All TRU wastes that meet WIPP criteria, including TRU wastes containing hazardous wastes that exist as co-contaminants.

7.2 Wastes and Emissions Generated During Construction

This section presents the significant gaseous emissions and wastes generated at the Pantex Plant for the upgrade of the Plutonium Storage operations. The data reflects the Incremental quantities of emissions and wastes associated with the construction of the Plutonium Storage upgrades.

7.2.1 Emissions

Air pollutants are emitted during construction. The principle sources of such emissions are fugitive dust from land clearing, site preparation, excavation, and other construction activities, and exhaust from construction equipment and vehicles. The annual emissions generated during a one-year period with peak construction activity for the Incremental Pu Storage operations are shown in Table 7-3.

Table 7-3 Incremental Pu Storage Emissions During a Peak Construction Year

Chemical	Quantity (tonne)
Sulphur Dioxide	0.05
Oxides of Nitrogen	0.73
Volatile Organic Compounds (VOC)	0.36
Carbon Monoxide	2.00
Particulate matter 10 microns and smaller	0.29
Total Suspended Particulates (TSP)	0.73

7.2.2 Solid and Liquid Wastes

The solid and liquid wastes generated during construction include concrete and steel waste construction materials and sanitary waste water. The steel construction waste material will be recycled as scrap metal. No radioactive or mixed wastes will be generated during construction. The total quantity of solid and liquid waste generated during the entire construction period for the Incremental Pu Storage alternatives are shown in Table 7-4.

**Table 7-4 Incremental Pu Storage
Total Wastes During Construction**

Waste Category	Quantity
Nonhazardous Solids	
Concrete (m^3)	18.8
Steel (tonne)	2.8
Nonhazardous Liquids	
Sanitary (million liters)	47.4
Hazardous Waste (m^3)	0.6

9.0 References

Memorandum from Howard Canter requesting Upgrade Alternative, August 1993.

Data Report on Plutonium Plant, Fluor Daniel, Inc., Programmatic Environmental Impact Statement, April 1993.

Design Criteria Manual, Weapons Complex Reconfiguration Program, Fluor Daniel, Inc., June 1993.

Memorandum from J.L. Brennan, Fluor Daniel, Inc., transmitting Upgrade Assumptions, Nov. 1993.

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m^3	Cubic meters
M&O	Management and Operating
MAA	Material Access Area
MC	Material Confirmation
MC&A	Material Control & Accountability
MW	Megawatts
MWh	Megawatt Hour
NDA	Nondestructive Assay
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NMP&M	Nuclear Materials Production and Manufacturing
NNM	Nonnuclear Manufacturing
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
NWCR	Nuclear Weapons Complex Reconfiguration
OSHA	Occupational Safety and Health Administration
PCV	Primary Containment Vessel
PA	Protected Area
PDC	Programmatic Design Criteria
PEIS	Programmatic Environmental Impact Statement
PIDAS	Perimeter Intrusion, Detection, and Assessment System
PPA	Property Protection Area
ppb	Parts per Billion
PPE	Personal Protective Equipment
ppm	Parts per Million
PSAR	Preliminary Safety Analysis Report
psia	Pounds per Square Inch Atmospheric
Pu	Plutonium
RCRA	Resource Conservation and Recovery Act
RD&T	Research, Development, and Testing
REACTS	Radiation Emergency Assistance Center/Training Site

SAR	Safety Analysis Report
S&S	Security and Safeguards
scf	Standard Cubic Feet
SIP	Stockpile Improvement Program
SNM	Special Nuclear Material
SST	Safe Secure Transport
SSCs	Structures, Systems, and Components
TASP	Technology Assessment Selection Panel
TID	Tamper Indicator Device
TRU	Transuranic
TSP	Total Suspended Particulate
VOC	Volatile Organic Compounds
UPS	Uninterruptible Power Supply
W76	Weapon Program designation for the warhead employed by the Trident I submerged launch ballistic missile
W78	Weapon Program designation for the warhead employed by the Minuteman III ballistic missile
W80	Weapon Program designation for the warhead employed by the cruise missile
W87	Weapon Program designation for the warhead employed by the Peacekeeper ballistic missile
W88	Weapon Program designation for the warhead employed by the Trident II submerged launch ballistic missile
WIPP	Waste Isolation Pilot Plant
°F	Degrees Fahrenheit

A.0 Design Process for Accident Mitigation

A.1 Background

The experience gained in the design, construction, operation, modification, and decommissioning of the facilities of the existing nuclear weapons complex will be utilized in the design process for the Pantex Pu Storage Upgrade. This information will also be employed in the safety assessment to better estimate performance and improve the safety of the Pantex Plant.

Safety analysis reports and Defense Programs safety surveys provide information from which bounding accident scenarios have been selected. Bounding accident scenarios are those accidents of a class involving a particular hazard and that result in the largest potential consequence for a particular accident initiator. These selected scenarios provide a vehicle for explaining how the application of current safety assessment methodologies, design criteria, and industry consensus codes and standards will be used to provide a modern weapons complex with design features that prevent or mitigate the consequences of these accidents. It is emphasized that the design process for the Pantex Plant will be comprehensive and evaluate a broad spectrum of hazards and accident initiators as well as design approaches to risk reduction. The safety analysis will include deterministic accident analysis as well as Probabilistic Risk Assessment (PRA).

A.2 Design Process/Safety Analysis

A.2.1 Pantex Plant

One of the major design goals for the Pantex Plant is to achieve a reduced risk to facility personnel and to public health and safety relative to that associated with similar functions at the existing nuclear weapons complex. This goal applies to the Pantex Pu Storage Upgrade. Significant changes exist between the current facilities design criteria and safety standards, which will reduce total risk to the public associated with operation of the Pu Storage Plant. These changes include:

1. Design to the current DOE structural and safety criteria

2. Small throughput, batch size, and inventories of certain hazardous materials

3. Elimination of some hazardous materials.

This will reduce potential off-site health effects if a significant accidental release were to occur.

The upgrade of Pantex will be designed to comply with current Federal, State and local laws, DOE Orders, and industrial codes and standards. This will provide a plant that is highly resistant to the effects of severe natural phenomena, including earthquake, flood, tornado, high wind, as well as credible events as appropriate to the site, such as fire and explosions, and man-made threats to its continuing structural integrity in the event of any credible accident or event, including an aircraft crash, if such an accident is credible at that site.

The Pantex Pu Storage Upgrade is currently envisioned to be larger in capacity than any of the existing Pu Storage vaults. Recent international agreements will significantly reduce the weapons stockpile. Weapons that are now deployed with the armed forces will be returned for disassembly and their Pu components eventually placed into storage. This creates the need for a larger storage capacity than presently exists. From a risk viewpoint, a larger stored inventory of Pu incremental increases the risk of an accidental release. Therefore, the storage facility will be modularized and compartmentalized to limit the worse case consequences of any specific accident. The design of the storage facility will result in a public risk that complies with established DOE design criteria. It will also incorporate up-to-date safeguards and security features to protect against theft and sabotage.

The design process for the Plant will comply with the requirements for safety analysis and evaluation in DOE Orders 4700.1 and 5480.23. These orders require that the safety assessment be an integral part of the design process to ensure compliance with all DOE safety criteria by the time the facilities are constructed and in operation.

The safety analysis process begins early in conceptual design with identification of hazards having the potential to produce unacceptable safety consequences to workers or the public. As the design develops, failure mode and effects analyses are performed to identify equipment or human failures, or external events, with the potential to release hazardous materials. The events considered include industrial explosion, fire, earthquake, tornado, flood, spills, and aircraft crash. These potential events become focal points for design changes or improvements to prevent, or lessen the likelihood of, undesirable accidents. These analyses continue, as the design progresses, and eventually event tree and fault tree analyses are generated to better understand the estimated frequency of occurrence of accident scenarios. Deterministic safety analyses are performed to assess the need for safety class equipment to mitigate the effects of the accident scenarios and to assess the performance of this equipment in accident mitigation. Eventually, the safety analyses are formally documented in a safety analysis report and in a PRA. The PRA documents the envelope of frequency versus consequence for an entire spectrum of accidents which will help to identify where design improvements can be made to maintain this risk envelope within acceptable bounds.

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The first Safety Analysis Report (SAR) is completed at the conclusion of conceptual design and includes identification of hazards and some limited assessment of a few, enveloping design basis accidents. This analysis includes deterministic safety analysis and failure modes and effects analysis of major systems. The preliminary safety analysis report (PSAR) is started during preliminary design. A detailed and comprehensive PSAR is completed by the completion of detailed design and provides a broad assessment of the range of design basis accident scenarios and the performance of equipment provided in the facility specifically for accident consequence mitigation.

The safety review of this report and the supporting PRA is completed, safety issues resolved, and commitments accepted before initiation of facility construction. A final safety analysis report (FSAR) is produced that includes documentation of safety-related design changes during construction, and the impact of those changes on the safety assessment. It also includes the result of any safety-related research and development that has been performed to support the safety assessment of the facility. Final approval of the FSAR is required before the facility is allowed to commence operation.

A.2.2 Pu Storage Plant

The design of the Pantex Pu Storage Upgrade will consider a broad range of accident scenarios. As a result of the design process, the Plant may include design facilities to mitigate the effects of the scenarios considered in the safety analysis of existing facilities. The effect of each of the above-identified scenarios are:

Aircraft Crash and Fire

A severe accident that will be considered in the siting and design of the Pantex Pu Storage Upgrade is the crash of a large aircraft into the facility. Such an event may have the potential to disperse significant quantities of stored or in-process materials. The likelihood and frequency of such a crash is strongly dependent upon the location of the plant site and will be considered in the safety assessment. The design of the facility will ensure that the public risk from an aircraft crash into the building is in compliance with DOE guidelines. Unless the risk analysis demonstrates that the risk from an aircraft crashing into the facility is less than the threshold for credible events, potential aircraft crashes will be considered among the man-made missiles that structures will be designed to withstand.

Criticality

The Pantex Pu Storage Upgrade will incorporate design features to prevent a criticality by limiting mass, shape, and geometry of nuclear material; and by designing plant features to mitigate the potential for a criticality, even if two unlikely, independent events were to occur. The Pantex Pu Storage Upgrade will be designed to maintain structural integrity for severe, rare earthquakes, large fires and design basis accidents, including accidental criticality. The structural design criteria will be more stringent than those used for the existing facilities. The effects of a large aircraft crash will also be considered in the criticality analysis and the design of the Pantex Pu Storage Upgrade. For plutonium-containing solutions and solids, the plant will rely on geometrically-favorable design and will be designed with favorable geometry, storage racks, transfer systems, criticality favorable enclosures, fixed neutron absorbers, and administrative controls, in order of preference.

Overpressurization

The Pantex Pu Storage Upgrade facility will only accept material that has been certified as being chemically stable before shipment to the plant. Several steps are being considered for assuring the long-term stability of stored Pu and, therefore, minimizing the likelihood of an overpressurization incident. Parameters for safe storage, such as chemical form and concentration of impurities, are being defined. Items to be stored would then be tested to make certain that they are within the safe storage parameters. Also, storage conditions necessary to ensure safe long-term storage (e.g. temperature) would be defined and the vault designed to maintain these conditions. During storage, containers would be statistically sampled and tested for container integrity and leakage and radiographed to ensure stability of the stored items. Finally, the containers in which Pu will be stored are expected to be quite robust; they are not expected to rupture at pressures to which they are likely to be exposed. The design process will include a comprehensive assessment of possible accident scenarios involving material in storage. Mitigating design features will be incorporated as required by the safety analysis.

Fire

The automatic sprinkler systems located in the Pantex Pu Storage Upgrade will be safety class to insure their operability and to minimize the possibility of a release due to fire. In the event the loading dock system is taken out of service, compensatory measures (e.g. constant fire watch) would be implemented.

The site will have its own fire department and trained fire brigade to respond to all fire emergencies, thus minimizing the response time and minimizing the size of the fire.

In addition to the automatic sprinkler systems, the Pantex Pu Storage Upgrade will have smoke detection systems installed throughout the facility.

In the unlikely event that all active fire detection and suppression systems are simultaneously removed from service, the building will be designed with passive fire rated barriers to withstand the maximum possible fire and contain the fire within the given compartment.

A.2.3 Safety Goal

The Pantex Pu Storage Upgrade Plant will provide a level of public health and safety superior to that experienced for facilities of the existing nuclear weapons complex. DOE has adopted two quantitative safety goals to limit the risks of fatalities associated with its nuclear operations. These goals are the same as those established for nuclear powerplants by the Nuclear Regulatory Commission (NRC) and, like the NRC goals, should be viewed as aiming points for performance. The goals are:

The risk to an average individual in the vicinity of a DOE nuclear facility for prompt fatalities that might result from accidents should not exceed one-tenth of one percent (0.1%) of the sum of prompt fatalities resulting from other accidents to which members of the population are generally exposed. For evaluation purposes, individuals are assumed to be located within one mile of the site boundary.

The risk to the population in the area of a DOE nuclear facility for cancer fatalities that might result from operations should not exceed one-tenth of one percent (0.1%) of the sum of all cancer fatality risks resulting from all other causes. For evaluation purposes, individuals are assumed to be located within 10 miles of the site boundary.

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3. Final Safety Analysis Report, Building 371, EG&G Rocky Flats, Inc., June 1981.

4. Final Safety Analysis Report, Building 779, EG&G Rocky Flats, Inc., Revised June 1987.

5. Safety Analysis Report Addendum-200 Area, Savannah River site, Separations Area Operations Storage of Plutonium in the 247-F Facility; DPSTSA-200-16; Addendum, Westinghouse Savannah River Company, April 1992.

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