AR TARGET SHEET

The following document was too large to scan as one unit, therefore, it has been broken down into sections.

EDMC#: 0062811
SECTION: 14 OF 15

DOCUMENT #: WA7890008967 Rev 8

TITLE: Hanford Facility RCRA Permit, Dangerous Waste Portion, Rev 008, 9/04

Appendix 4A

Engineering Figures

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APPENDIX 4A

ENGINEERING FIGURES

The figures listed below are included in this appendix, and are to be used in conjunction with the text in the DWPA Chapter 4.

Figure 4A-1 WTP Simplified Flow Diagram

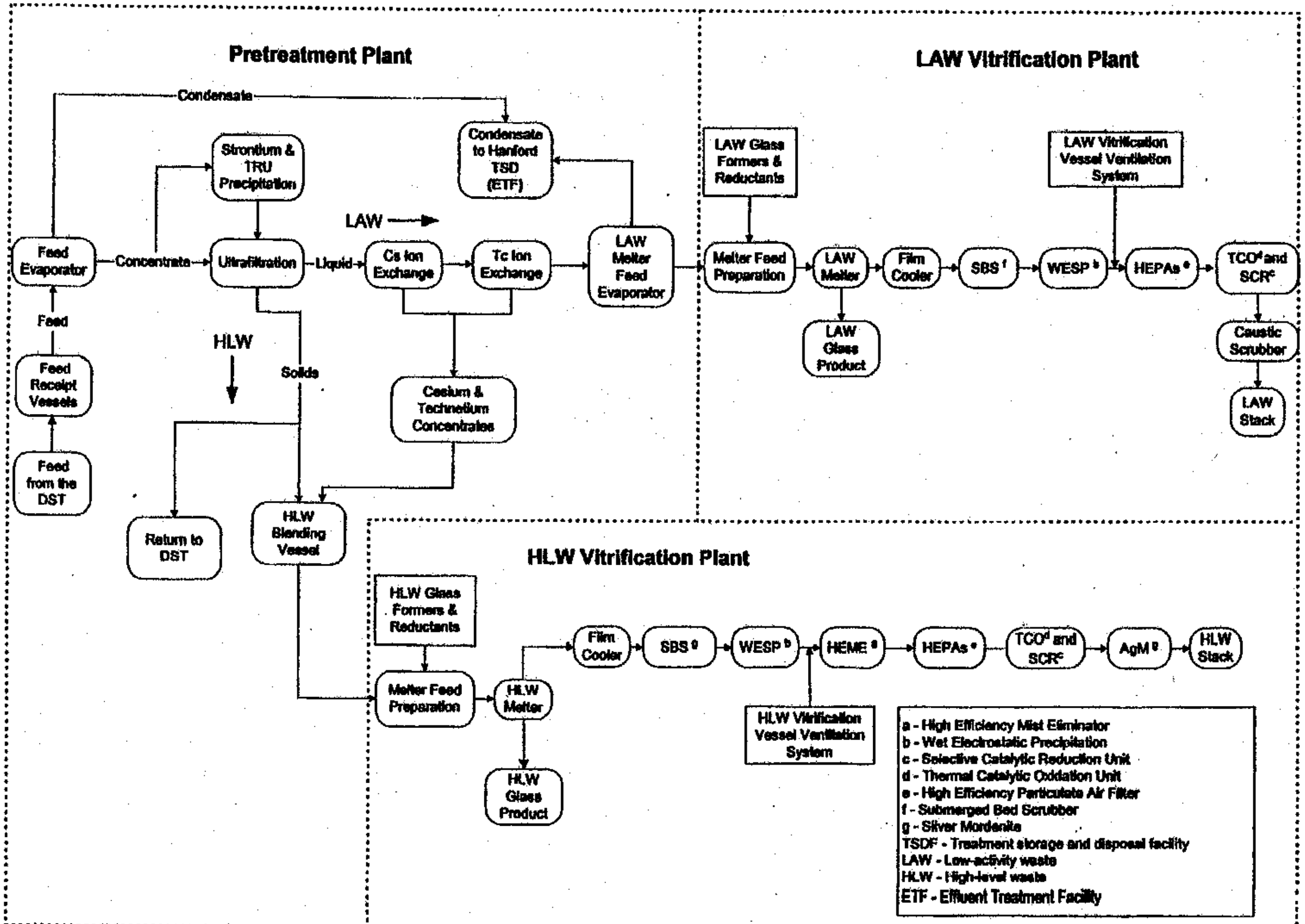
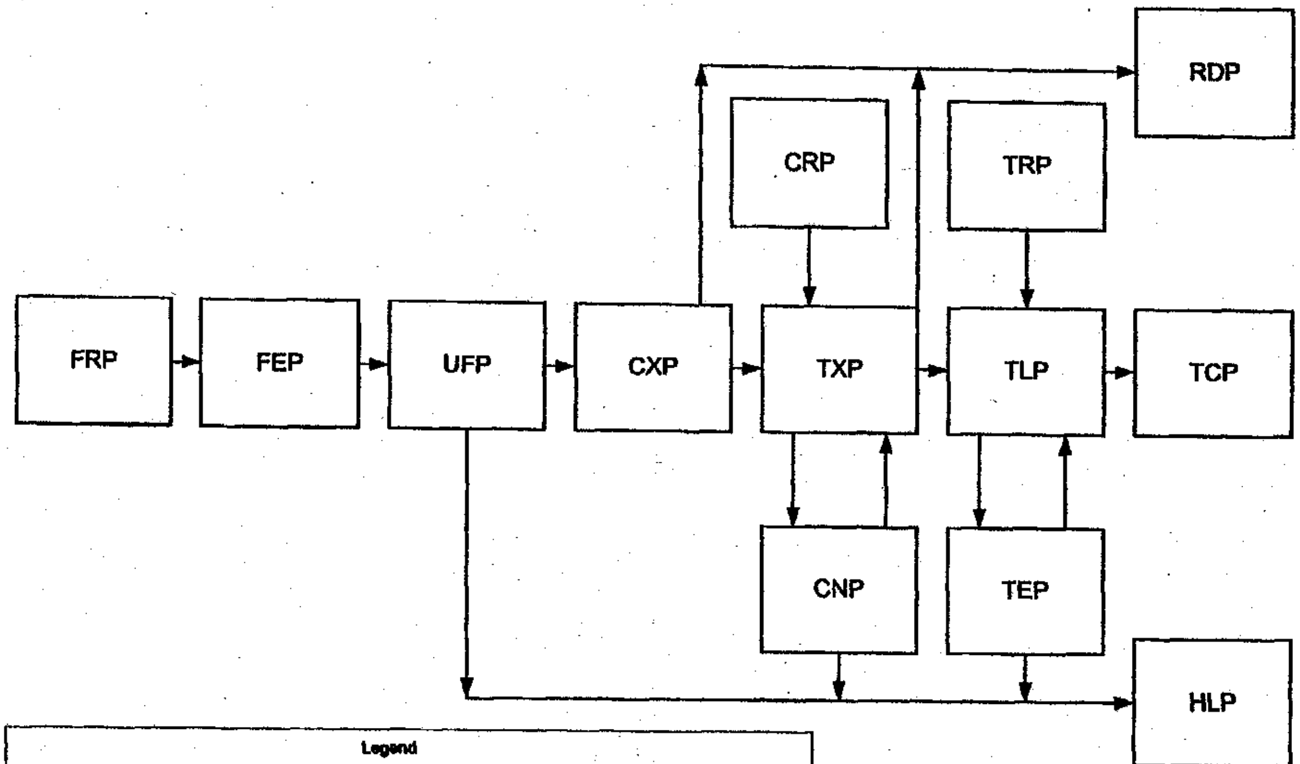


Figure 4A-2 Primary Pretreatment Process Systems



Legend

FRP:	Waste Feed Receipt Process System	CRP:	Cesium Resin Addition Process System
FEP:	Waste Feed Evaporation Process System	TXP:	Technetium Ion Exchange Process System
UFP:	Ultrafiltration Process System	TRP:	Technetium Resin Addition Process System
CXP:	Cesium Ion Exchange Process System	RDP:	Spent Resin Collection and Dewatering Process System
CNP:	Cesium Nitric Acid Recovery Process System	HLP:	HLW Lag Storage and Blending Process System
TLP:	Treated LAW Evaporation Process System	TCP:	Treated LAW Concentrate Storage Process System
TEP:	Technetium Eluant Recovery Process System		

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Figure 4A-3 Primary LAW Vitrification Systems

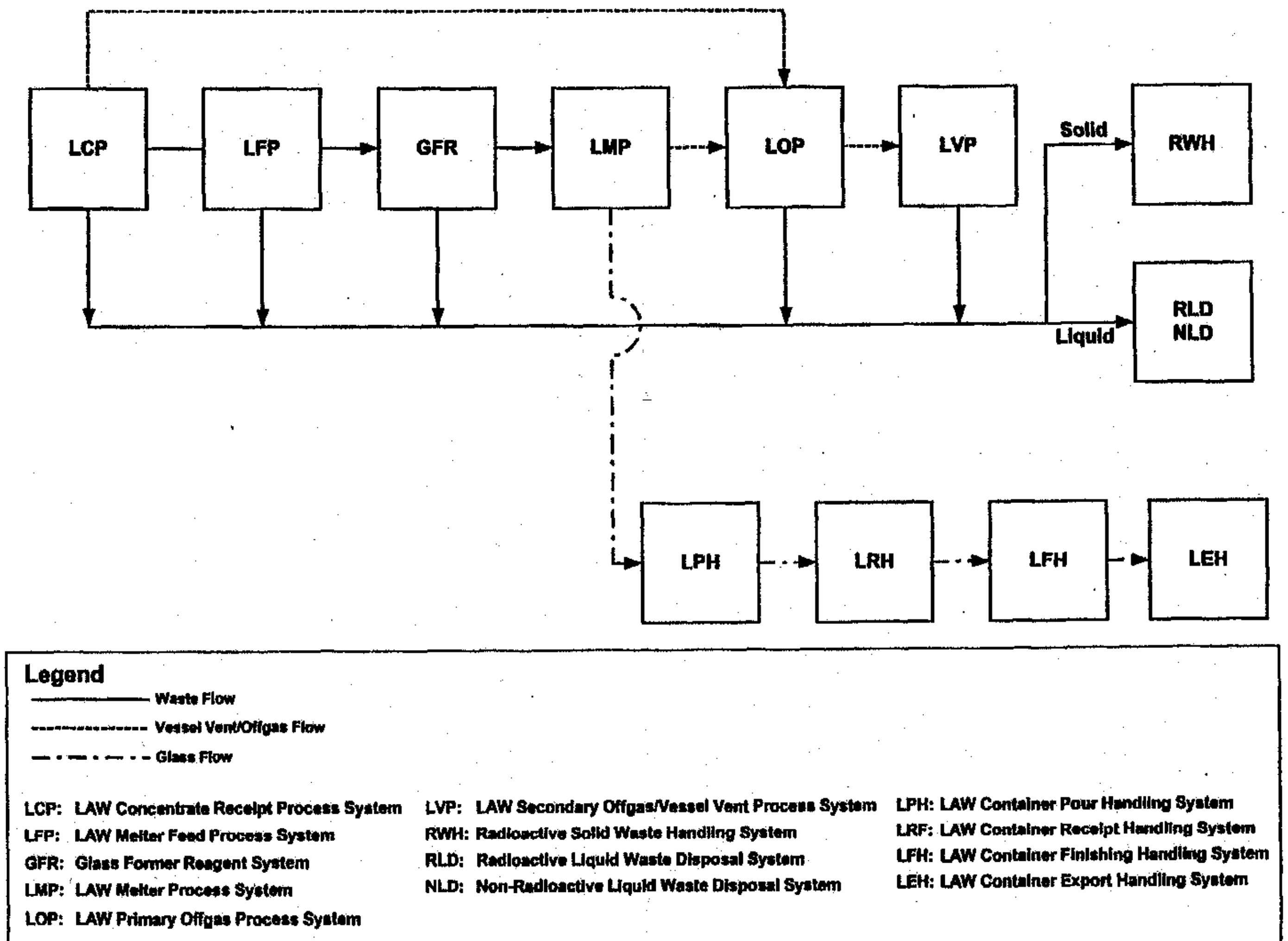
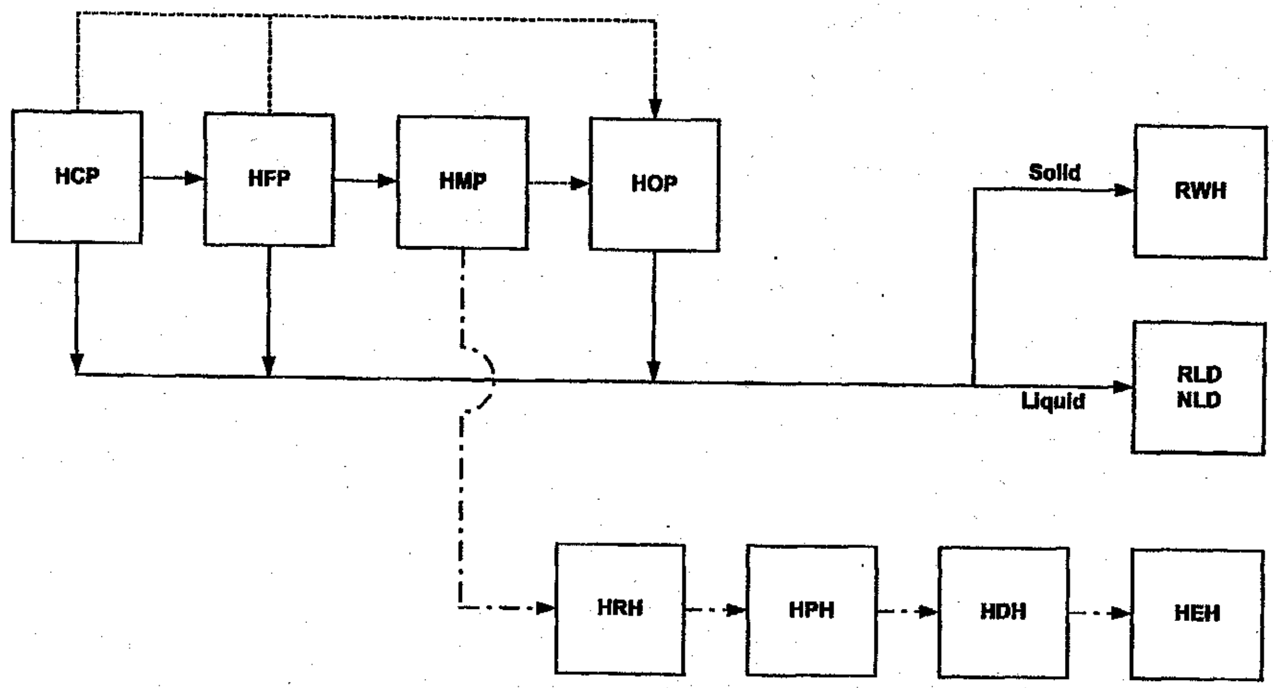


Figure 4A-4 Primary HLW Vitrification Systems



Legend

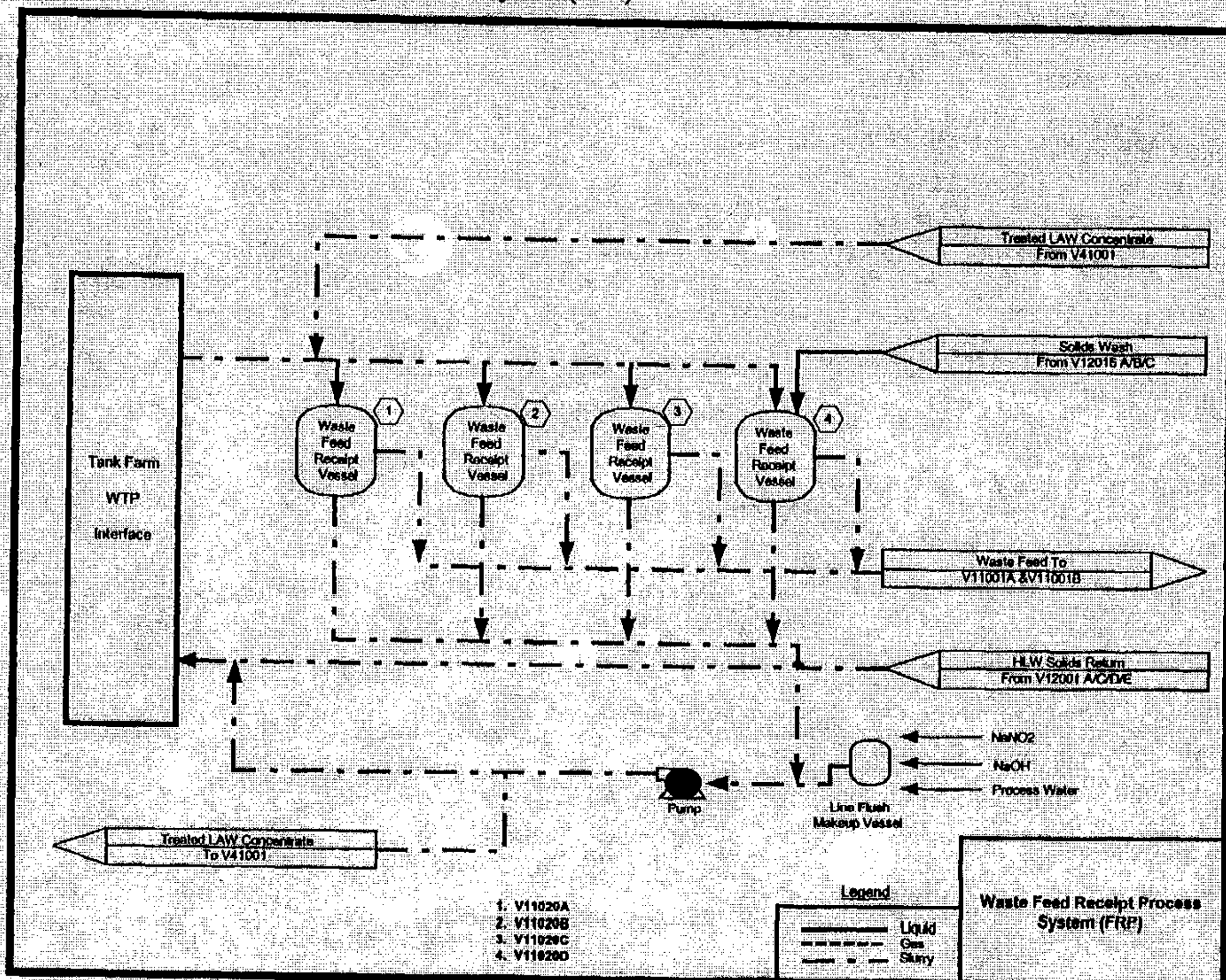
Waste Flow

Vessel Vent/Offgas Flow

Glass Flow

HCP: HLW Cave Receipt Process System
HFP: HLW Melter Feed Process System
HMP: HLW Melter Process System
HOP: HLW Melter Offgas Treatment Process System
RWH: Radioactive Solid Waste Handling System
RLD: Radioactive Liquid Waste Disposal System
NLD: Non-Radioactive Liquid Waste Disposal System
HRH: HLW Canister Receipt Handing System
HPH: HLW Canister Pour Handling System
HEH: HLW Canister Export Handling System
HDH: HLW Canister Decontamination Handling System

Figure 4A-5 Waste Feed Receipt Process System (FRP)



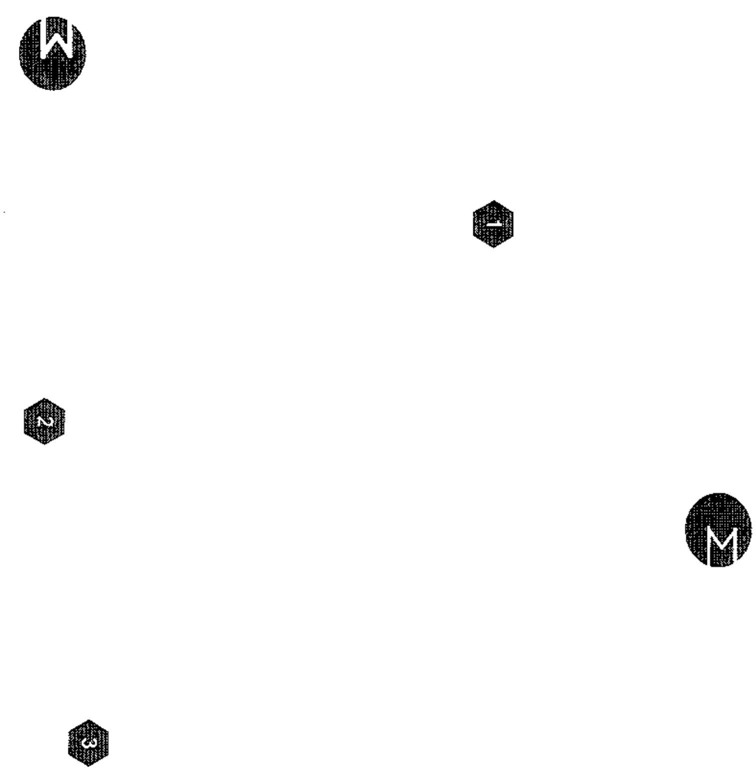
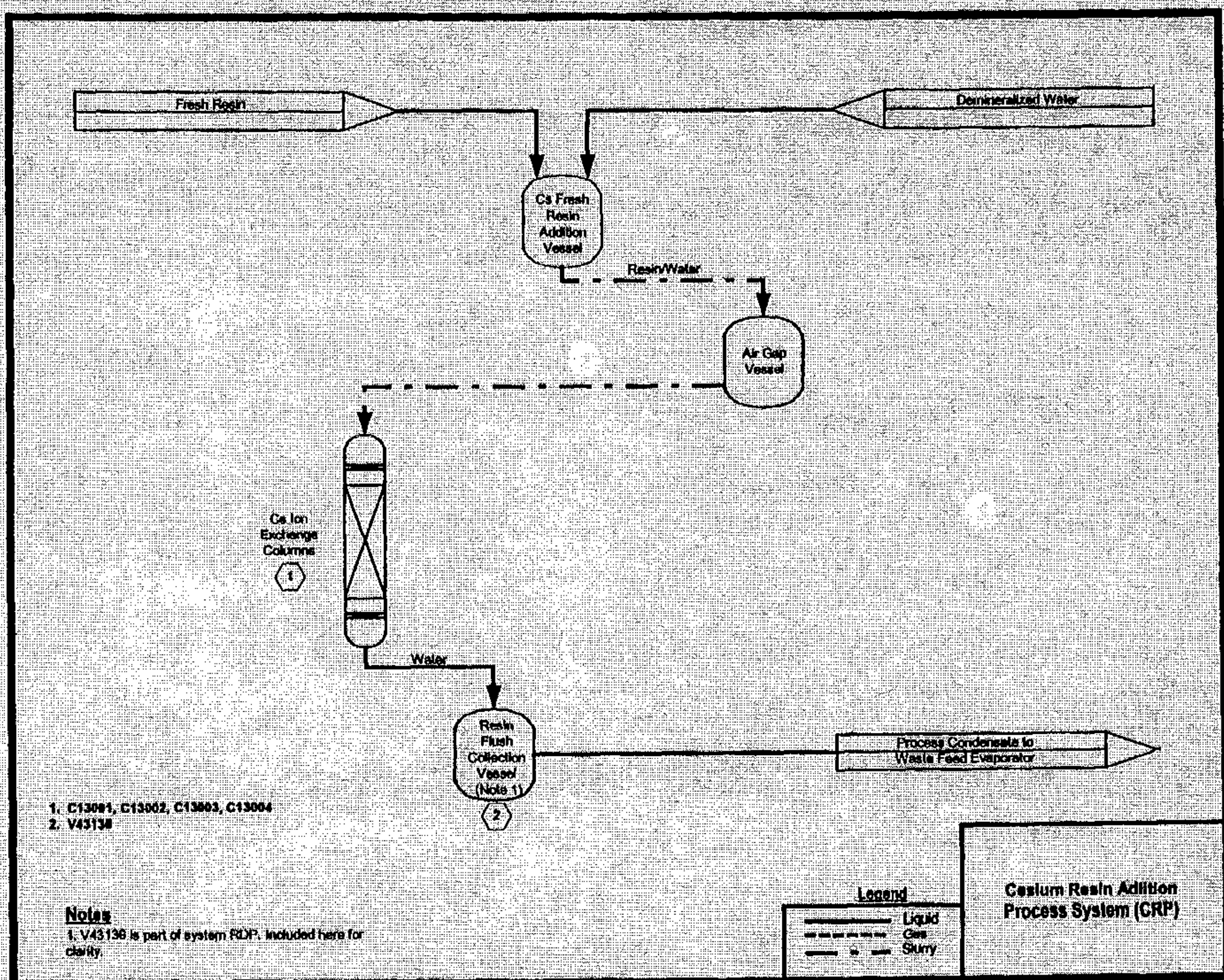


Figure 4A-11 Cesium Resin Addition Process System (CRP)



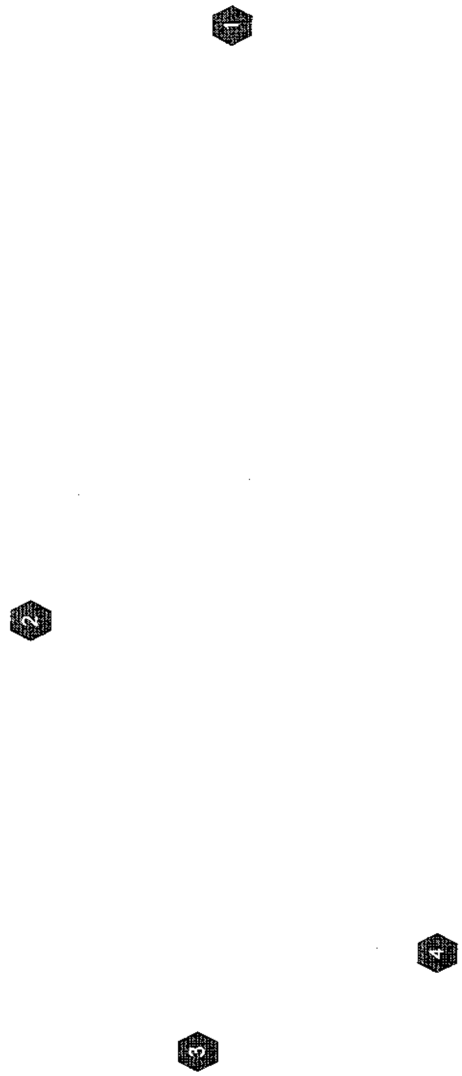

1
2
4
3

Figure 4A-13 Technetium Eluant Recovery Process System (TEP)

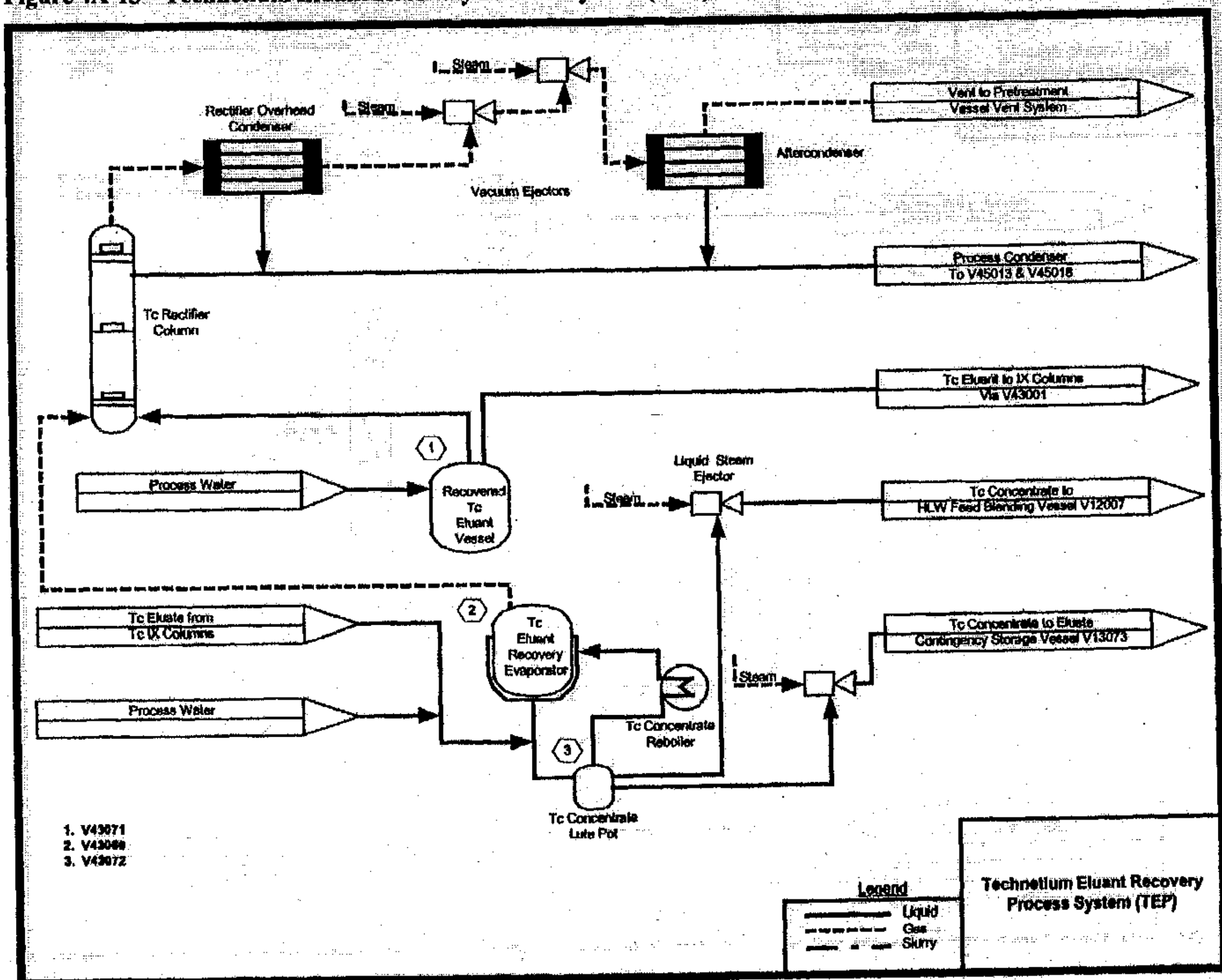


Figure 4A-14 Technetium Resin Addition Process System (TRP)

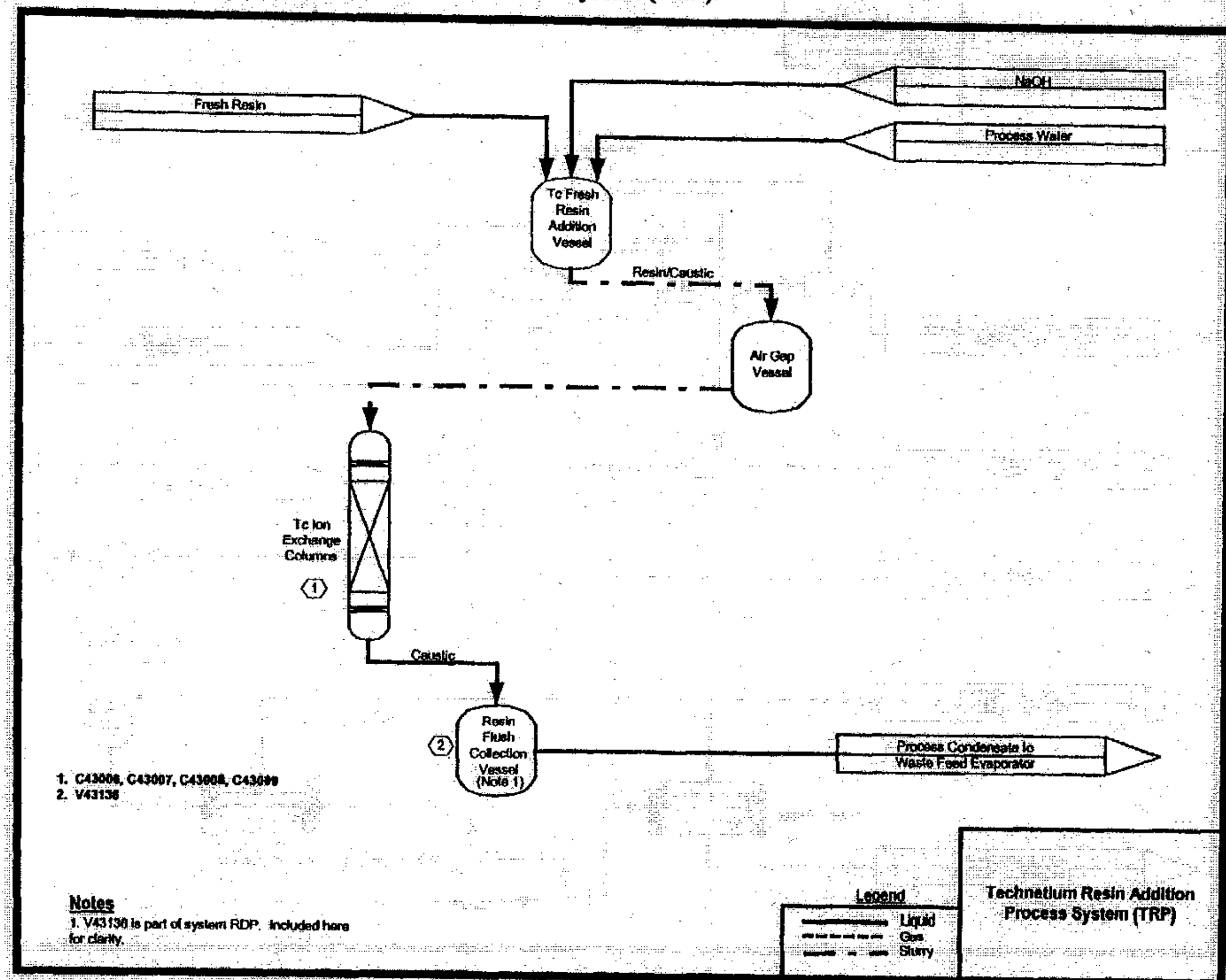


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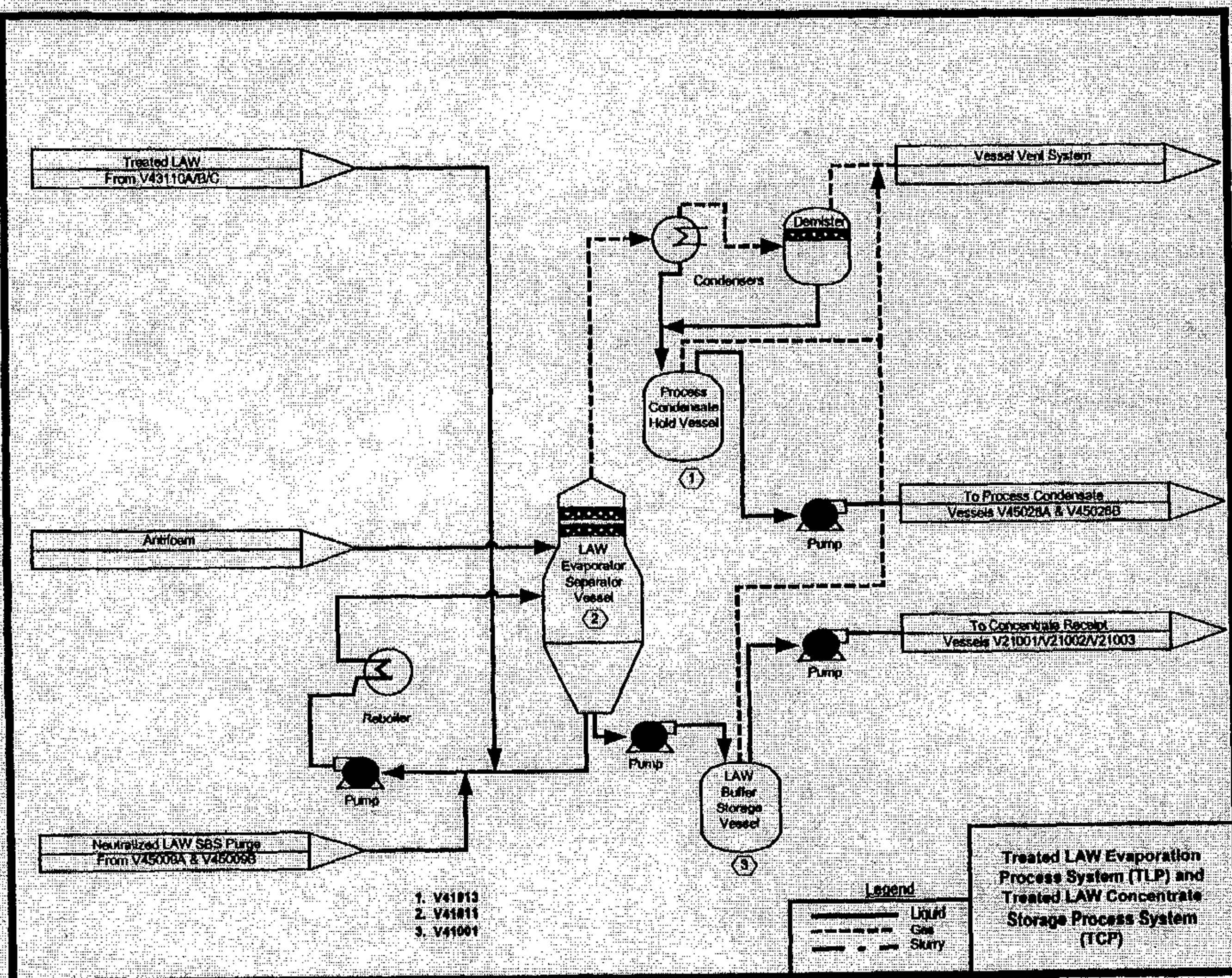
Figure 4A-16 Treated LAW Evaporation Process System (TLP) and Treated LAW Concentrate Storage Process System (TCP)



1

2

Figure 4A-18 Pretreatment Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)

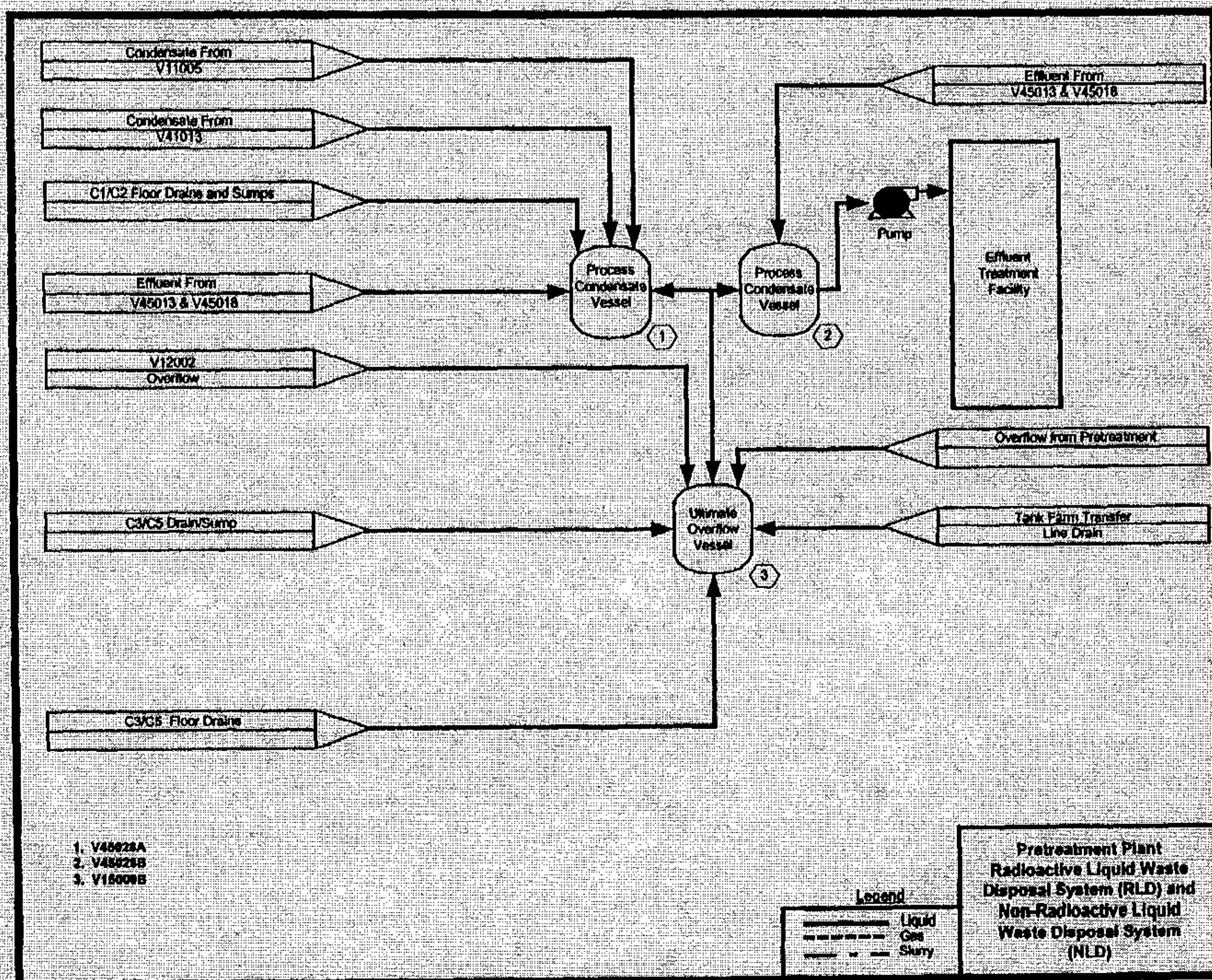
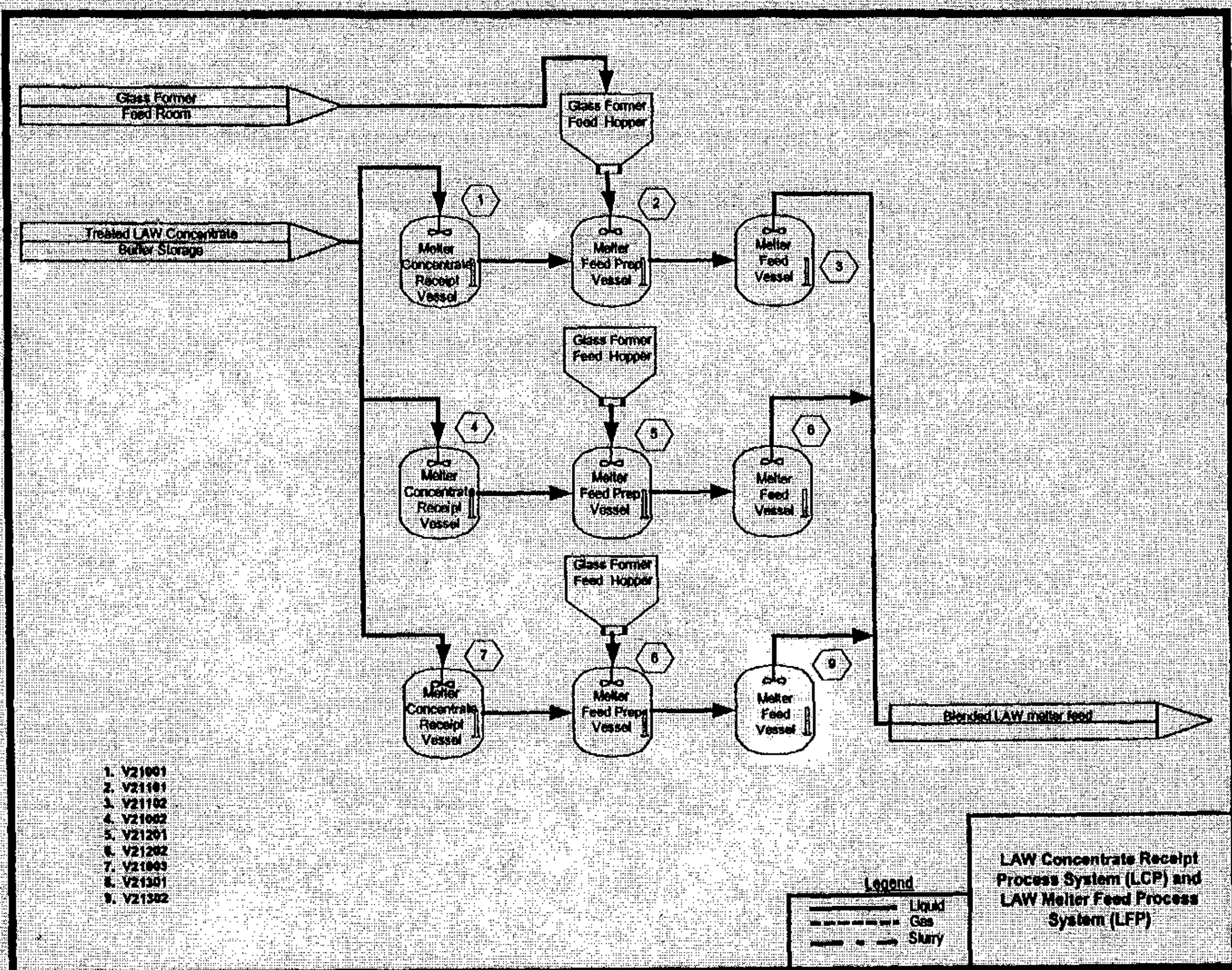


Figure 4A-20 LAW Concentrate Receipt Process System (LCP) and LAW Melter Feed Process System (LFP)



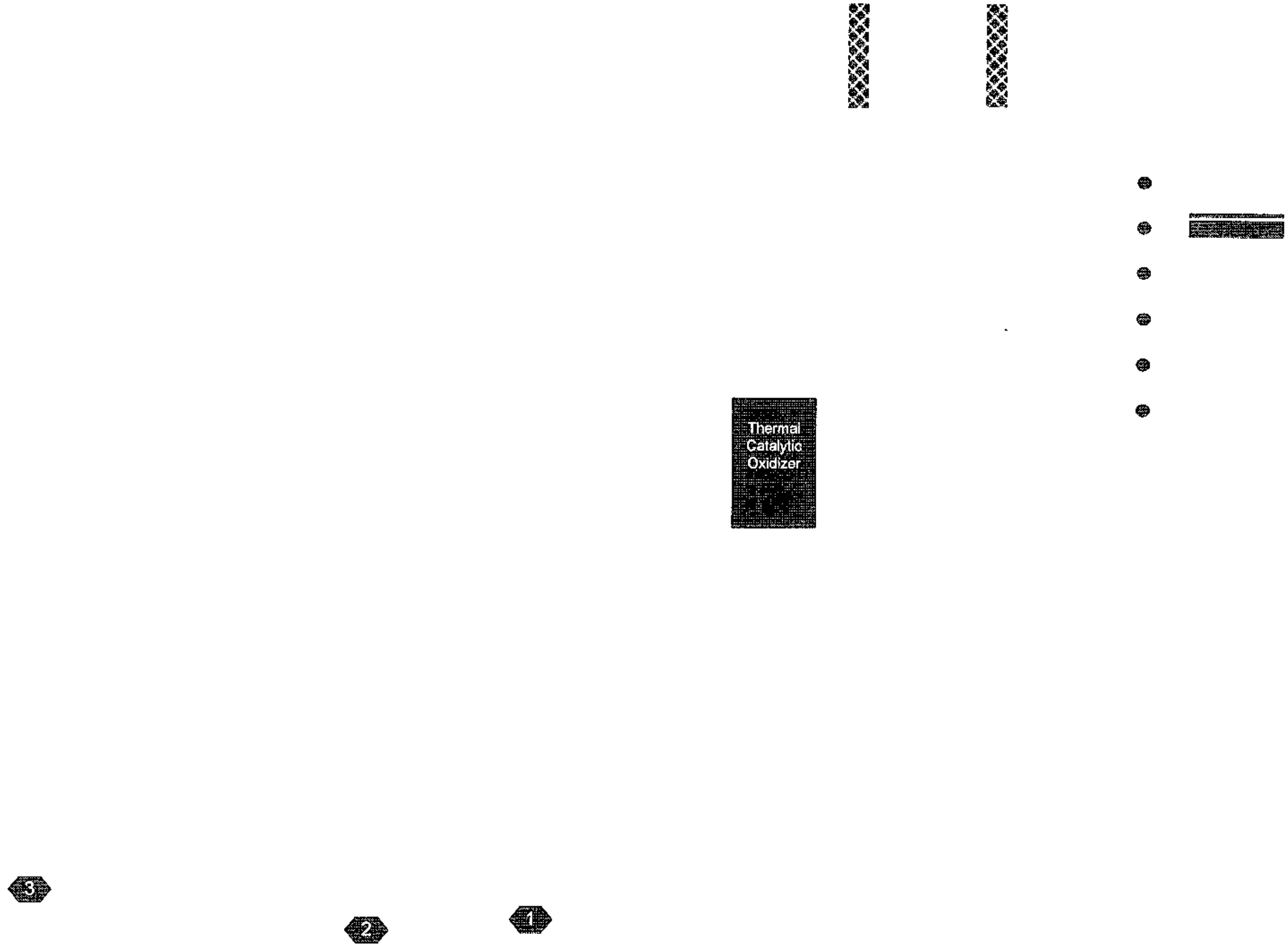

Thermal
Catalytic
Oxidizer
3
2
1

Figure 4A-24 LAW Container Finishing Handling System (LFH)

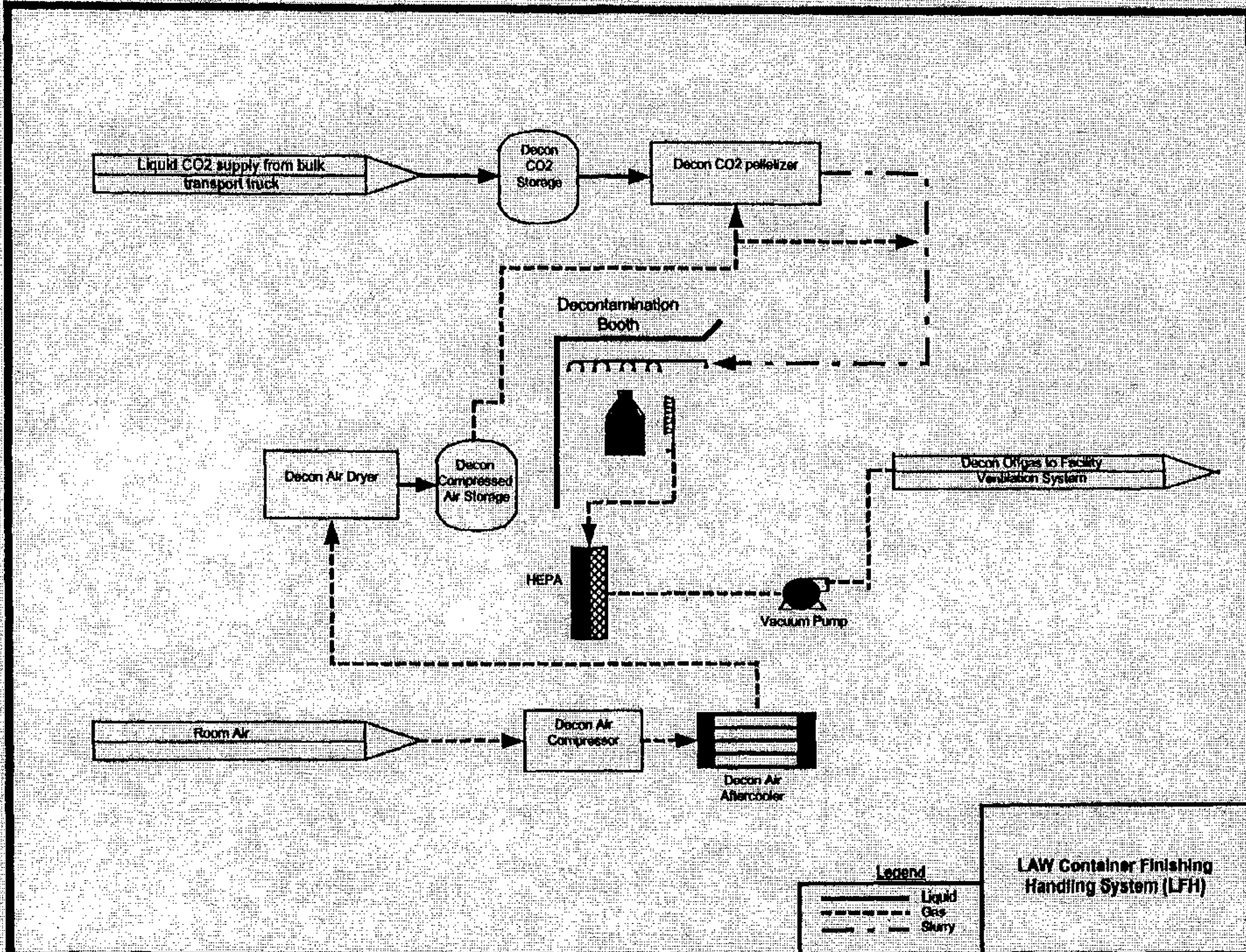


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Figure 4A-25 LAW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)

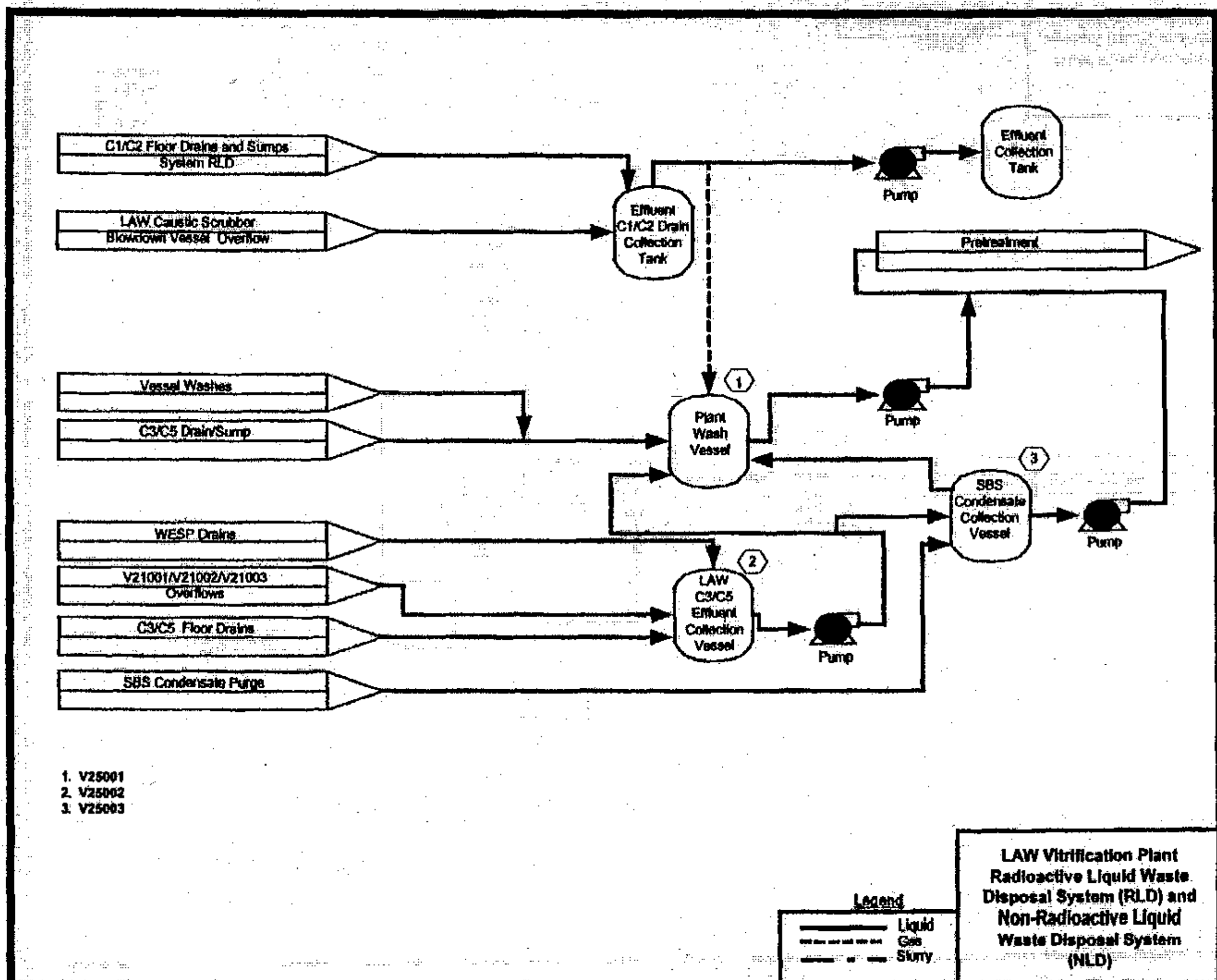


Figure 4A-26 HLW Cave Receipt Process System (HCP) and HLW Melter Feed Process System (HFP)

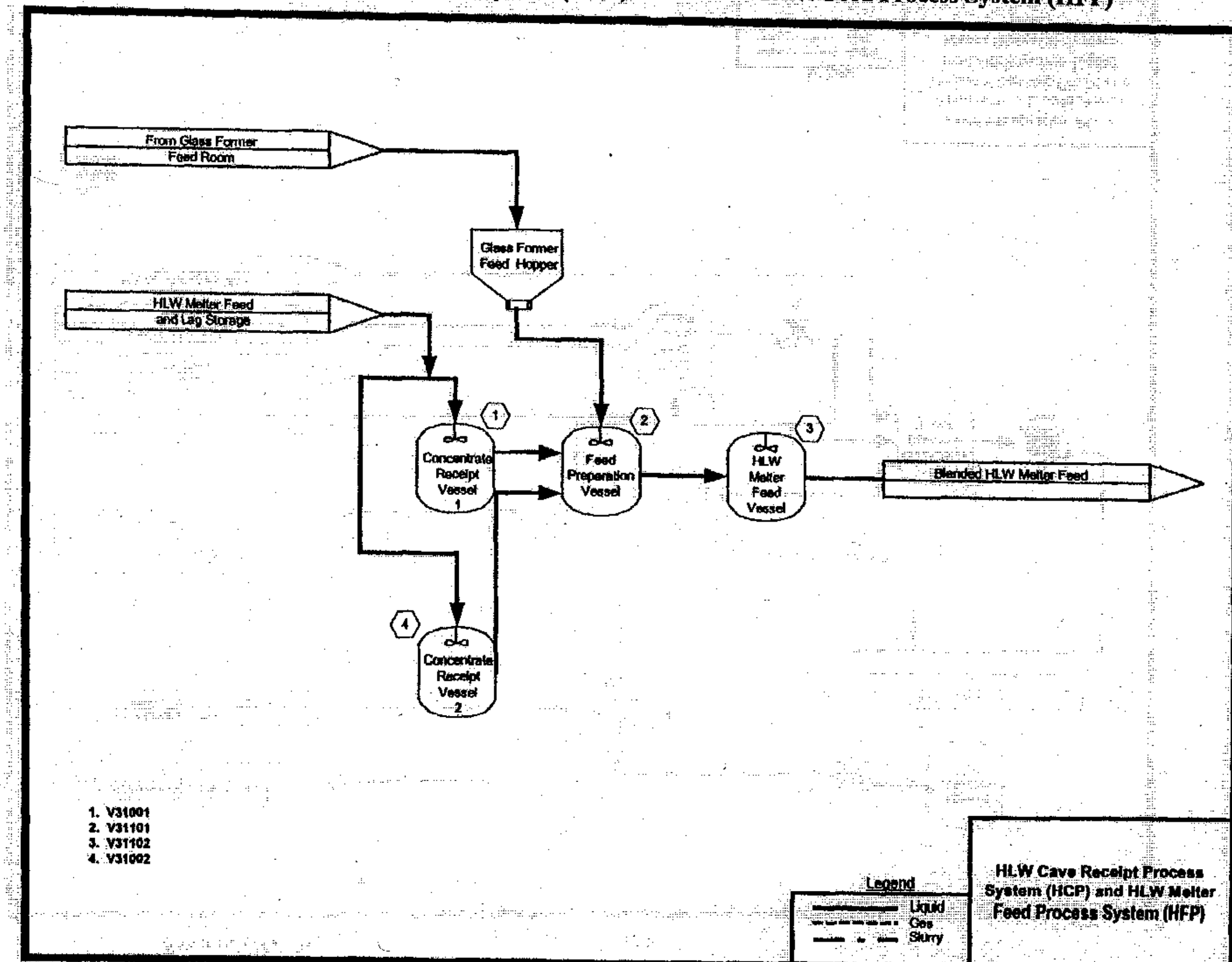


Figure 4A-27 HLW Melter Process System (HMP)

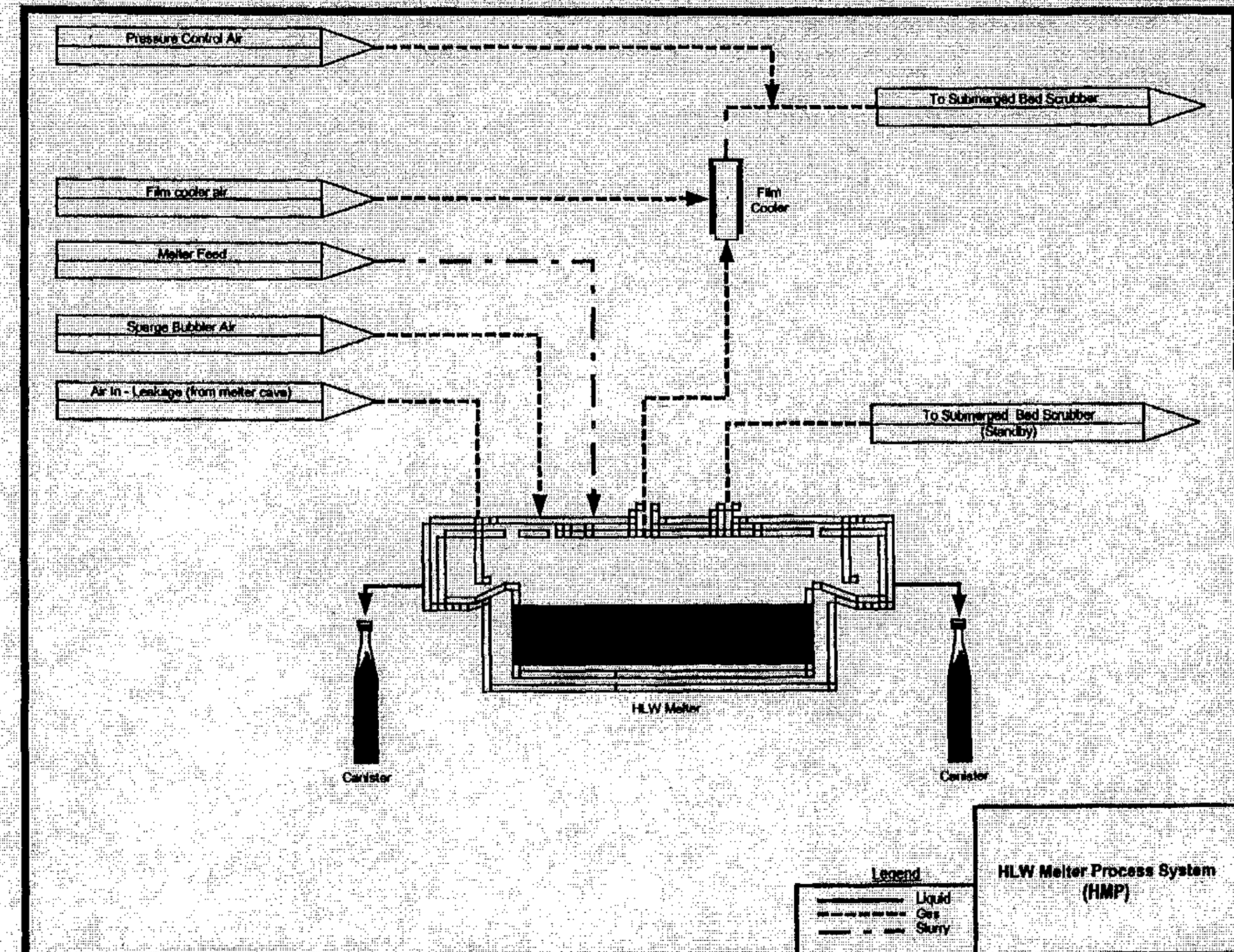


Figure 4A-29 Melter Offgas Treatment Process System (HOP) Secondary System

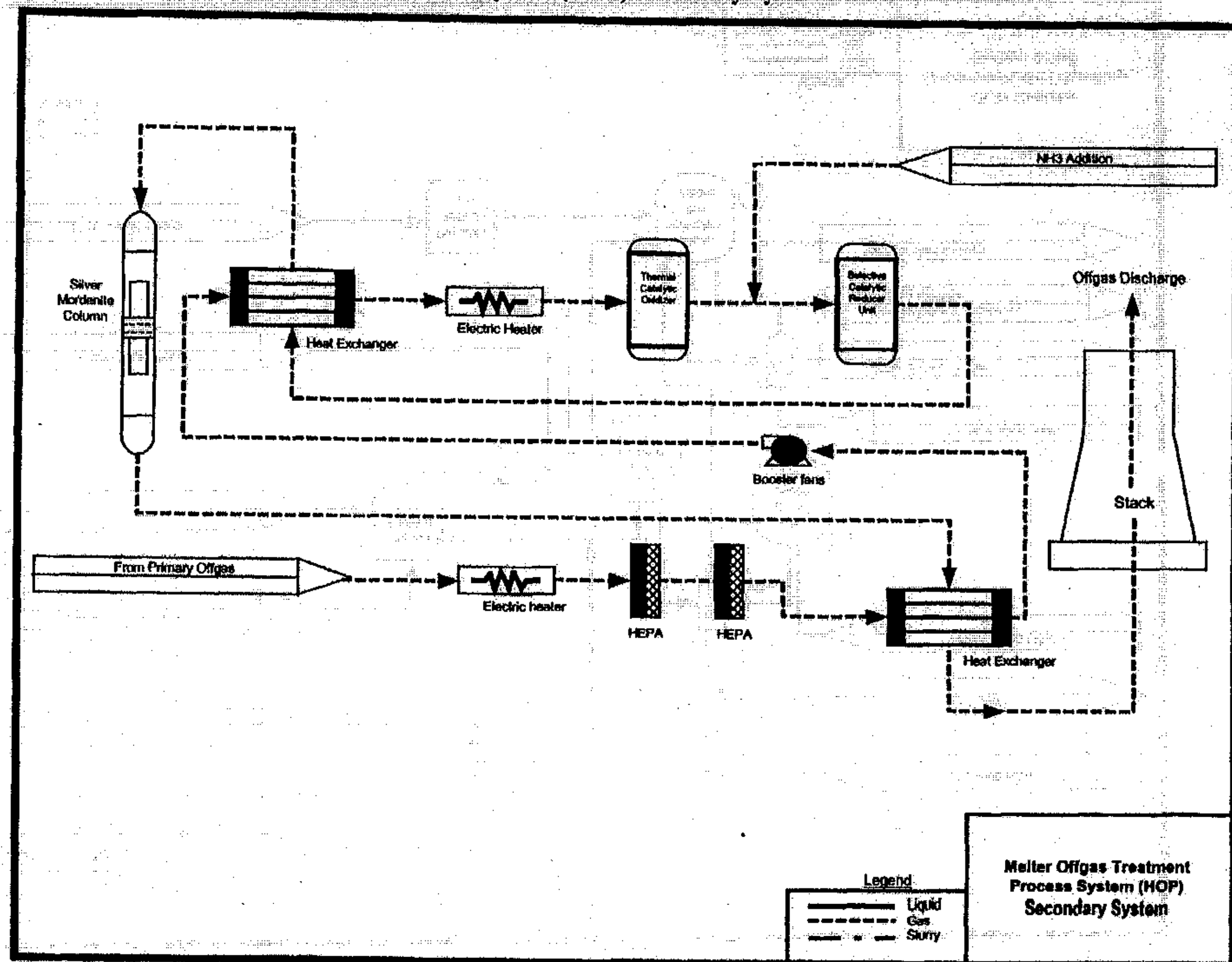


Figure 4A-30 HLW Canister Decontamination Handling System (HDH)

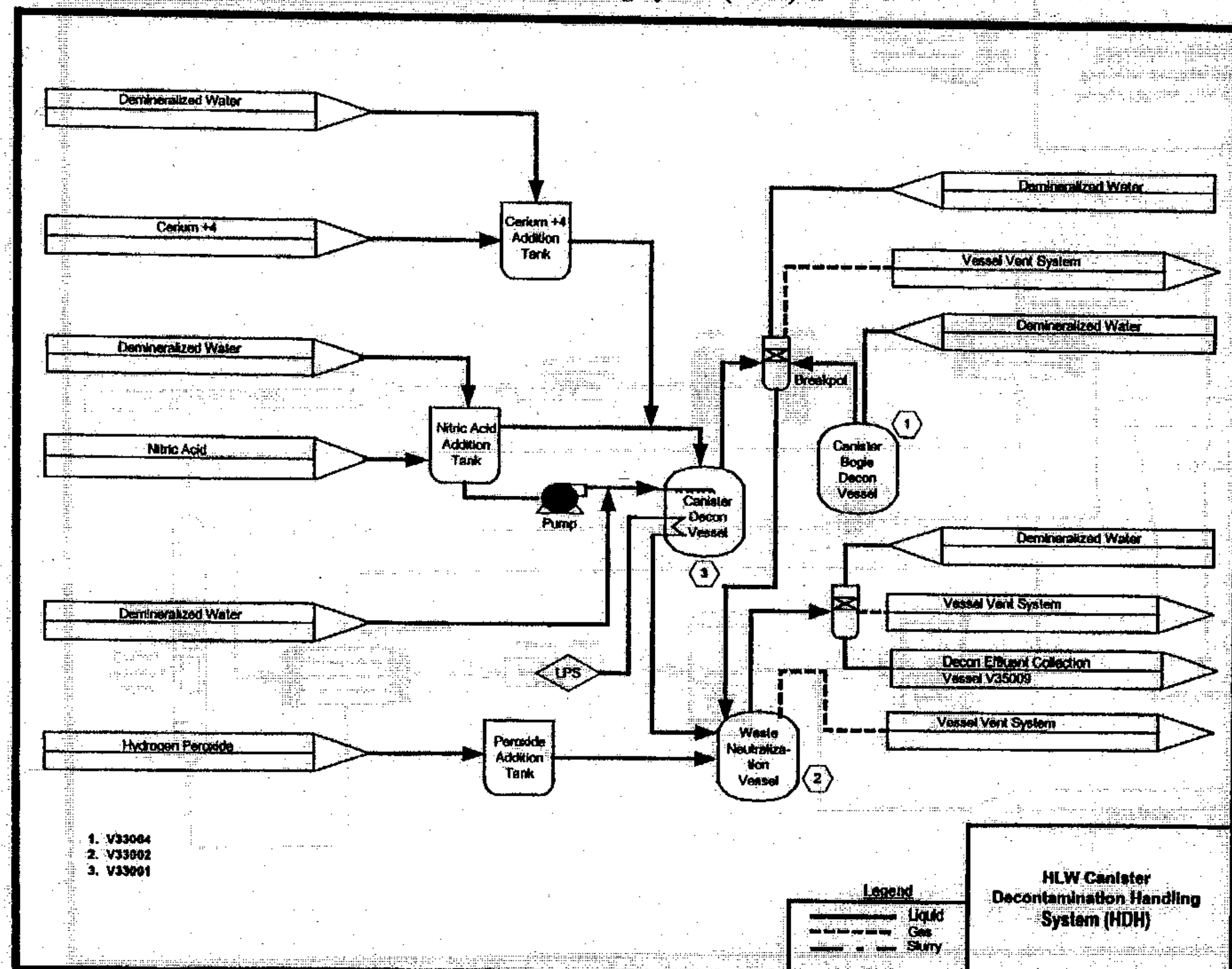


Figure 4A-31 HLW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)

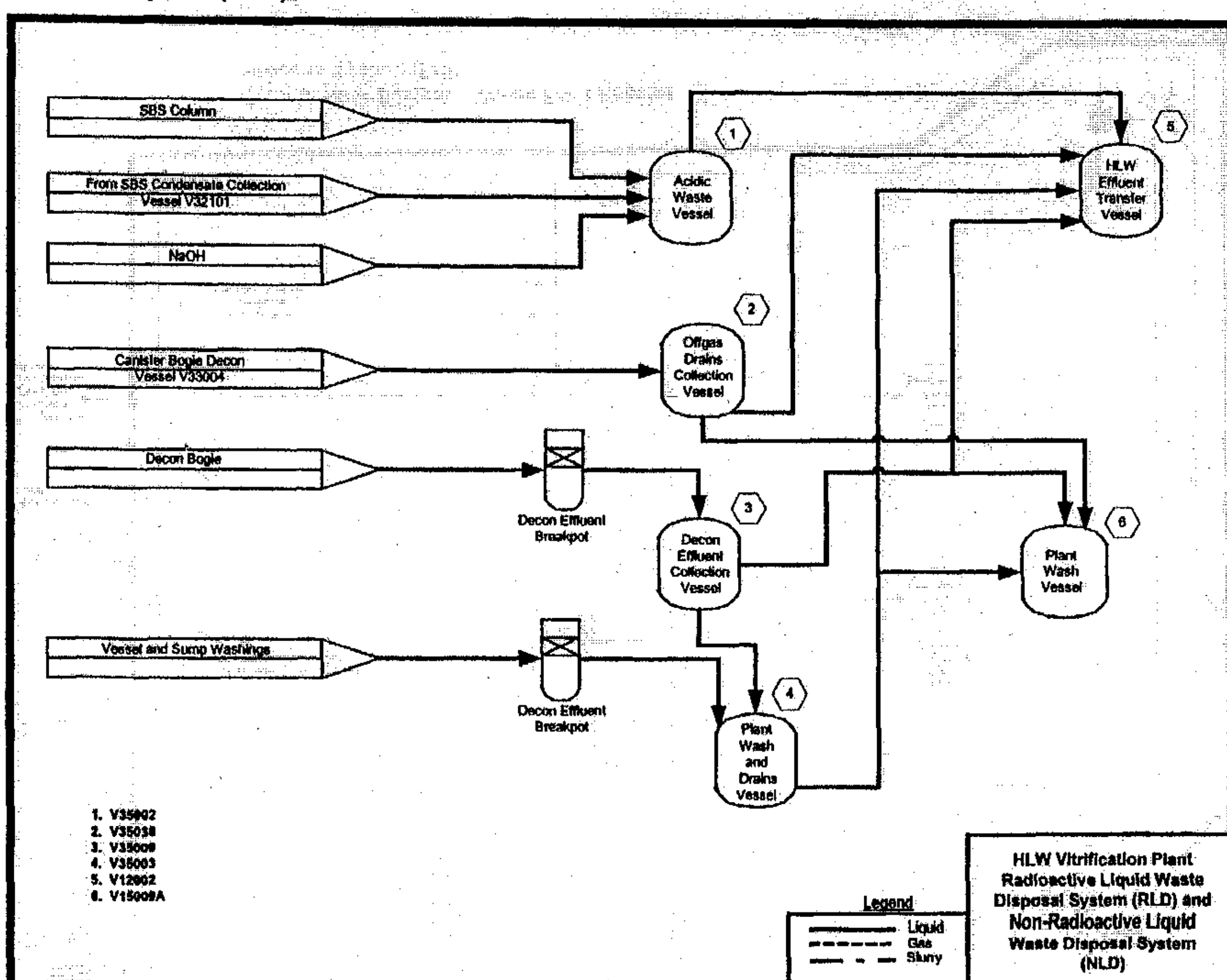


Figure 4A-32 Typical Tank System – Waste Feed Receipt Process System (FRP)

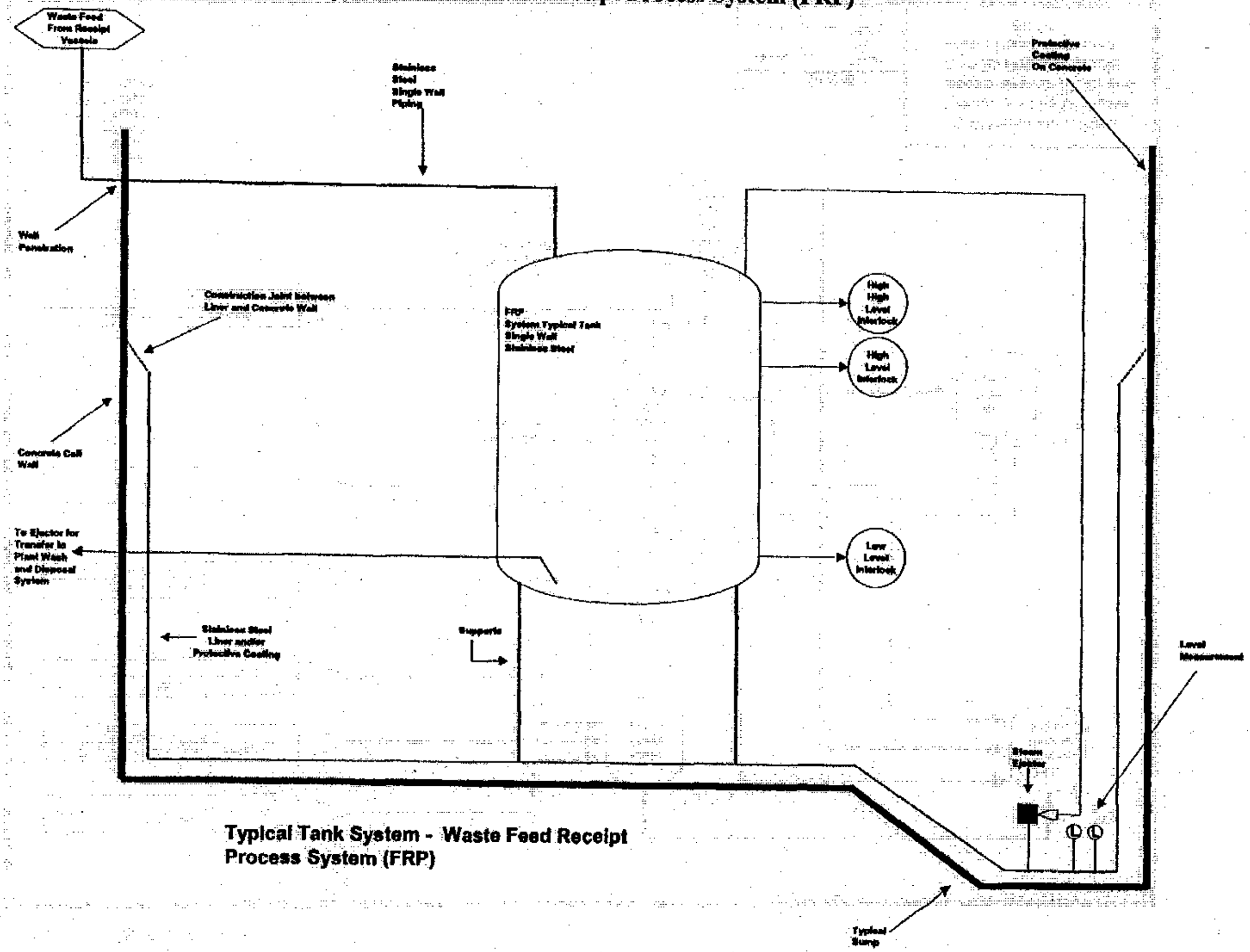


Figure 4A-33 Typical Tank System – Waste Feed Evaporation Process System (FEP)

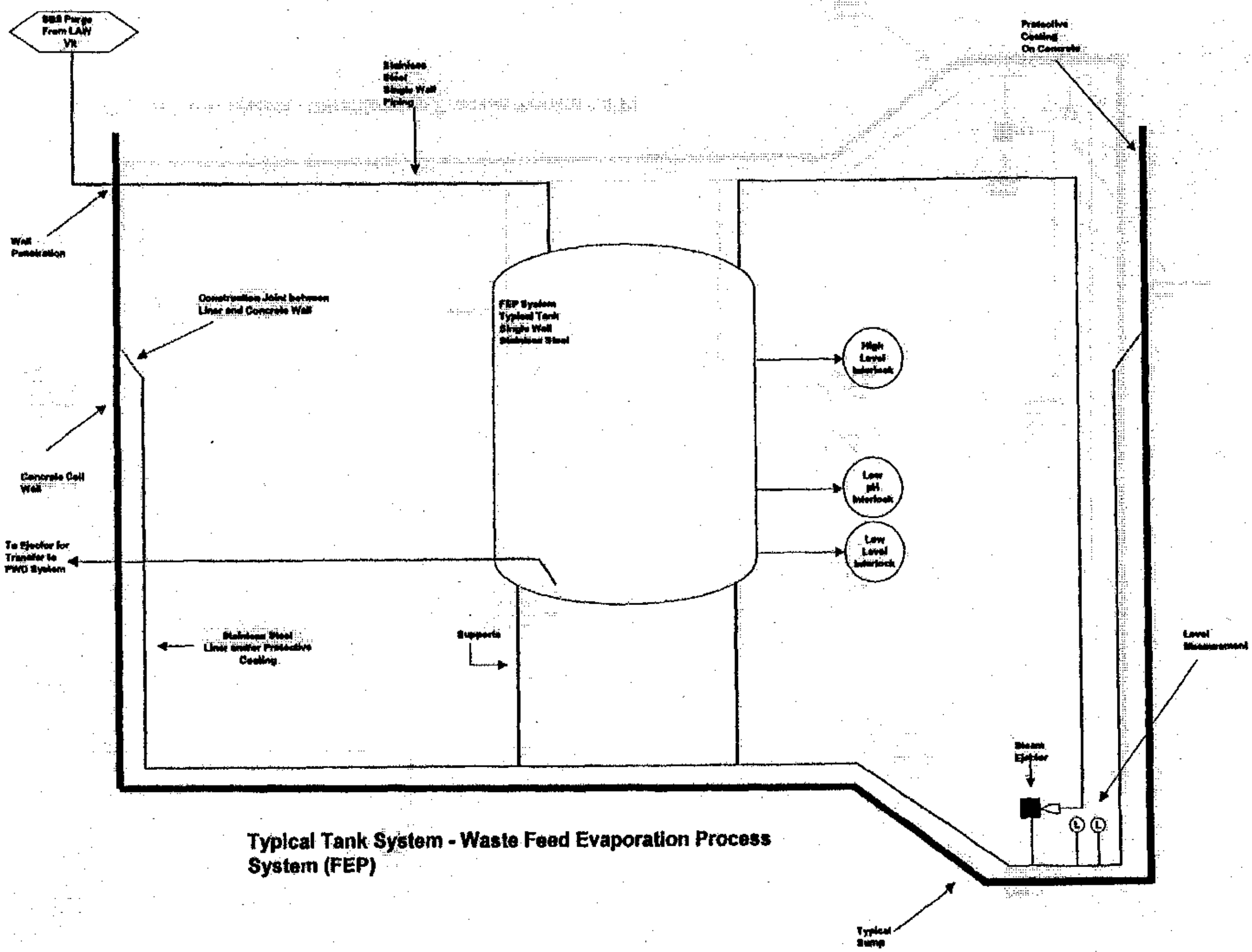
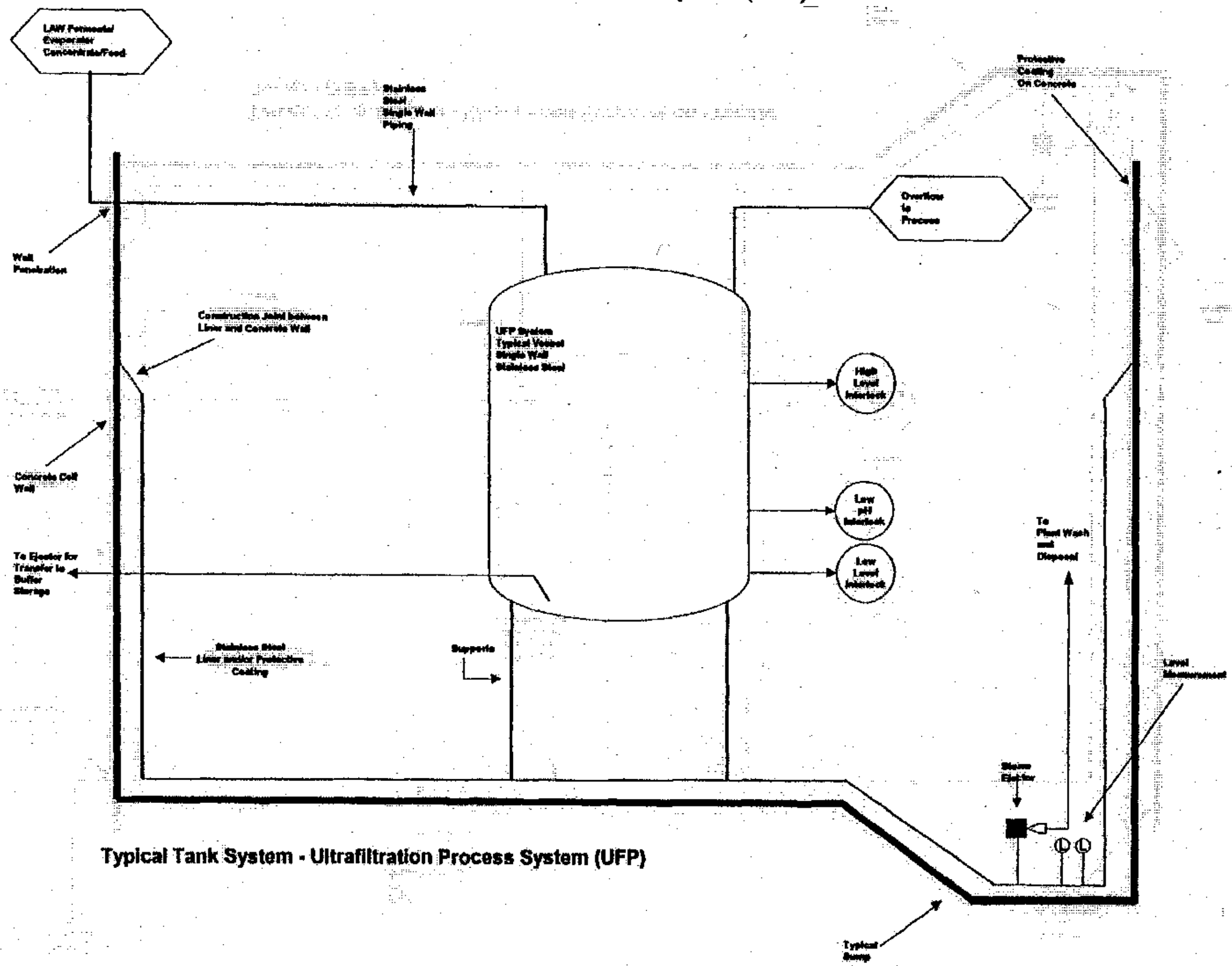
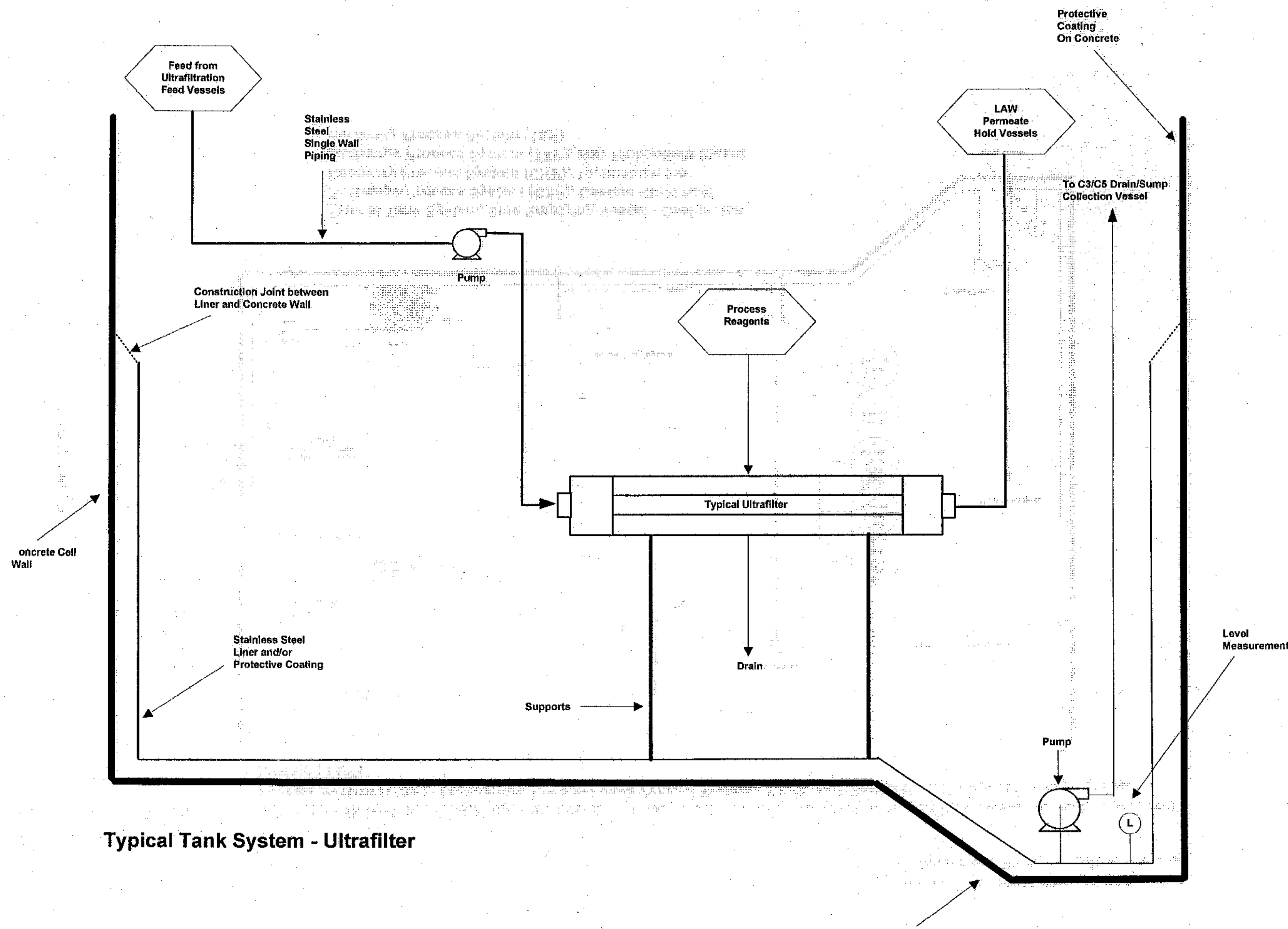


Figure 4A-34 Typical Tank System – Ultrafiltration Process System (UFP)



Typical Tank System - Ultrafiltration Process System (UFP)



Typical Tank System - Ultrafilter

Figure 4A-36 Typical Tank System – Side Emptying Vessel – Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid Recovery Process System (CNP), Technetium Ion Exchange Process System (TXP), and Technetium Eluant Recovery Process System (TEP)

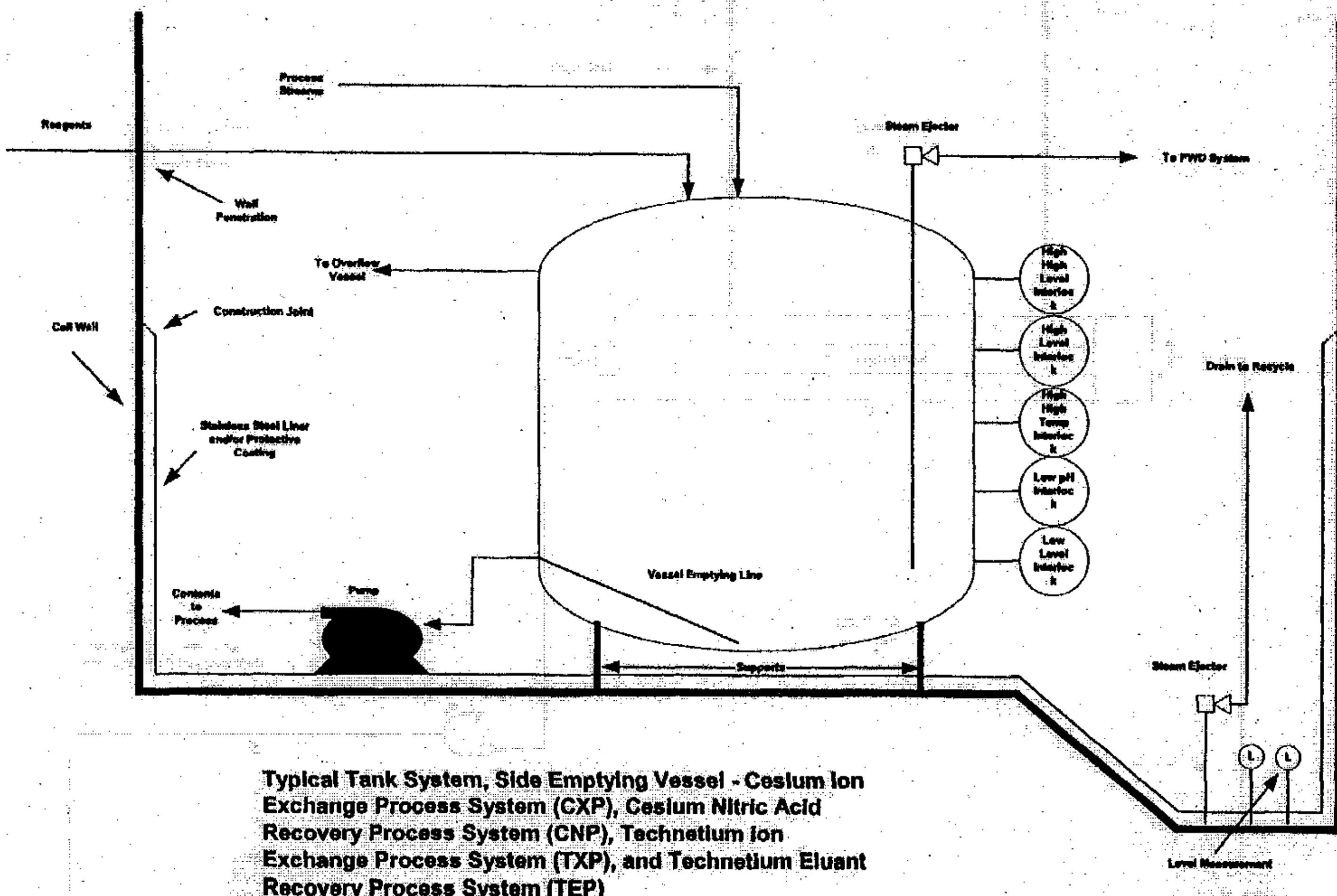
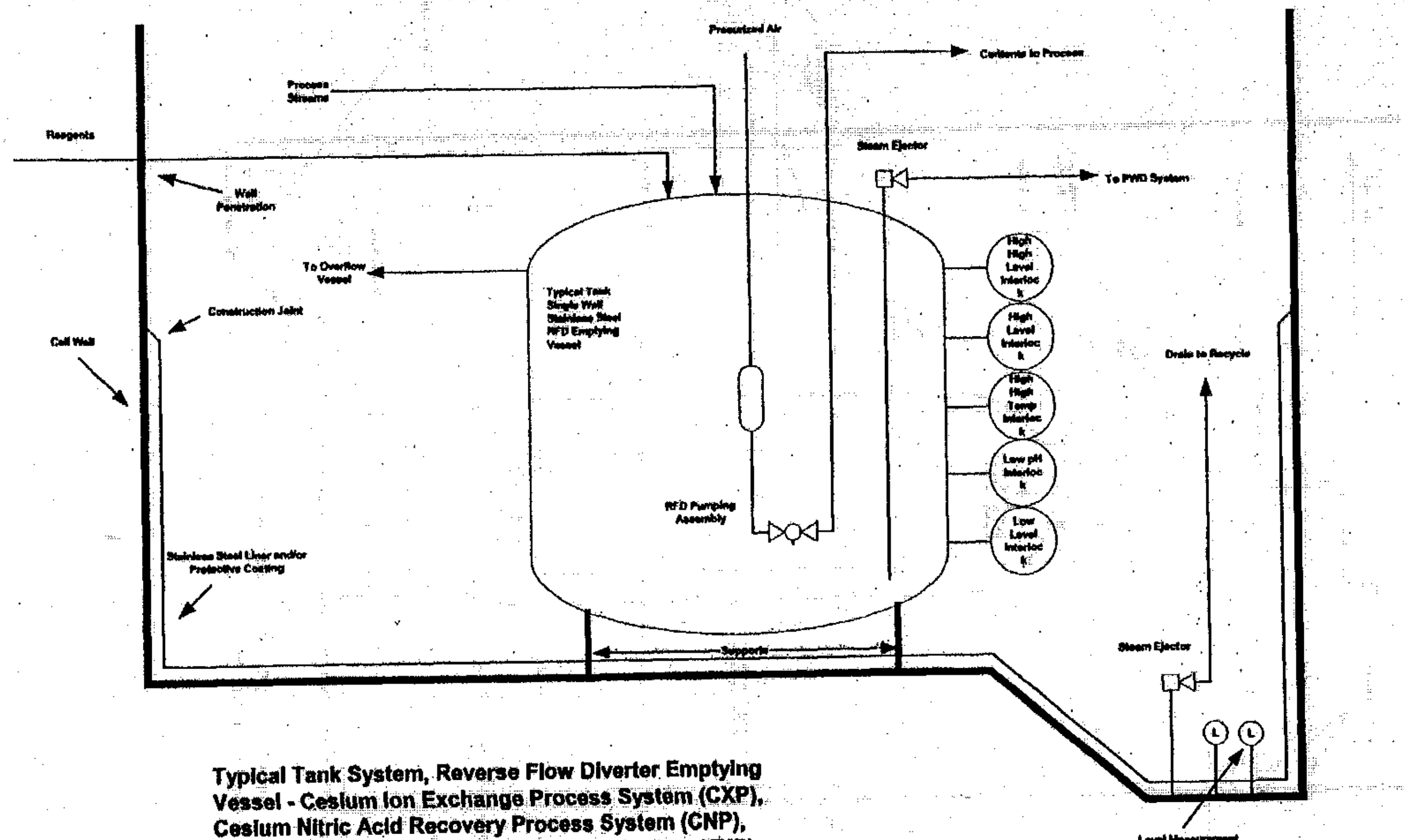
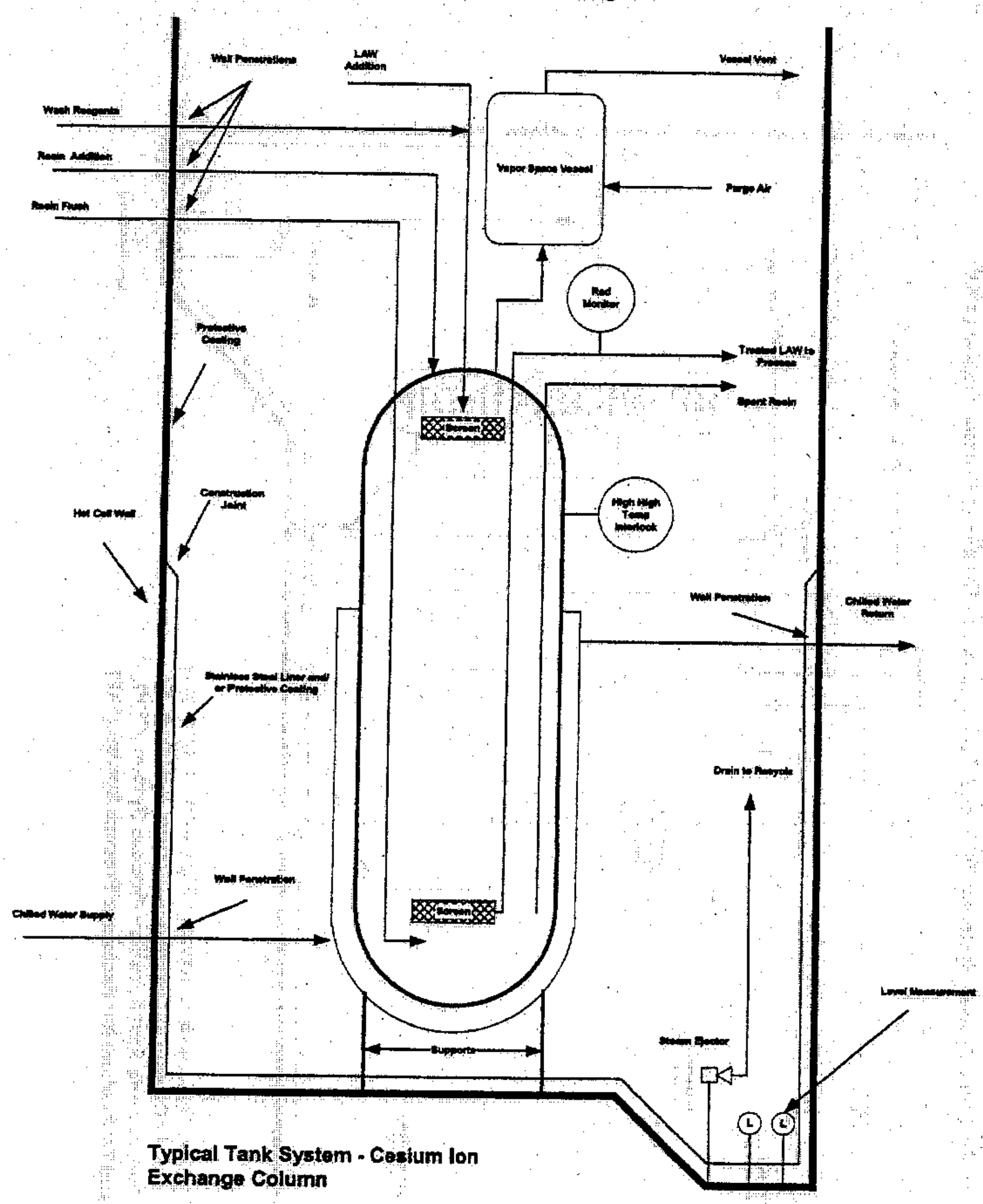


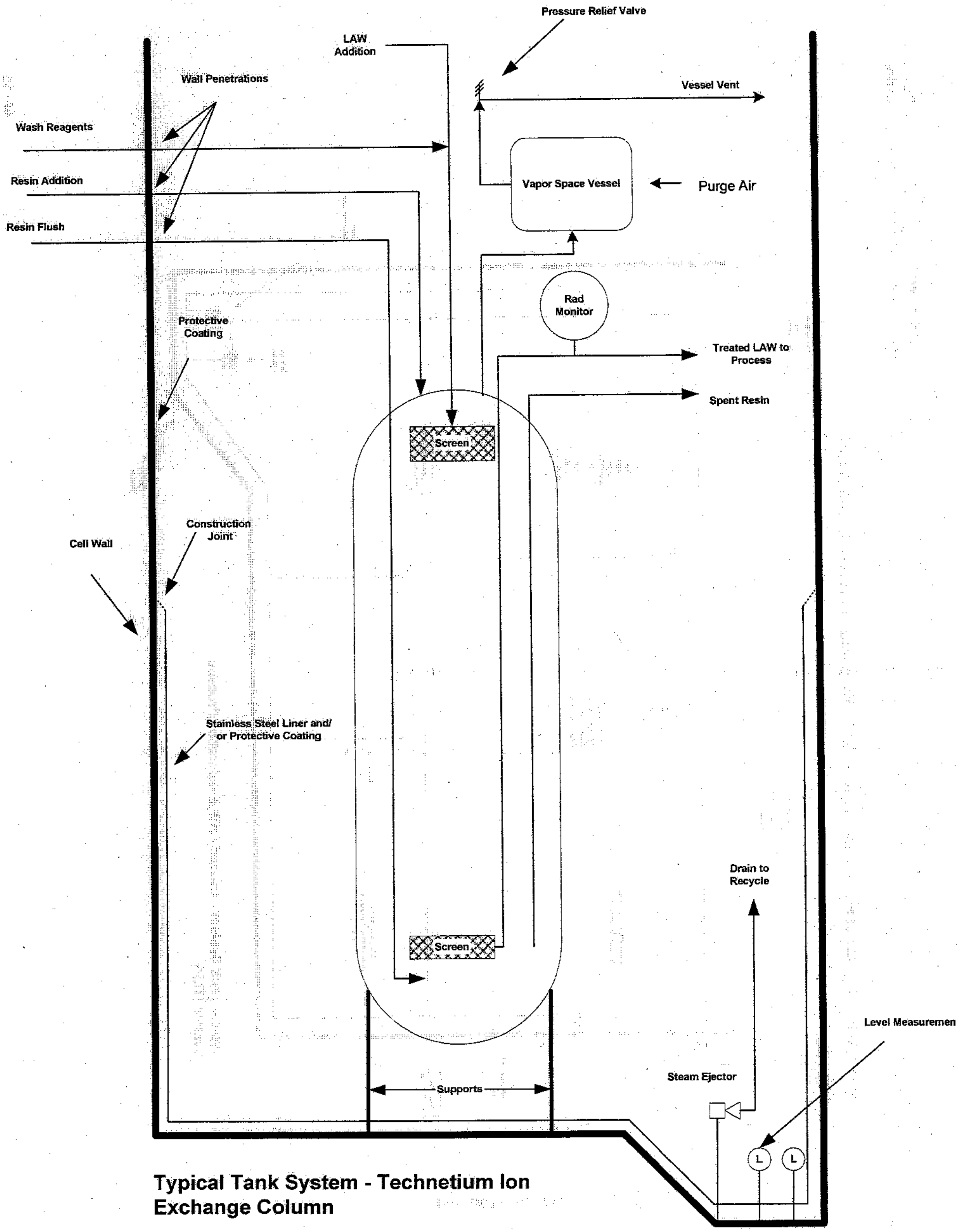
Figure 4A-37 Typical Tank System, Reverse Flow Diverter Emptying Vessel – Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid Recovery Process System (CNP), and Technetium Ion Exchange Process System (TXP)



Typical Tank System, Reverse Flow Diverter Emptying Vessel - Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid Recovery Process System (CNP), and Technetium Ion Exchange Process System (TXP)

Figure 4A-38 Typical Tank System – Cesium Ion Exchange Column





Typical Tank System - Technetium Ion Exchange Column

Figure 4A-40 Typical Tank System – Treated LAW Evaporation Process System (TLP)

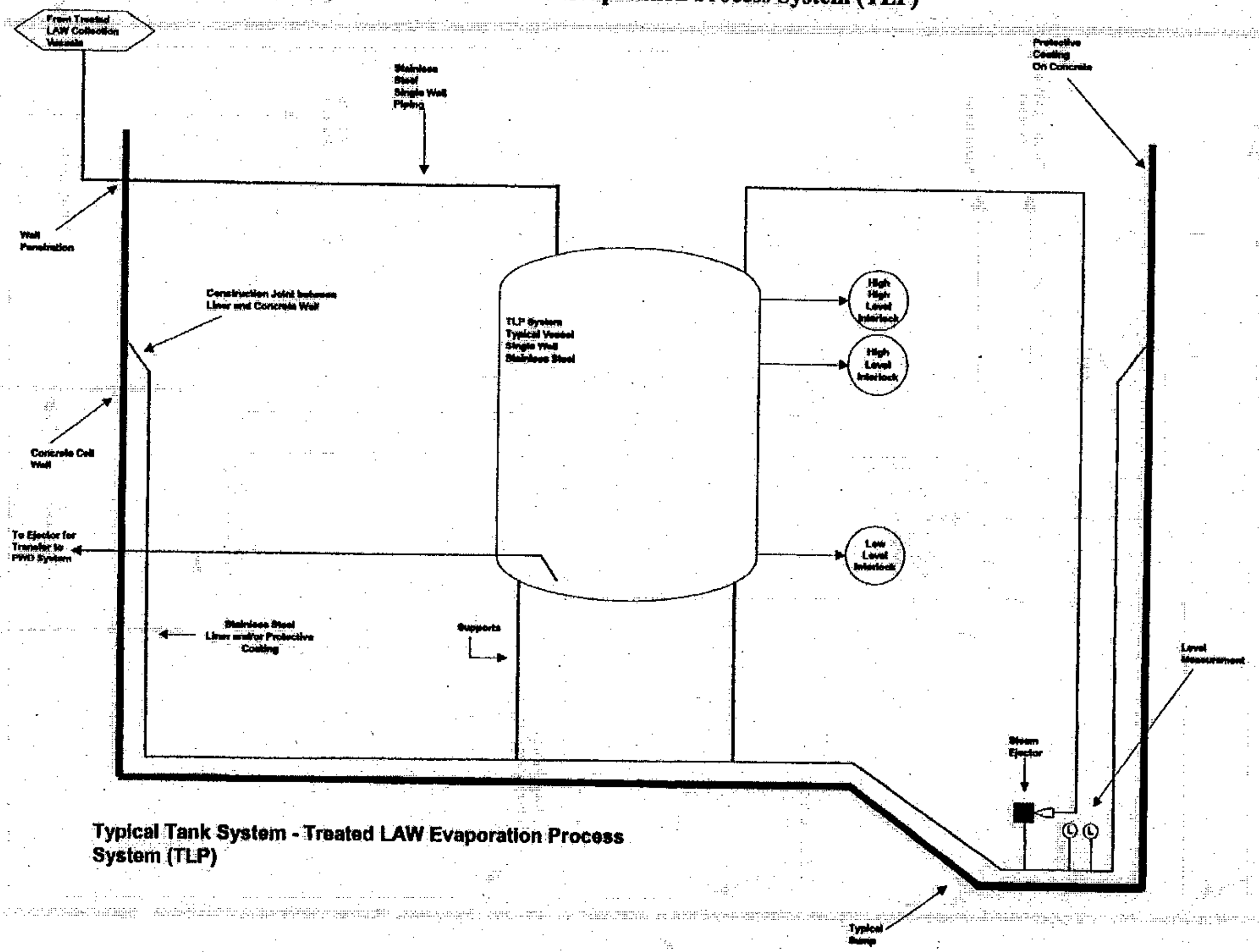


Figure 4A-41 Typical Tank System – Treated LAW Concentrate Storage Process System (TCP)

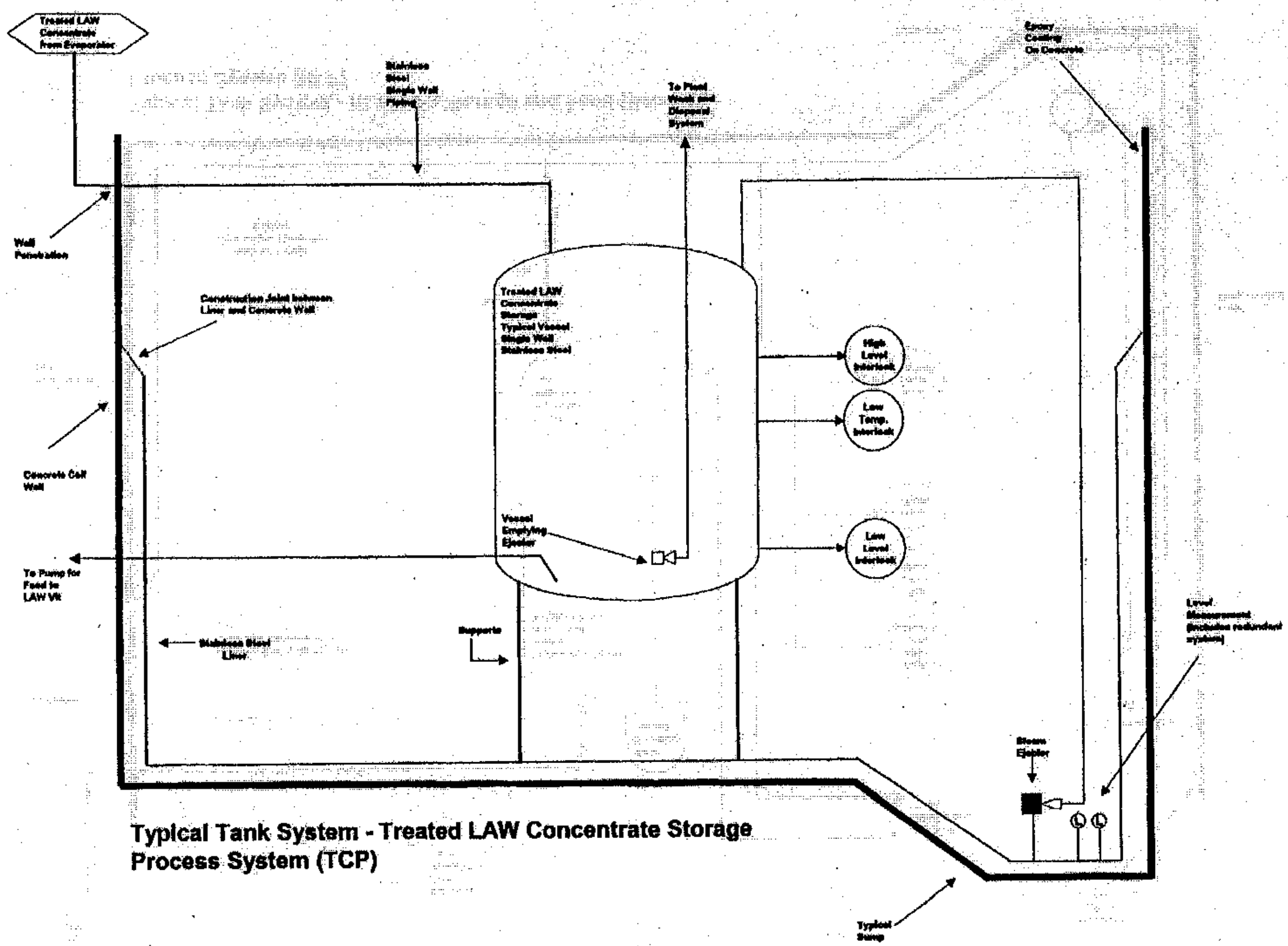


Figure 4A-42 Typical Tank System – HLW Lag Storage and Feed Blending Process System (HLP)

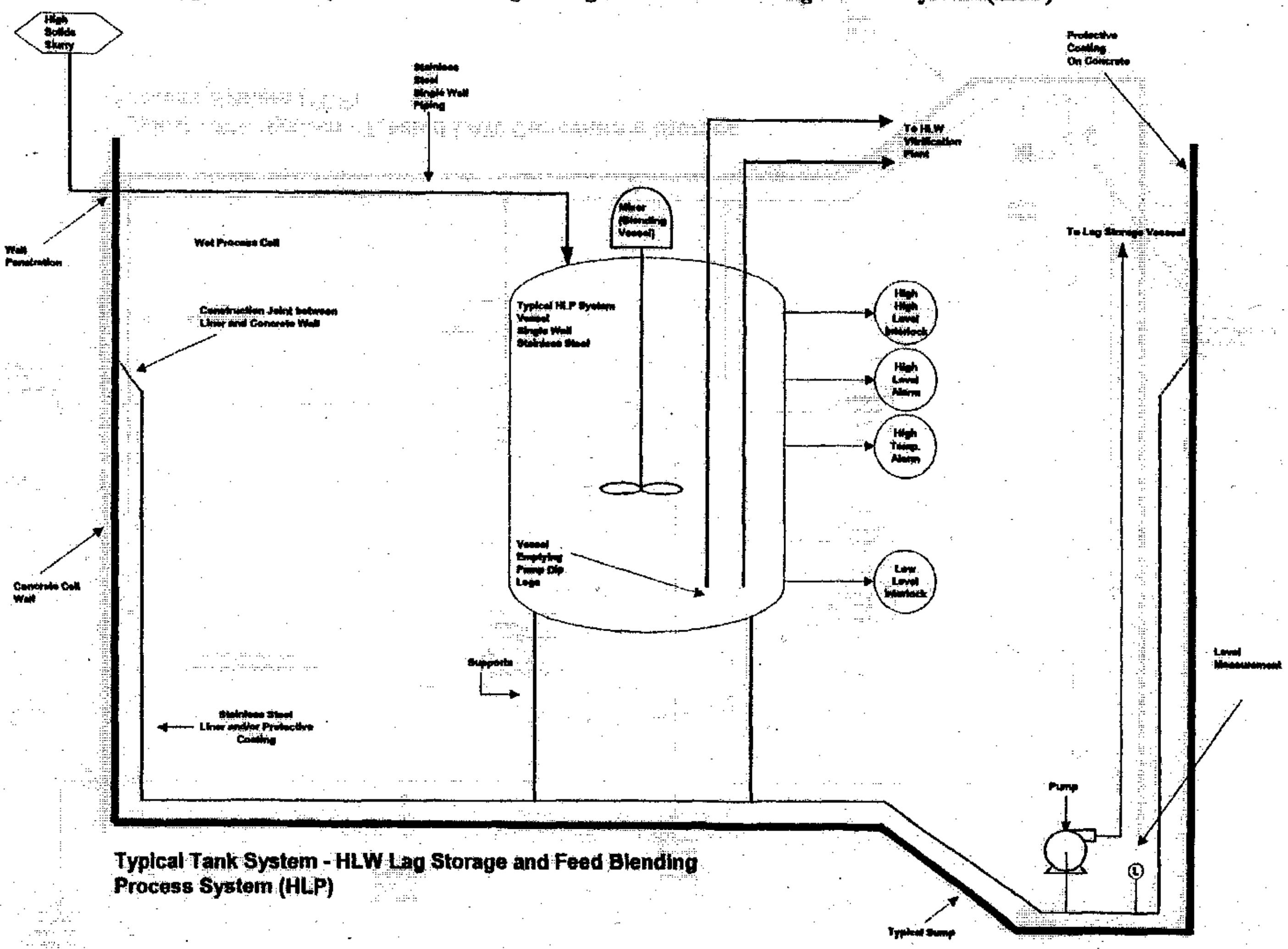
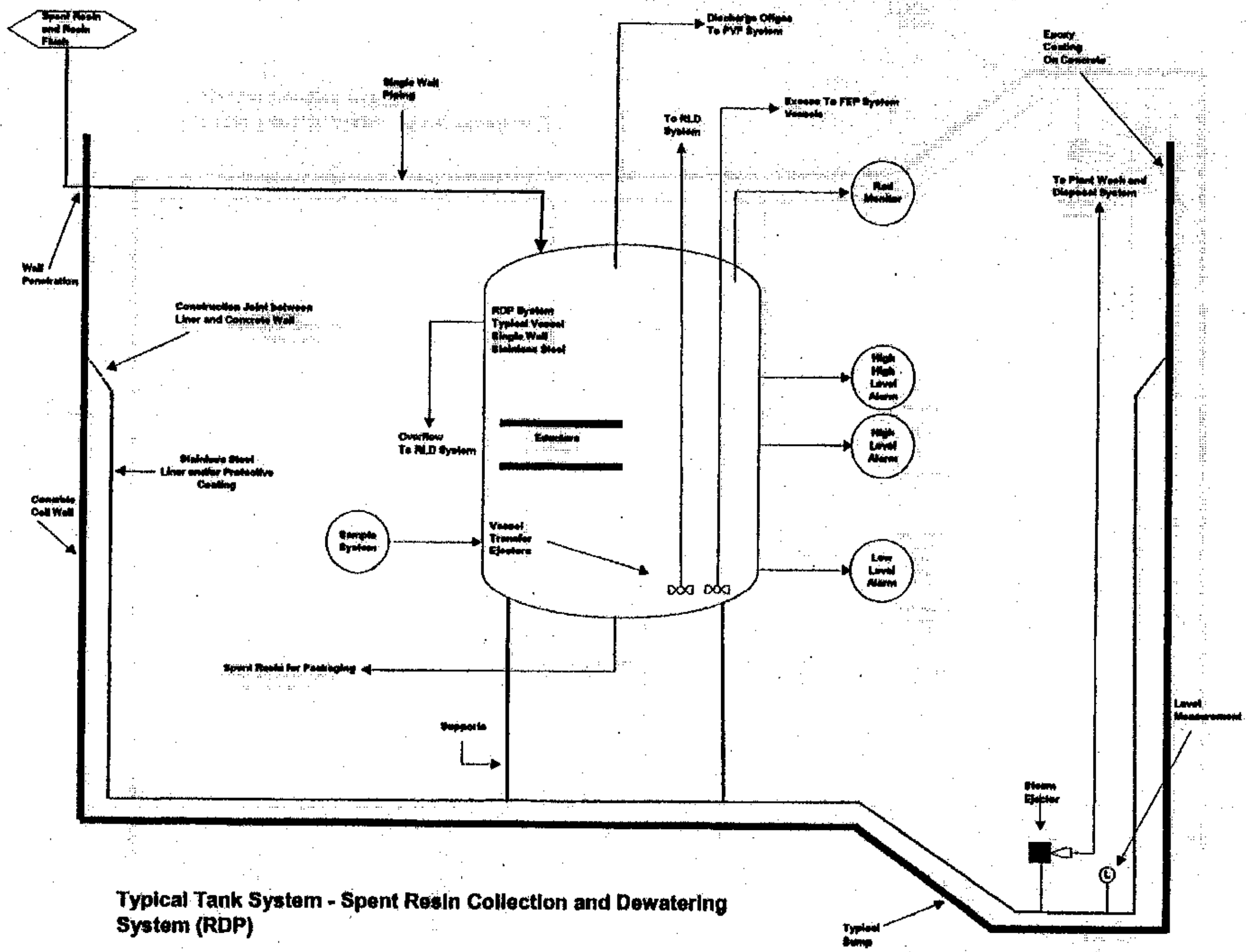
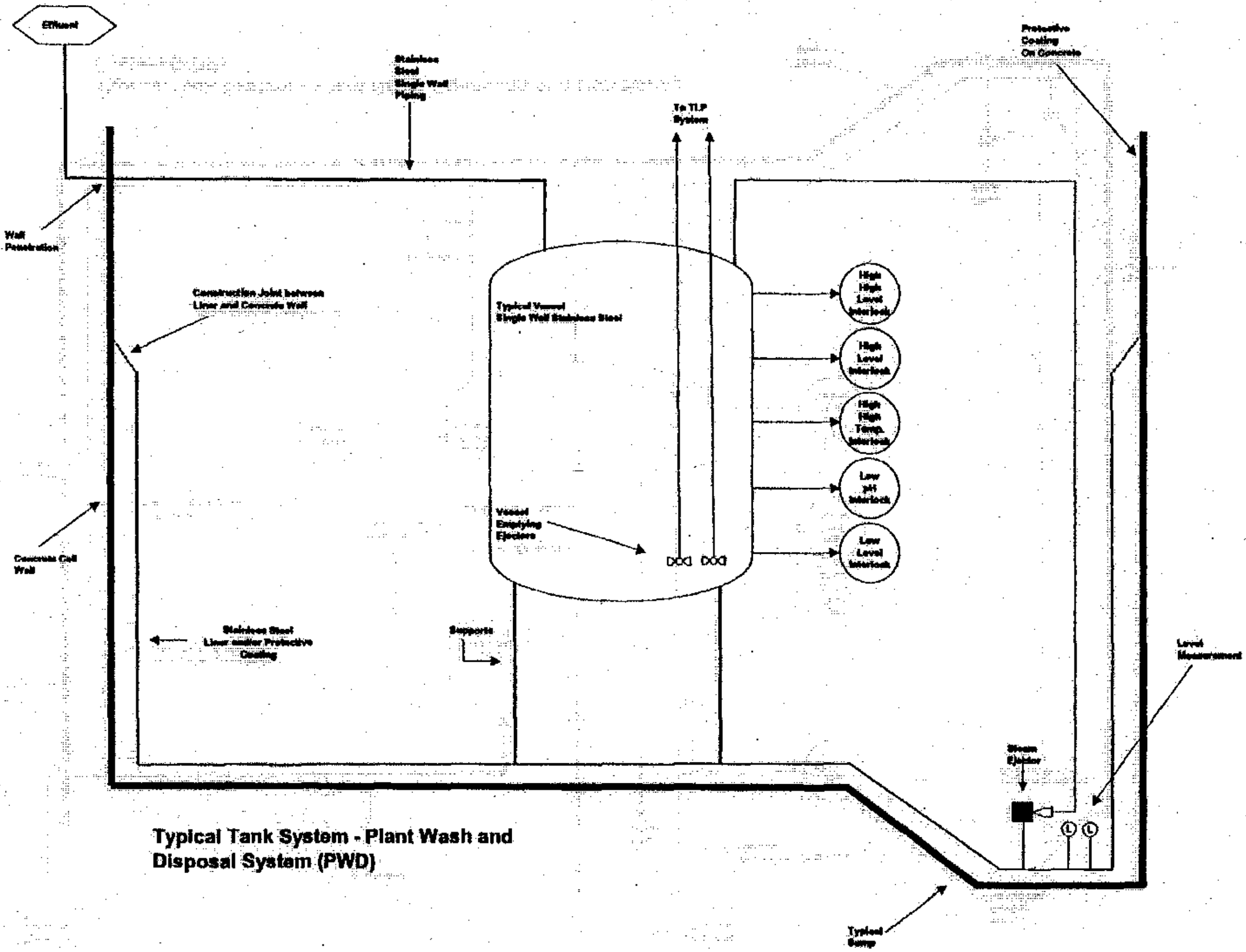


Figure 4A-43 Typical Tank System – Spent Resin Collection and Dewatering System (RDP)



Typical Tank System - Spent Resin Collection and Dewatering System (RDP)

Figure 4A-44 Typical Tank System – Plant Wash and Disposal System (PWD)



Typical Tank System - Plant Wash and Disposal System (PWD)

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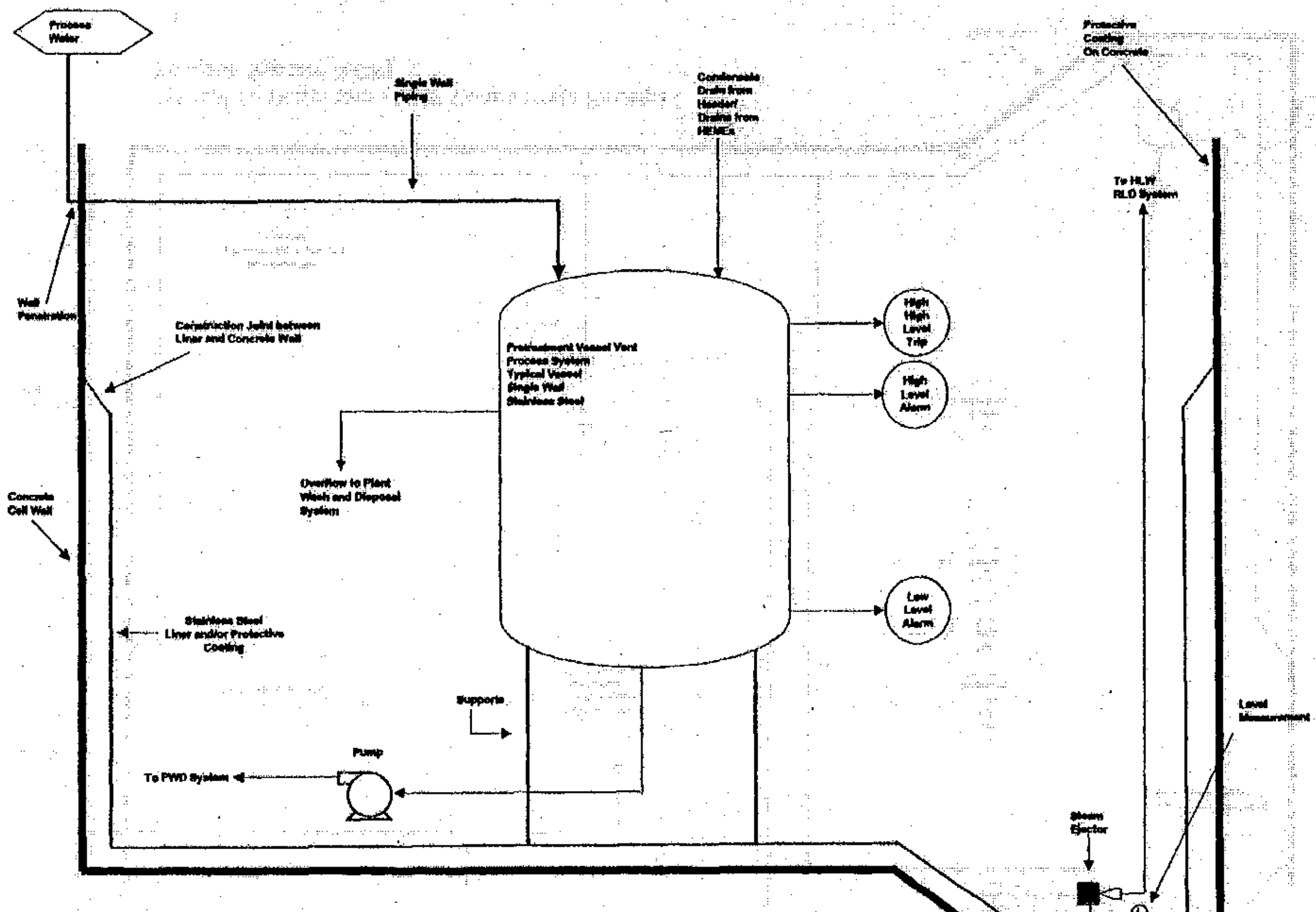
Figure 4A-45 Typical Tank System – Pretreatment Vessel Vent Process System (PVP)



Typical Tank System - Pretreatment Vessel Vent Process System (PVP)

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Figure 4A-46 Typical Tank System – LAW Concentrate Receipt Process System (LCP)

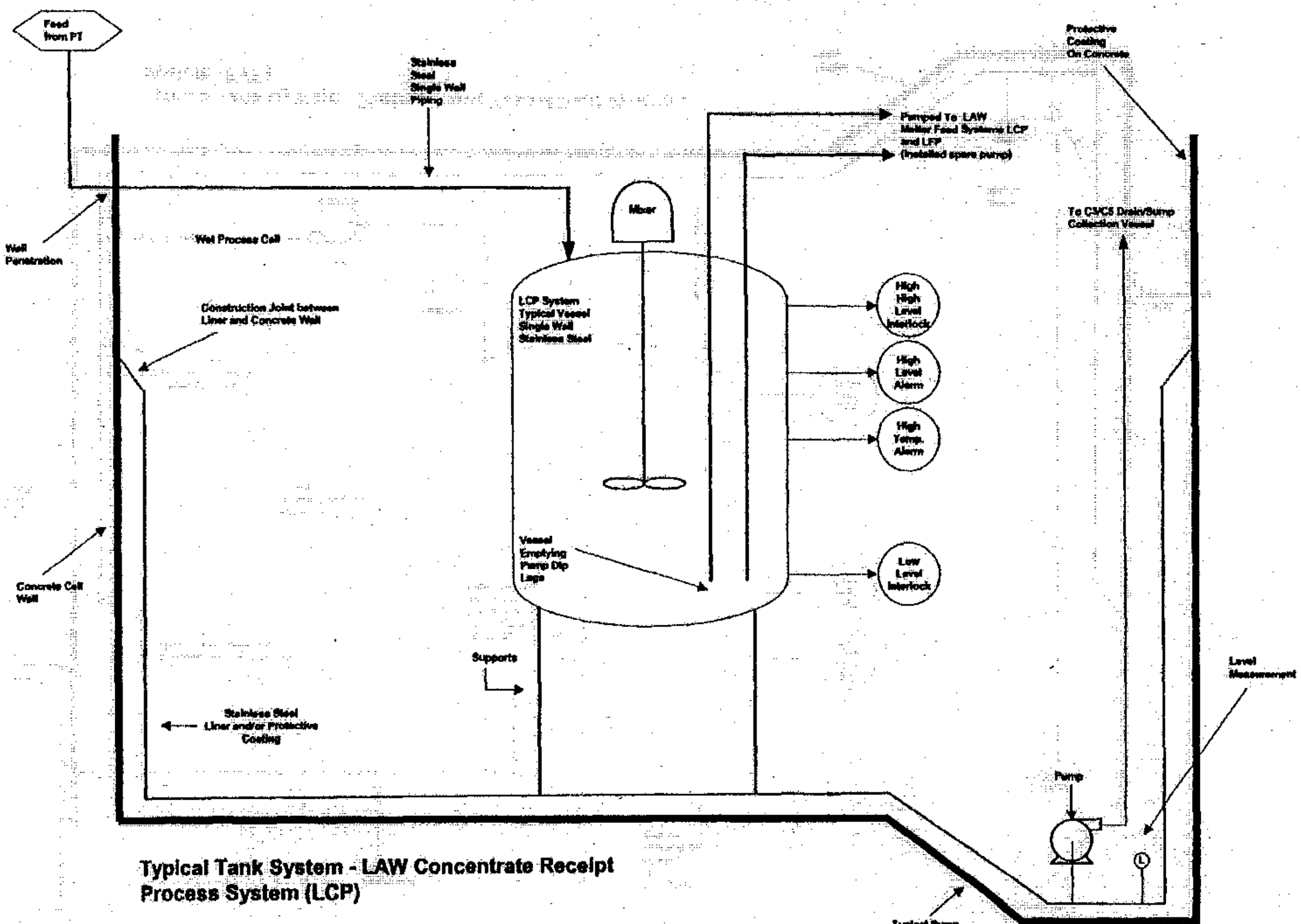

Figure 4A-47 Typical Tank System – LAW Melter Feed Process System (LFP)

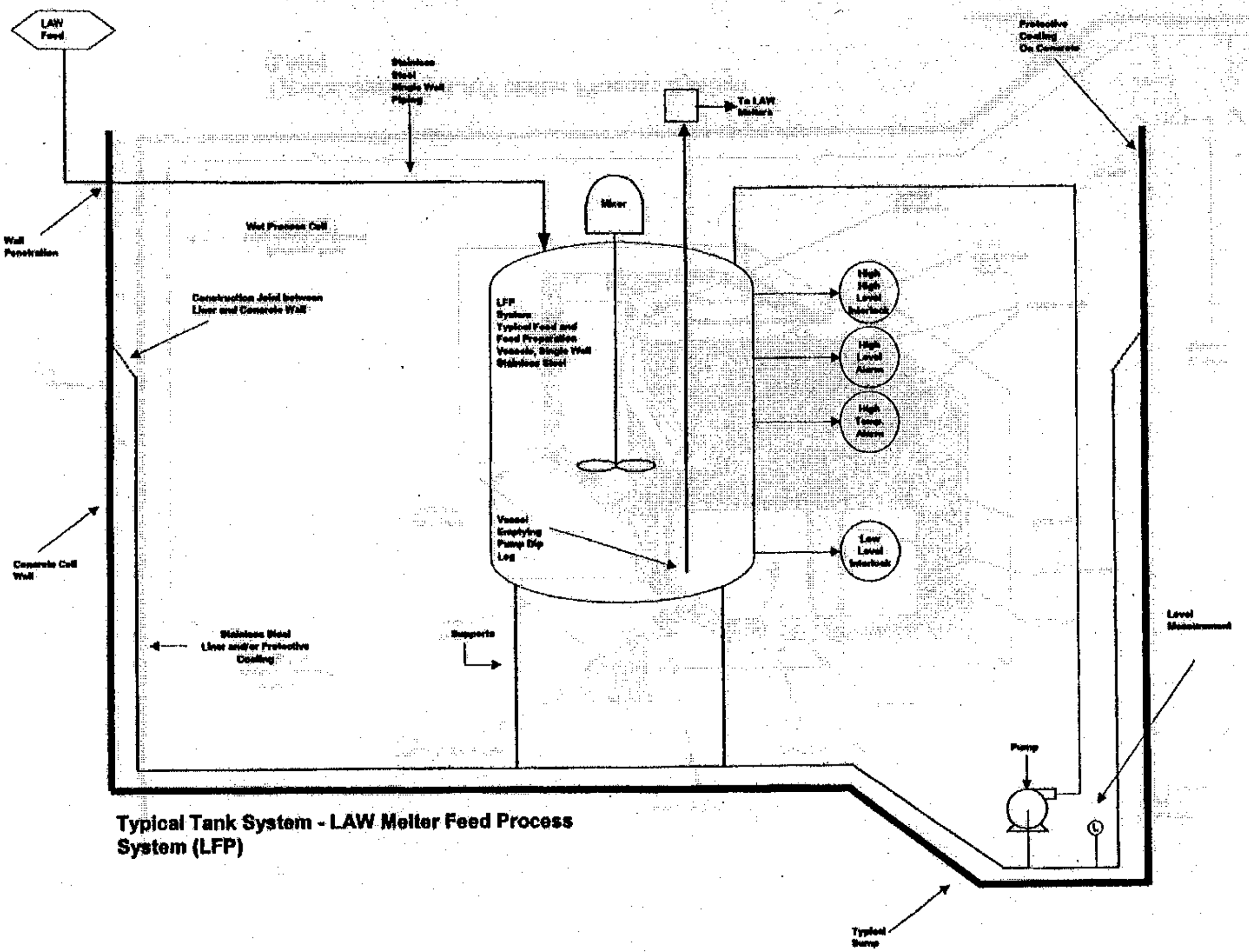

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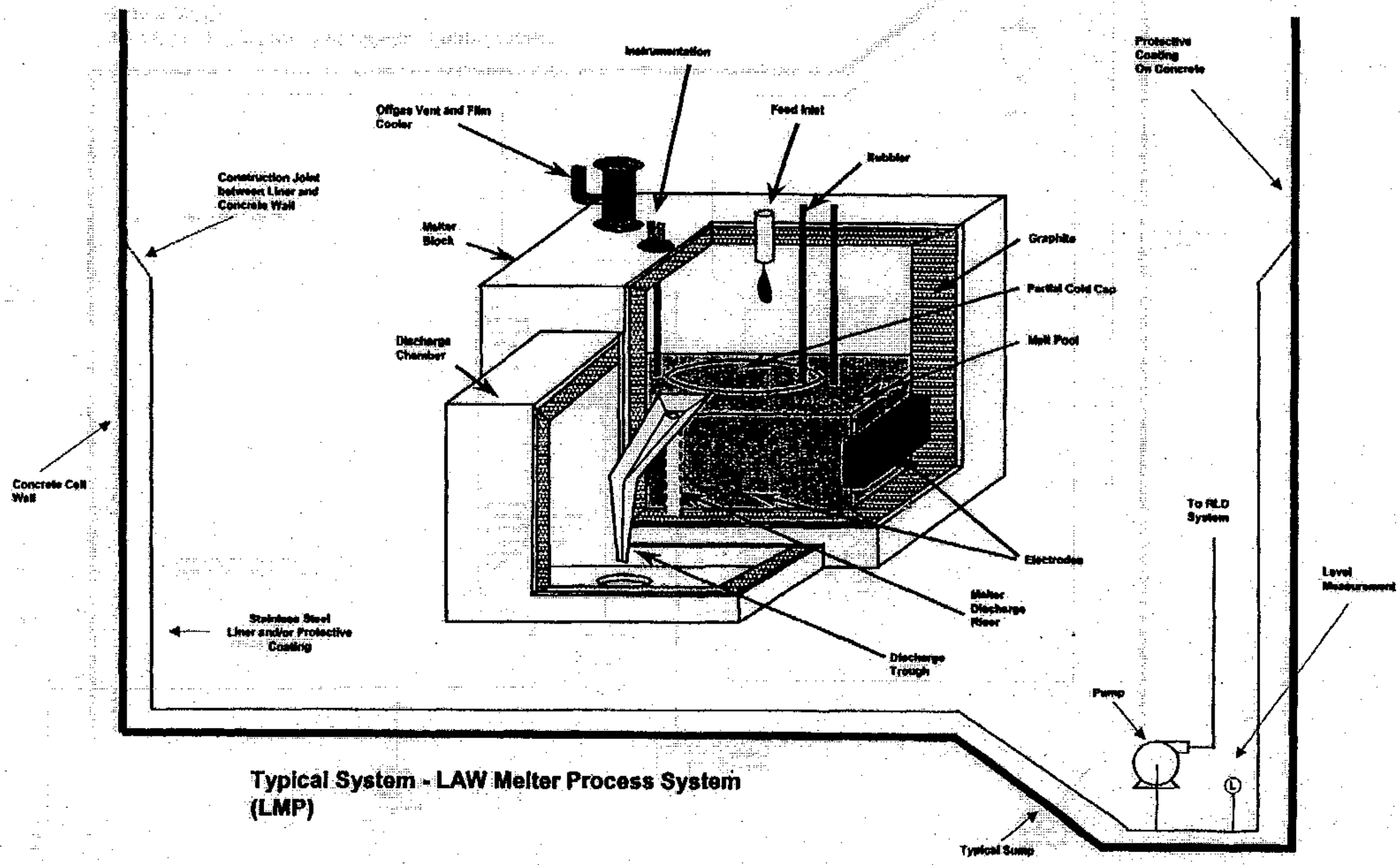
Figure 4A-48 Typical System – LAW Melter Process System (LMP)



Typical System - LAW Melter Process System (LMP)

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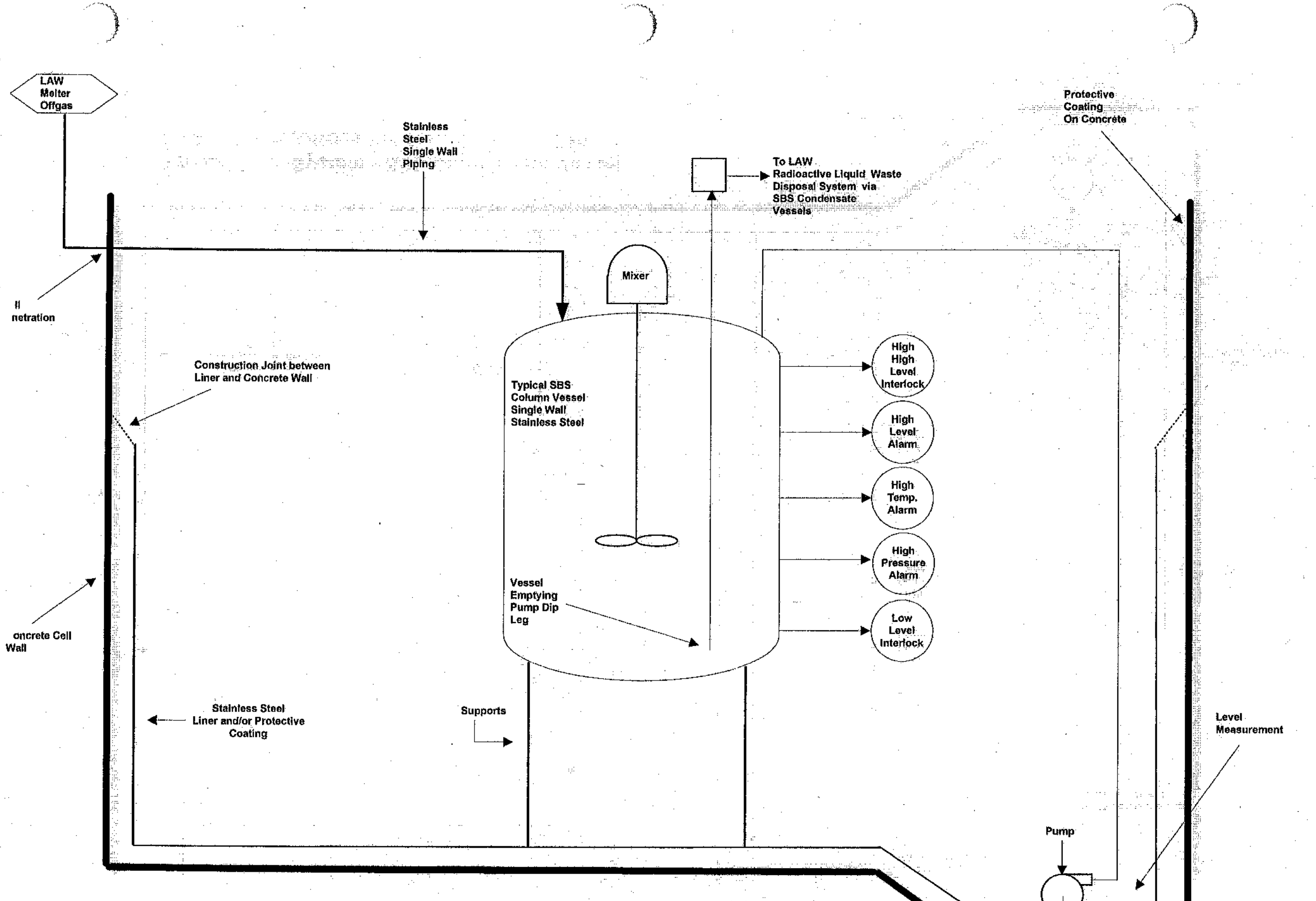
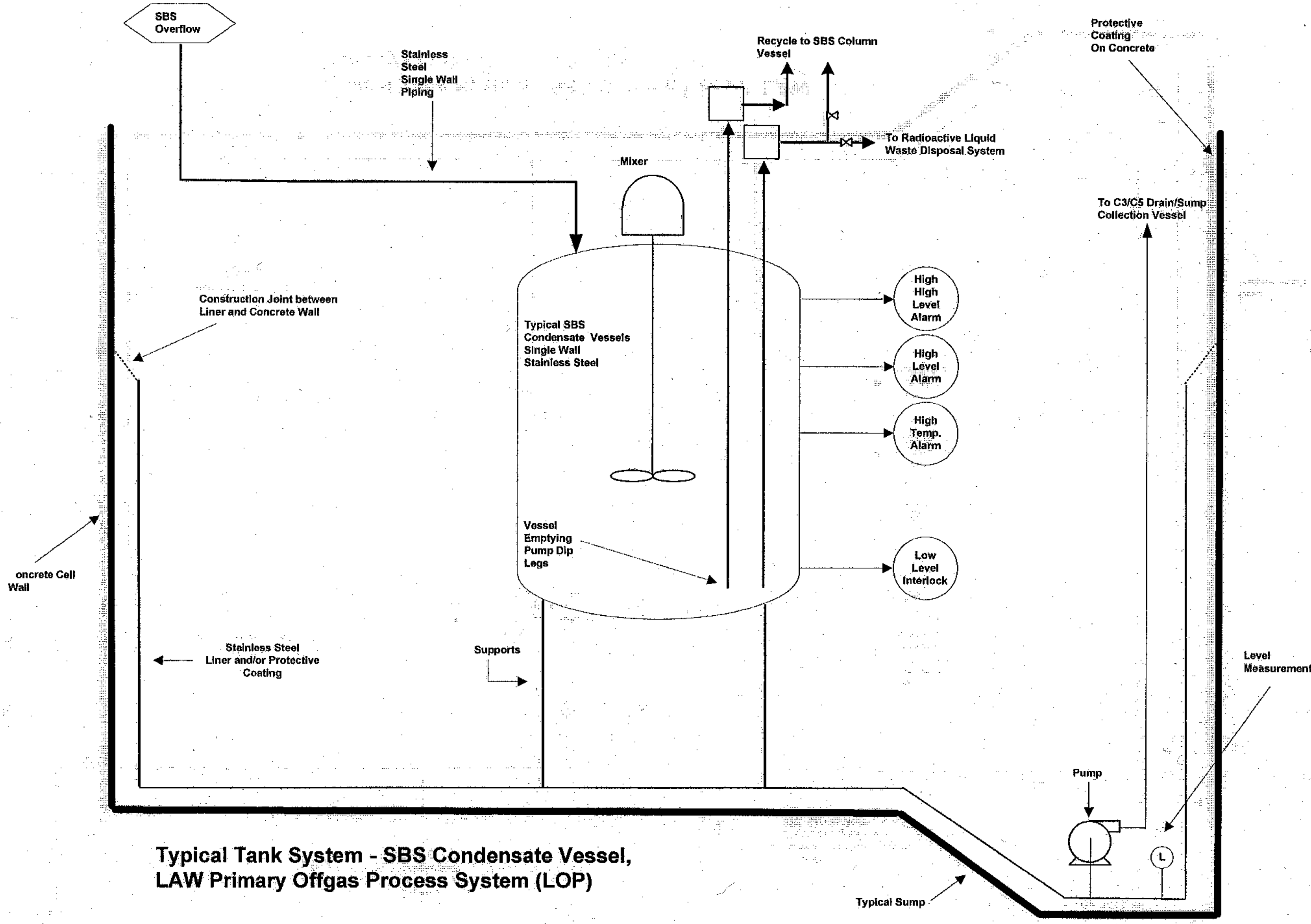
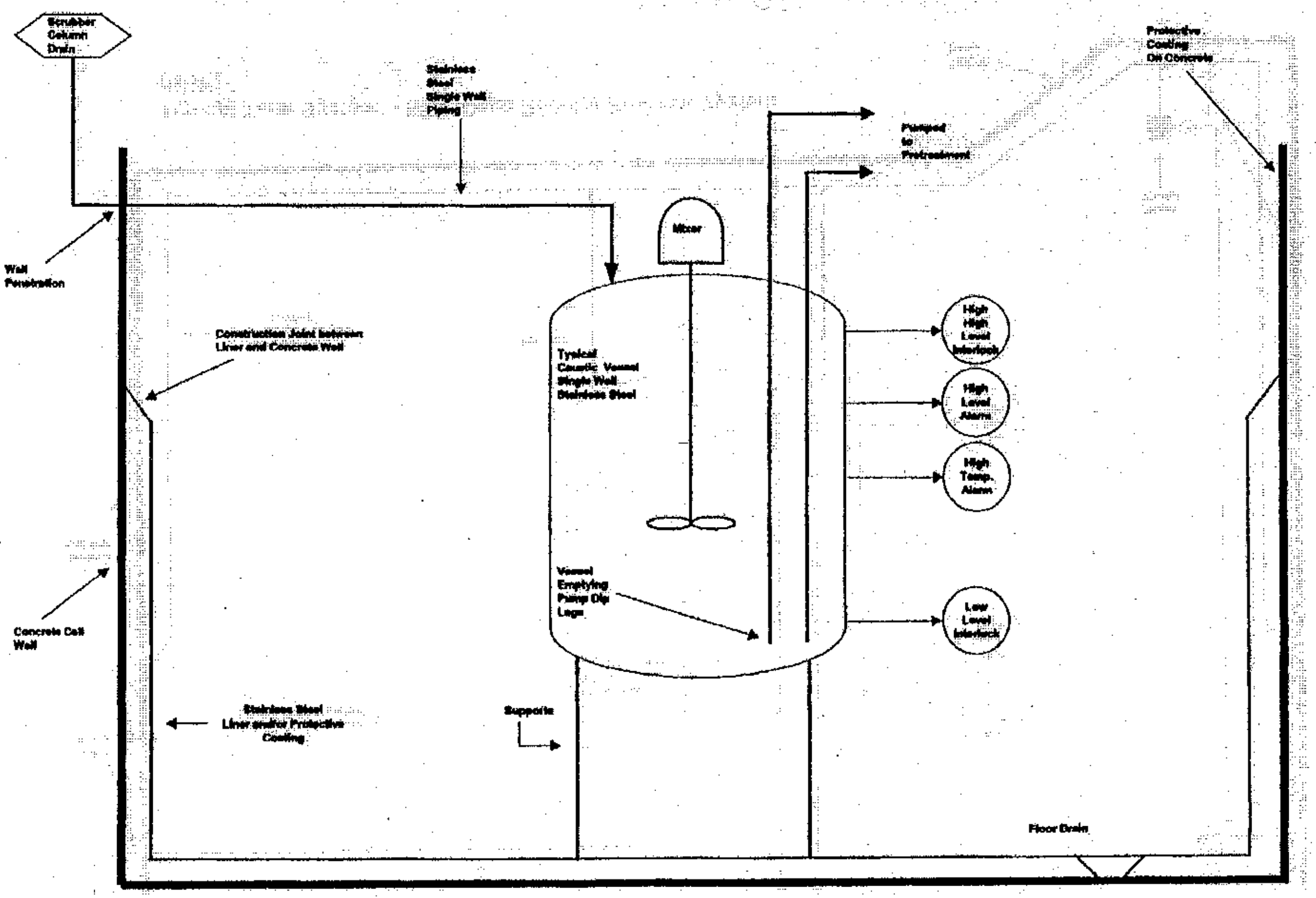


Typical Tank System - SBS Column Vessel, LAW Primary Offgas Process System (LOP)



Typical Tank System - SBS Condensate Vessel, LAW Primary Offgas Process System (LOP)

Figure 4A-51 Typical Tank System – LAW Secondary Offgas/Vessel Vent Process System (LVP)



Typical Tank System - LAW Secondary Offgas/Vessel Vent Process System (LVP)

Figure 4A-52 Typical Tank System – HLW Cave Receipt Process System (HCP)

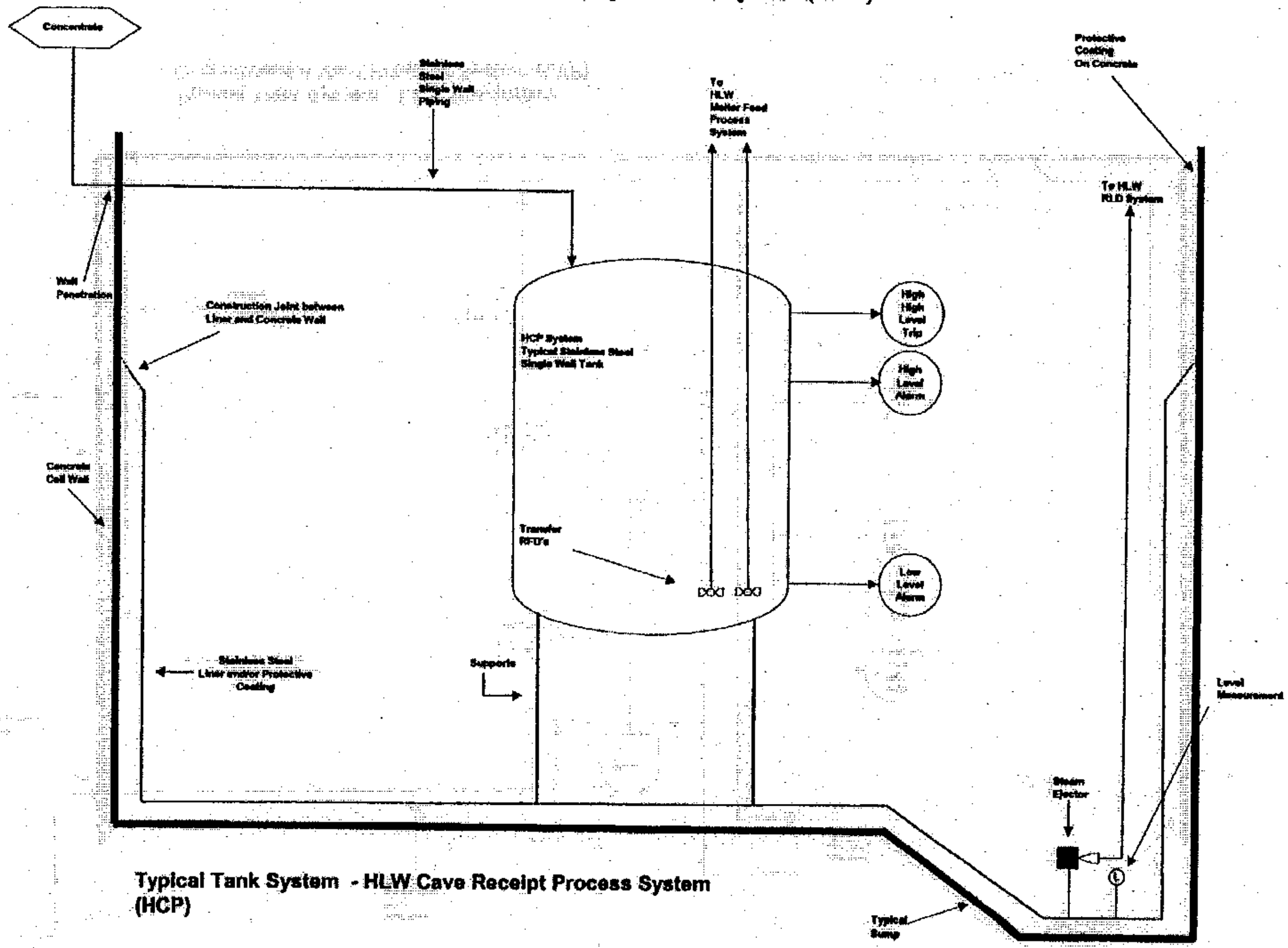


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Figure 4A-53 Typical Tank System – HLW Melter Feed Process System (HFP)

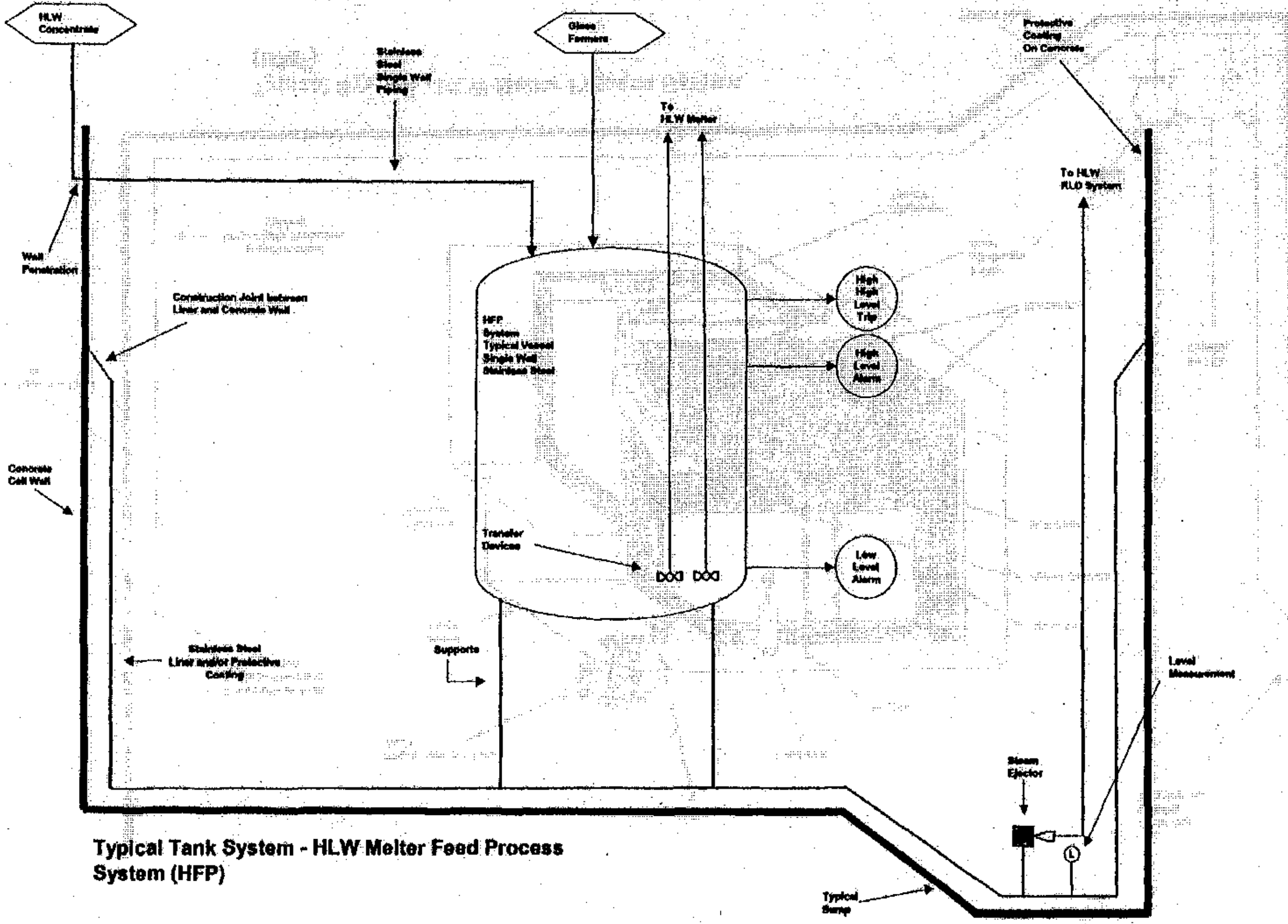


Figure 4A-54 Typical System – HLW Melter Process System (HMP)

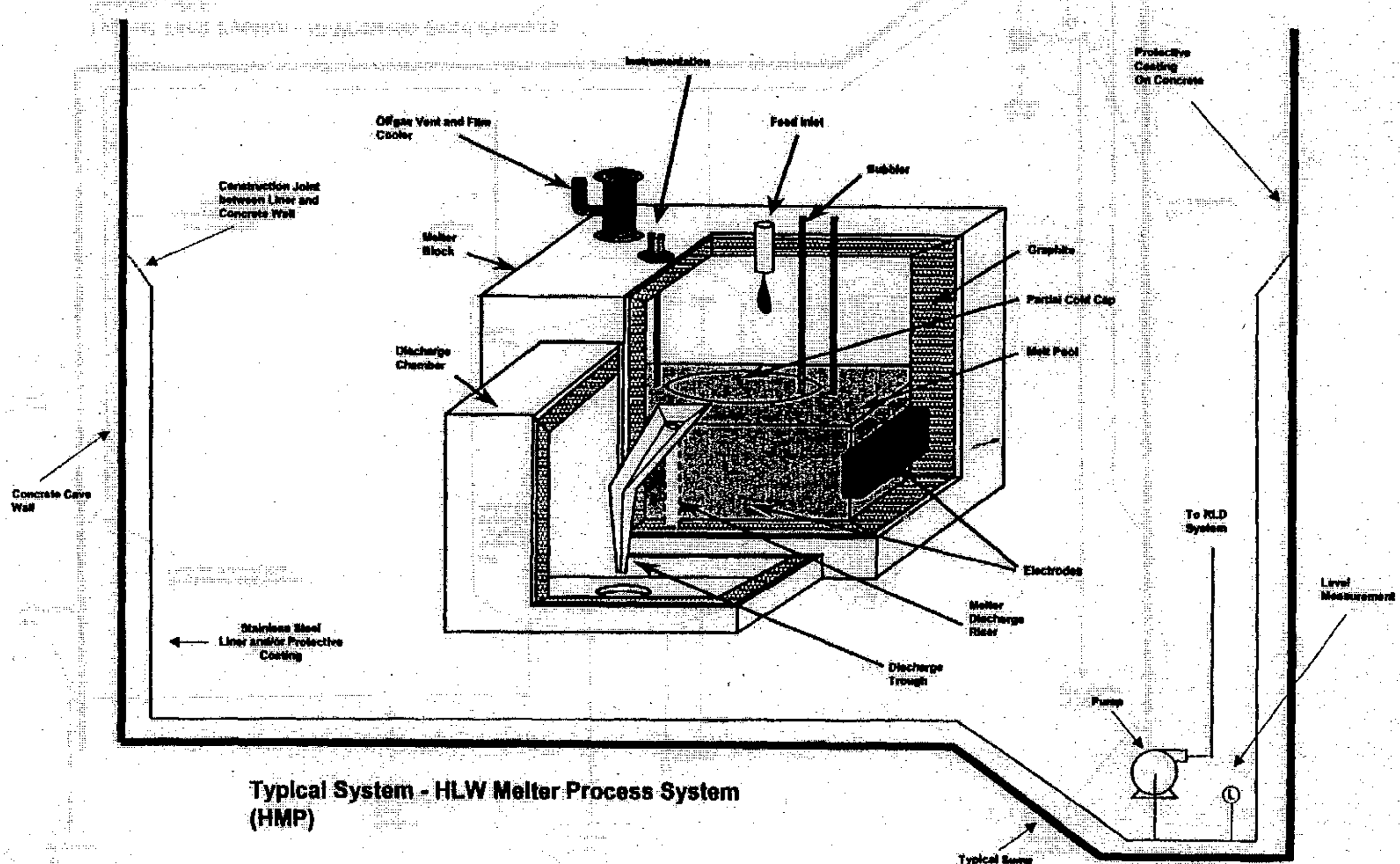


Figure 4A-55 Typical Tank System – Melter Offgas Treatment Process System (HOP)

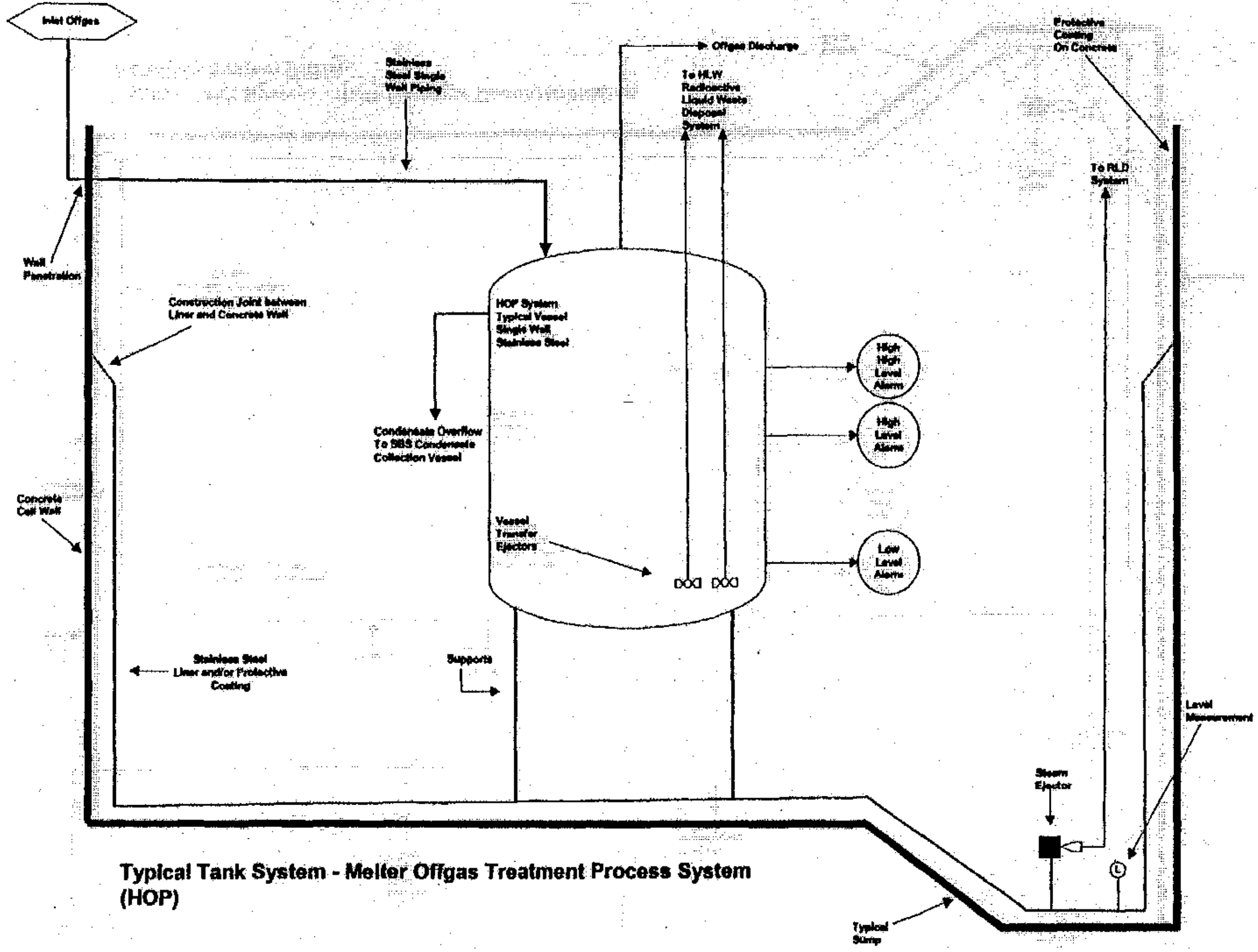


Figure 4A-56 Typical Tank System – HLW Canister Decontamination Handling System (HDH)

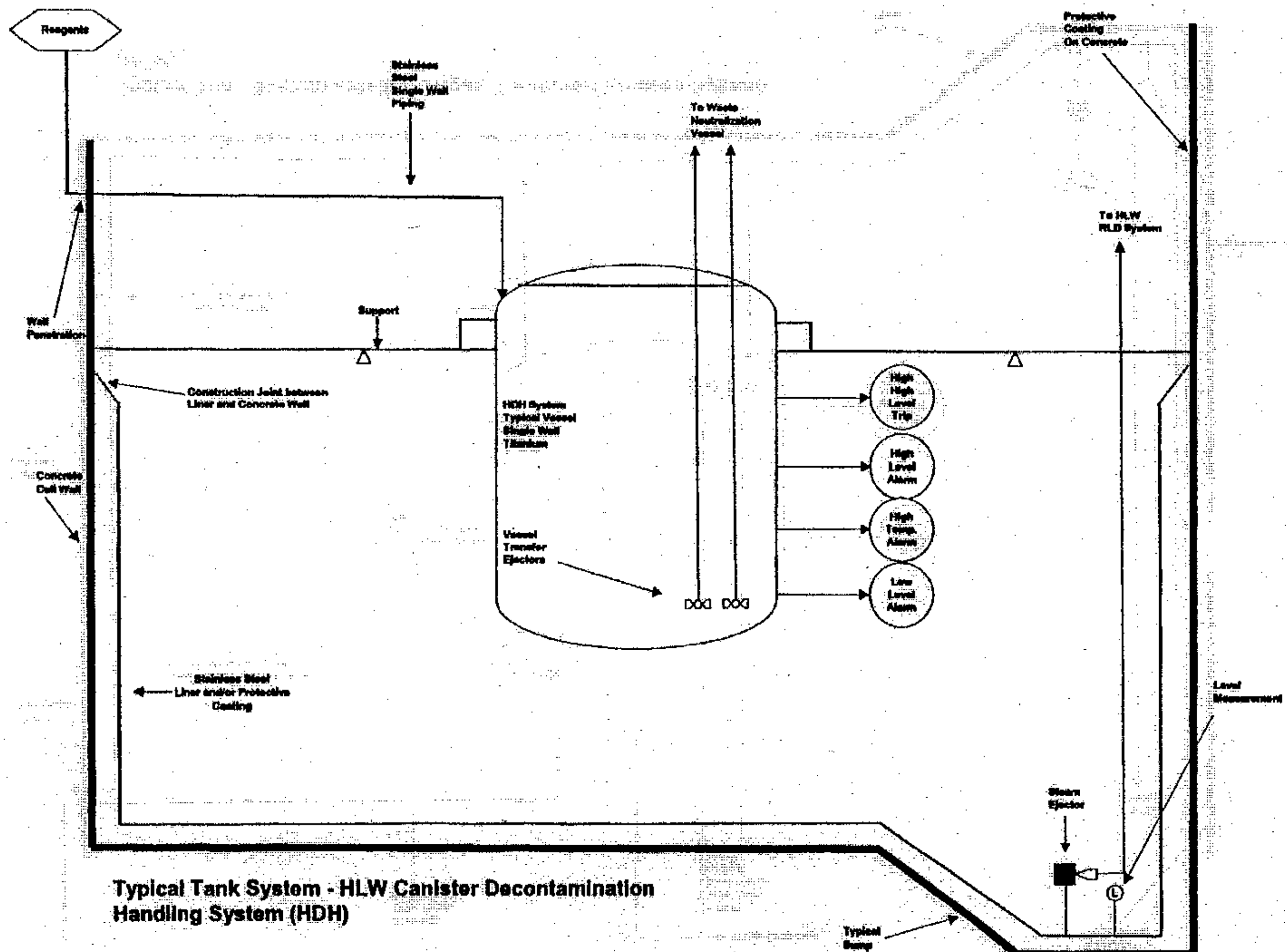


Figure 4A-57 Typical Tank System – Radioactive Liquid Waste Disposal System (RLD)

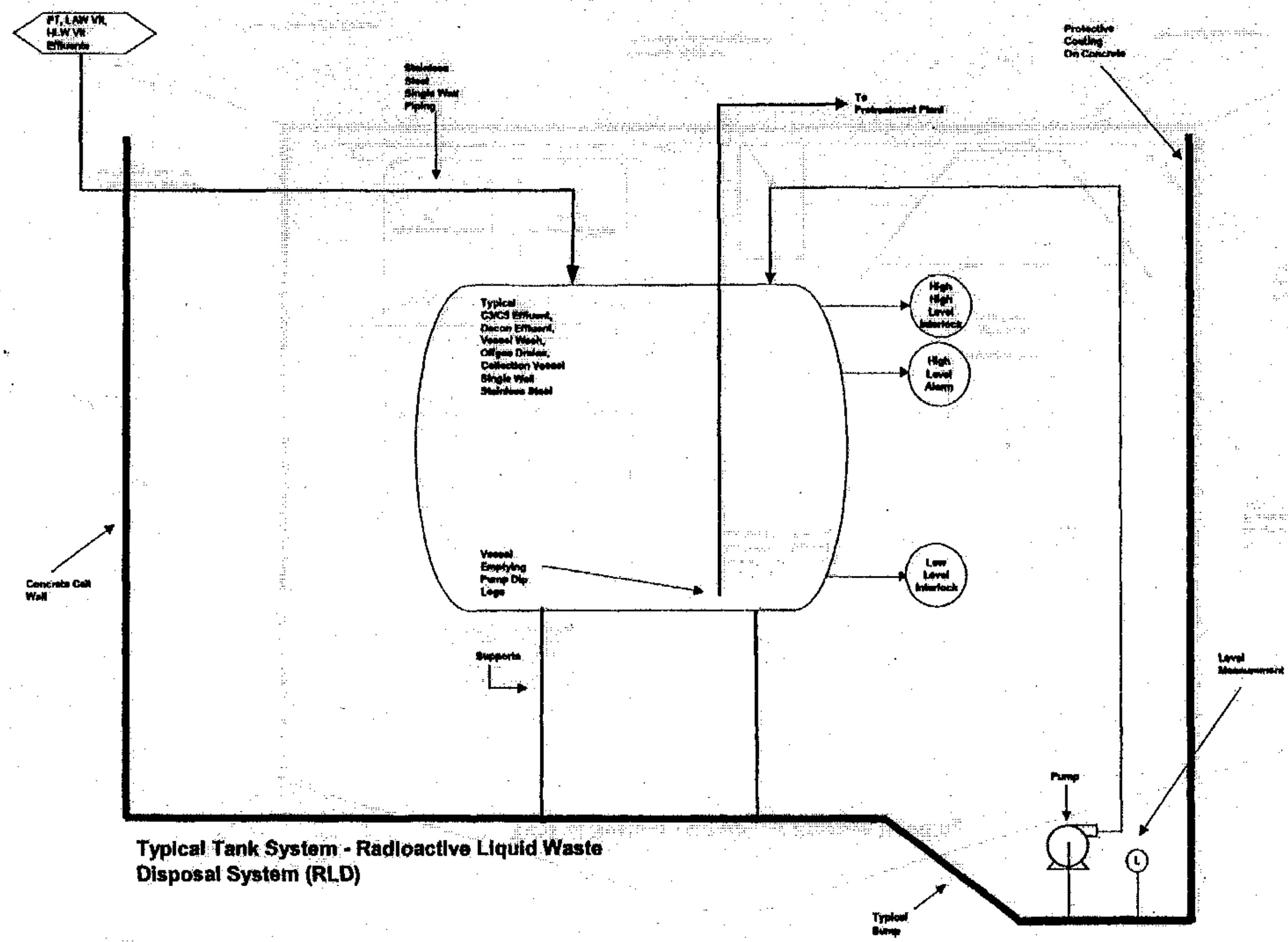


Figure 4A-58 Typical System – BOF Container Storage Area

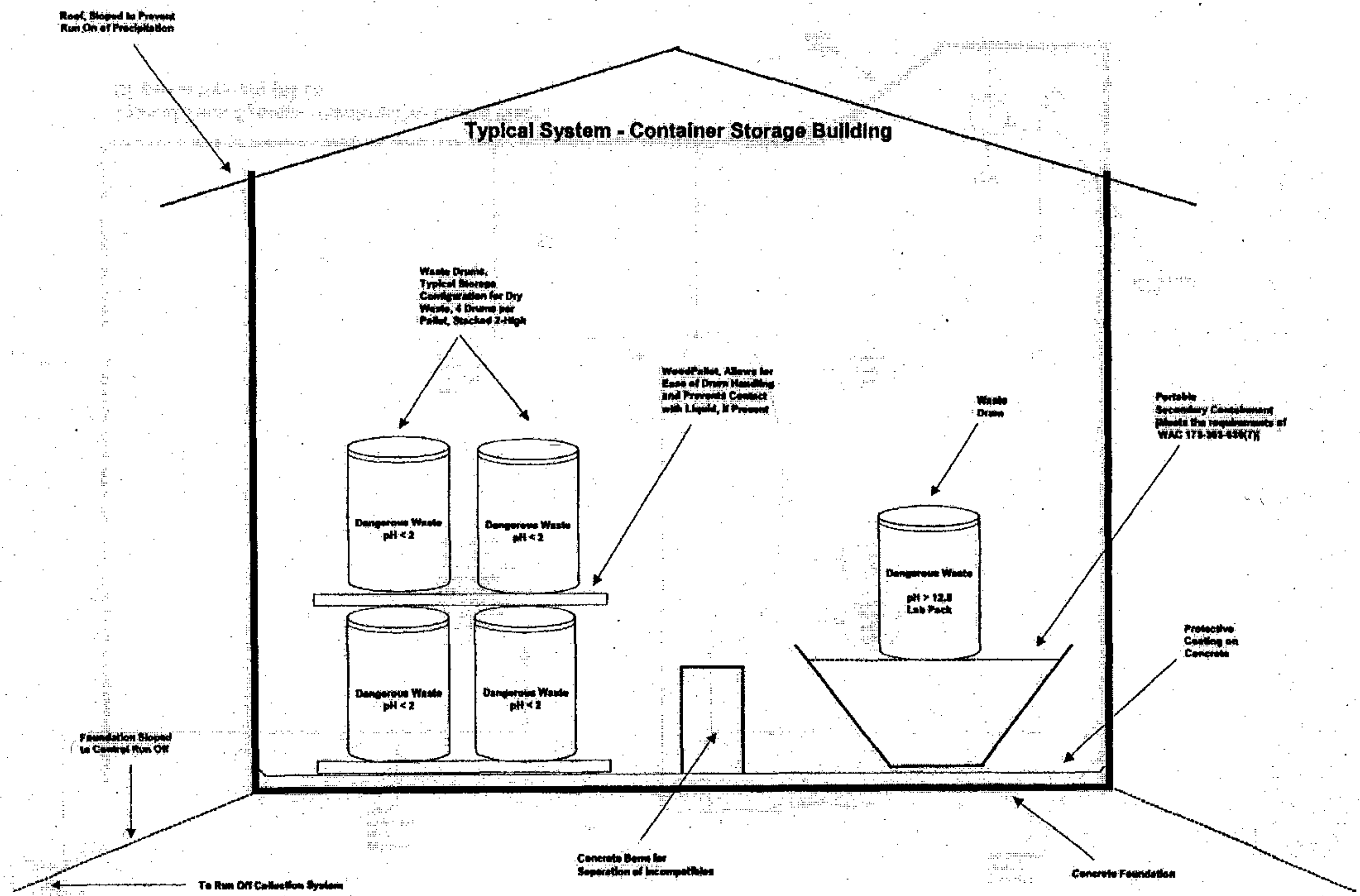
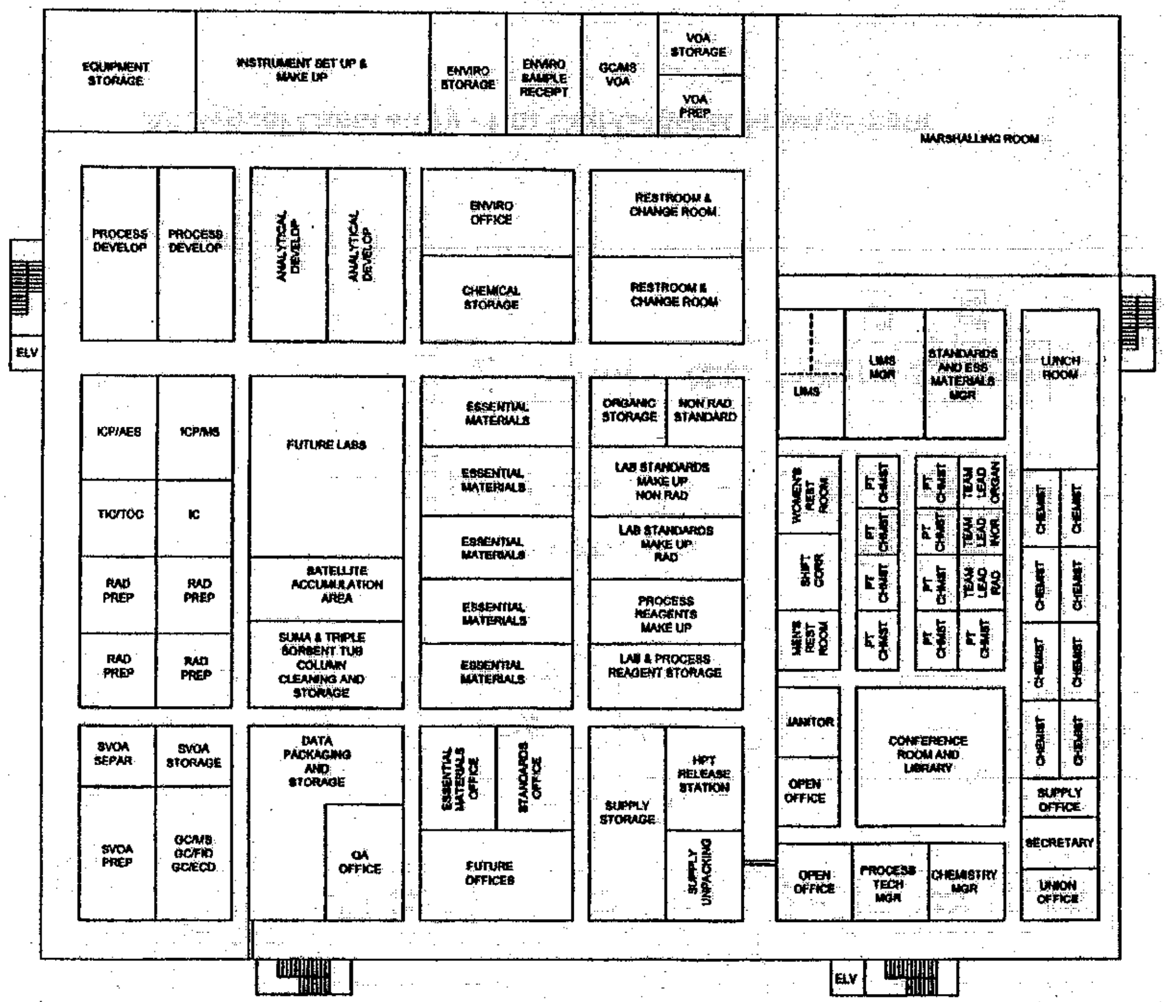


Figure 4A-108 Analytical Laboratory Second Floor General Arrangement



Analytical Laboratory - Second Floor General Arrangement

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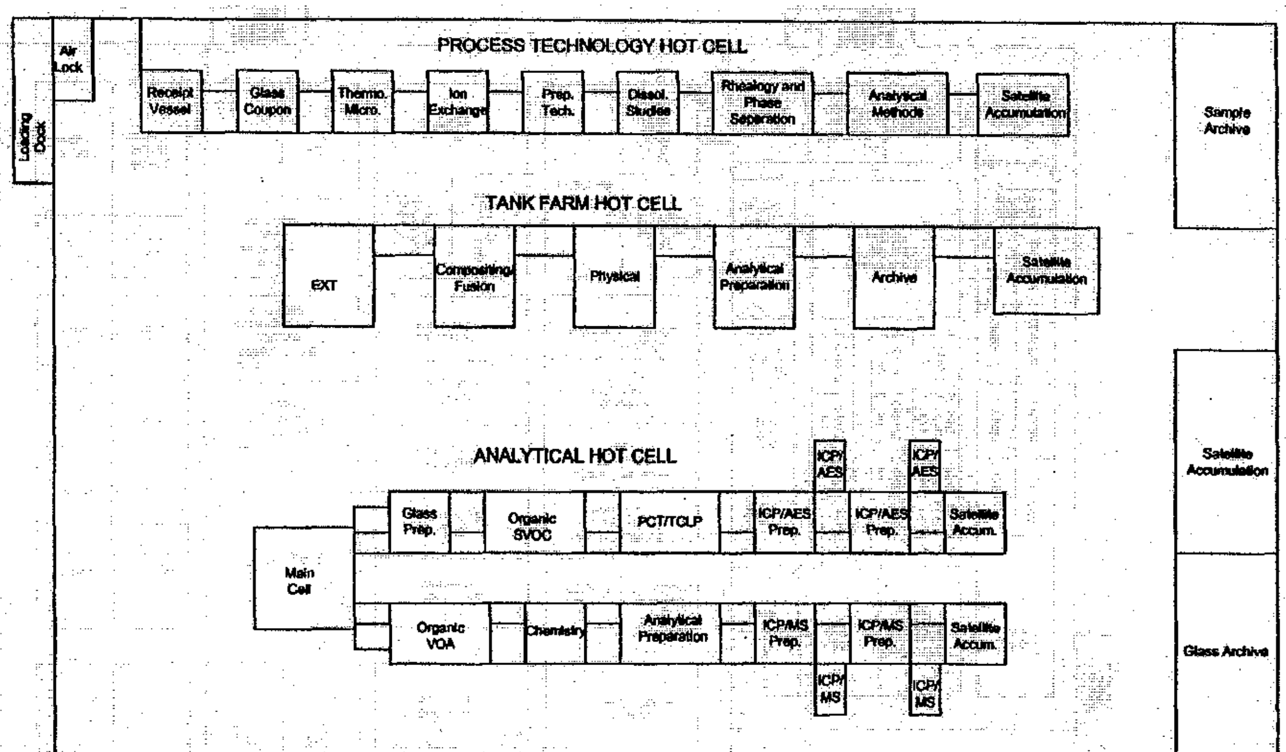
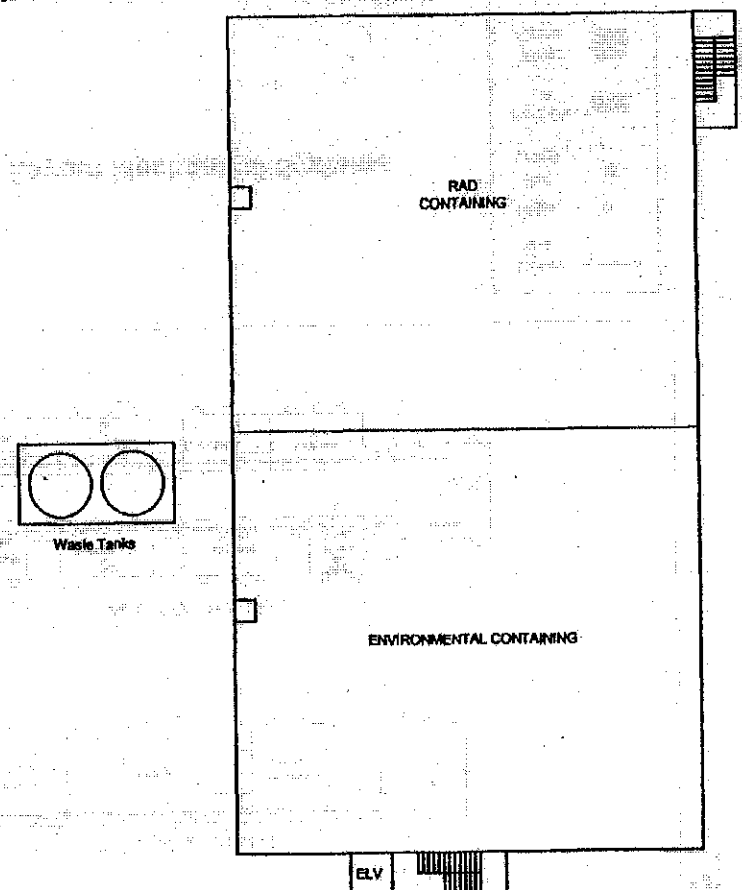
Figure 4A-109 Analytical Laboratory Hot Cell General Arrangement



Analytical Laboratory - Hot Cell General Arrangement

Figure 4A-110 Analytical Laboratory Basement Level General Arrangement



Analytical Laboratory - Basement Level General Arrangement

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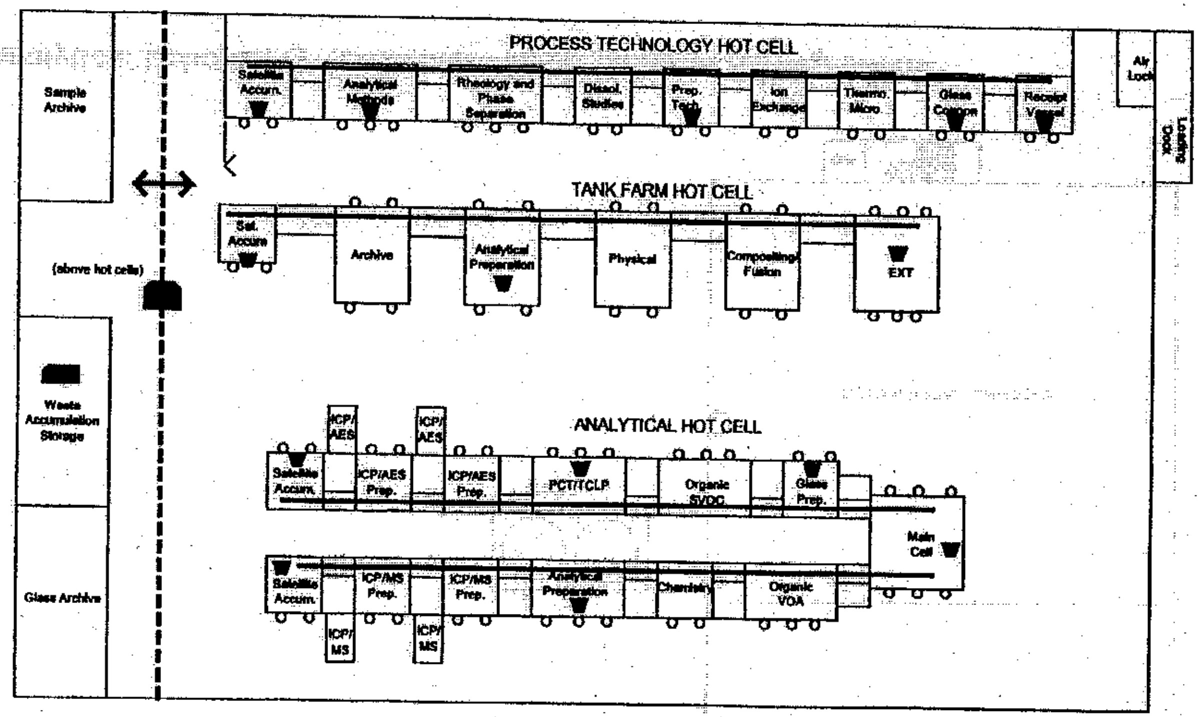
Figure 4A-111 **Analytical Laboratory Hot Cell Mechanical Systems**



Analytical Laboratory - Hot Cell Layout Mechanical Systems

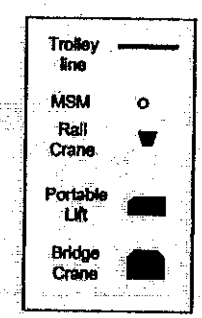
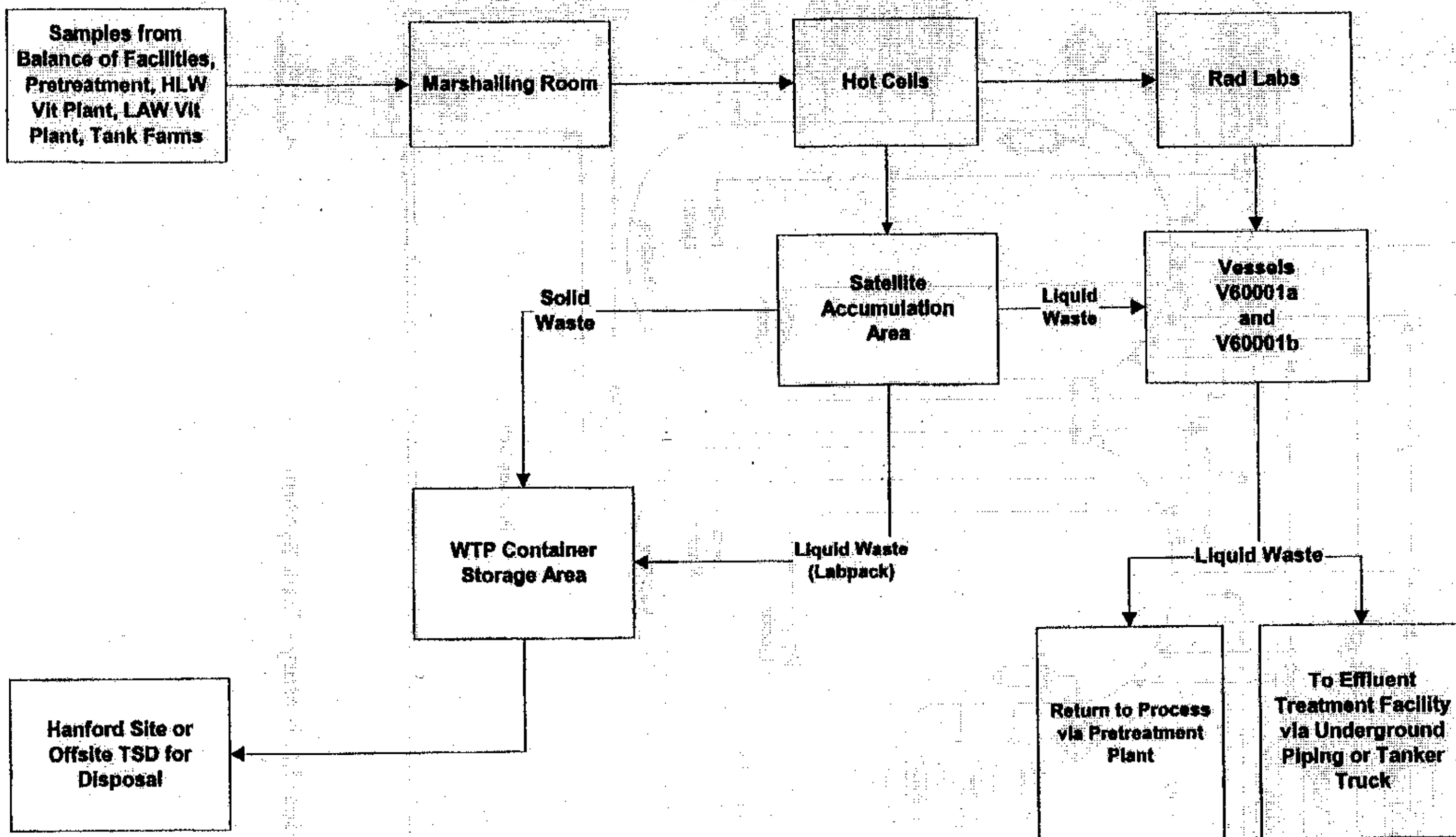


Figure 4A-112 **Analytical Laboratory Simplified Process Flow**



Analytical Laboratory - Simplified Process Flow

Figure 4A-113 Analytical Laboratory Tank System

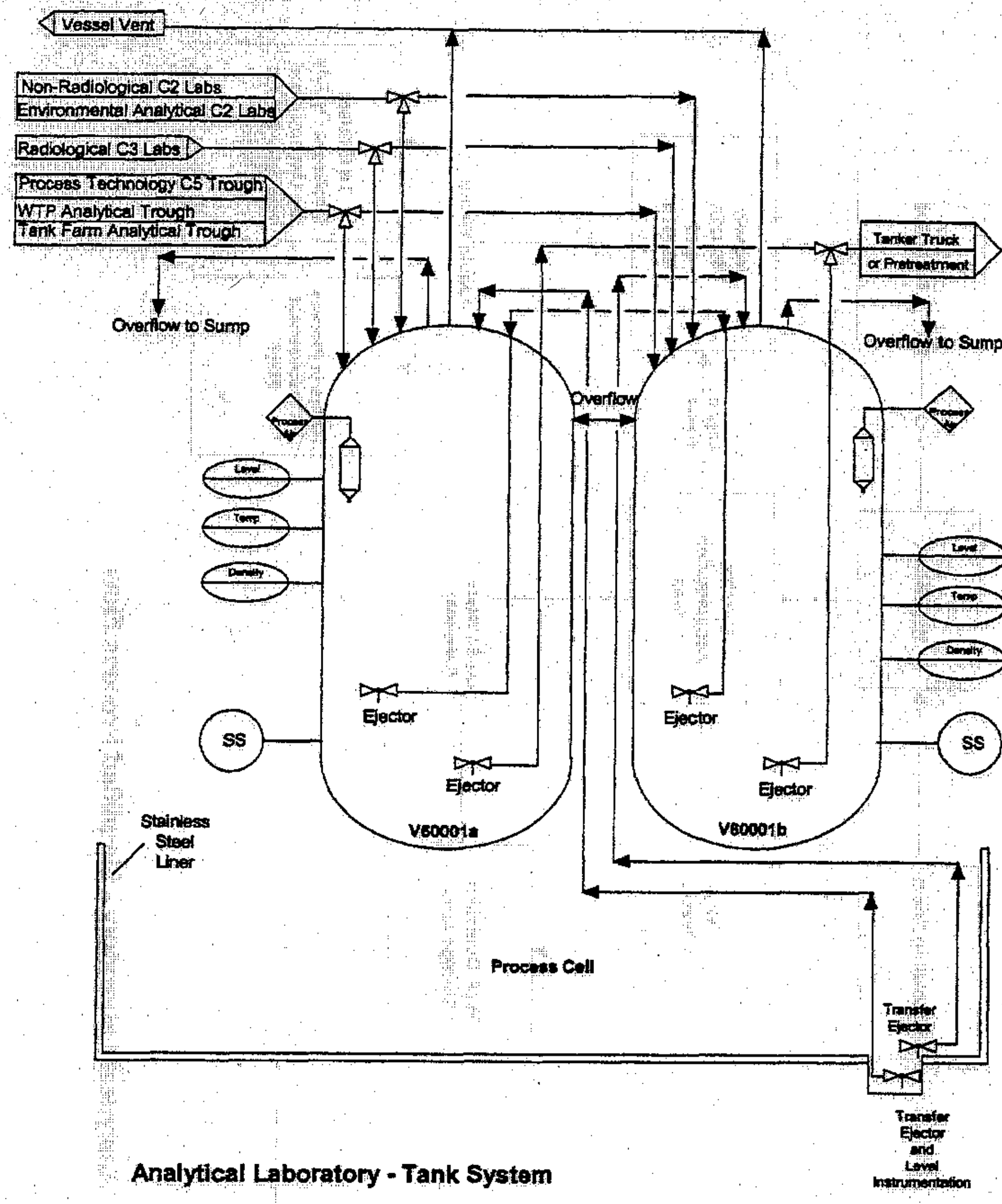


Figure 4A-114 Analytical Laboratory Main Floor Ventilation

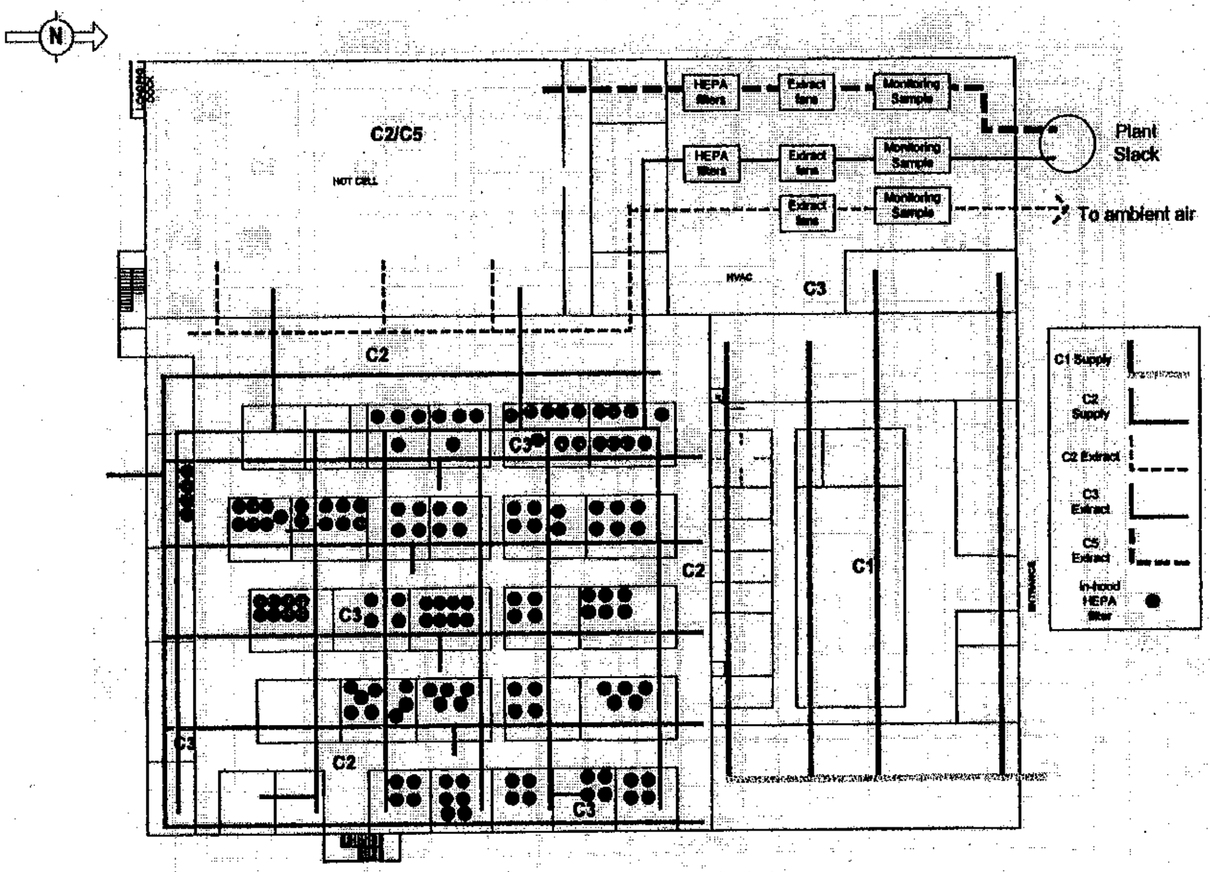


Figure 4A-115 Analytical Laboratory Second Floor Ventilation

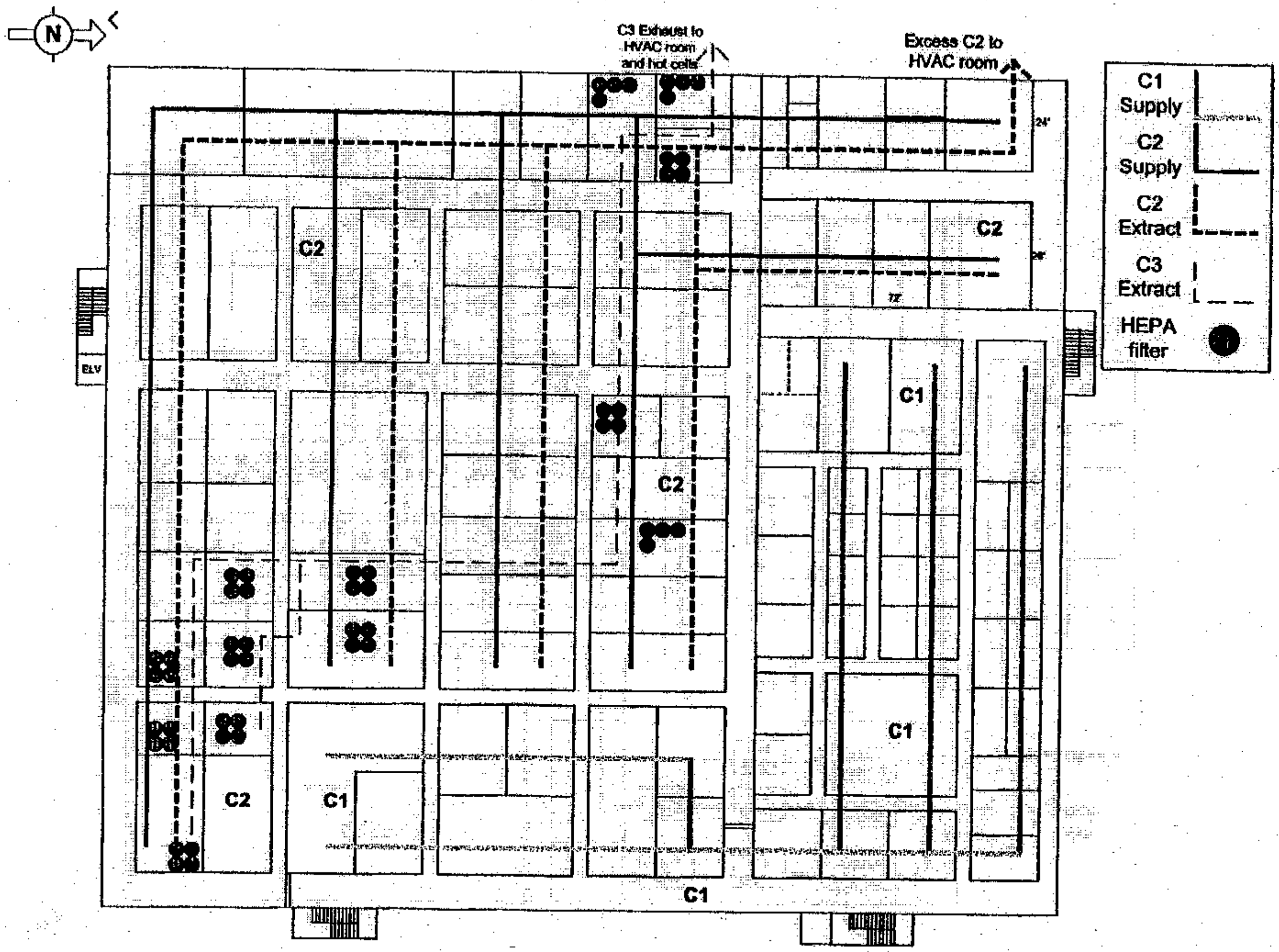


Figure 4A-116 Analytical Laboratory Hot Cell Ventilation

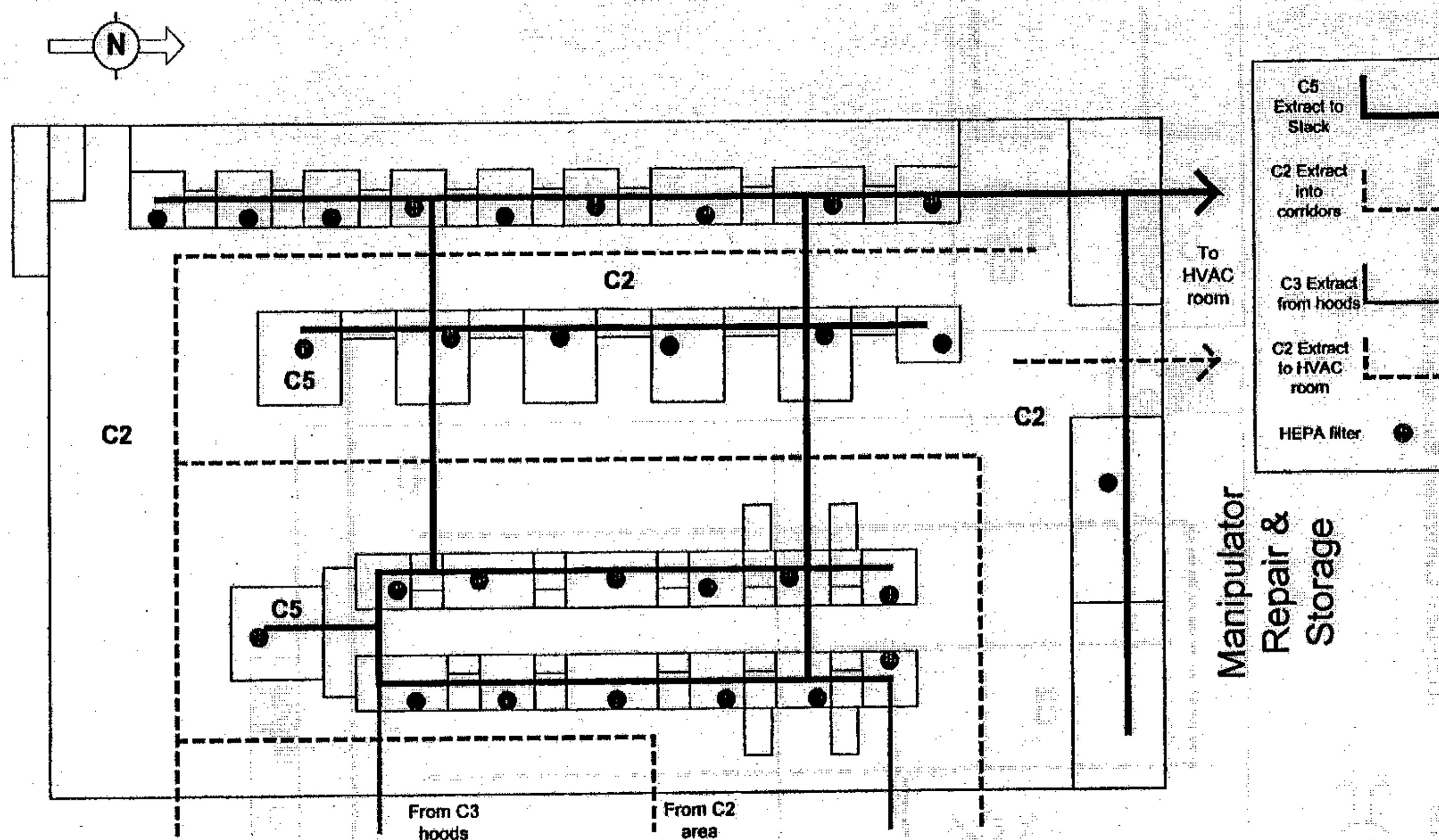


Figure 4A-117 Analytical Laboratory Basement Level Ventilation

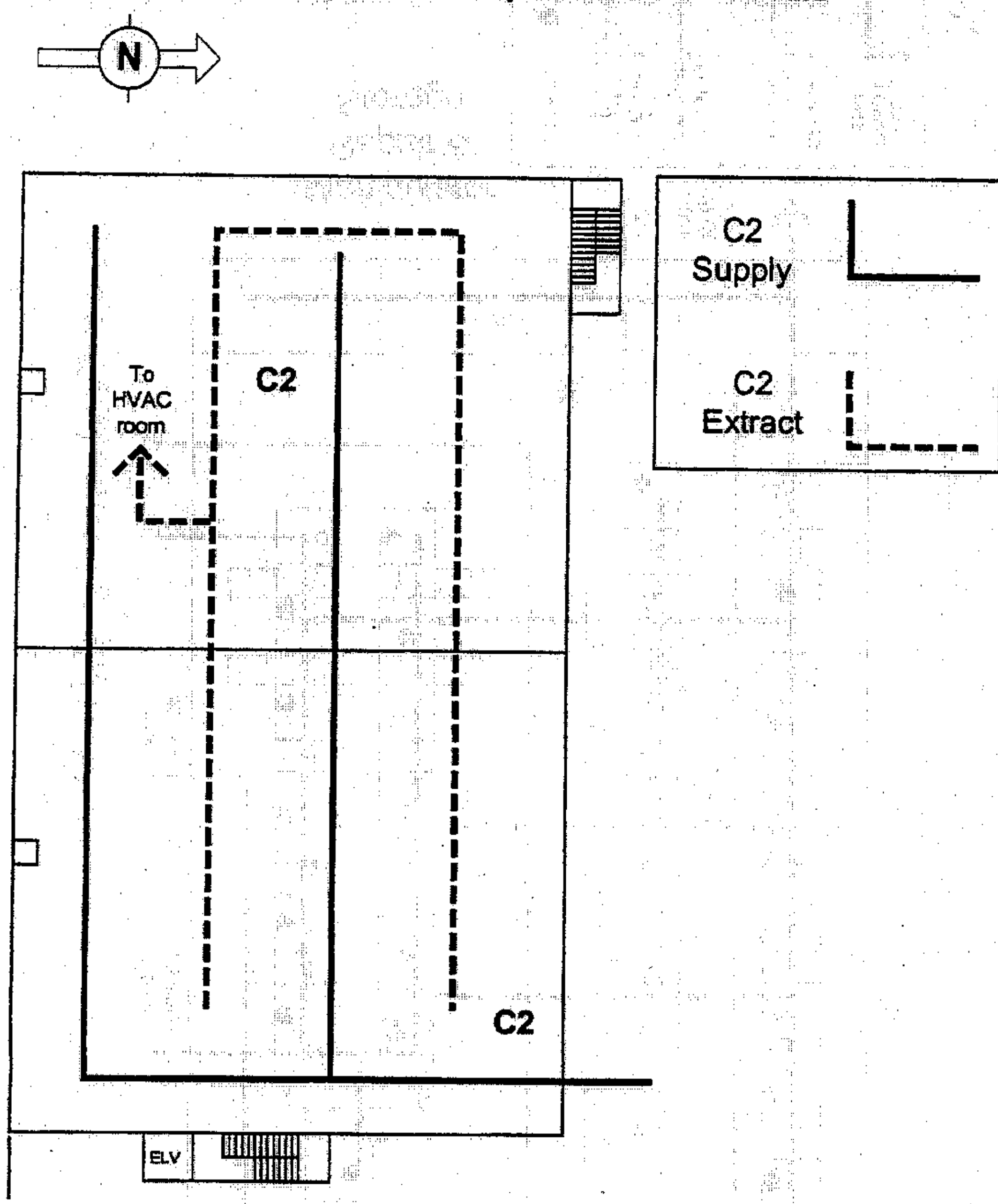


Figure 4A-118 Schematic of an Example IHLW Container and Label

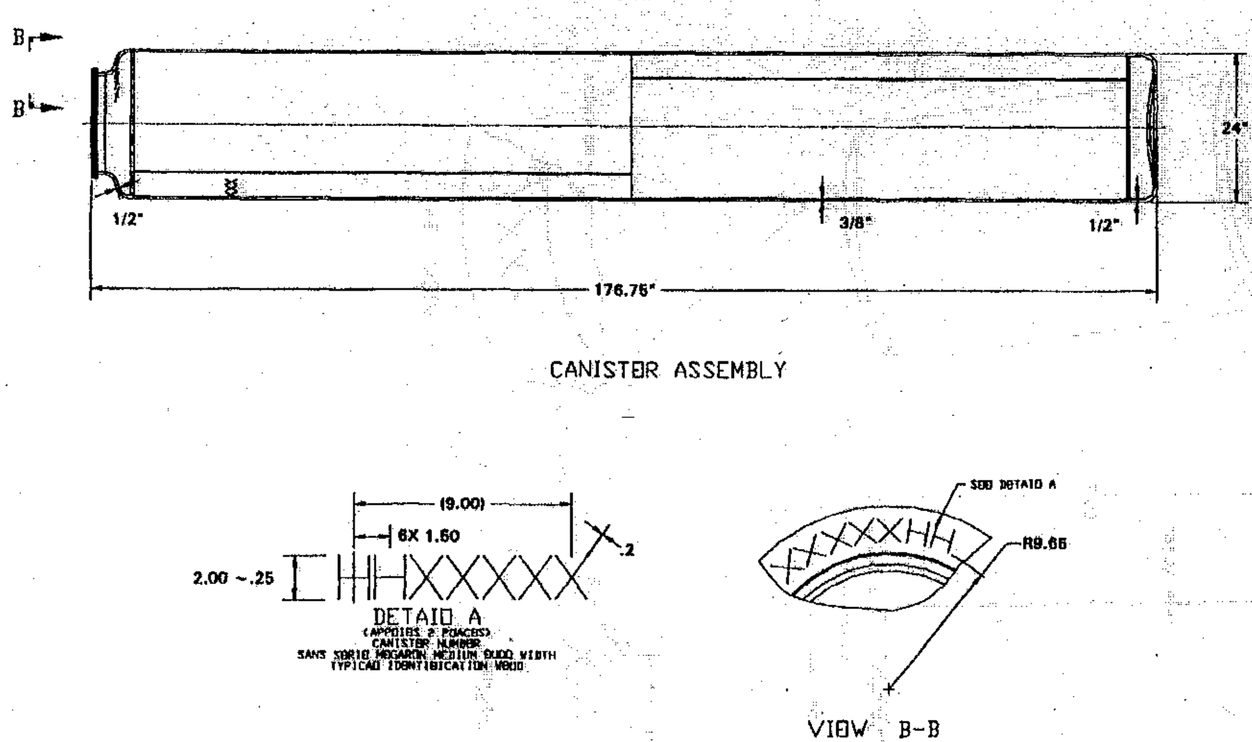


Figure 4A-119 **Schematic of an Example ILAW Container and Label**

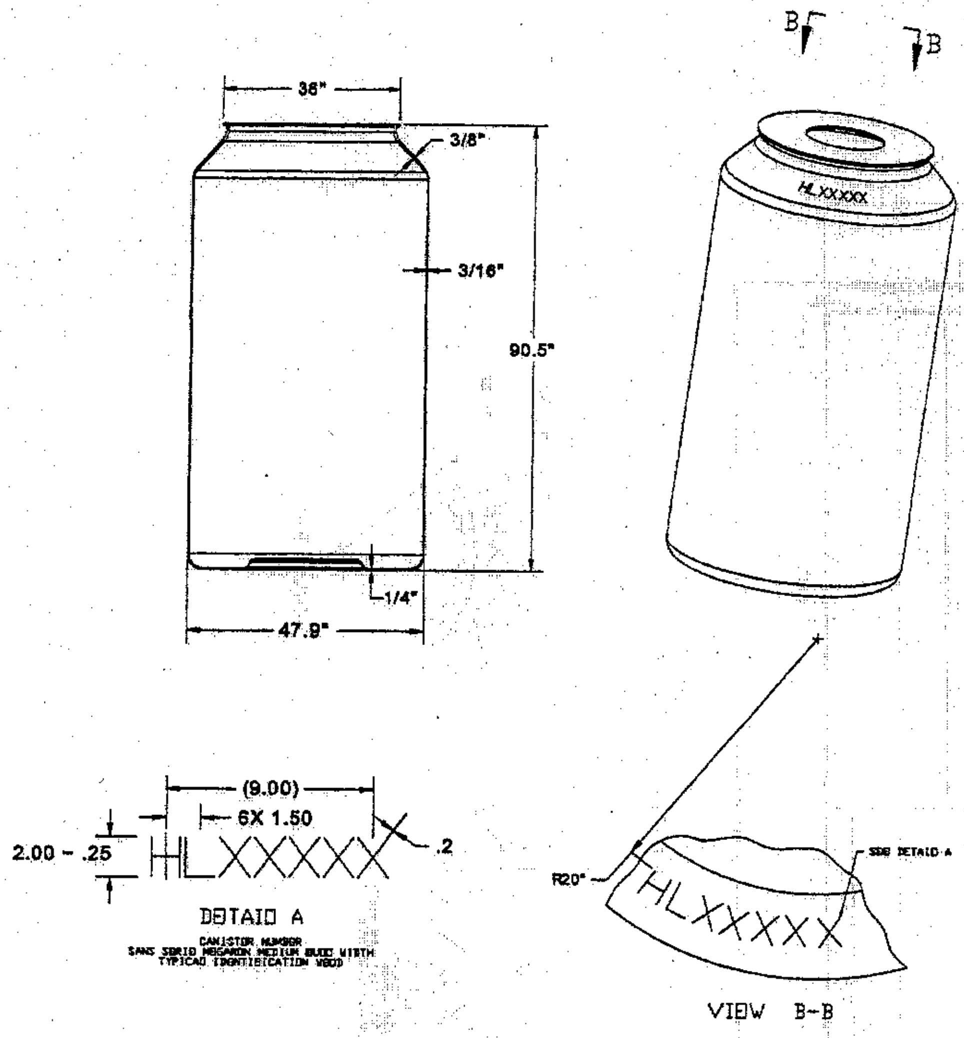


Figure 4A-120 Typical Arrangement of a Reverse Flow Diverter

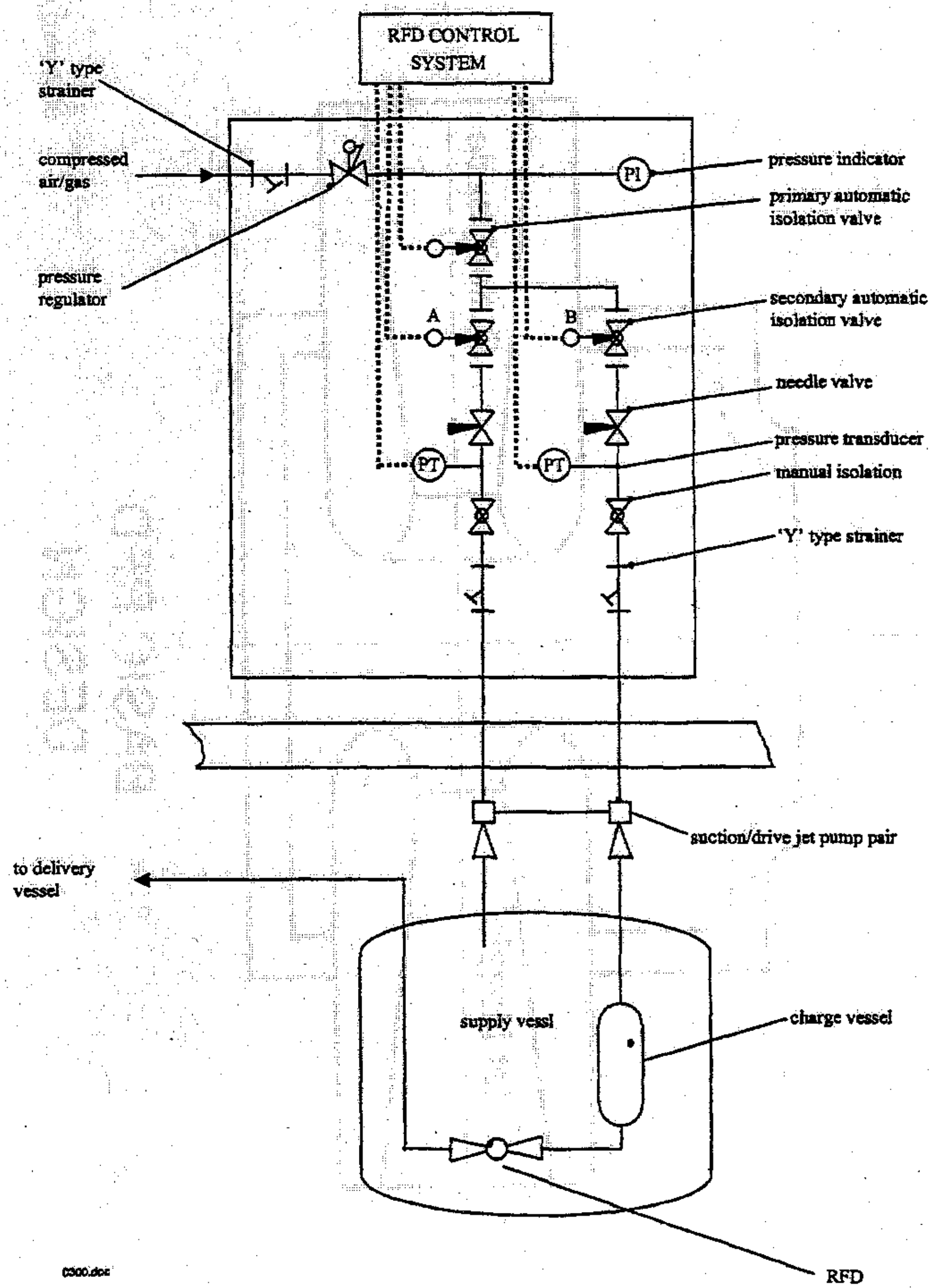


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Figure 4A-121 **Basic Reverse Flow Diverter Design**

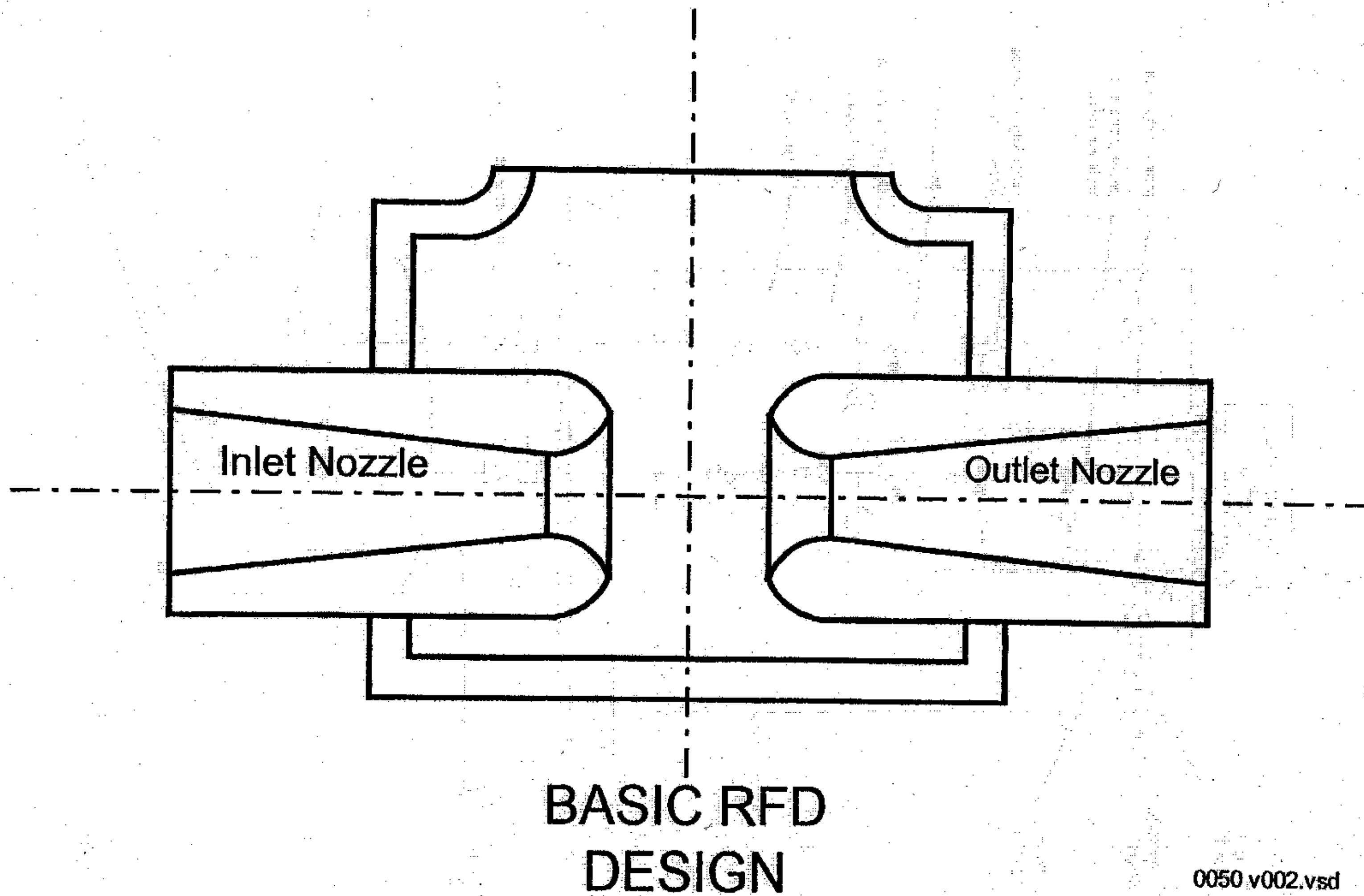

Figure 4A-122 Typical Arrangement of a Steam Ejector System

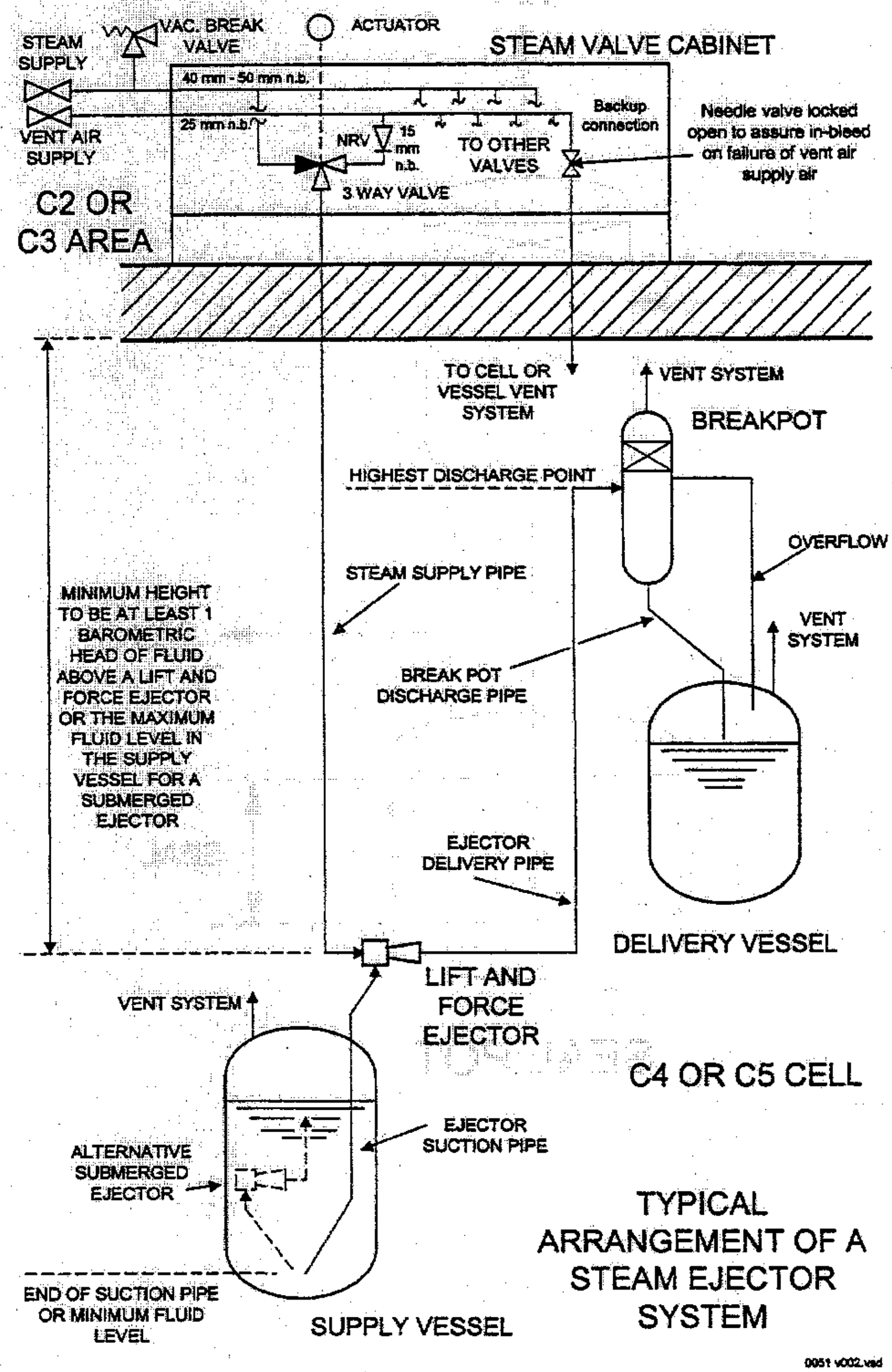

Figure 4A-123 **Typical Seal Pot Arrangement**

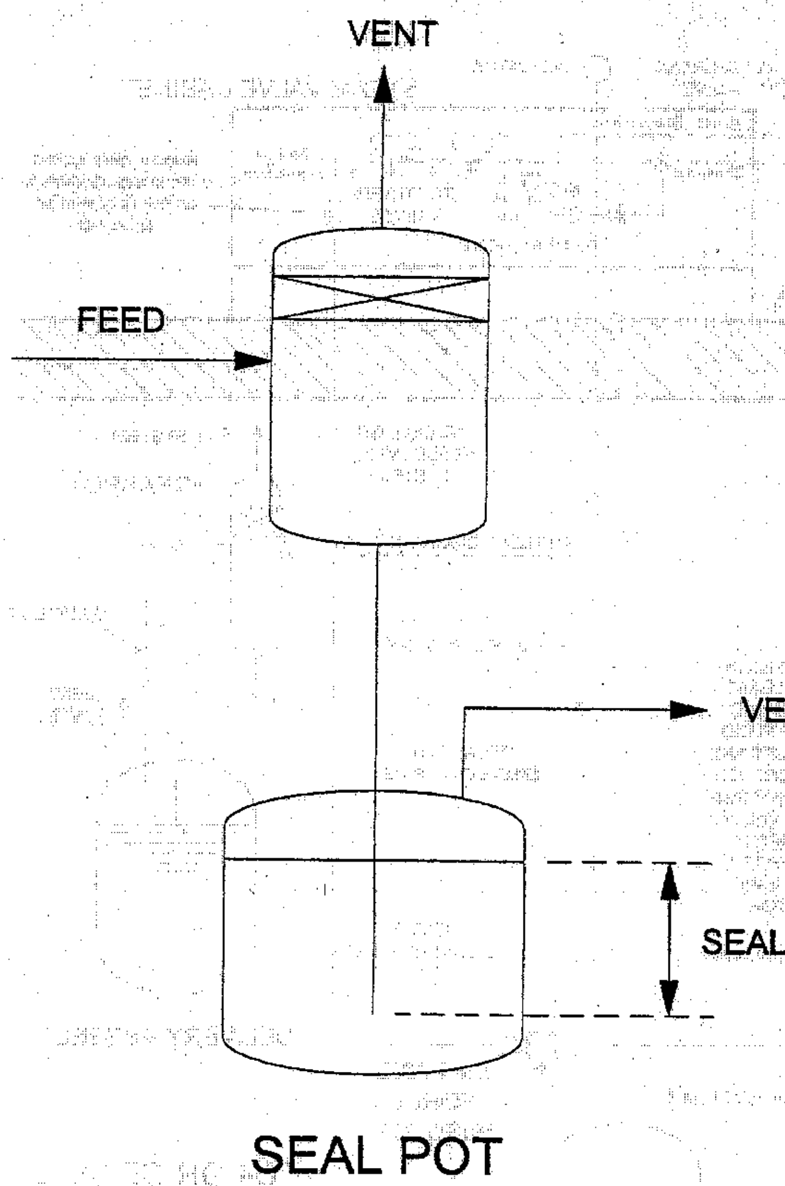

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Figure 4A-124 **Typical Breakpot Arrangement**

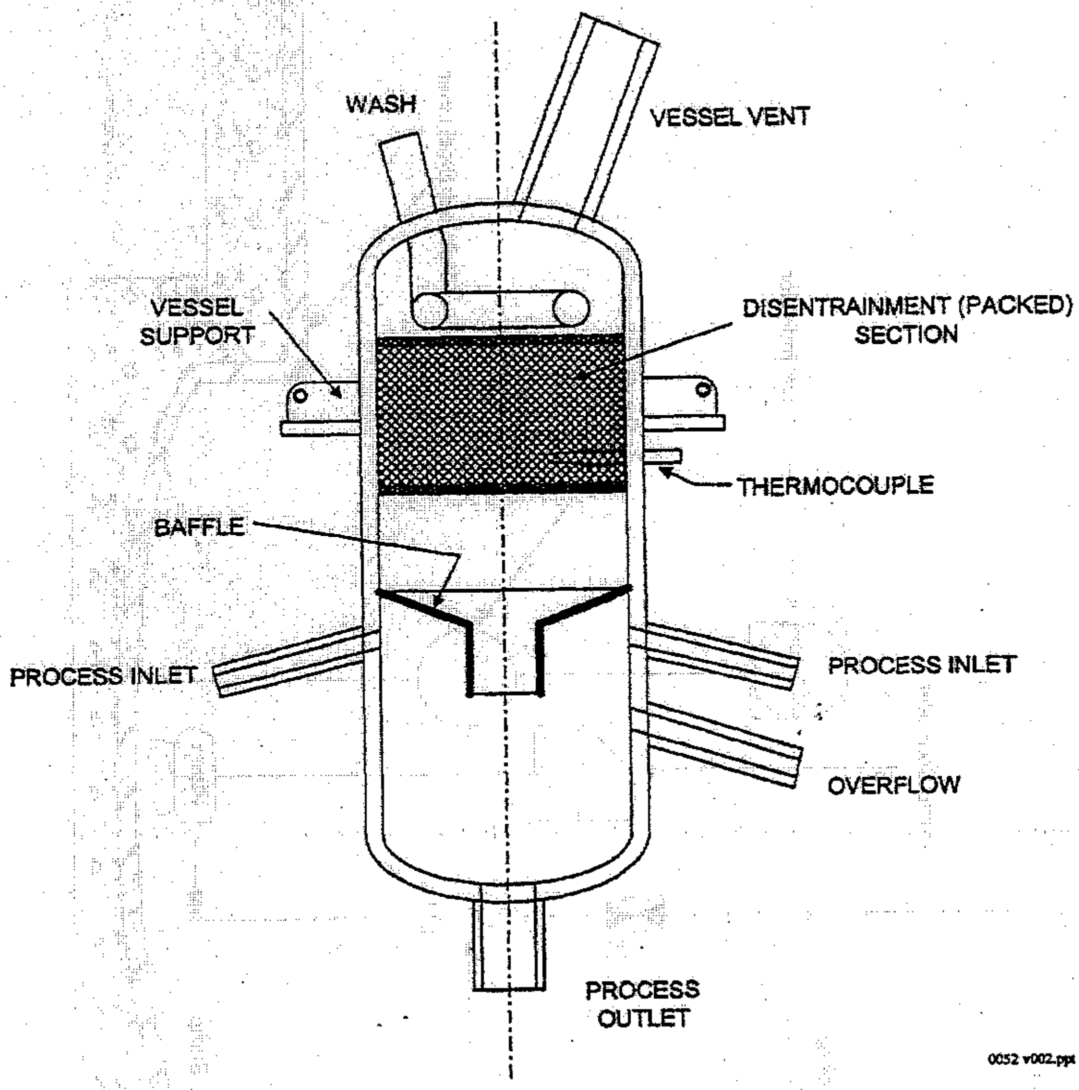


Figure 4A-125 Typical Type I Sump

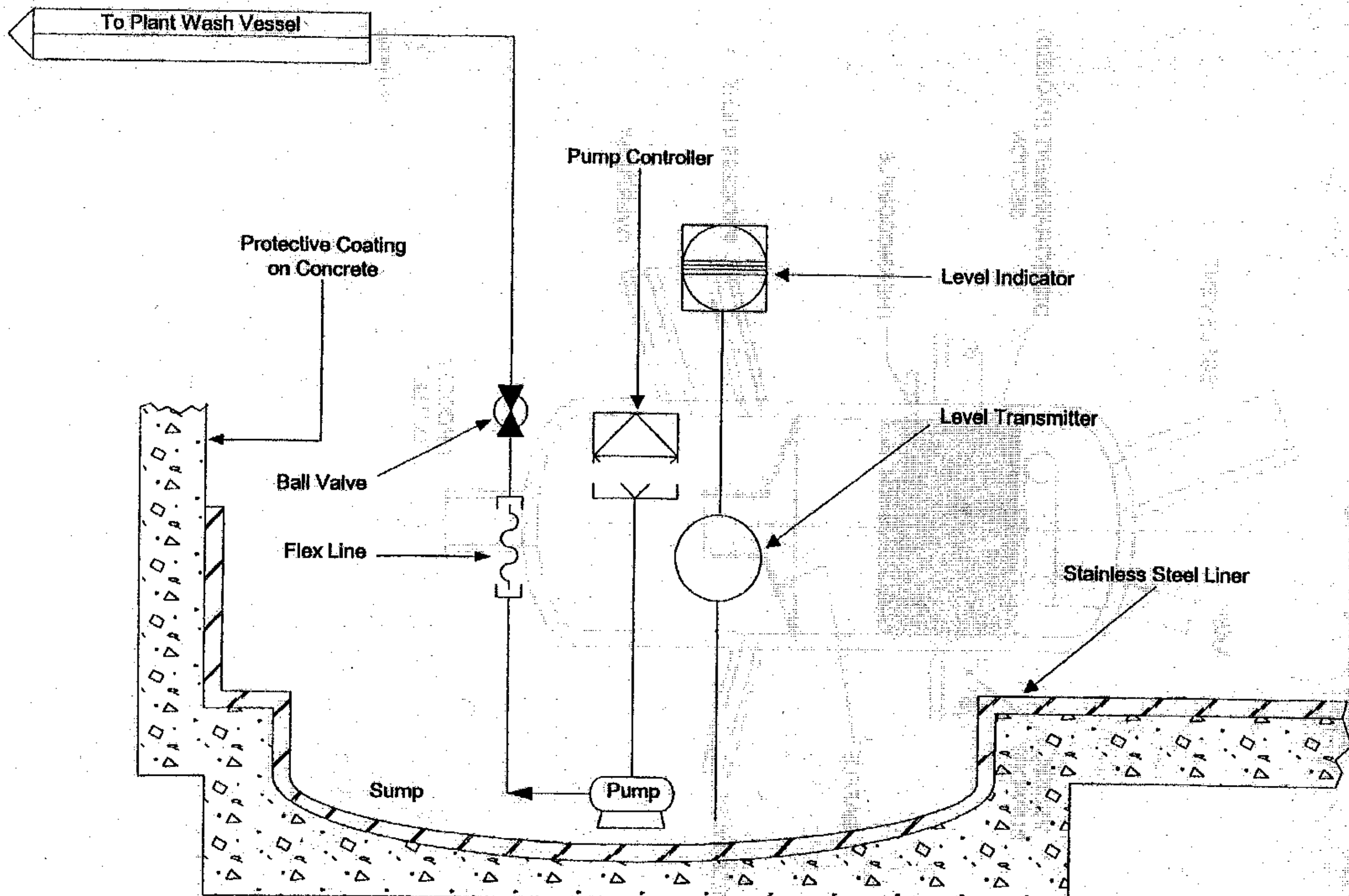


Figure 4A-126 Typical Type II Sump

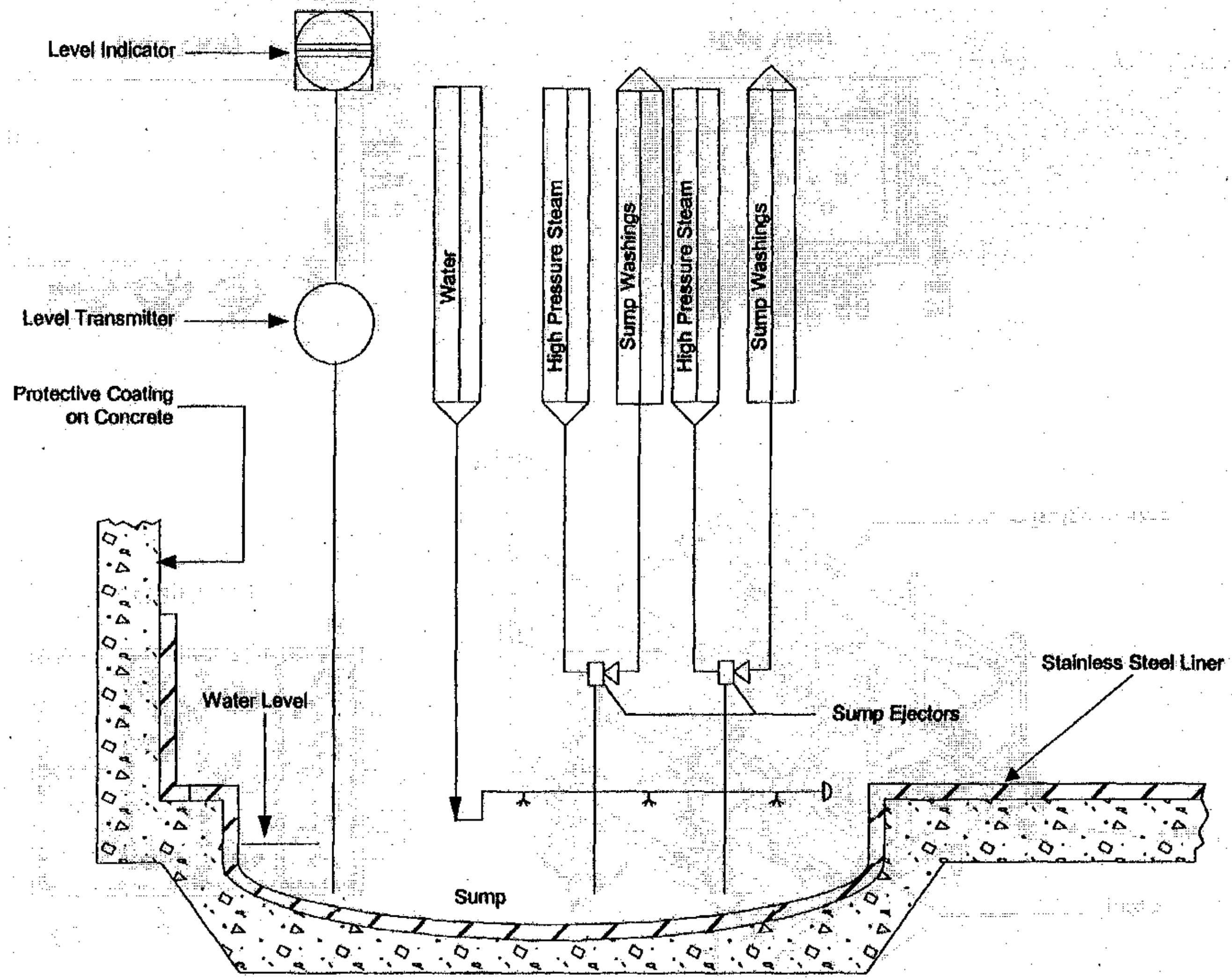
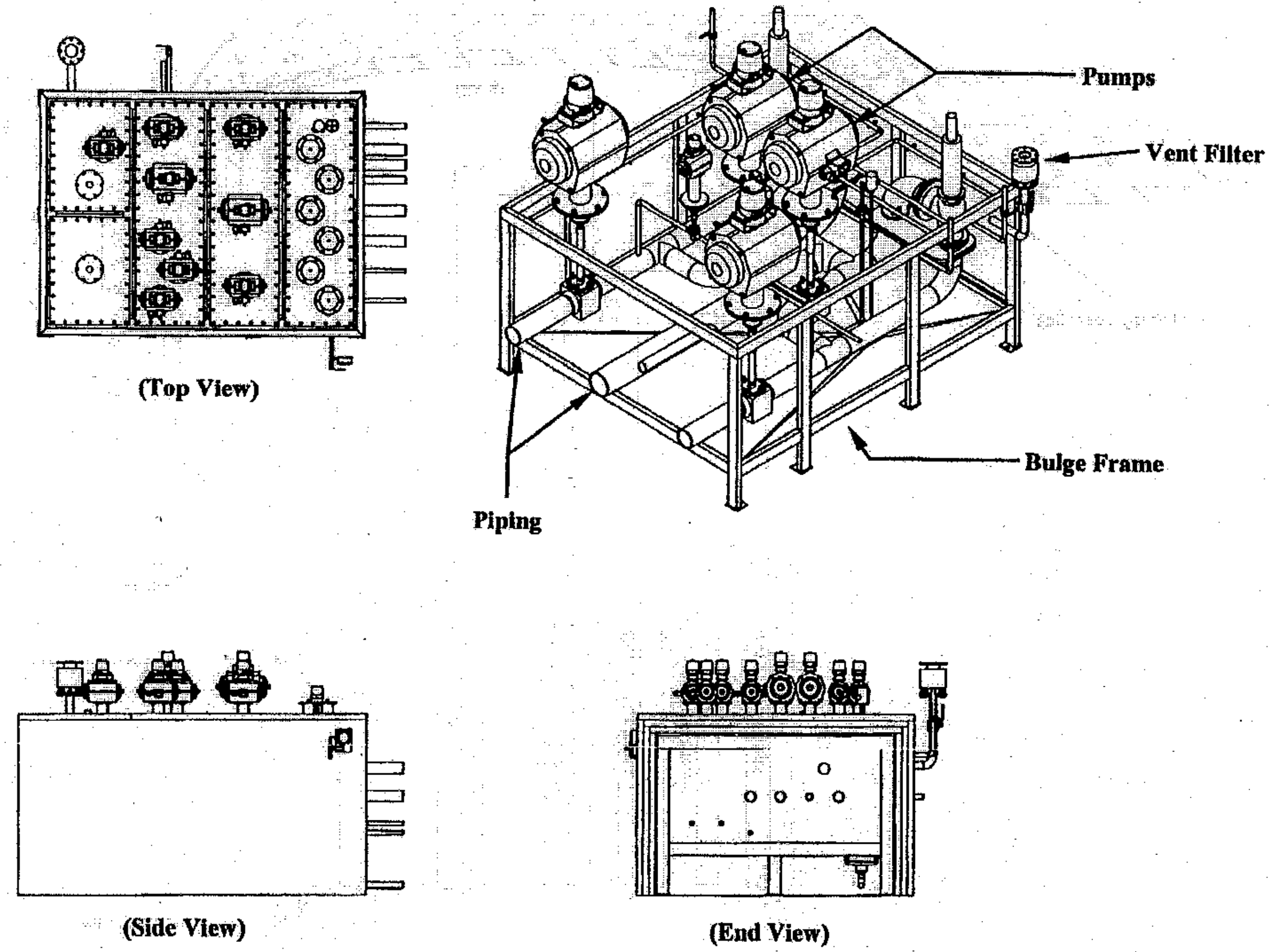


Figure 4A-127 Typical Bulge Configuration



Supplement 1

RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements

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SUPPLEMENT 1.0

RPP-WTP COMPLIANCE WITH UNIFORM BUILDING CODE

SEISMIC DESIGN REQUIREMENTS

Contents

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1.0 Introduction

This report outlines how the seismic design requirements specified for the WTP facilities will meet, as a minimum, all the requirements of the 1997 Uniform Building Code.

2.0 Compliance with the Uniform Building Code

Design of all structures, systems and components (SSC's) for the WTP facility will meet, as a minimum, the design requirements of the Uniform Building Code and thus satisfy the requirements of WAC 173-303-806(4)(a)(xi).

Two approaches are allowed per UBC, the design procedures prescribed in Chapter 16 and alternate procedures per Section 1629.10. The procedures to be utilized for each SSC will be set after the SSC is categorized.

Each facility is evaluated to determine both the hazards associated with internal events caused by the process systems and hazards associated with the events external to the facility, including seismic events. The hazard assessment process will identify SSC's which have importance to safety functions. Once these SSC's are identified, they are categorized based on the necessity for them to function during or following a seismic event.

3.0 Seismic Categorization

The primary categorization of SSC's is for Natural Phenomena Hazards, the most significant being seismic events. The seismic categories used for designing WTP facilities are defined by the requirements of the SSC to perform its safety function during a seismic event.

Seismic Category I (SC-1)

SSC's important to safety, which has a safety function.

Seismic Category II (SC-II)

SSC's important to safety, whose failure during a seismic event could prevent a Seismic Category I SSC from performing its safety function.

Seismic Category III (SC-III)

a). SSC's important to safety, but without a seismic safety function.

b). SSC's not important to safety, but which has significant inventory of radioactive or hazardous material.

Seismic Category IV (SC-IV)

SSC's not important to safety and without an inventory of radioactive or hazardous material, but requiring seismic protection.

4.0 Seismic Design Criteria

The WTP Project has evaluated standards for seismic design, which met the minimum requirements of UBC and selected Department of Energy standard DOE-STD-1020, for evaluation of natural phenomena hazards, including specifically for seismic design. The following project documents have been developed for selection of appropriate seismic design basis events and design criteria for design of SSC's.

- "TWRS-P Facility Design Earthquake-Peak Ground Acceleration, Seismic Response Spectra, and Seismic Design Approach", RPT-W375-RU00002. This report documents and summarizes the project approach to selection of seismic standards and the specific seismic standard selection. The report also applies that standard to establish the peak design basis peak ground acceleration value, and associated seismic response, spectra that will be used to develop the design response spectra.

- "Applicability of DOE Documents to the Design of TWRS-P Facility for Natural Phenomena Hazards", RPP-W375-RU0003. This report documents a review by the design team to identify the DOE standards that apply to the design of the WTP (formerly TWRS-P).

- "Validation of the Geomatrix Hanford Seismic Report for Use on the TWRS Privatization Project", RPT-W375-RU00004. This report documents a review by the project of an extensive site-specific report that considers the seismology and geological conditions on the Hanford Site for applicability to the WTP site. The report concluded that the Geomatrix report adequately assesses the seismic hazards and would be used to select a site-specific seismic design response spectra.

- "Seismic Analysis and Design Approach", RPT-W375-RU00005. This report identifies the specific requirements for seismic design of SSC's. Requirements for evaluation of seismic loads and applicable design codes to adequately design SSC's to resist these loads is contained in this report.

- "Final Report-Geotechnical Investigation, WTP", by Shannon & Wilson, Inc., H-1616-51. This report was prepared to evaluate the site-specific soil conditions and provide design limitations. The report also identified the appropriate soil type to be used for design of seismic loads in accordance with the Uniform Building Code.

5.0 Design Requirements

The seismic design requirements for Seismic Category IV and Seismic Category III, SSC's follow the requirements of the UBC. In accordance with UBC, Figure 16-2, the USGS seismic hazards survey map, the WTP site is designated as seismic zone 2B. Since SC-IV SSC's do not contain significant radioactive or hazardous materials, the Importance Factor I used in design is 1.0. SC-III SSC's contain radioactive and hazardous materials and will be designed with an Importance Factor of 1.25.

The WTP project has selected alternative methods for evaluation of seismic loads and design of SSC's, within the provision of the UBC. These alternative evaluation procedures applied to SC-I and SC-II SSC's are the following.

- ASCE 4, "Seismic Analysis of Safety-Related Nuclear Structures"

- Nuclear Regulatory Commission Guide 1.92, "Combining Modal Responses and Spatial Components in Seismic Response Analysis".

- Selected sections of the Nuclear Regulatory Commission regulations for seismic design contained in NUREG-0800, "Standard Review Plan".

The UBC permits the use of alternative lateral-force procedures, using rational analyses based on well-established principals used for design of facilities with more significant hazardous consequences similar to SC-I and SC-II WTP facilities.

6.0 Conclusion

In conclusion, the seismic design requirements for the WTP facilities meet the provisions of or alternative methods permitted by the UBC. The requirements for seismic design of Seismic Category III and IV structures, systems and components are achieved by direct application of the UBC. The requirements for seismic design of Seismic Category I and II structures, systems and components are achieved through well-established alternative methods. Structures, systems and components designed in accordance with the requirements established for the WTP project will adequately resist the maximum horizontal and vertical acceleration ground motions associated with the seismic zone 2B or site-specific seismic response spectra, as permitted by the UBC.

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Chapter 6.0

Procedures to Prevent Hazards

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CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS

Contents6.0 PROCEDURES TO PREVENT HAZARDS [F] Att 51-6-1

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter addresses hazard prevention at the River Protection Project - Waste Treatment Plant (WTP). It covers the following topics: security; preparedness and prevention requirements; preventive procedures, structures, and equipment; and prevention of reaction of the ignitable, reactive, and incompatible waste at the WTP.

Information is presented in two formats: narrative and table. See Appendix 6A for inspection tables.

6.1 SECURITY [F-1]

This section describes WTP security procedures and equipment. Hanford Site security measures are discussed in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE-RL 1998).

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the barrier and warning signs that support security and control access to the WTP.

6.1.1.1 24-Hour Surveillance System

The entire Hanford Site is a controlled-access area. For surveillance information, refer to the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-1998).

6.1.1.2 Barrier and Means to Control Entry

The WTP will use two fences, one around the facility's perimeter, and a second inner fence that controls access to dangerous waste management areas. The inner fence will be of sufficient height and construction to prevent people, livestock, and wildlife accidental access to the WTP. Vehicle access to the WTP administration building will be through a normally open gate in the perimeter fence. Visitors must check in at the administration building and will be escorted as required.

WTP personnel entry to the process areas will be through a controlled pedestrian gate. Service vehicles delivering supplies will enter process areas through a controlled gate. See the topographic map in Chapter 2.0 of this Dangerous Waste Permit Application (DWPA), for further information regarding barriers and vehicular access.

6.1.1.3 Warning Signs [F-1a(2)]

Warning signs, written in English, stating, "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" (or an equivalent legend), legible from a distance of at least 25 feet, and visible from any angle of approach to the WTP. These warning signs will be posted in locations such as:

- Around the perimeter of the WTP fenced areas
- On each entrance, gate, and other access points to portions of the WTP facility actively managing dangerous waste
- On entrances to other enclosed areas within the plant that contain dangerous or mixed waste

Points of access into waste handling and storage areas will have clearly marked warnings for radiation exposure and corrosivity, the major health risks associated with the waste. Access points into these areas will be strictly controlled. In addition, signs will be posted at the main site access entrance, instructing visitors to report to the WTP administration building to gain access to the WTP (WAC 173-303-310(2)(a)).

6.1.2 Waiver [F-1b]

No waivers of the security procedures and equipment requirements for the WTP are requested.

6.2 INSPECTION PLAN [F-2]

The following sections describe the WTP dangerous waste inspection plan. The WTP will use a graded approach to preventing and detecting malfunctions, deterioration, operator errors, and discharges that will range from daily inspections to integrity assessments. This graded approach is comprised of activities that, at a minimum, will meet the inspection requirements and will include more precautions for equipment at higher risk of failure. Monitoring via instrumentation will be used to perform remote inspections in areas of high radioactivity, including the pretreatment areas, the LAW vitrification area, and the HLW vitrification area. Due to the radioactive nature of the waste and consistent with ALARA principles, monitoring by instrumentation will be the primary means of fulfilling the inspection requirements in these areas. The WTP also will use cameras, windows, process control, function checks, and preventive maintenance to comply with inspection requirements.

Example inspection schedules, which are part of the inspection plan, are presented as tables in Appendix 6A. Each table addresses a particular dangerous waste management unit, or group of units, such as tanks. Within each management unit table, the inspections are presented by system, and are further broken down by individual component in each system.

6.2.1 General Inspection Requirements [F-2a]

This section describes general, WTP-wide inspection requirements used to help prevent, detect, or respond to environmental or human health hazards related to dangerous waste handling, treatment, and storage at the WTP. The inspection schedules are provided in Table 6A-1.

Instruments, such as those used for overfill detection, will be connected to the Process Control System (PCS). The PCS will be the computer system that continuously monitors the instruments' data. Should the PCS detect an abnormal reading, control personnel will be alerted (in real time) by alarm in the control room. The monitoring system will provide trending of selected monitoring data, graphics, and equipment summary displays. The WTP will use a maintenance management system to plan and track preventive maintenance activities and function testing at the WTP. Other methods of performing inspections at the WTP will be visual where safe and effective to do so.

6.2.1.1 Items to be Inspected [F2a(1)]

The WTP inspection plan will include specific inspection schedules that meet the requirements. In Appendix 6A are example inspection schedules of the types of items to be inspected. The following are listed in the inspection schedule tables:

- General inspections for safety and emergency equipment, security, and preparedness and prevention
- Tank systems
- Containers
- Container storage areas
- Miscellaneous treatment units
- Containment building areas

6.2.1.2 Types of Problems to Look for During Inspections [F-2a(2)]

The example inspection tables in Appendix 6A include a column titled "inspections". This column specifies the type of inspection activities to be performed (such as verifying the operability of equipment and problems to look for) for each inspected item.

6.2.1.3 Frequency of Inspections [F-2a(3)]

In the example inspection tables in Appendix 6A, the column titled "frequency" provides the frequency of inspection for each item. Inspection frequencies were developed using a graded approach that will be finalized prior to the start of operations, and are based on the following:

- Regulatory requirements where specified
- Rate of possible deterioration of equipment
- Probability of a release to the environment
- Potential to cause harm to human health and the environment
- Manufacturer's specifications
- Integrity assessments of tank systems
- Operating experience and knowledge

6.2.1.4 Schedule Location [F-2a(4)]

Controlled copies of the inspection plan will be kept at the WTP facility. The project document control manager, or equivalent, will be responsible for ensuring that controlled copies of the inspection plan are kept current when revisions to the inspection plan are made.

6.2.1.5 Employee Positions Responsible for Conducting Inspections [F-2a(5)]

Personnel performing dangerous waste inspections will have the appropriate facility-specific training, as defined in the *River Protection Project - Waste Treatment Plant Dangerous Waste Training Plan* (Chapter 8.0). The training program will identify the individuals qualified to perform dangerous waste-related inspections. There will not be specific job positions where all individuals holding that position qualify to perform dangerous waste inspections.

6.2.2 Inspection Log [F-2b]

Hand written records of inspections (the inspection log) will include the date and time of inspection; the legible, printed name and hand written signature of the inspector; a notation of the observations made; and an account of spills or discharges. Most of the daily inspections will be recorded as part of the process control data recording system and will therefore be fully retrievable and auditable. Repairs, and remedial or corrective actions needed, will become part of the WTP's corrective action system and the date and nature of repairs or remedial actions taken will be recorded in the inspection log. The inspection log will be stored in the WTP operating record for at least 5 years from the date of inspection.

Electronic media, rather than hard copies, will be used for recording inspections in the WTP, where it is sensible, cost-effective, and/or consistent with ALARA practices. Electronic inspection records normally will be readily retrievable. Whenever possible, dangerous waste inspection requirements will be incorporated into the procedures and operating documentation records for normal operations. The procedures and operating requirements that satisfy compliance with WAC 173-303 (including inspection requirements) will be identified so that they are distinguishable within the larger universe of facility operational requirements.

6.2.3 Schedule for Remedial Action for Problems Revealed [F-2c]

Remedial action will be taken as soon as practicable by facility management to implement the *River Protection Project-Waste Treatment Plant Emergency Response Plan* (ERP) (Chapter 7.0), if an inspection identifies an imminent hazard to human health or the environment.

An investigation will begin within 24 hours, upon detection of unplanned release in the plant. Depending upon the volume of the release and the characterization of the released contents, the cleanup may be completed within 24 hours, or as soon as practicable, after completion of the initial investigation period. However, the time required to cleanup the release will depend on factors such as analytical turnaround time, radioactivity, and volume.

When inspections reveal problems that do not present an immediate threat to human health or the environment, nor result in a release of hazardous material (cracks in secondary containment coatings, nonfunctioning instrumentation, and labeling errors or omissions), such inspection findings will be logged and response actions scheduled and tracked within 24 hours as corrective actions. The following steps are used, in general, to resolve corrective actions:

- Problem identification and documentation
- Classification
- Cause analysis
- Corrective action
- Follow-up investigation

Non-emergency corrective actions will be completed within 24 hours if possible; however, additional response time may be required because of the radioactive component of the waste being managed at the WTP.

The precise title of the personnel that will be responsible for authorizing such corrective actions has not been decided; however, the position will be one equivalent to a shift operations manager.

6.2.4 Specific Process or Waste Type Inspection Requirements [F-2d]

The following sections describe specific process inspection requirements.

6.2.4.1 Container Inspections [F-2d(1)]

The WTP will store immobilized low-activity waste (ILAW), immobilized high-level waste (IHLW), and secondary dangerous and mixed waste in containers. Secondary waste refers to newly generated waste (or a waste by-product from treating the Hanford tank waste) that designates as dangerous waste or mixed waste. Secondary waste also will be generated by the laboratory activities, from maintenance waste, and failed contaminated equipment. The location and design description of the containers and their storage areas are included in Chapter 4. Inspections of container storage areas will be performed weekly when waste is in the storage areas. Table 6A-2 provides examples of container and container storage area inspection schedules for ILAW, IHLW, and secondary waste.

<u>Immobilized Low-Activity and High-Level Waste Containers</u>
Filled ILAW and IHLW containers will be radioactive and thus, inspections must be performed remotely. Therefore, in lieu of conventional container inspections while the containers are in storage, each container will be inspected before and after filling, and when it is moved into and out of the ILAW and IHLW container storage areas. The canisters will not contain free liquids, will be chemically and physically stable (not ignitable or reactive), and will be welded closed. The IHLW containers will be placed in special racks inside the storage areas that will prevent them from toppling. The immobilized waste containers and storage areas are described in Chapter 4.

The WTP will inspect the ILAW and IHLW container storage areas, when they are in use, weekly by remote means. These remotely managed storage areas do not include thirty-inch aisle spacing. The example inspection schedules (Appendix 6A) specify the problems for which to look and how inspections are performed.

The dangerous waste container labeling requirements will be met by using a unique alphanumeric identifier that will be welded to each container. Deterioration of the identifier is not expected due to the permanent nature of these markings and provisions for subsequent handling that will safeguard against damage to the containers and the identifying marks.

Using the identification on each container, a tracking system will record key movements of each immobilized waste container through the facility. Information about the waste canister tracking system is in Chapter 4. For each container of ILAW and IHLW produced, the system will track the following:

- The location of each container in process and storage areas
- The date that waste was first placed in the container
- The date the container was shipped from the facility, and its destination
- The nature of waste in the container, including dangerous waste designation codes, and land disposal restriction requirements

Secondary and Miscellaneous Waste in Containers

Example inspection schedules for secondary dangerous waste and mixed waste container storage areas are given in Table 6A-2.

6.2.4.2 Tank Systems Inspections and Corrective Actions [F-2d(2)(a)]

A description of the tank systems, and their safety and interlock controls, at the WTP can be found in Chapter 4. Examples of tank system inspections, inspection frequencies, and problems to look for are given in Table 6A-3. Following is a brief discussion of the tank system inspections.

Inspection procedures and the complete inspection schedule will be available at the WTP prior to starting operation. Each tank, or grouping of identical tanks, is shown as a line item in the inspection schedule tables. Each inspection item includes a description of problems to look for, and the frequency of inspection.

Cathodic Protection

Cathodic protection systems will be used to prevent or mitigate metal corrosion on underground dangerous waste transfer lines where the outermost pipes are in contact with the soil. The cathodic protection systems are described in Chapter 4. Example inspection schedules for cathodic protection systems and sources of impressed current are in Table 6A-4.

Tank Integrity Assessments

A periodic integrity assessment approach will be developed for the WTP waste tanks to ensure that the tanks' systems remain fit-for-use. The schedule for performing periodic integrity assessments will be developed during the new tank design assessment discussed in Appendix 4B of this application.

6.2.4.3 Tank Systems – Corrective Actions [F-2d(2)(b)]

Operating procedures describing corrective actions will be developed prior to operations.

6.2.4.4 Storage of Ignitable or Reactive Wastes [F-2d(3)]

Dangerous waste codes assigned to the waste in the *Double-Shell Tank System Dangerous Waste Part A Permit Application* (DOE-RL 1996) apply to the waste feed the WTP will receive. The waste feed will include the waste codes for ignitability (D001) and reactivity (D003), but the waste is not expected to exhibit the characteristics listed in WAC 173-303-090 for these two waste codes. Based on past process knowledge that includes the age, temperature, history, and chemical composition of the waste feed stored in the DST system, the waste codes D001 and D003 will be removed by the WTP. See the Waste

Analysis Plan (Appendix 3A of this application) for specific information on the waste codes and their removal.

Consequently, only the waste feed receipt tanks will be inspected for tanks storing ignitable and reactive waste. The remainder of the process tanks will not contain ignitable or reactive waste. Ignitable or reactive secondary waste may be stored in tanks or containers at the WTP. Annual inspections of all areas managing D001 and D003 waste will be conducted by personnel familiar with the Uniform Fire Code, or in the presence of the local, state, or federal fire marshal. Inspections will be entered into the WTP operating record and maintained at the WTP for 5 years (see Table 6A-5 for the inspection schedule for ignitable or reactive wastes).

6.2.4.5 Air Emissions Control and Detection - Inspections, Monitoring, and Corrective Actions (F-2d[4] and [4][a])

<u>Air Emissions from Process Vents (Subpart AA) [F-2d(4)(a)]</u>
The WTP does not use any of the regulated devices or processes listed; therefore, the WTP will not be subject to regulation under Subpart AA (40 CFR 264).

<u>Air Emission Standards for Equipment Leaks (Subpart BB) [F-2d(4)(b)]</u>
WAC 173-303-691 and Subpart BB (40 CFR 264) applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight. This provision will not apply to the facility because the WTP will not accept or treat wastes with organic concentrations at or above 10 percent by weight. Compliance with this provision will be documented through analyses of verification samples, as described in the Waste Analysis Plan.

<u>Air Emission Standards for Tanks, Impoundments, and Containers (Subpart CC) [F-2d(4)(c)]</u>
The regulations specified under WAC 173-303-692 and 40 CFR Part 264 Subpart CC, incorporated by reference, do not apply to the WTP mixed waste tank systems and containers. These tanks and containers qualify as waste management units that are "used solely for the management of radioactive dangerous waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act" and are excluded under WAC 173-303(1)(b)(vi). Containers or tanks bearing nonradioactive, dangerous waste, such as maintenance and laboratory waste, that are not excluded under WAC 173-303-692(1)(b)(ii) or 40 CFR 264.1082(c), will comply with the container and tank standards specified under 40 CFR part 264 Subpart CC.

6.2.4.6 Miscellaneous Unit Inspections

The WTP melters are miscellaneous units under WAC 173-303-680. Remote inspections and monitoring will be performed by instrumentation that will be supplemented by camera(s) and viewing through shielded windows because of the high levels of radiation in process areas. Inspections will verify the integrity of melter equipment and detect malfunctions, deterioration, leaks, or operator errors that have the potential to release dangerous waste into the facility or the environment. The miscellaneous unit inspection schedule is provided in Table 6A-6.

6.2.4.7 Containment Building Inspection

Containment buildings will be inspected for items listed in Table 6A-7. The WTP containment building example inspection schedules include the requirements from 40 CFR 264 Subpart DD. Example inspection schedules for tank systems and miscellaneous units located within containment buildings are in Tables 6A-3 and Table 6A-7.

6.2.4.8 Waste Pile Inspection [F-2d(5)]

Operation of the WTP does not involve the placement of mixed waste in piles. Therefore, this section is not applicable to the WTP.

6.2.4.9 Surface Impoundment Inspection [F-2d(6)]

Operation of the WTP does not involve the placement of mixed waste in a surface impoundment. Therefore, this section is not applicable to the WTP.

6.2.4.10 Incinerator Inspection [F-2d(7)]

Operation of the WTP does not involve using a waste incinerator. Therefore, this section is not applicable to the WTP.

6.2.4.11 Landfill Inspection [F-2d(8)]

Operation of the WTP does not involve the placement of mixed waste in a landfill. Therefore, this section is not applicable to the WTP.

6.2.4.12 Land Treatment Facility Inspection [F-2d(9)]

Operation of the WTP does not involve the land treatment of mixed waste. Therefore, this section is not applicable to the WTP.

6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following sections document the preparedness and prevention measures to be taken at the WTP.

6.3.1 Equipment Requirements [F-3a]

The following sections describe internal and external communications, and emergency equipment required and located at WTP.

6.3.1.1 Internal Communications [F-3a(1)]

The onsite communication system at the WTP provides immediate emergency information to facility personnel, and includes public address and alarm systems. The public address system provides for verbal instruction and communication to WTP personnel. The internal communication system also notifies personnel of the following local or plant-wide alarm-activated emergency situations: building evacuations, fire or explosion, radioactive discharges, and high airborne contamination. The ERP provides additional information on the response activities.

6.3.1.2 External Communications [F-3a(2)]

The WTP is equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hanford Hazardous Materials Response Team, or local emergency response teams, as necessary. External communication will be via a telephone communication system. Telephones will be available for staff use at numerous locations throughout the facility. Under no circumstances will only one staff member be at the WTP site. In addition, the current Hanford communication system will be utilized as described in the *Hanford Emergency Management Plan* (DOE/RL 1999), Section 5.2.

6.3.1.3 Emergency Equipment [F-3a(3)]

Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment are available to personnel at the WTP. A list of emergency and decontamination equipment is provided in the ERP.

6.3.1.4 Water for Fire Control [F-3a(4)]

The primary water supply for fire protection will be provided from the 200 East Area raw water distribution system. The fire water supply system comprises two water storage tanks designed to National Fire Protection Association (NFPA) 22, *Standard for Water Tanks for Private Fire Protection* (NFPA 1998); and Factory Mutual (FM) Data Sheet 3-2, *Water Tanks for Fire Protection* (FM 2001a). Each water storage tank will be capable of supplying fire-water for a minimum of two hours at the maximum anticipated demand.

The pumping system is being designed to NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection* (NFPA 1999a), and Factory Mutual Data Sheet 3-7N, *Stationary Pumps for Fire Protection* (FM 2001b). A fire pump will be installed and connected to each water storage tank. Each pump will be capable of providing the maximum system demand and will be connected to the underground distribution system in a manner that will prevent single failure from disabling both water supplies.

The underground distribution piping and valving will be designed and installed according to NFPA 24, *Standard for Installation of Private Fire Service Mains and Their Appurtenances* (NFPA 1995); and Factory Mutual Data Sheet 3-10, *Installation and Maintenance of Private Fire Service Mains and Their Appurtenances* (FM 2000).

The distribution system in the various buildings and structures are being designed following the various appropriate codes and standards that apply to their specific occupancy. The standards include NFPA 13, *Standard for the Installation of Sprinkler Systems* (NFPA 1999b); NFPA 14, *Standard for the Installation of Standpipe, private Hydrant, and Hose Systems* (NFPA 2000); NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* (NFPA 1996); and the appropriate Factory Mutual standards, as required.

6.3.2 Aisle Space Requirement [F-3b]

Sufficient aisle space will be maintained throughout the facility buildings to allow access of personnel and equipment responding to fires, spills, or other emergencies.

Alternate aisle space for IHLW and ILAW container storage area is explained in Chapter 4. Secondary wastes stored in container storage areas will meet the 30-inch minimum aisle space requirement.

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment. Refer to Chapter 4 for additional information on feed transfer piping and tank overfill protection structures, equipment, and instrumentation.

6.4.1 Unloading/Loading Operations [F-4a]

Waste feed to be treated at the WTP will be received from the DST system staging tank through a pipeline with secondary containment; leak detection; and cathodic protection, where transfer lines are in contact with the soil. The WTP will not receive waste for treatment in containers.

The filled ILAW and IHLW containers and canisters will be loaded for transport using special shielding and heavy lifting equipment. The immobilized waste will present no hazards from spills, leaks, run-off, or chemical exposures to personnel from the dangerous waste constituents because the waste will be solid (contain no free liquids) and the containers will be permanently sealed.

Containers of secondary waste bound for transport to another TSD will be packaged according to the federal, state, and local regulations in place at the time. (Because the WTP will not begin generating secondary waste for several years, information such as the procedures, structures, and equipment is not yet available.)

6.4.2 Runoff [F-4b]

Waste stored and treated inside the plants can not contact precipitation and therefore, can not contaminate runoff from WTP structures, nor can precipitation enter secondary containment for the process and storage areas within the plants. Additionally, the process condensate vessels located outside the Pretreatment Plant will be surrounded by a concrete berm lined with a protective coating for secondary containment. The secondary containment will collect and hold leaks and precipitation until the liquid can be removed. There will be no contaminated runoff from the outside tanks.

6.4.3 Contamination of Water Supplies [F-4c]

The active portions of the facility are being designed with robust structural features such as thick, reinforced concrete floors and walls; secondary containment (lined with stainless steel or other protective coating); and off-gas treatment systems. The structural features alone are designed to prevent waste feed from contacting the environment. Operation of the WTP is also intended to prevent a release of waste to the environment. The WTP design, construction, and operation will prevent waste feed and secondary waste from contaminating groundwater and drinking water supplies (see Chapter 4 for structural design information).

Raw and potable water will be supplied to the WTP via separate underground lines from the 200 East Area water treatment and distribution system. Backflow preventers or interconnection breaks ensure that in the event water is contaminated at the WTP, the water cannot flow back into the water systems' sources. There will be no connections between potable water and raw water systems, or between the potable water system and piping that will contain mixed waste.

6.4.4 Equipment and Power Failures [F-4d]

Should there be a partial or total loss of electrical power to the WTP, automatic measures ensure the plant is in a safe operational configuration. (Safe operational configuration is defined as a shutdown to minimal operations that will prevent releases and prevent unnecessary damage to the equipment.)

The emergency power system will consist of three 4.16kV medium voltage, automatically controlled emergency diesel generators connected to three separate 4.16kV emergency switchgears. Upon loss of power the emergency power system generators will automatically start. The emergency diesel generators are capable of starting, accelerating, and being loaded with the design load in a specified time limit (under 10 seconds per National Electrical Code (NEC) article 700 [Sec 3.2.2 (7)][NFPA 1999c]). The emergency power system will be connected to essential loads in order to ensure only a short-term power interruption for those loads designated as essential.

Standby power will be provided by three 13.8kV medium voltage, standby diesel generators. The standby diesel generators are started manually or automatically in the event of a prolonged loss of offsite power. This source is primarily associated with the LAW and HLW melters. Critical indications and controls are backed up by uninterruptible power supplies and batteries. The plant will remain in a safe condition during loss of electrical power.

Egress lighting will consist of self-contained fixtures with battery packs and charging systems. These lighting systems will be located in stairways, exit routes and fire alarm stations and will come on automatically upon loss of normal power to the fixture. A selected part of the normal lighting will operate as essential lighting, and will provide a minimum level of illumination throughout the plant to aid in restoring the plant to normal operation. Essential lighting will be powered by the emergency power system and will be available after an offsite power loss, following a delay required to start the emergency power supply diesel generators and for the generators to pick up the essential loads.

Selected instrumentation and controls will be unaffected by a loss of offsite power, since many of these instruments and controls will be powered by uninterruptible power supply systems. The uninterruptible power supply systems will be battery backed, and the battery chargers will be connected to the emergency power supply. Emergency lighting, such as in the central control room, will be connected to an uninterruptible power supply system. Radiation monitoring using continuous air monitors and area radiation monitors are also powered by these systems and continue operating during power failure.

6.4.5 Personal Protection Equipment [F-4e]

Facility design, operating practices, and administrative controls are the primary means of preventing personnel exposure to dangerous and mixed waste. The following practices, structures, and equipment are intended to minimize personnel exposure to chemicals, radioactive contamination, and radiation exposure:

- Remote operation and viewing
- Active ventilation that moves air from uncontaminated zones to progressively more contaminated zones
- Waste cutoff systems that automatically keep operations in a safe condition
- Secondary containment for liquids
- Offices, control rooms, change rooms, and lunchrooms that are situated to minimize casual exposure of personnel

Before the start of an operation that might expose employees to the risk of injury or illness, a review of the operation will be performed to ensure the appropriate protective gear is selected. Personnel will be instructed to wear personal protective equipment in accordance with training, posting, and instructions. The inspection schedule for personal protective equipment is found in Table 6A-1; however, the specific items listed as personal protective equipment will be in the ERP (Chapter 7.0) and not duplicated here.

6.4.6 Prevent Releases to the Atmosphere [WAC 173-303-806(4)(a)(viii)(F)]

The WTP off-gas treatment systems are the primary means of preventing contaminated releases to the atmosphere. The procedures, structures, and equipment used in these systems will be described in Chapter 4.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE WASTE [F-5]

The WTP will receive waste feed that is designated as ignitable or reactive; the WTP may store, in containers, secondary waste that is designated as ignitable, reactive, or incompatible (see Chapter 3 and Waste Analysis Plan, Appendix 3A of this application).

Process knowledge, administrative controls, and the active ventilation system prevent the formation or release of ignitable vapors that could harm human health or the environment.

Appendix 6A

Inspection Schedules

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APPENDIX 6A
INSPECTION SCHEDULES

Contents

Tables

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1.0 Inspection Schedules

This section provides example WTP inspection schedules showing inspection frequencies and what to look for. These example inspection schedules list the monitoring equipment, safety and emergency equipment, security devices, preparedness and prevention equipment, and operating and structural equipment that help prevent, detect, or respond to environmental or human health hazards related to mixed and dangerous waste. A copy of the current and complete inspection schedules will be retained at the WTP or other approved locations.

Table 6A-1 contains examples of the general inspection requirements. The remaining tables are organized by type of waste management unit. Following is a list of tables and their locations included in this Appendix.

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Table 6A-1 Example WTP General Inspection Schedule

Component Name	Inspection	Frequency
Security Devices		
WTP inner fence	Check for damaged fencing	Monthly
Posted warning signs (see Section 6.1.1.3) that say: "DANGER – UNAUTHORIZED PERSONNEL KEEP OUT" (or equivalent)	Verify signs are present, legible, and visible; ensure buildings or rooms containing dangerous or mixed waste are posted	Monthly
Points of access to active portions turnstiles, doors, and/or magnetic encoded bar readers	Verify operability	Monthly
Emergency Preparedness Equipment		
Safety showers and eyewash stations	Verify operability and sufficient pressure	Weekly
Automatic fire suppression system(s)	Verify operability	Annually
Portable fire extinguishers (all types)	Check for adequate charge	Monthly
Emergency lighting	Test operability	Monthly
Spill kit and spill control equipment	Verify contents complete	Quarterly
Emergency sirens and alarms	Verify operability	Monthly
Voice paging system (pagers or PA system)	Verify operability	Monthly
Crash alarm telephone system	Verify operability	Monthly
Emergency telephones	Verify operability	Monthly
Personal protective clothing and equipment	Ensure supplies meet ERP listing and requirements	Quarterly
Power Supply Inspections		
Emergency uninterruptible power supply system(s)	Verify operability	Annual
Emergency diesel generator	Perform no-load test and verify sufficient fuel	Annual

Table 6A-2 Example Container and Container Storage Area Inspection Schedules

Name	Inspection	Frequency
Dangerous and/or Mixed Waste Container Storage Areas		
• HLW Vit Plant container storage areas Nos. 1, 2 & 3 • LAW Vit Plant container storage area • Non-rad dangerous waste container storage area • Central waste container storage area • HLW Out-of-Service Melters • LAW Out-of-Service Melters	Verify major risk labels present and legible, ensure all containers closed (except when waste is being added to container); Check that container storage areas are free of liquid and debris; Check for significant cracks, gaps, and other signs of deterioration of storage area floors; Verify minimum 30 inches of aisle space between containers rows; Ensure that any containers holding free liquids have portable secondary containment and no liquids accumulated in portable secondary containment	Weekly
Immobilized HLW and LAW Containers		
Empty containers (canisters) for immobilized LAW and HLW waste)	Inspect container for liquid or debris inside, cracks, dents, bulges, gouges, or other abnormalities	Prior to filling
Filled IHLW and ILAW containers (canisters)	Inspect (by camera surveillance or cell window) each container for cracks, leaks, bulges, or other abnormalities	After sealing container
	Record in tracking system each container's location when placed in storage; Record in tracking system all container location changes if container(s) are moved while in storage; Verify container in recorded location when transporting container out of WTP storage	Within 48 hours of placing or moving each container
HLW and LAW Vitrification Plants' Container Storage Areas		
IHLW and ILAW container storage areas	Visually check for liquid, foreign material, or debris in storage area; Check for deformities in storage area floors	Weekly when facility is storing waste in immobilized waste container storage area
ILAW buffer container storage area	Visually check (camera surveillance or other remote means) for damaged containers; Check for liquids, foreign materials or debris in storage area; Check for cracks and deformities in storage area	Weekly when facility is storing waste

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
Pretreatment Plant Tank System			
FRP			
Waste feed receipt vessels	V11020A, V11020B, V11020C, V11020D	Inspect tank level monitoring data to prevent overflow	Daily
FEP			
Evaporator feed vessels	V11001A, V11001B	Inspect tank level monitoring data to prevent overflow	Daily
Waste feed evaporator separator vessels	V11002A, V11002B	Inspect tank level monitoring data to prevent overflow	Daily
Evaporator process condensate pot	V11005	Inspect tank level monitoring data to prevent overflow	Daily
HLP			
Strontium/transuranic lag storage vessels	V12001A, V12001C,	Inspect tank level monitoring data to prevent overflow	Daily
Lag storage vessels	V12001D, V12001E	Inspect tank level monitoring data to prevent overflow	Daily
HLW feed blending vessel	V12007	Inspect tank level monitoring data to prevent overflow	Daily
UFP			
Evaporator concentrate buffer vessels	V12010A & V12010B	Inspect tank level monitoring data to prevent overflow	Daily
Ultrafiltration feed vessels	V12011A & V12011B	Inspect tank level monitoring data to prevent overflow	Daily
LAW permeate hold vessels	V12015A, V12015B, V12015C	Inspect tank level monitoring data to prevent overflow	Daily
Ultrafilters	G12002A, G12002B, G12003A, G12003B, G12004A, G12004B	Inspect tank level monitoring data to prevent overflow	Daily
CXP			
LAW feed vessel	V13001	Inspect tank level monitoring data to prevent overflow	Daily
Cesium ion exchange columns	C13001, C13002, C13003, C13004	Inspect column monitoring data to prevent release	Daily
Caustic rinse collection vessel	V13008	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
CNP			
Recovered nitric acid vessel	V13028	Inspect tank level monitoring data to prevent overflow	Daily
Eluate contingency storage vessel	V13073	Inspect tank level monitoring data to prevent overflow	Daily
Cesium concentrate lute pot	V13030	Inspect tank level monitoring data to prevent overflow	Daily
PVP			
HEME drain collection vessels	V15326 & V15327	Inspect tank level monitoring data to prevent overflow	Daily
Condensate collection vessel	V15038	Inspect tank level monitoring data to prevent overflow	Daily
Vessel vent header collection vessel	V15052	Inspect tank level monitoring data to prevent overflow	Daily
PWD			
Primary alkaline effluent vessel	V45013	Inspect tank level monitoring data to prevent overflow	Daily
Secondary alkaline effluent vessel	V45018	Inspect tank level monitoring data to prevent overflow	Daily
Ultimate overflow vessel	V15009B	Inspect tank level monitoring data to prevent overflow	Daily
Plant wash vessel	V15009A	Inspect tank level monitoring data to prevent overflow	Daily
Acidic effluent vessel	V15013	Inspect tank level monitoring data to prevent overflow	Daily
Contaminated effluent vessel	V15018	Inspect tank level monitoring data to prevent overflow	Daily
HLW effluent transfer vessel	V12002	Inspect tank level monitoring data to prevent overflow	Daily
C3 floor drains tank	V15319	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
TLP			
Evaporator separator vessel	V41011	Inspect tank level monitoring data to prevent overflow	Daily
Process condensate hold vessel	V41013	Inspect tank level monitoring data to prevent overflow	Daily
Plant wash vessels	V45009A & V45009B	Inspect tank level monitoring data to prevent overflow	Daily
TCP			
LAW buffer storage vessel	V41001	Inspect tank level monitoring data to prevent overflow	Daily
RDP			
Spent resin collection vessels	V43135A & V43135B	Inspect tank level monitoring data to prevent overflow	Daily
Resin flush collection vessel	V43136	Inspect tank level monitoring data to prevent overflow	Daily
TXP			
Technetium ion exchange columns	C43006, C43007, C43008, C43009	Inspect column monitoring data to prevent overflow	Daily
Caustic rinse collection vessel	V43056	Inspect tank level monitoring data to prevent overflow	Daily
Technetium ion exchange buffer vessel	V43001	Inspect vessel level monitoring data to prevent overflow	Daily
Treated LAW buffer vessels	V43110A, V43110B, V43110C	Inspect tank level monitoring data to prevent overflow	Daily
TEP			
Technetium eluant recovery evaporator	V43069	Inspect tank level monitoring data to prevent overflow	Daily
Recovered technetium eluant vessel	V43071	Inspect tank level monitoring data to prevent overflow	Daily
Technetium concentrate lute pot	V43072	Inspect tank level monitoring data to prevent overflow	Daily
RLD			
Process condensate vessels	V45028A & V45028B	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
LAW Vitrification Plant Tank System			
LCP			
Melter 1 concentrate receipt vessel	V21001	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 concentrate receipt vessel	V21002	Inspect tank level monitoring data to prevent overflow	Daily
Melter 3 concentrate receipt vessel	V21003	Inspect tank level monitoring data to prevent overflow	Daily
LFP			
Melter 1 feed preparation vessel	V21101	Inspect tank level monitoring data to prevent overflow	Daily
Melter 1 feed vessel	V21102	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 feed preparation vessel	V21201	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 feed vessel	V21202	Inspect tank level monitoring data to prevent overflow	Daily
Melter 3 feed preparation vessel	V21301	Inspect tank level monitoring data to prevent overflow	Daily
Melter 3 feed vessel	V21302	Inspect tank level monitoring data to prevent overflow	Daily
LVP			
LAW caustic scrubber blowdown vessel	V22001	Inspect tank level monitoring data to prevent overflow	Daily
LOP			
Melter 1 SBS condensate vessel	V22101	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 SBS condensate vessel	V22201	Inspect tank level monitoring data to prevent overflow	Daily
Melter 3 SBS condensate vessel	V22301	Inspect tank level monitoring data to prevent overflow	Daily
RLD			
Plant wash vessel	V25001	Inspect tank level monitoring data to prevent overflow	Daily
LAW C3/C5 effluent collection vessel	V25002	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
SBS condensate collection vessel	V25003	Inspect tank level monitoring data to prevent overflow	Daily
HLW Vitrification Plant Tank System			
HCP			
Concentrate receipt vessel 1	V31001	Inspect tank level monitoring data to prevent overflow	Daily
Concentrate receipt vessel 2	V31002	Inspect tank level monitoring data to prevent overflow	Daily
HOP			
SBS condensate collection vessel	V32101	Inspect tank level monitoring data to prevent overflow	Daily
HDH			
Canister decontamination vessel	V33001	Inspect tank level monitoring data to prevent overflow	Daily
Waste neutralization vessel	V33002	Inspect tank level monitoring data to prevent overflow	Daily
Canister bogie decontamination vessel	V33004	Inspect tank level monitoring data to prevent overflow	Daily
RLD			
Acidic waste vessel	V35002	Inspect tank level monitoring data to prevent overflow	Daily
Plant wash and drains vessel	V35003	Inspect tank level monitoring data to prevent overflow	Daily
Decontamination effluent collection vessel	V35009	Inspect tank level monitoring data to prevent overflow	Daily
Offgas drains collection vessel	V35038	Inspect tank level monitoring data to prevent overflow	Daily
HFP			
Feed preparation vessel	V31101	Inspect tank level monitoring data to prevent overflow	Daily
HLW melter feed vessel	V31102	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
Analytical Laboratory Tank System			
LAB			
Lab liquid effluent collection vessels	V60001a & V60001b	Inspect tank level monitoring data to prevent overflow	Daily
Plant Sumps as identified in Chapter 4: Leak Detection for Primary Containment			
Leak detectors located in secondary containment for all tank systems, container storage areas, miscellaneous units, and containment buildings managing dangerous and/or mixed waste	Monitor cell leak detection instrumentation or monitoring data to detect leaks		Daily
Underground Piping (receiving from DST and transferring out)			
Leak detectors	Monitor cell leak detection instrumentation or monitoring data to detect leaks		Daily

Table 6A-4 Example Cathodic Protection Inspection Schedule-Dangerous Waste Transfer Lines

Component Name and Line Number	Inspection	Frequency
Cathodic protection systems for dangerous and mixed waste transfer lines	Verify proper operation	• Initial (less than 6 months after installation) • Annually (from date of initial installation inspection, above)
All sources of impressed current supporting cathodically protected dangerous and mixed waste transfer lines	Test for proper function	Bi-monthly

Table 6A-5 Example Ignitable or Reactive Wastes Inspection Schedule

Component Name	Inspection	Frequency

Table 6A-5 Example Ignitable or Reactive Wastes Inspection Schedule

Component Name	Inspection	Frequency
Receipt tanks	Inspect, by qualified personnel or in the presence of fire marshal, for compliance with Uniform Fire Code and enter inspection into operating record	365 days
Containers and container storage areas storing ignitable or reactive waste	Inspect, by professional person or in the presence of fire marshal for compliance with Uniform Fire Code and enter inspection into operating record. Inspect containers and container storage areas for compliance with WAC 173-303-630(8) requirements.	365 days

Table 6A-6 Example Miscellaneous Unit Inspection Schedule

Component Name	Inspection	Frequency
LAW & HLW Melters	• Visual inspection (via cave window or CCTV if provided) for damage, leaks, or abnormalities • Inspect melter level monitoring data to prevent overflow	Daily

Table 6A-7 Example Containment Buildings Inspection Schedule

Component Name	Inspection	Frequency
• Containment building areas as designated in Chapter 4	• Visual of area surrounding containment building to detect signs of releases of hazardous waste • Primary barrier in low or no radiation zones – look for significant cracks, gaps, corrosion or other signs of deterioration, look for liquid on floor. • High radiation areas – check differential pressure monitoring records to ensure negative pressure in containment building area	Weekly

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Chapter 7.0

Contingency Plan

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