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United States
Department of Energy
P.O. Box 550
Richland, Washington 99352

DOE/RL-96-82
Revision 0

UC-630

Hanford Facility Dangerous Waste Closure Plan, 241-Z Treatment and Storage Tanks

Date Published
December 1996

United States
Department of Energy
P.O. Box 550
Richland, Washington 99352

Approved for Public Release

STATE ENVIRONMENTAL POLICY ACT (SEPA)

ENVIRONMENTAL CHECKLIST FORMS

FOR

241-Z TREATMENT AND STORAGE TANKS CLOSURE

DECEMBER 1996

REVISION 0

WASHINGTON ADMINISTRATIVE CODE
ENVIRONMENTAL CHECKLIST FORMS
[WAC 197-11-960]

A. BACKGROUND

1. Name of proposed project, if applicable:

   241-Z Treatment and Storage Tanks Closure. The 241-Z Treatment and Storage Tanks will be clean closed with respect to dangerous waste contamination that resulted from operations of this tank system as a Resource Conservation and Recovery Act (RCRA) treatment, storage, and disposal unit (TSD).

2. Name of applicants:

   U.S. Department of Energy, Richland Operations Office (DOE-RL).

3. Address and phone number of applicants and contact persons:

   U.S. Department of Energy
   Richland Operations Office
   Post Office Box 550
   Richland, Washington 99352

   Contact Persons:

   J. E. Rasmussen, Director
   Environmental Assurance, Permits,
   and Policy Division
   (509) 376-6441

4. Date checklist prepared:

   December 1996

5. Agency requesting the checklist:

   Washington State
   Department of Ecology
   1315 W. 4th Avenue
   Kennewick, Washington 99336-6018

6. Proposed timing or schedule: (including phasing, if applicable):

   Tri-Party Agreement milestone M-20-48A states that a Part B permit application, a closure plan, or a preclosure work plan will be developed for this 241-Z TSD unit. A closure plan is being prepared and will be submitted to the Washington State Department of Ecology (Ecology) in December 1996 to complete this milestone.

   The 241-Z Treatment and Storage Tanks System will be used to support Plutonium Finishing Plant (PFP) Complex transition activities. The

schedule for the final use of the 241-Z unit will be determined as part of the Defense Nuclear Facilities Safety Board Recommendation 94-1 *Hanford Site Integrated Stabilization Management Plan* and the Multi-Year Program Planning process. Once the PFP Complex transition activities are complete and the final inventory of waste is removed from the 241-Z unit, closure activities will begin.

7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

Removal and disposal of the 241-Z tanks, internal piping and concrete vaults will be coordinated with the disposition phase of the PFP Complex decommissioning process. If soil cleanup is necessary, it will be coordinated with the decommissioning of the PFP Complex also.

8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

General Hanford Site environmental information is found in *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

National Environmental Policy Act (NEPA) documentation for the proposed actions in the closure plan is generally covered by Categorical Exclusions (CX) as found in 10 CFR 1021, Subpart D, Appendices A and B. A sitewide CX (Deactivation, De-Energization, or Isolation of Decommissioned Plant Systems and Stabilization in Hanford Facilities) was approved by the DOE RL in February 1996. This sitewide CX covers the following activities proposed in the closure plan: decontaminate areas; stabilize contaminated areas; drain or empty piping and vessels; flush piping and vessels; plug, cap, or blank ductwork, piping, and vessel nozzles; stabilize, consolidate, or remove outside contaminated areas adjacent to facilities; remove, reuse, or recycle non-hazardous and hazardous materials; remove and transport hazardous and radioactive waste to appropriate storage locations or to burial grounds; test, sample, and monitor in and around deactivated facilities; winterize equipment and the facility for freeze protection; minimize or eliminate plant operating systems; install electrical, monitoring, and utility services to facility to maintain, if appropriate, essential system operation.

9. **Do you know whether applications are pending for government approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

Not applicable.

10. List any government approvals or permits that will be needed for your proposal, if known.

A CX under NEPA will be required; see item 8 above. The DOE-RL and Ecology will approve the 241-Z Treatment and Storage Tanks Closure Plan.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

The 241-Z Treatment and Storage Tanks are part of the PFP Complex. The 241-Z unit is a liquid waste collection system containing five tanks in five separate covered concrete cells, located below grade at the 241-Z Building. The 241-Z Treatment and Storage Tanks are used for intermediate storage and pH adjustment of aqueous waste from the PFP Complex.

The closure plan proposes to clean close the 241-Z Treatment and Storage Tanks with respect to dangerous waste contamination that resulted from operations of the unit as a RCRA TSD. To facilitate closure, the 241-Z unit consists of five components: the tanks (excluding tank D-6), the internal piping, ancillary equipment, the concrete vaults, and the soils directly beneath the unit. The unit boundary is the concrete walls and vault ceiling. The upper building has never handled dangerous waste and is not considered part of the RCRA unit. Underground pipes from other buildings in the PFP Complex to the 241-Z unit are not considered part of the TSD unit and will be addressed during decommissioning of the PFP Complex.

The 241-Z unit is proposed to be clean closed to the performance standards of *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-610 with respect to all dangerous waste and materials contaminated from operation of the treatment and storage tanks. Closure of the 241-Z Treatment and Storage Tanks will be performed in accordance with the Ecology-approved closure plan. General closure activities are as follows:

- Rinse the tanks and internal piping. Sample, analyze, designate, and dispose of the rinsate.
- Visually examine the tanks and compare to the "debris rule" performance standard as a clean closure performance standard.
- Clean the tanks as necessary and re-examine visually.
- Isolate the tanks by blanking inlet/outlet lines on the internal piping.
- Remove and dispose of ancillary equipment.
- Identify potentially contaminated areas on the concrete. (Other areas of concrete are considered clean.)

- Examine the concrete for potential pathways for dangerous waste to reach the soils (i.e., cracks)

- If cracks are found in the concrete vaults that may have resulted in contamination of the soil, the soil characterization and potential cleanup will be coordinated with the CERCLA remedial action process.

- Decontaminate the potentially contaminated concrete areas using a debris rule technology and the debris rule performance standard for concrete

- If the tanks, internal piping, concrete, and underlying soils meet the clean closure performance standards, clean close the unit

- If portion of the tanks or internal piping do not meet the closure performance standards and further cleanup is ineffective, remove contaminated portions or coordinate cleanup with the decommissioning process

12. **Location of the proposal.** Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The Hanford Site covers approximately 1,150 square kilometers (560 square miles) of semiarid land that is owned by the United States Government and managed by the DOE-RL. The Hanford Site is located northwest of the city of Richland, Washington. The city of Richland adjoins the southeastern most portion of the Hanford Site and is the nearest population center.

The 241-Z Treatment and Storage Tanks are located within the PFP Complex in the central west portion of the 200 West Area. The 241-Z Treatment and Storage Tanks are located below grade in a buried, reinforced-concrete structure with a pre-engineered corrugated metal enclosure over the top, which provides weather protection. The 241-Z Building is approximately 6 meters (20 feet) wide, 28 meters (92 feet) long, and 6.7 meters (22 feet) deep and is located about 100 meters (328 feet) south of the 234-5Z Building. The section, township and range are as follows: Section 1, T.7N, R25E, Willamette Meridian, Benton County.

TO BE COMPLETED BY APPLICANT

EVALUATIONS FOR AGENCY USE ONLY

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other_____.

Flat

b. What is the steepest slope on the site (approximate percent slope)?

The general slope of land on the Hanford Site is generally less than 2 percent.

c. What general types of soils are found on the site? (for example, clay, sandy gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

There are 15 different types of soil on the Hanford Site. The vast majority of the soil where activities would take place is classified as sand to sandy loam. For detailed information about soils on the Hanford Site see *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Hanford Site soils are generally stable although sand is affected by blowing winds.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Filling and grading ordinarily take place during construction activities but are not part of the proposed closure plan activities.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not applicable.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

None.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approx. quantities, if known.

Small quantities of dust and vapors could be generated by decontamination activities. These dust and vapors will be routed through the High Efficiency Particulate Air (HEPA)-filter equipped 296-Z-3 stack, located adjacent to the 241-Z building. These emissions will be further evaluated through the Notice of Construction process, which will be completed as detailed closure activities are being developed.

b. Are there any off-site sources of emissions or odors that may affect your proposal? If so, generally describe.

No.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any?

None.

3. Water

a. Surface

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The Yakima River runs near the southern boundary of the Hanford Site. The Columbia River runs through the northern portion of

the Hanford Site and bounds the Hanford Site on the southeast. The proposed actions will occur on the 200 Area Plateau and would not affect either the Columbia or Yakima Rivers.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material would be involved.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? Note location on the site plan.

The proposed actions would not take place within the 100 year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No discharge of waste materials to surface waters would occur.

b. Ground

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No ground water will be withdrawn. No water will be discharged to ground water.

2) Describe waste material that will be discharged into the ground from septic tanks

or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None.

c. Water Run-off (including storm water)

1) Describe the source of run-off (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The proposed activities would not generate stormwater discharges.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No.

d. Proposed measures to reduce or control surface, ground, and run-off water impacts, if any:

None.

4. Plants

a. Check or circle the types of vegetation found on the site.

___ deciduous tree: alder, maple, aspen, other
___ evergreen tree: fir, cedar, pine, other
_X_ shrubs
_X_ grass
___ pasture
___ crop or grain
___ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
___ water plants: water lily, eelgrass, milfoil, other
_X_ other types of vegetation

The Hanford Site contains plants typical of a desert with a shrub-steppe habitat. For detailed information about vegetation on the Hanford Site see *Hanford Site National Environmental Policy*

Act (NEPA) Characterization, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

b. What kind and amount of vegetation will be removed or altered?

None.

c. List threatened or endangered species known to be on or near the site.

No federal listed threatened or endangered plant species are known to occur on the Hanford Site. Four species listed by the state of Washington as threatened or endangered do occur on the Hanford Site. Columbia milk-vetch and Hoover's desert parsley, both state listed threatened species, occur along the Columbia River near Priest Rapids Dam, Midway and Vernita. Dwarf evening primrose, a state listed threatened species, occurs in the wetter zone of the water's edge along the Hanford Reach area of the Columbia River. None of these species, however, is known to be found in the vicinity of the 241-Z Treatment and Storage Tanks.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

No landscaping would be called for.

5. Animals

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds,
other:.....
mammals: deer, bear, elk, beaver,
other:.....
fish: bass, salmon, trout, herring, shellfish,
other:.....

Many species of birds and animals can be found on the Hanford Site. Due to the disturbed nature of the locations on the Hanford Site where the proposed activities would take place, it is not expected that the proposed closure plan activities would adversely impact these species. For detailed information about animals on the Hanford Site see *Hanford Site National*

Environmental Policy Act (NEPA) Characterization, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

b. List any threatened or endangered species known to be on or near the site.

The federal government lists both the Aleutian Canada goose, and the bald eagle as threatened, and the peregrine falcon as endangered. The state of Washington lists the peregrine falcon, Aleutian Canada goose, white pelican and sandhill crane as endangered and the ferruginous hawk and bald eagle as threatened. The state-listed American white pelican is an uncommon seasonal resident along the Columbia River. No federal or state-listed endangered species is likely to live within or visit the PFP Complex while closure plan activities are completed.

c. Is the site part of a migration route? If so, explain.

The Hanford Site and the adjacent Columbia River are part of the broad Pacific Flyway for waterfowl migration.

d. Proposed measures to preserve or enhance wildlife, if any:

None.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Existing power sources for the 241-Z Facility will be used during the closure plan activities.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Clean closing the 241-Z unit will expose workers to radioactive contamination and hazardous waste. The constituents of concern for RCRA closure are defined by the Part A, form 3 for the unit. Before treatment, the mixed waste in the tanks is corrosive and contains predominately nitric acid. Additional chemical constituents known to be present through process knowledge, modeling, and some process sampling include chromium, lead, silver, and carbon tetrachloride. Depending on the waste stream received, the waste also could designate as a state-only toxic dangerous waste. (Constituents of the wastes are described in Chapter 4 of the closure plan.)

1) Describe special emergency services that might be required.

Hanford Site security, fire response, and ambulance services are on call at all times in the event of an onsite emergency.

2) Proposed measures to reduce or control environmental health hazards, if any:

As low as reasonably achievable (ALARA) principles will be implemented as needed.

b. Noise

1) What type of noise exists in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for

example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

There could be minor noise if high-pressure physical extraction methods are used to remove contaminants.

3) Proposed measures to reduce or control noise impacts, if any:

ALARA principles will be implemented as needed.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

Commercial activities on the Hanford Site include a nuclear power plant and a State of Washington administered low-level burial area operated by US Ecology.

b. Has the site been used for agriculture? If so, describe.

No portion of the Hanford Site has been used for agricultural purposes since 1943.

c. Describe any structures on the site.

Hanford Site structures are many and varied, although most are contained within fenced, developed areas.

d. Will any structures be demolished? If so, what?

No.

e. What is the current zoning classification of the site?

The Hanford Site is zoned by Benton County as an Unclassified Use (U) district.

f. What is the current comprehensive plan designation of the site?

The 1985 Benton County Comprehensive Land Use Plan designates the Hanford Site as the "Hanford Reservation." Under this designation, land on the Site may be used for "activities nuclear in nature." Non-nuclear activities are authorized

"if and when DOE approval for such activities is obtained."

Future use of the Hanford Site is currently being considered by the DOE, but final decisions are not expected to be made until the year 2001.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The Hanford Site contains an area designated as the Hanford Reach of the Columbia River. Under Public Law 100-605, "Study of the Hanford Reach of the Columbia River," the National Park Service would be requested to review any activities which might take place within this area.

i. Approximately how many people would reside or work in the completed project?

Not applicable.

j. Approximately how many people would the completed project displace?

Not applicable.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The closure performance standards of WAC 173-303-610(2) require that the owner/operator of a TSD unit close the unit in a manner that

- Minimizes the need for future site maintenance

- Controls, minimizes, or eliminates to the extent necessary the need to protect human health and the environment, and post-closure escape of dangerous waste, dangerous waste

constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground, surface water, ground water, or the atmosphere, and

- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activities.

Clean closure of the 241-Z unit will eliminate future maintenance and be protective of human health and the environment by removing or reducing dangerous waste contamination at the 241-Z Treatment and Storage Tanks to levels that eliminate the threat of contaminant escape to the environment.

The appearance of the 241-Z unit after closure will be consistent with the future plans for this property. The clean-closed storage tanks and vaults will remain at the site until the disposition phase of the PFP Complex decommissioning. Future land use decisions will be considered during the PFP Complex decommissioning process and at that time the final disposition of the unit and the appearance and use of the land areas will be integrated with the rest of the PFP Complex.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No new structures are proposed.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

None.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Not applicable.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any?

None.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

The retired B Reactor has been placed on the National Register of Historic Places but would not be disturbed by the proposed action. The historic status of other Hanford Site structures is in the process of being determined on a case-by-case basis as the need arises. Additional information regarding the cultural resources on the Hanford Site environment can be found in *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Although the area adjacent to the Columbia River has been found to be rich in cultural resources, the proposed action in the closure plan would not affect undisturbed areas. Additional information regarding this can be found in *Hanford Site National Environmental Policy Act (NEPA) Characterization*, PNL-6415, Revision 8, Pacific Northwest National Laboratory, 1996, Richland, Washington.

c. Proposed measures to reduce or control impacts, if any:

None.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

None.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The Hanford Site is a controlled location and public transportation is not allowed to the site; however, Ben-Franklin Transit does serve the 300 Area, discharging and picking up passengers at the 300 Area parking lot.

c. How many parking spaces would the completed project have? How many would the project eliminate?

None.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

None.

g. Proposed measures to reduce or control transportation impacts, if any:

None.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts on public services, if any:

None.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

Currently the Hanford Site uses electricity, water, refuse service, telephone, sanitary sewer, septic systems and other utilities. These utilities will be used as the closure plan activities are being completed.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

None.

SIGNATURES

The above answers are true and complete to the best of our knowledge. We understand that the lead agency is relying on them to make its decision.

J. E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division
U.S. Department of Energy
Richland Operations Office

12-26-96
Date

W. D. Adair, Director
Environmental Protection
Fluor Daniel Hanford, Inc.

12/9/96
Date

HANFORD FACILITY DANGEROUS WASTE CLOSURE PLAN, 241-Z TREATMENT AND STORAGE TANKS

FOREWORD

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (document number DOE/RL-91-28) and a Unit-Specific Portion. The scope of the General Information Portion includes information used to discuss units undergoing closure, such as the 241-Z Treatment and Storage Tanks (the unit addressed in this document, DOE/RL-96-82).

Documentation contained in the General Information Portion is broader in nature and is used by reference in documents associated with multiple treatment, storage, and/or disposal units (e.g., the glossary provided in the General Information Portion). Wherever appropriate, the 241-Z Treatment and Storage Tanks closure plan documentation makes cross-reference to the General Information Portion, rather than duplicating text.

Information provided in the 241-Z Treatment and Storage Tanks closure plan documentation is current as of December 1996.

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DOCUMENT CONTENTS

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			**Force**		
pounds per square inch	6.895	kilopascals	kilopascals	1.4504×10^{-4}	pounds per square inch

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc , Belmont, California.

CONTENTS

The Part A, Form 3 (Revision 4) will be revised to include two new waste numbers: D005 (for barium) and D009 (for mercury) and to include the D-8 tank as a treatment tank. The D-8 tank currently is identified only as a storage tank.

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 character/inch).

DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 5 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[ ] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below)*

MO.	DAY	YR.	* FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*
0 3	2 2	4 3	* The date construction of the Hanford Facility commenced.

MO.	DAY	YR.	FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OF OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

[X] 1. FACILITY HAS AN INTERIM STATUS PERMIT

[X] 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES - CODES AND CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR OR GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	I

EXAMPLE FOR COMPLETING SECTION III *(shown in line numbers X-1 and X-2 below)*: *A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons.* The facility also has an incinerator that can burn up to 20 gallons per hour.

LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY	LINE NUMBER	C. PROCESS CODE *(from list above)*	D. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	D. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 2	69,300	L		7				
2	T 0 1	16,277	V		8				
3					9				
4					10				

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY

S02
The 241-Z Treatment and Storage Tanks (241-Z) support the Plutonium Finishing Plant (PFP), which was constructed in November 1948. The 241-Z consists of storage tanks D-4, D-5, D-7, D-8, and an overflow tank. Tank D-5 also serves as the waste treatment tank.. These tanks, located in the belowground portion of the 241-Z Building, have a combined storage capacity of 69,300 liters (18,307 gallons). Tanks D-4 and D-5 each have a capacity of 16,400 liters (4,332 gallons), while tanks D-7 and D-8 each have a capacity of 17,900 liters (4,729 gallons). The overflow tank, located in the D-7 Vault, has a capacity of 700 liters (185 gallons) and is in place to serve only in a capacity for receiving waste that might overflow from one of the other tanks. The overflow tank is not in place to serve as storage capacity for dangerous waste. The 241-Z accumulates and stores mixed waste generated from PFP process activities. The waste accumulated in 241-Z is transferred to tank D-5 for treatment. Once treated, the waste is stored in Tank D-5 before final transfer to the Double-Shell Tank (DST) System. The original construction of 241-Z included a fifth 16,400 liter (4,332 gallon) tank that also is located in the belowground portion of the facility. Tank D-6 was taken out of service and isolated from the 241-Z tank system in 1972 and never stored dangerous waste. The purpose of identifying Tank D-6 is to note its existence within the 241-Z Building, but not to include it with the tank system covered by the Part A, Form 3, for the 241-Z.

T01
Treatment that occurs in tank D-5 consists of a batch process that includes the addition of sodium hydroxide or potassium hydroxide, sodium nitrite, ferric nitrate, and water. The sodium hydroxide is added to adjust the pH of the waste to make the waste more amenable for transfer to the DST System. Ferric nitrate solution is added to provide 1 percent stable solids for transfer to the DST System, while water could be used to adjust the plutonium concentration of the waste to be transferred so that the waste meets the DST System criteria for acceptance. This treatment process makes the waste more amenable for transfer to the DST System. The maximum process design capacity for tank treatment is 16,277 liters per day (4,300 gallons per day).

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure using the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the remaining box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Same as above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002			T03 D80	Included with above

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

EPA I.D. NUMBER *(entered from page 1)*: 7 8 9 0 0 0 8 9 6 7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1).)*
1	D002	1,360,777	K	T01	Treatment-Tank
2	D007				
3	D008				
4	D011				
5	D019				
6	WT01				
7	WT02		Y	Y	Included With Above
8	D002	2,494,758	K	S02	Storage-Tank
9	D007				
10	D008				
11	D011				
12	D019				
13	WT01				
14	WT02		Y	Y	Included With Above
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Continued from the front.

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The waste received by the 241-Z from PFP process activities could be assigned one or more of the following dangerous waste numbers as determined through process knowledge, modeling, and some process sampling. Waste could designate corrosive (D002), and/or toxic for chromium (D007), lead (D008), silver (D011), or carbon tetrachloride (D019). Depending on the waste stream received, the waste also could designate as a state-only toxic dangerous waste (WT01 or WT02).

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more details)*.

VI. PHOTOGRAPHS Refer to attached photograph(s).

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawing(s) and photograph(s).

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section X below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
John D. Wagoner, Manager U.S. Department of Energy Richland Operations Office	John D. Wagoner	9/26/96

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John D. Wagoner — 9/26/96

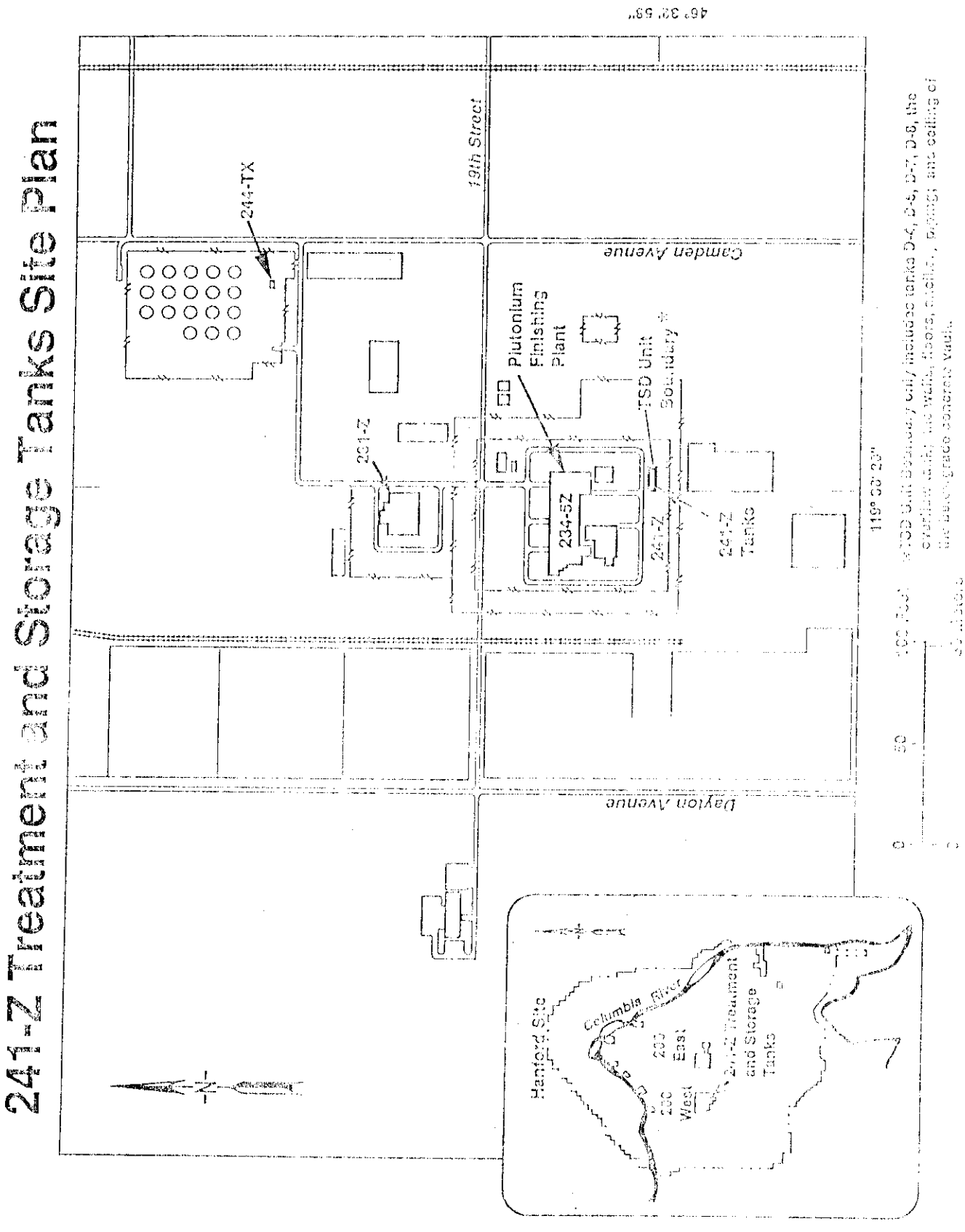
Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

Date

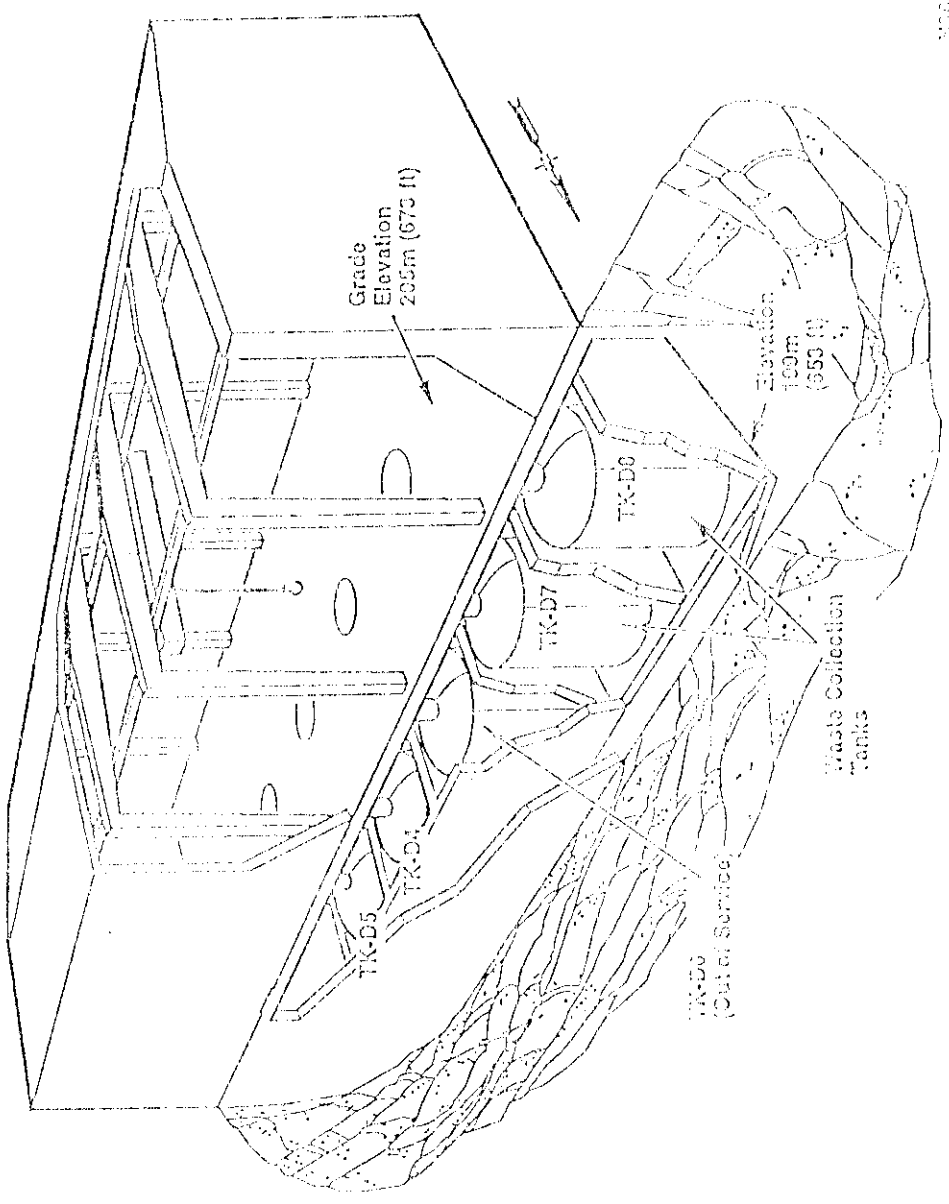
[signature] — 9/18/96

Co-operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

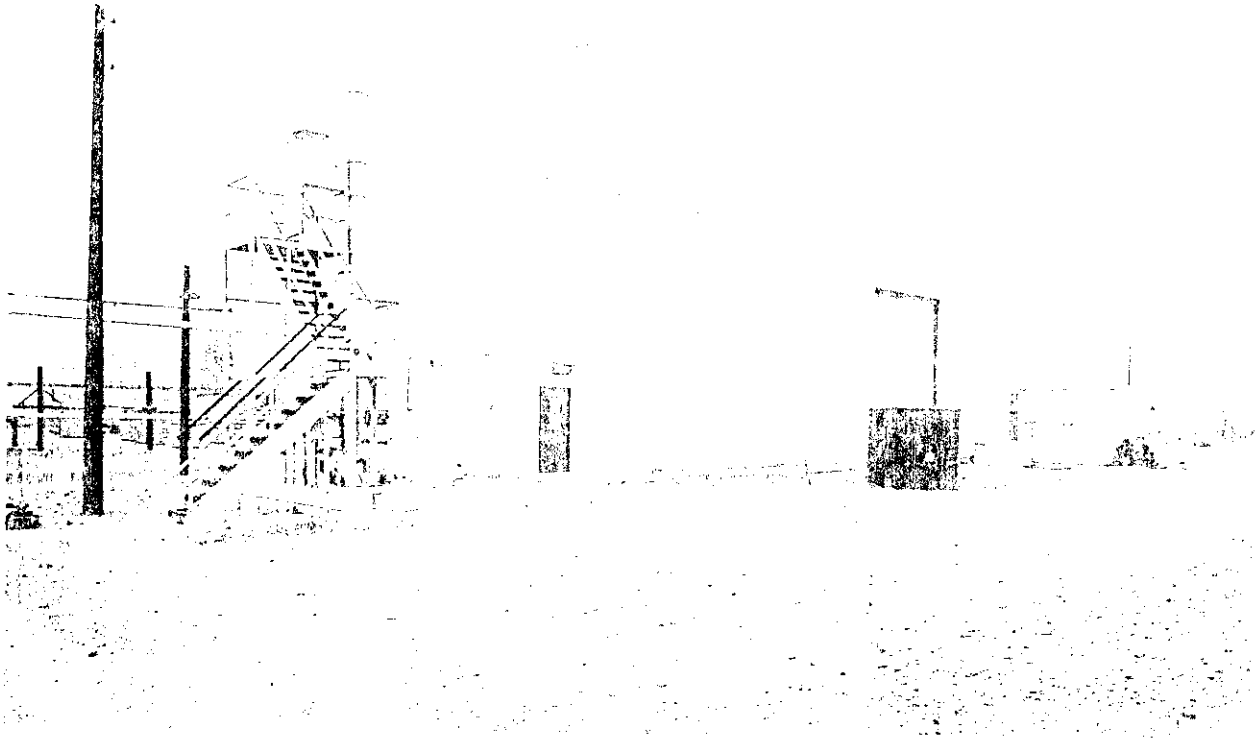
Date


241-Z Treatment and Storage Tanks Site Plan
244-TX
19th Street
Camden Avenue
Plutonium Finishing Plant
TSD Unit Boundary
231-Z
234-5Z
241-Z
241-Z Tanks
Dayton Avenue
46° 33' 58"
119° 38' 26"
Hanford Site
Columbia River
200 East
200 West
241-Z Treatment and Storage Tanks

241-Z Building
Cutaway View



241-Z BUILDING



46°32'58"
119°38'20"

CONTENTS

FIGURES

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2.0 FACILITY DESCRIPTION

This chapter provides a description of the 241-Z Treatment and Storage Tanks. Information concerning Hanford Facility security also is provided.

2.1 FACILITY DESCRIPTION AND OPERATIONS

The 241-Z Treatment and Storage Tanks are part of the Plutonium Finishing Plant (PFP) complex (Figures 2-1 and 2-2). Construction of the PFP complex began in 1948 and was completed in 1951, with the 241-Z Treatment and Storage Tanks being first put into use in 1949. The PFP complex was the final link in the plutonium manufacturing chain on the Hanford Site, processing plutonium-bearing chemical solutions and converting these into metal and oxide. This process ended in May 1989. The 241-Z Treatment and Storage Tanks continue to receive and process waste as part of the PFP transition and decommissioning process.

The 241-Z Treatment and Storage Tanks are a liquid waste collection system containing five tanks in five separate covered concrete cells, located belowgrade at the 241-Z Building. The 241-Z Treatment and Storage Tanks are used for intermediate storage and pH adjustment of aqueous wastes from the PFP complex.

This closure plan focuses on closure of *Resource Conservation and Recovery Act* (RCRA) *of 1976* components and areas, and on dangerous waste contamination resulting from RCRA regulated operations. Activities that took place since 1987, when Washington State Department of Ecology (Ecology) received authorization to regulate the dangerous waste portion of mixed waste, are of concern for closure. This plan identifies the activities necessary to close the 241-Z Treatment and Storage Tanks.

This treatment and storage unit is proposed to be clean closed to the performance standards of Ecology *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-610 with respect to all dangerous waste and materials contaminated from operation of the 241-Z Treatment and Storage Tanks.

2.1.1 241-Z Treatment and Storage Tanks

The 241-Z Treatment and Storage Tanks are located belowgrade in a buried, reinforced-concrete structure with a pre-engineered corrugated metal enclosure over the top that provides weather protection (Figure 2-3). The tank system was put into use in 1949 and the metal enclosure was added in 1979. The 241-Z Building is approximately 6 meters wide, 23 meters long, and 6.7 meters deep and is located about 100 meters south of the 234-5Z Building. The abovegrade portion of the 241-Z Building was never used to manage dangerous waste. Waste is received via underground piping.

The belowgrade structure consists of five separate ventilated cells [west to east: D-8, D-7, D-6, D-4, and D-5 (referred to as vaults)], each containing a stainless steel tank of approximately 17,000 liters (Figure 2-4). In addition, the second cell from the west end, the D-7 cell, houses a 700-liter overflow tank. These tanks have been used to accumulate the liquid waste generated during PFP complex operations. The waste was pH adjusted to meet the Double-Shell Tank System (DST System) (DOE/RL-90-39) waste acceptance criteria before being transferred to the DST System. Waste is received through underground pipelines. There is a sump located in a corner on the floor in each vault. Any liquid from the floor of each vault (except for the D-5 tank vault) can be jetted via a steam jet from the sump into the D-4 tank. The D-5 tank vault sump is jetted into the D-5 tank.

The active tank system includes D-4, D-5, D-7, and D-8 tanks, and the overflow tank. The overflow tank is located in the same vault as the D-7 tank. The PFP waste is accumulated in the D-8 tank and subsequently transferred to the D-5 tank for discharge to the DST System. Waste stored in the 241-Z Facility is treated to meet specific DST System waste acceptance criteria before being discharged. The D-5 tank is equipped with a pump and a steam jet for use in waste transfers. The steam jet normally is used to remove the waste heel left after pump operations. Operation of the D-5 tank pump is interlocked so that waste transfers cannot be made without personnel in attendance at the DST System (244-TX Tank Farm).

The D-4 and D-7 tanks were used to receive low salt waste from PFP operations before 1994. These tanks now provide reserve storage capacity should the D-8 or D-5 tanks overflow. In addition, these tanks could collect small amounts of steam condensate resulting from operation of the steam jet systems. Any overflow, from any of the tanks, is directed initially to the D-7 overflow tank. The waste is pumped to the D-4 tank, to the D-7 tank, and to the D-5 tank before being transferred to the DST System (Figure 2-5). The D-6 tank is not part of the active LSD unit and was isolated and removed from service in 1972.

The metal enclosure houses the coverblocks, steam jet equipment, high-efficiency particulate air (HEPA) filters, and ventilation equipment for the tanks and cells, and D-10 and D-11 chemical addition tanks. A 1.5 ton crane runs the length of the building near the ceiling. There is a personnel access door at the south end of the east wall and at the west end of the south wall. An electrically operated door is located in the middle of the south wall. There are two windows on the north wall. A 45.7 centimeter diameter ventilation duct exits abovegrade through the southern wall in the southwest corner of the building.

The sodium hydroxide used for waste pH adjustment was provided from an aboveground tank (D-9), in the 241-Z8 area, which is a concrete pad outside the 241-Z Building. Presently, the sodium hydroxide is added through D-10 and D-11 chemical addition tanks, which are two 190-liter, type 304 stainless steel tanks located inside the 241-Z Building. Other chemicals (e.g., sodium nitrite and ferric nitrate) are added, as required, through the D-10 and D-11 tanks to inhibit corrosion of the underground stainless steel waste tanks and to provide 1 percent stable solids, respectively.

Various penetrations (pipes and electrical) allow in-leakage of air through the building floor (vault cell ceiling) to the cells and into the tanks. Exhaust air is drawn from the cells and tanks by two separate headers connected to a common header and is heated, filtered through a two-stage testable HEPA filter, monitored continuously for radioactivity, and discharged to the atmosphere through a 7.6-meter stainless steel stack (296-Z-3). Exhaust air from the 241-Z Building is sampled any time forced ventilation occurs through the stack.

At the southwest corner of the 241-Z Building is the equipment for the vessel vent and vault ventilation system. The 296-Z-3 stack and its associated fans, filters, and controls are located on a concrete pad, located outside the southwest corner of the 241-Z Building.

2.1.2 241-ZA and 241-ZB Structures

The 241-ZA and 241-ZB structures are not part of this TSD unit; however, these structures house equipment used in the operation of the 241-Z Treatment and Storage Tanks. This section is included for information only.

The 241-ZA houses a glovebox used for collecting and packaging of samples taken from the 241-Z Treatment and Storage Tanks. The glovebox exhaust is vented back through the 241-Z ventilation system.

The 241-ZB area, located adjacent to the 241-Z Building, is a concrete pad and spill barrier housing the D-9 caustic storage tank. The D-9 tank is currently undergoing deactivation. There are two sumps located within the spill barrier and another located in the concrete pad adjacent to the D-9 tank.

2.2 SECURITY INFORMATION

Security information for the Hanford Facility is discussed in the *Hanford Facility Dangerous Waste Permit Application, Dangerous Waste Portion* (DOE/RL-91-28).

Hanford Patrol ensures the protection of special nuclear material at the PFP complex. The PFP complex has two distinct controlled areas within its boundary (Figure 2-2). The PFP complex is enclosed by a double cyclone fence approximately 2.4 meters high with razor ribbon affixed to the top of the inner fence. This fence forms the physical barrier surrounding the PFP complex. There is a high tensile aircraft cable affixed to the inner fence to provide vehicle delay. The isolation zone located between the two fences contains two electronic intrusion alarm systems supported by closed circuit television surveillance monitoring and illumination. The inner fenced area is termed a Protected Area. The 241-Z Treatment and Storage Tanks are located within this Protected Area.

Two buildings are located on the PFP complex perimeter that serve as entry for the area. The first building is an administratively controlled area

that provides for accountability in the event of an emergency, safety briefings for visitors, and special entry authorization control badges and dosimetry. This building is staffed during normal day shift operations to accommodate visitors to PFP.

The second building is the Protected Area badgehouse that provides for access control and houses equipment that ensures protection against unauthorized introduction of prohibited articles and equipment to prevent theft and/or diversion of special nuclear materials. A vehicle lock is located to the west side of this building for searching vehicles that must enter the PFP complex. This badgehouse is staffed 24 hours a day by security personnel.

Access to the active portion of the 241-Z Treatment and Storage Tanks is controlled by lock and key. Accesses to the tank cell are padlocked and key control is maintained by PFP operations shift personnel.

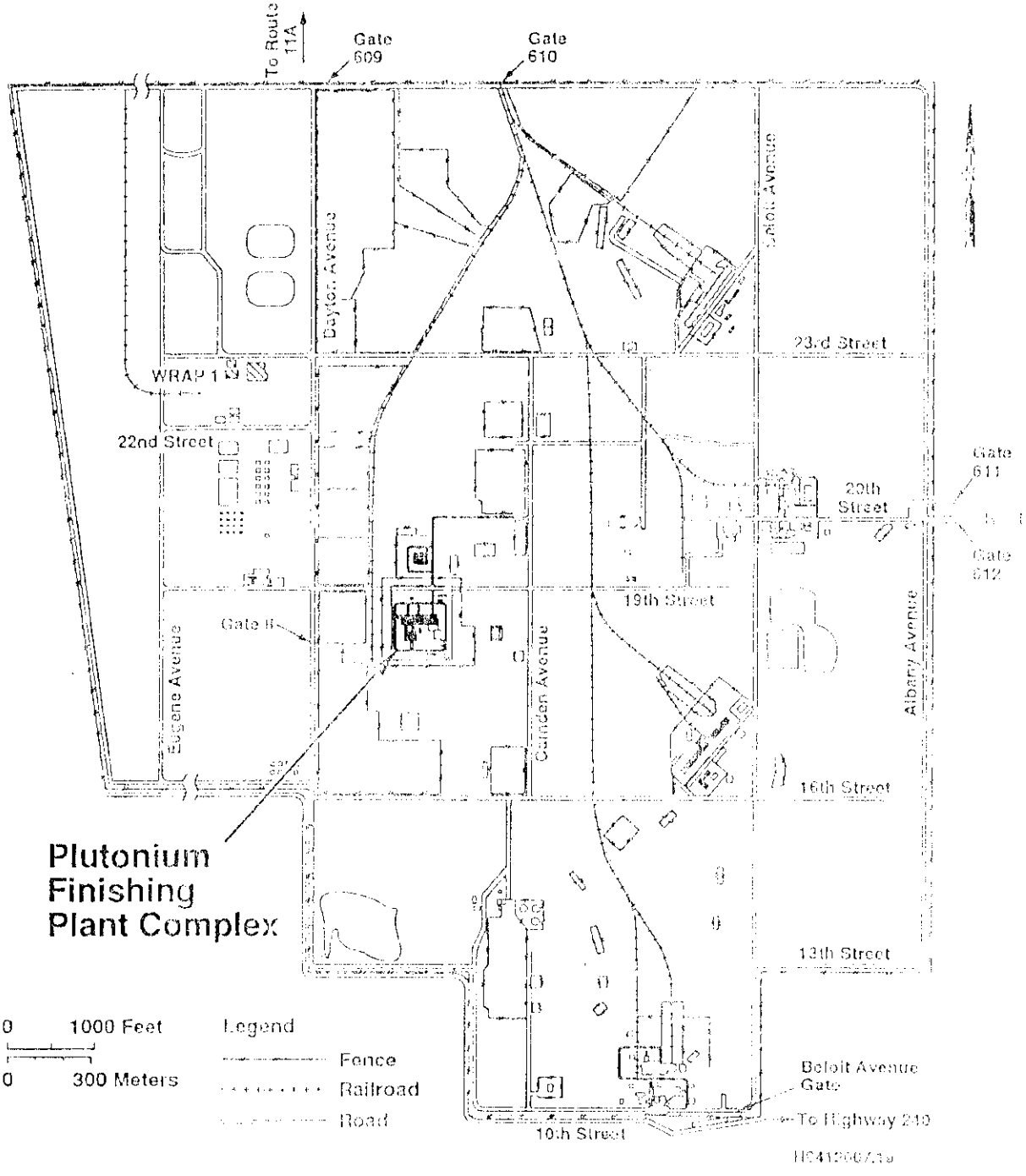

Figure 2-1. 200 West Area.

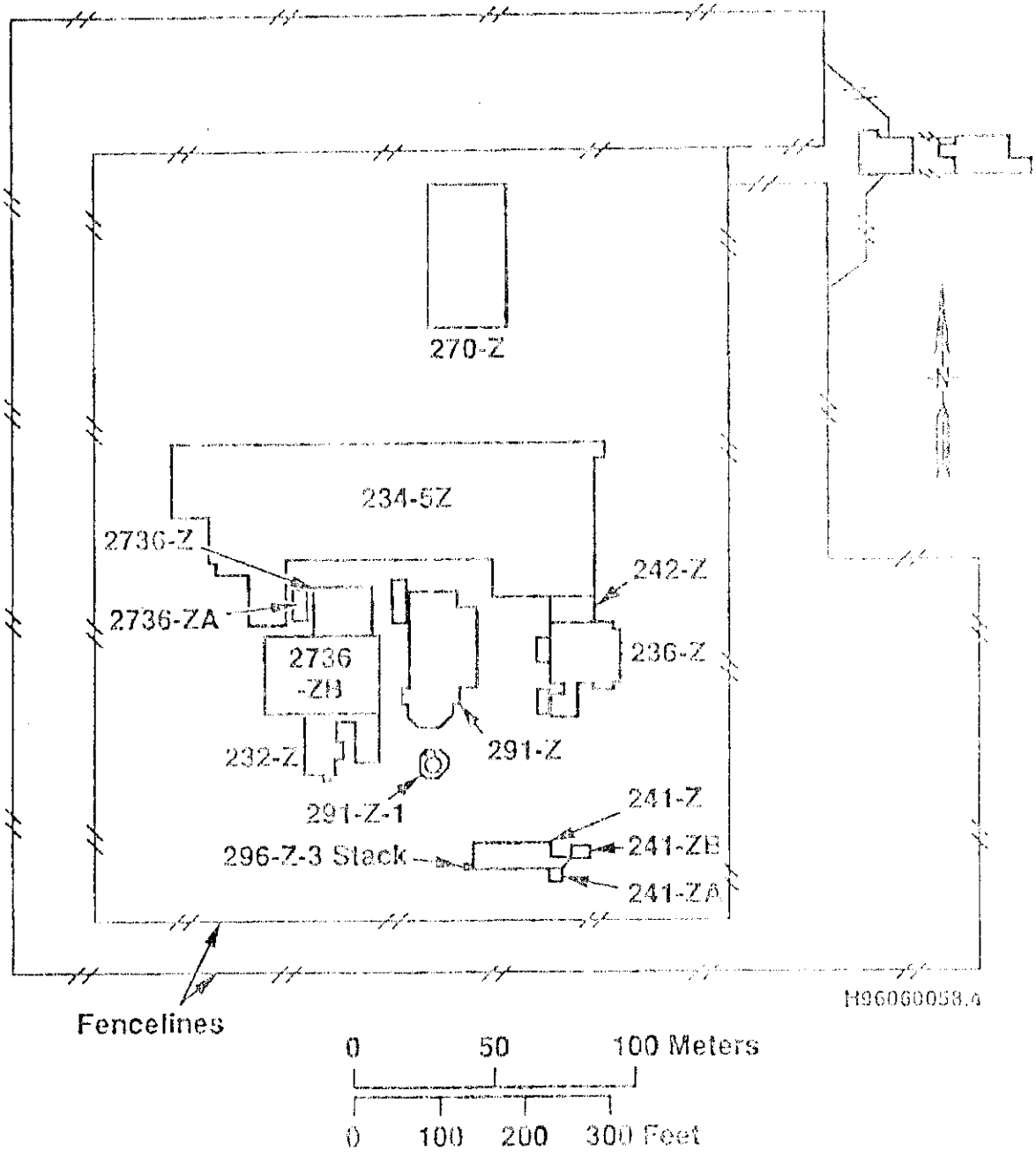

Figure 2-2. Plutonium Finishing Plant Complex.

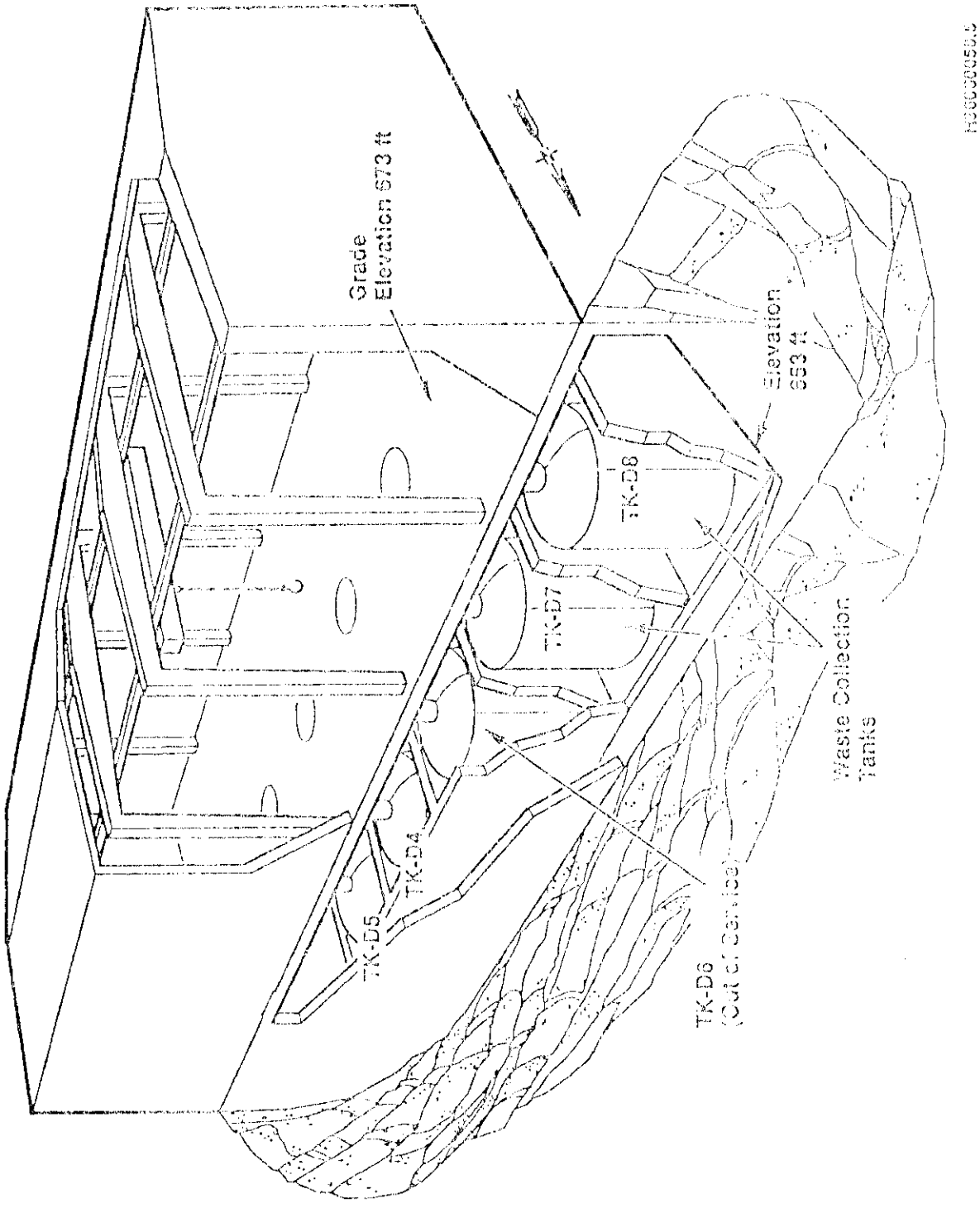

Figure 2-3. Cutaway View of 241-Z Treatment and Storage Tanks.

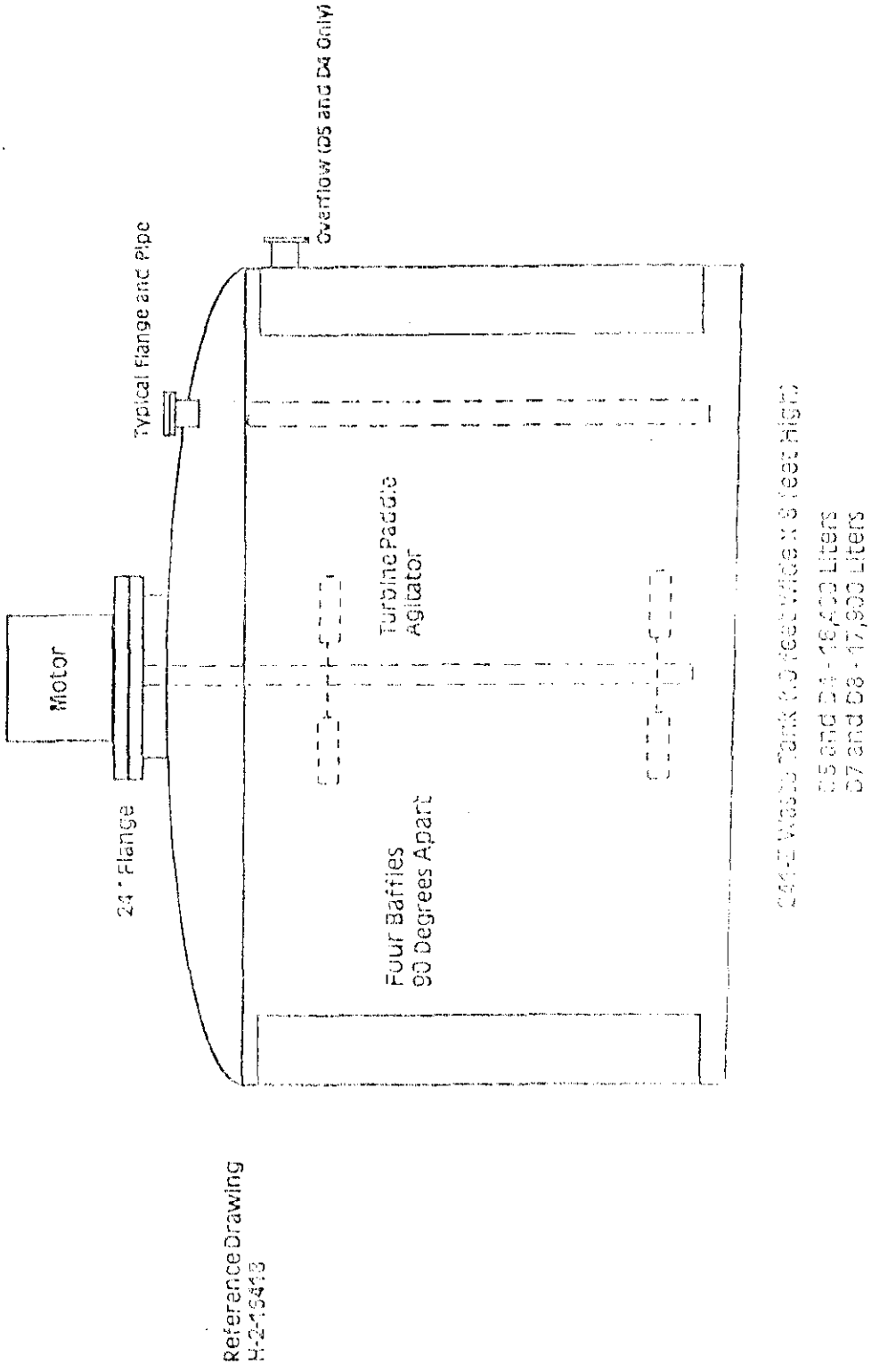

Figure 2-4. Typical Tank Diagram.

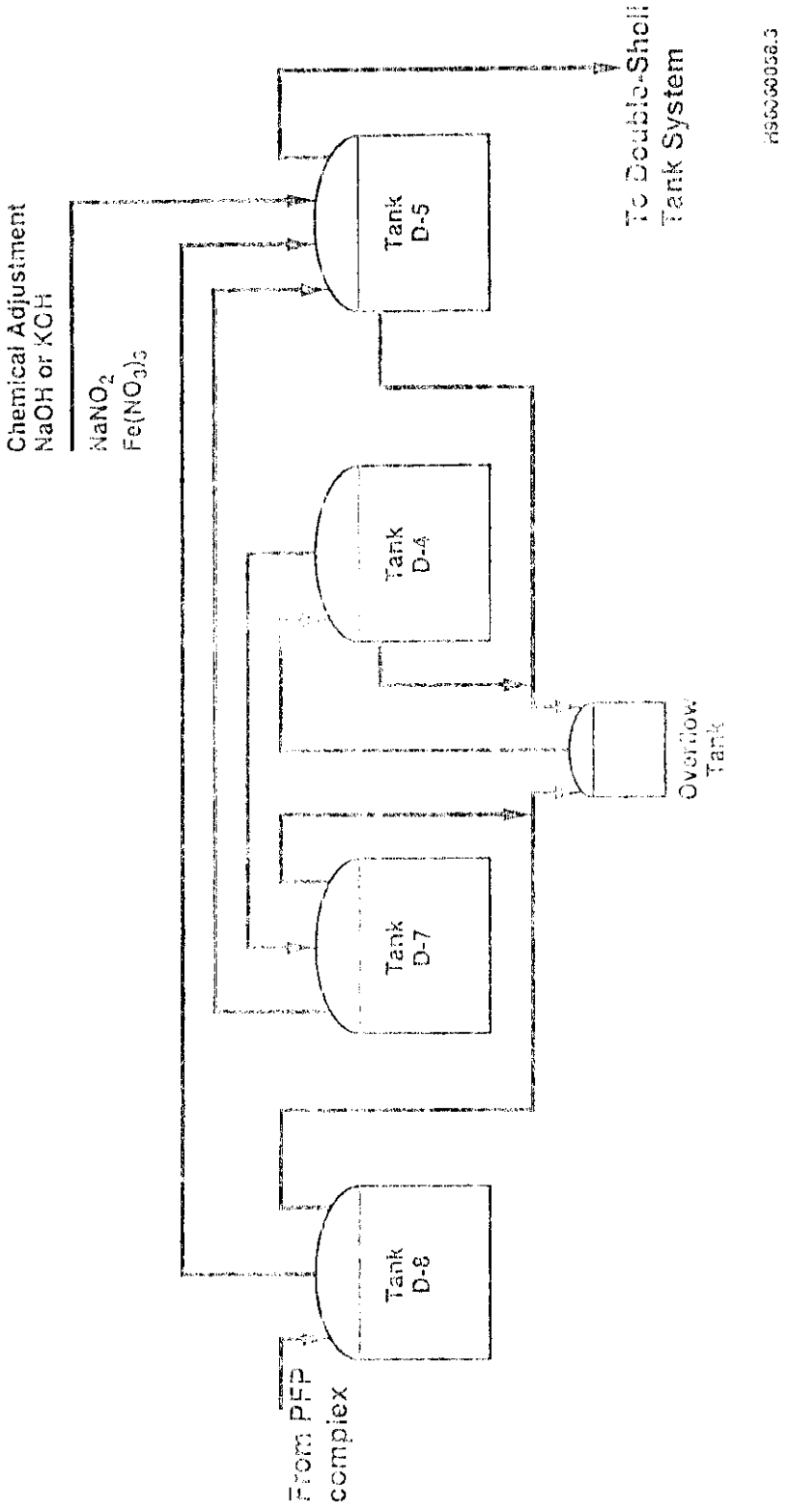

Figure 2-5. Schematic of 241-Z Treatment and Storage Tanks.

CONTENTS

APPENDIX

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3.0 PROCESS INFORMATION

The 241-Z Treatment and Storage Tanks treat and store mixed waste. The waste types are defined in the Part A, Form 3. This section describes the processes that produced waste. Waste streams transferred to the 241-Z Treatment and Storage Tanks are identified by their salt concentration (high salt or low salt) and/or process of origin. Waste streams that discharged to the 241-Z Treatment and Storage Tanks during the time that the unit was subject to RCRA, starting in 1987, are of concern for the closure of this TSD unit. These waste streams are:

- High-salt waste (HSW) from PRF. The PRF currently is not authorized for operation and is inactive

- HSW from the remote mechanical C (RMC) line. The RMC line currently is not authorized for operation and is inactive

- Low-salt waste (LSW) from the PFP complex laboratories, the PRF, and the RMC line

- Waste from the vertical calciner and ion exchange. These processes are being developed to replace the PRF and RMC operations.

Waste is received initially in the D-8 tank. Depending on the characteristics of the waste being accumulated, treatment may be required to ensure the tank is adequately protected from any deleterious effects during storage. Waste treatment in the tank system consists of adding sodium or potassium hydroxide to adjust pH, so the waste is less corrosive to carbon steel. After being stored in the D-8 tank, the waste is transferred to D-5 tank where final waste treatment occurs before the waste is transferred to the DST System. Waste containing aluminum is brought to at least 1.8 M excess hydroxide. All other waste is brought to at least 0.5 M excess hydroxide. Sodium nitrite is added to further reduce the corrosivity of the waste. Ferric nitrate also is added to form a stable solid particulate. A stable particulate is desired to provide favorable spacing of plutonium in larger tanks.

Sodium nitrite is stored as a dry chemical aboveground in the 241-Z Building. A measured portion of sodium nitrite is dissolved in the D-10 tank and pumped directly into pH adjusted waste solutions in the D-5 tank. Ferric nitrate is stored as a 10 weight percent aqueous solution in 208-liter containers. The liquid is measured out in the D-11 tank and added to waste in the D-5 tank.

3.1 TANK INTEGRITY TESTING

The 241-Z Treatment and Storage Tanks do not have annual testing performed, as required by WAC 173-303-400(3)(a), for interim status facilities without compliant secondary containment. An integrity assessment of the tank system was completed in October 1993, and the tank system was found to be fit

for use (Bramson 1993). The 241-Z Treatment and Storage Tanks have continuous leak detection monitoring equipment. In addition, the Tri-Party Agreement recognizes the existing secondary containment system (as limited by M-32-01 and outlined in M-32-01-T02) as sufficient to allow the operation of the 241-Z Facility. Therefore, annual testing of this tank system is no longer a condition of operation.

Ecology and the DOE-RL have agreed (Appendix A) that the annual testing compliance issue at the 241-Z is resolved provided that the PFP complex maintains the following:

- Continuous leak detection monitoring of the 241-Z Treatment and Storage Tanks
- Continues to operate within the Tri-Party Agreement milestone M-32-00 operations restrictions
- Documents this agreement in this closure plan.

When the integrity assessment of the 241-Z tank system was completed in October 1993, a schedule was established to perform another assessment by December 31, 1997, and every 5 years thereafter to ensure that the tank system will not collapse, rupture, or fail during its lifetime. This schedule was based on a long-life expectancy for the 241-Z tank system. However, current plans call for the system to be closed when the Defense Nuclear Facility Safety Board 94-1 stabilization activities are complete (currently planned to be done in the early 2000's). The current planning schedule supersedes the schedule established in the tank integrity assessment report. Therefore, the tank integrity schedule needs to be revised so future tank integrity assessments will no longer be performed.

The decision to suspend further integrity assessments can be supported by the fact that (1) the 241-Z tank system is operating within its design parameters for handling waste (as verified by the October 1993 integrity assessment); (2) in over 20 years of operations of this system, the integrity of the dangerous waste tank system has not failed; (3) continuous leak detection monitoring and daily inspections will be maintained throughout the remainder of the operating life of the system; and (4) performing assessments exposes personnel to chemical and radiological hazards.

3.2 PLUTONIUM FINISHING PLANT WASTE PRODUCING PROCESSES

This section describes the processes that produced waste streams transferred to the 241-Z Treatment and Storage Tanks.

3.2.1 Plutonium Reclamation Facility

The mission of the PRF was to recover and purify plutonium from aqueous feed to produce plutonium nitrate solution. The PRF, located in the 236-Z Building, began operation in 1964. The PRF was shut down in 1979 and

restarted in 1984. The PRF last operated in 1993 as part of a training campaign.

The PRF used a liquid-liquid solvent extraction process to separate and purify plutonium from impure forms of various chemical compositions. The solvent extraction process changed a dilute aqueous solution, containing plutonium and various impurities, into a concentrated plutonium nitrate solution. A major portion of the process consisted of columns in which a dense, organic liquid flowed downward through a less-dense, aqueous (water-based) solution. As the liquids passed through each other the liquids picked up or adsorbed (extracted) specific substances from each other. These extraction processes could be repeated to produce purer solutions.

The different columns in the solvent extraction process removed different materials. First, an organic solvent was used to separate plutonium from solutions containing impurities. This occurred in the CA column. The same principle was applied to separate impurities from the organic solvent so that the solvent could be reused. Organic solvent cleanup occurred in the CU and CX columns. The CU column was used to remove uranium and the CX column was used to remove dibutyl phosphate from the organic solution (a tributyl phosphate and carbon tetrachloride mixture).

While liquid-liquid extraction was a fundamental process in the system, other processes, such as evaporation, also were used. The filtrate evaporator ran during PRF campaigns to reduce the volume of the acid waste streams generated from solvent extraction columns. The product concentrator was used to concentrate the plutonium nitrate solutions to meet the RMC feed specifications. Steam was used to heat the evaporators. The steam was supplied to the steam jacket surrounding the evaporator. The steam condensate was transferred to the 241-Z Treatment and Storage Tanks.

Waste solutions generated by PRF operations were mixtures of HSW, consisting of column aqueous waste (CAW), the CX column waste stream (CXP), and the CU column waste stream (CUU); and LSW solutions of filtrate evaporator distillate and steam jacket condensates from the filtrate and product evaporators.

3.2.2 Remote Mechanical C Line

The RMC line was used to convert plutonium nitrate solutions to plutonium metal. The RMC line was started in 1959, shut down in 1973, and restarted in 1985. The RMC line last operated in 1989.

Plutonium nitrate solution for the RMC line came from the Plutonium Uranium Extraction (PUREX) Plant or PRF. The plutonium nitrate solution was loaded into glass tanks for use as feed to the RMC line. Nitric acid and hydrogen peroxide were added to the plutonium nitrate to achieve a specific chemical composition. This adjusted feed stream was mixed with oxalic acid to precipitate plutonium oxalate into a solid and liquid slurry. The slurry was vacuum filtered to remove the excess liquid. The excess liquid, known as filtrate, had potassium permanganate added to partially destroy the remaining

oxalic acid before evaporating the filtrate in the PRF filtrate evaporator to complete oxalic acid destruction. The distillate from the filtrate evaporator contained trace quantities of nitric acid and plutonium, which was discharged into the D-4 tank.

The plutonium oxalate solids that remained on the vacuum filter were scraped into a heated screw calciner for conversion into plutonium oxide powder, which subsequently was reacted with hydrogen fluoride gas in a fluorinator to convert the solids into plutonium fluoride powder. The unreacted hydrogen fluoride gas was scrubbed using a concentrated potassium hydroxide liquid to ensure capture before discharge into the ventilation system. The spent potassium hydroxide stream was discharged to the D-3 tank.

3.2.3 PFP Complex Laboratories

The 234-5Z Building houses the two PFP complex laboratory organizations. The PFP Analytical Engineering Laboratory is devoted to performing analytical measurements in support of PFP operations. The Plutonium Process Support Laboratory (PPSL) performs process development studies at the PFP complex. Currently, the PPSL is studying future plutonium residue stabilization methods. Both laboratories are located within the 234-5Z Building, and the liquid waste from the laboratories is transferred to the 242-Z Treatment and Storage Tanks.

3.2.4 New Processes for Facility Transition Activities

A vertical calciner coupled with an ion exchange pretreatment system is being developed to replace the PRF and RMC for plutonium residue stabilization and clean out.

Plutonium nitrate solution will be directly calcined to plutonium oxide solids. The vertical calciner will be equipped with a sodium hydroxide scrubber to condense and neutralize NO_x and water gases. Impure plutonium filtrate solutions will be processed using an ion exchange process to remove potassium and sodium so that the resultant solution can be treated in the vertical calciner.

3.3 OPERATION EVENT

In March 1991, an operation event resulted in an overflow of water into the D-5 and D-4 vaults. It is estimated that approximately 26,000 liters of water were transferred inadvertently to the tanks during a period when the PRF was in a maintenance outage. The top mounted flanges on the D-4 and D-5 tanks leaked after water backed up the overflow tank drain line allowing water to overflow into the vaults. The sump alarms went off. The liquid was transferred back into the tanks and later transferred to the DST System. While there was standing water in the vault, the water level did not decrease noticeably, indicating that the concrete vaults are effective secondary containment for the tank system.

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TABLES

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4.0 WASTE CHARACTERISTICS

This chapter discusses the inventory and the characteristics of the waste treated and stored in the 241-Z Storage and Treatment Tanks. The 241-Z Treatment and Storage Tanks received and treated chemical waste from the PFP since 1949. This closure plan focuses on activities since 1987, when Ecology received authorization to regulate the dangerous waste portion of mixed waste.

4.1 ESTIMATE OF MAXIMUM INVENTORY OF WASTE

The maximum estimated inventory of waste stored in the 241-Z Waste Treatment and Storage Tanks at one time is calculated on the basis that the four usable tanks (not including D-6) are filled to their administratively allowable maximum capacity of 55 percent. The tank volumes at the overflow level are (1) D-8, 17,900 liters; (2) D-5, 16,400 liters; (3) D-4, 16,400 liters; and (4) D-7, 17,900 liters. A 55-percent allowable maximum capacity equates to a total of 37,730 liters.

The annual volumes of waste solutions transferred through the 241-Z Treatment and Storage Tanks to the DST System since 1986 are presented in Table 4-1.

4.2 WASTE CHARACTERISTICS

The PRF and the RMC lines no longer operate and therefore are no longer contributing waste to the 241-Z Treatment and Storage Tanks. The PRF last operated in 1993 as part of a training campaign. The RMC line last operated in 1989.

4.2.1 Plutonium Reclamation Facility Waste Streams

The waste solution generated by the PRF was a mixture of HSW and LSW. The HSW was composed of CAW and the solvent clean up waste. The LSW was composed of filtrate evaporate distillate and steam jacket condensates from the filtrate and product evaporators.

The CAW waste stream was the highly acidic waste from the PRF CA column. The CAW was difficult to accurately characterize because, although some components either were added or known to exist, other components were present in the waste only because these were present in the feed, which typically was characterized only with respect to plutonium content.

The solvent cleanup waste was waste streams generated at the PRF during the organic cleanup phase. Two streams were sent to the 241-Z Treatment and Storage Tanks: the first was the aqueous stripping stream from the uranium removal column (CU column), which is referred to as the CUC stream; and the second was the aqueous stripping stream from the dibutyl phosphate removal

column (CX column), which is referred to as the CXP stream. The CXP was a carbonate solution that contained the organic degradation product sodium dibutyl phosphate. The CUU, although containing trace fluoride and chloride, contained high levels of uranium.

The combined column waste streams, CAW, CUU, and CXP, normally were collected in the D-8 tank and pH adjusted with 19 M sodium hydroxide in the D-5 tank by a reverse strike caustic addition to obtain a final caustic molarity of 1.8 M. After addition of ferric nitrate and sodium nitrite, the waste was transferred to the DST System.

The remaining PRF generated waste streams were filtrate concentrator distillate and steam condensate from the filtrate and product evaporators. The evaporator distillate normally contained nitric acid and trace plutonium, but small concentrations of fluoride and chloride might have been present. The steam condensate normally was only water and scale inhibitor, but there was the potential for high plutonium levels in this stream in the event of a vessel failure. These waste streams were collected in the D-4 tank and assayed in the D-7 tank. These waste solutions usually were combined with the D-8 tank waste solutions (HSW) in the D-5 tank for pH adjustment and transferred to the DST System. Batches that did not contain HSW could have been pH adjusted to 0.5 M caustic solution for transfer to the DST System.

4.2.2 Remote Mechanical C Line Waste Streams

Process waste discharged to the 241-Z Treatment and Storage Tanks from the RMC line operation came from two sources: the potassium hydroxide scrubber located in the 234-5Z Building and the filtrate evaporator located in the 236-Z Building. The potassium hydroxide scrubber solution was a HSW stream that contained potassium fluoride and unreacted potassium hydroxide. The LSW stream generated by the filtrate evaporator during RMC line operation had higher volume and lower acidity than the LSW stream generated when PRF was in operation. Although the bulk components of the RMC line LSW were the same as PRF LSW, the trace constituents were different.

The RMC line HSW was collected in the D-3 tank and, when necessary, transferred to the D-5 tank for transfer to the DST System. The waste was highly caustic and no caustic addition was required before transfer.

The RMC line LSW, like PRF LSW, was collected in the D-4 tank and stored in the D-7 tank. Because these solutions were slightly acidic, the solutions were pH adjusted with 19 M sodium hydroxide to a 0.5 M excess hydroxide ion concentration for transfer to DST System. The blending of RMC line HSW and LSW before caustic addition was avoided because of the possibility of producing acidified free fluoride ions.

4.2.3 Low-Salt Waste from Laboratories and Miscellaneous Operations

The LSW, generated in the PFP Analytical Engineering Laboratory and the PPSL, contains acids and bases and trace amounts of plutonium and other

contaminants such as metals. This stream currently is routed to the D-8 tank. From the D-8 tank, the liquids are transferred to the D-5 tank, treated with caustic to 0.5 M excess hydroxide, and transferred to the DST System.

4.2.4 New Waste Streams from Facility Transition Activities

Waste streams from the vertical calciner are expected to contain sodium hydroxide, sodium nitrate, sodium nitrite, and trace plutonium. The waste stream from the ion exchange process is expected to contain nitric acid and trace plutonium and potassium nitrate solutions. Other waste including metals such as silver, lead, barium, and chromium could be generated during plutonium stabilization and deactivation activities.

4.2.5 Waste Summary

Table 4-2 summarizes the past waste compositions contributed by the various streams. This information is a combination of historical sample data and chemical material balances.

The composition of anticipated waste streams (facility transition activities) is summarized in Table 4-3.

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Table 4-1. Volumes of Waste Solutions Transferred through the 241-Z Treatment and Storage Tanks to Double-Shell Tank System Since 1986.

Fiscal year	Volume (estimated) (liters)	Volume (actual) (liters)
1986		1,113,286
1987		381,190
1988		573,867
1989		505,729
1990		114,133
1991		39,633
1992		30,359
1993		8,782
1994		20,214
1995		0
1996*	17,791	
1997*	4,542	
1998*	45,803	
1999*	9,085	
after 1999**	3,785 per year	

* Anticipated future volumes; testing and use of vertical calciner and ion exchange.

** Estimated volume until building deactivation; terminal cleanout activities only.

Table 4-2. Past Waste Characterization of Plutonium Finishing Plant Waste Transferred to the 241-Z Treatment and Storage Tanks. (Concentrations are listed in parts per million). (sheet 1 of 2)

Species	PRF CAW	PRF CAW Range*	PRF CXP	PRF CUU	PRF LSW	RMC HSW	RMC LSW	Laboratories
Ag^{+}	---	---	---	---	---	---	---	10
Al^{+3}	20,000	10,000-18,000	0	0	0	0	0	0
Ba^{+2}	1	---	0	0	1	0	0	0
Ca^{+2}	50	---	1	0	6	0	2	0
Cr	70	10-100	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Fe^{+2}	50	0-10,000	50	50	60	50	54	50
H^{+}	2000	2,000-3,000	0	400	2,000	0	800	100
K^{+}	40	0-7,000	0	0	200	200,000	90	0
Mg^{+2}	1	---	0	0	1	0	0	0
Mn^{+2}	50	0-9,000	0	0	100	0	300	0
Na^{+}	600	0-10,000	10,000	0	100	20,000	100	100
Ni^{+2}	40	10-100	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Pb^{+2}	90	---	0	0	0	0	0	0
Sr^{+2}	2		0	0	0	0	0	0
OH^{-}	0	---	80	0	0	30,000	0	0
CO_3^{-2}	0	---	10,000	0	0	1,000	0	0
Cl^{-}	300	0-20,000	3	3	200	3,000	30	10
F^{-}	800	300-1,000	1,000	1,287	0	44,280	0	0
I^{-}	0	---	0	0	0	0	0	0
NO_3^{-}	300,000	200,000 - 300,000	10,000	10,000	100,000	0	50,000	1,000
NO_2^{-}	1,000	---	50	0	400	0	400	20
PO_4^{-3}	20		2	-	8	0	4	0

Table 4-2. Past Waste Characterization of Plutonium Finishing Plant Waste Transferred to the 241-Z Treatment and Storage Tanks. (Concentrations are listed in parts per million). (sheet 2 of 2)

	Species	PRF CAW	PRF CAW Range*	PRF CXP	PRF CUU	PRF LSW	RMC HSW	RMC LSW	Laboratories
1	SO_4^{-2}	200	---	0	0	0	0	0	0
2	CCl_4	600	---	700	700	300	0	0	0
3	Ammonia	200	---	0	0	0	0	0	0
4	TBP	4,000	---	6,000	6,000	0	0	0	0
5	Butanol	12	11-13	0	0	500	0	0	0
6	DBP	0	---	800	0	0	0	0	0
7	MBP	0	---	0	0	0	0	0	0
8	TOC	3,000	---	3,000	3,000	400	0	0	0
9	Silica	90	---	0	0	0	0	0	0
10	Pu	9	2-200	60	20	2	<1	6	0
11	Am	1	0-8	0	3	1	0	1	0
12	U	1		0	20	0	0	3	0

13
14 * Waste concentrations show a range due to variations in the PRF process used to accommodate variations
15 in the PRF feed.
16
17 CAW = column aqueous waste
18 CXP = CX column waste stream
19 CUU = UO column waste stream
20 DBP = dibutyl phosphate
21 HSW = high-salt waste
22 LSW = low-salt waste
23 MBP = monobutyl phosphate
24 PRF = Plutonium Reclamation Facility
25 RMC = remote mechanical C
26 TBP = tributyl phosphate
27 TOC = total organic carbon.

Table 4-3. Anticipated Future 241-Z Treatment and Storage Tanks Waste Composition. (Concentrations are listed in parts per million.)

Species	Vertical calciner	Ion exchange	Flushing	Laboratories
Ag^{+}*	10 - 100	---	---	0 - 10
Ba^{+2}*	10 - 100	---	---	---
Na^{+}	120,000	120,000	60,000	40,000
Cr^{+3}	---	10 - 100	10 - 100	10 - 100
Fe^{+3}	---	10 - 100	10 - 100	10 - 100
Ni^{+2}	---	10 - 100	10 - 100	10 - 100
K^{+}	---	0 - 7,000	0 - 7,000	0 - 7,000
Mn^{+2}	---	0 - 9,000	0 - 9,000	0 - 9,000
Pb*	10 - 100	---	---	---
Cl^{-}*	10 - 100	---	---	---
OH^{-}	20,000	26,000	850	29,000
NO_3^{-}	200,000	220,000	120,000	6,000
NO_2^{-}	30,000	900	2,000	2,000
Pu	$<1*10^{-2}$	13	$<1*10^{-2}$	0.2
Am	$<1*10^{-2}$	$<1*10^{-2}$	$<1*10^{-2}$	0.05
U	$<1*10^{-2}$	$<1*10^{-2}$	$<1*10^{-2}$	$<1*10^{-2}$

* Silver persulfate process waste combined with vertical calciner caustic scrubber waste.

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5.0 GROUNDWATER MONITORING

In accordance with the Tri-Party Agreement, groundwater associated with the 241-Z Treatment and Storage Tanks will be investigated under *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* as part of the 200-ZP-1 operable unit remedial investigation/feasibility study process. Therefore, groundwater investigation/remediation is not addressed as part of this closure plan.

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FIGURE

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6.0 CLOSURE STRATEGY AND PERFORMANCE STANDARDS

This chapter describes the closure strategy and closure performance standards that will be used, and outlines the steps that will be taken to close the 241-Z Treatment and Storage Tanks.

6.1 CLOSURE STRATEGY

The 241-Z Treatment and Storage Tanks will be clean closed with respect to dangerous waste contamination that resulted from operations as a TSD unit. To facilitate closure, the 241-Z Treatment and Storage Tanks are being viewed as consisting of five components: the tanks, the internal piping, ancillary equipment, the concrete vaults, and the soil directly beneath the structure. The TSD unit boundary is the concrete walls and vault ceiling. Dangerous waste management activities have not and do not occur in the aboveground portion of the unit; therefore, the aboveground portion is not considered part of the TSD unit. Underground pipes from other buildings in the PFP complex to the 241-Z Building are not considered part of the TSD unit and will be addressed during the PFP complex decommissioning process. Remedial action with respect to contamination that was not a result of 241-Z Treatment and Storage Tanks RCRA operations will be performed as part of the CERCLA remedial action process for the 200-ZP-1 operable unit.

After the waste inventory is removed, clean closure of the tanks, internal piping, and concrete vaults will be accomplished by decontaminating, as necessary, and demonstrating that these components meet the closure performance standards [WAC 173-303-610(2)]. The ancillary equipment will be removed, designated, and disposed of at a permitted unit. Removal and disposal of the tanks, internal piping, and concrete will be coordinated with the disposition phase of the PFP complex decommissioning process.

If the dangerous waste constituents in or on the tanks, internal piping, or concrete vaults are above the clean closure performance standards, and if further cleanup is not effective, closure will be integrated with and occur during the PFP complex decommissioning process. A preclosure workplan will be prepared, if required, in conjunction with development of the transition end point criteria and surveillance and maintenance plan for the entire PFP complex (Ecology et al. 1995, Chapter 8.0). These documents will ensure that the TSD unit is placed into a stable state, is monitored properly, and is ready for final RCRA closure during the disposition phase of the decommissioning process. (A schedule for preparation of the preclosure workplan will be developed at the time it is determined that clean closure of these TSD unit components cannot be achieved.)

Clean closure of soil will be accomplished by demonstrating that the concrete vaults kept contaminants from reaching the soil. The concrete vaults provided secondary containment for the 241-Z Treatment and Storage Tank system. Unless inspections identify potential through-thickness cracks indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean

closed. However, if inspections identify such cracks, investigation into potential soil contamination will be coordinated with the CERCLA remedial action process for the operable unit.

6.2 CLOSURE PERFORMANCE STANDARDS

Clean closure, as provided for in this plan, and in accordance with WAC 173-303-610(2) will eliminate future maintenance and will be protective of human health and the environment by removing or reducing chemical contamination at the 241-Z Treatment and Storage Tanks to levels that eliminate the threat of contaminant escape to the environment.

After closure, the appearance of the land where the 241-Z Treatment and Storage Tanks are located will be consistent with the appearance and future use of its surrounding land areas. The clean closed storage tanks and vaults will remain at the site until the disposition phase of the PFP complex. Future land use decisions will be considered during the PFP complex decommissioning process; and, at that time, the final disposition of the unit and the appearance and use of the land areas will be integrated with the rest of the PFP complex.

6.2.1 Closure Standards for Tanks and Concrete

This closure plan proposes use of a "clean debris surface" (defined in the following paragraph) as the clean closure performance standard for the tanks and concrete that will remain after closure. This approach is consistent with Ecology guidance (Ecology 1994) for achievement of tank system clean closure. Additionally, adherence to this guidance ensures that all residues have been removed as required by WAC 173-303-640 for clean closure of tank systems.

The clean debris surface standard is verifiable visually. "A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area" (40 CFR 268.45). When a physical extraction method is used on concrete, the performance standard is based on removal of the contaminated layer of debris. The physical extraction performance standard for concrete is removal of 0.6 centimeter of the surface layer and treatment to a clean debris surface. Inspections to verify achievement of a clean debris surface will be performed and documented as described in Chapter 7.0.

6.2.2 Closure Standards for Internal Piping

The internal piping will be flushed and drained as part of closure. The rinsate will be sampled and analyzed. Results less than designation limits

for the constituents of concern will be accepted as indicating that the pipes are clean with respect to RCRA waste or waste residues.

6.2.3 Closure Standards for Ancillary Equipment

Ancillary equipment is defined as pumps and other miscellaneous equipment not otherwise specified in this closure plan. Ancillary equipment will be removed and disposed.

6.2.4 Closure Standards for Underlying Soils

The concrete vaults have a system to collect leaks or spills and channel the material to drains or sumps. The collected material is pumped back into the tank system, thereby preventing spills from reaching the soil. The soil only could be contaminated if the concrete had failed. To determine if failure occurred, concrete surfaces will be inspected for cracks that (if existing) could have provided a pathway to soil for contamination. If such cracks are not identified, the soil will be considered to be clean closed. However, if such cracks are identified, investigation into potential soil contamination will be coordinated with the CERCLA remedial action process for the operable unit.

6.3 GENERAL CLOSURE ACTIVITIES

The 241-Z Treatment and Storage Tanks will be used to support PFP complex transition activities. The schedule for final use of the 241-Z Treatment and Storage Tanks will be determined as part of the Defense Facility Nuclear Safety Board Recommendation 94-1 *Hanford Site Integrated Stabilization Management Plan* and the multi-year program planning process. Closure activities will not begin until the 241-Z Treatment and Storage Tanks cease receiving waste from PFP operations and the final waste inventory is removed. Closure activities could include transferring rinsates and flush solutions to the DST System.

Closure of the 241-Z Treatment and Storage Tanks will be performed in accordance with this Ecology-approved closure plan. However, with Ecology notification and concurrence, closure activities can proceed before closure plan approval. General closure activities will be as follows:

- Rinse the tanks and internal piping. Sample, analyze, designate, and dispose of the rinsate
- Visually examine the tanks and compare to the 'debris rule' performance standard as a clean closure performance standard
- Clean the tanks as necessary and re-examine visually
- Isolate the tanks by blanking inlet/outlet lines on the internal piping

- Remove and dispose of ancillary equipment

- Identify potentially contaminated areas on the concrete. (Other areas of concrete are considered clean.)

- Examine the concrete for potential pathways for dangerous waste to the soils (i.e., cracks)

- If cracks are found in the concrete vaults that might have resulted in contamination of the soil, the soil characterization and potential cleanup will be coordinated with the CERCLA remedial action process for the operable unit

- Decontaminate the potentially contaminated concrete areas using a debris rule technology and the debris rule performance standard for concrete

- If the tanks, internal piping, concrete, and underlying soils meet the clean closure performance standards, clean close the unit

- If portions of the tanks or internal piping do not meet the closure performance standards and further cleanup is ineffective, remove the contaminated portions or coordinate cleanup with the decommissioning process.

Closure activities are summarized in Figure 6-1. These closure activities are discussed in greater detail in Chapter 7.0. Equipment or materials used in performing closure activities will be decontaminated or disposed at a permitted facility.

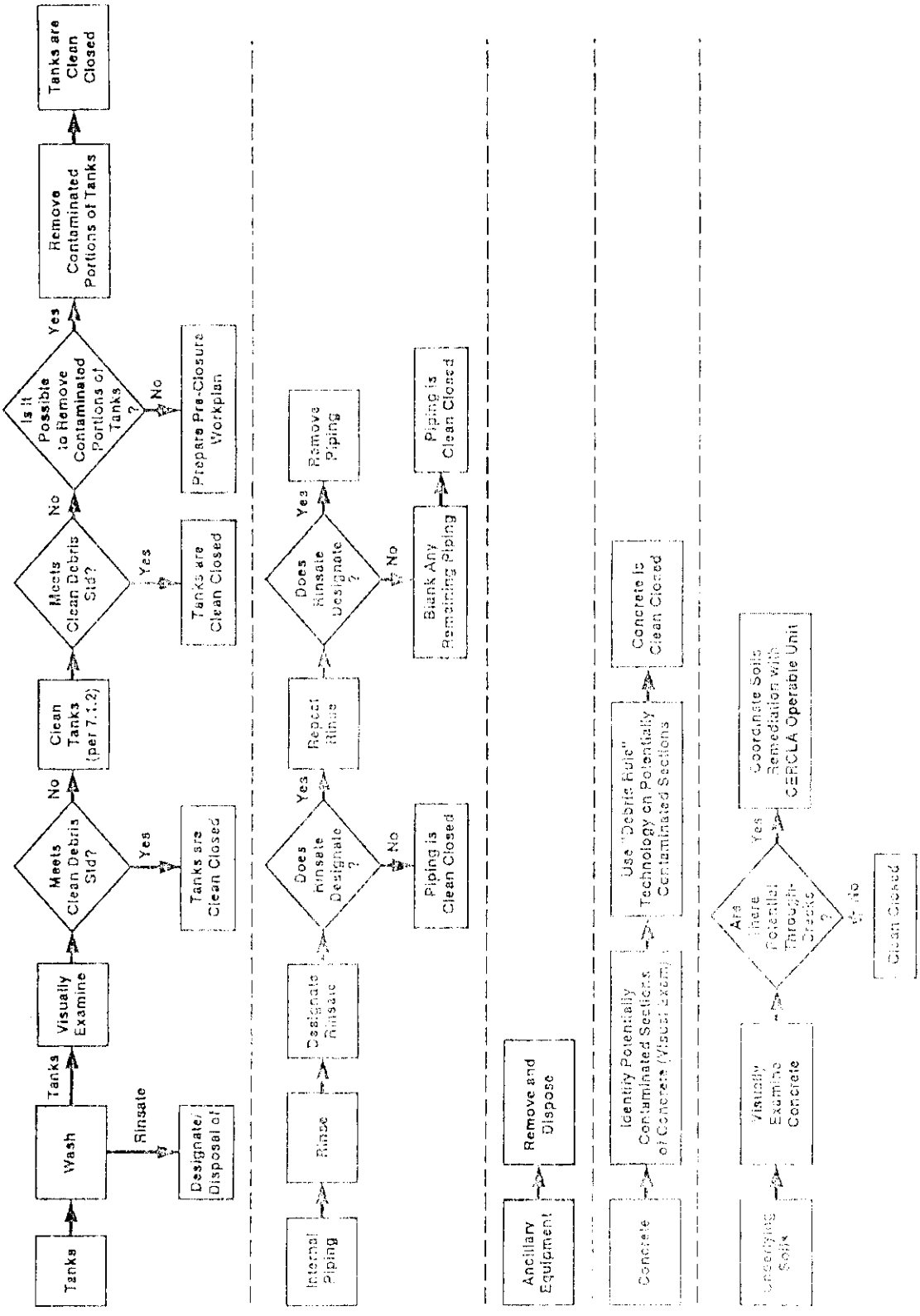

Figure 6-1. Closure Strategy Flowchart for the 241-Z Treatment and Storage Tanks.

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FIGURES

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7.0 CLOSURE ACTIVITIES

This chapter discusses the activities necessary to implement a clean closure strategy for the 241-Z Treatment and Storage Tanks. Before closure activities begin, any waste inventory stored will be removed. At that time, the last waste effluent will be transferred to the DST System for long-term storage in a manner consistent with previous waste transfers. Closure activities could include transferring rinsates and flush solutions to the DST System.

After the waste inventory is removed, clean closure of the tanks, the internal piping, the ancillary equipment, and the concrete vaults will be accomplished by decontaminating the components as necessary, and demonstrating that clean closure performance standards are met (Chapter 6.0, Section 6.2). Removal and disposal of most of the components will be deferred until the disposition phase of the PFP complex decommissioning process. Clean closure of the soil will be accomplished by demonstrating that the concrete vaults kept contaminants from reaching the soil. If it is determined that soil contamination is possible, investigation and potential cleanup of the soils will be coordinated with the CERCLA remedial action process for the operable unit.

7.1 CLOSURE ACTIVITIES

For the purposes of closure, the 241-Z Treatment and Storage Tanks are being viewed as consisting of five components: the tanks, the internal piping, ancillary equipment, the concrete vaults, and the soil directly beneath the structure. Closure of the tanks and concrete vault will entail decontamination as necessary to meet the 'debris rule' performance standard for metal and concrete surfaces. Closure of the internal piping will entail rinsing the piping and ensuring that the rinsate does not designate as dangerous waste. Closure of the ancillary equipment will entail removing and disposing of the equipment. Closure of the soil directly beneath the structure will entail demonstrating that the soil has not been contaminated by dangerous waste or waste residues. All work will be performed ALARA with respect to worker exposure to radioactivity, hazardous chemicals, or any other workplace hazards.

7.1.1 Constituents of Concern for Closure

The constituents of concern for closure are defined by the Part A, Form 3, for the 241-Z Treatment and Storage Tanks. Before treatment, the mixed waste in the tanks is corrosive and contains predominately nitric acid. Additional chemical constituents known to be present through process knowledge, modeling, and sampling include chromium, lead, silver, and carbon tetrachloride. Other constituents of the waste are described in Chapter 4.0. Depending on the waste stream received, the waste also could designate as a state-only toxic dangerous waste.

7.1.2 Activities for Closure of the 241-Z Treatment and Storage Tanks

Because of the nature of the solutions transferred within the 241-Z Treatment and Storage Tanks, it is expected that the tanks at closure might contain dangerous waste or dangerous waste residues. There might be deposits of material alongside the baffles inside the tanks. The interior of the tanks, including the internal components such as the agitator, will be washed down by adding or spraying with steam, a water-soluble cleaner, or other approved method. The tanks will be emptied and the interiors visually examined.

After rinsing, the tanks will be inspected visually for compliance with the performance standard. Because of possible radiation exposure, visual inspection will be made remotely using a camera or other device that allows verification of meeting the standard. If any areas are found to not meet the clean debris surface performance standard, these areas will be decontaminated in-place. Per the debris rule, only removal of contaminants from the surface layer is necessary for metal surfaces. Contamination will be removed from the surface layer using either high pressure water blasting (a physical extraction method) or by hand or remote wiping, washing, brushing, or scrubbing using an approved cleaner, and rinsing with water or by other appropriate methods.

The outside of the tanks also will be inspected for compliance to the performance standard. Any areas found to not meet this performance standard will be decontaminated in-place. Contamination will be removed from the surface layer using any of the methods described for internal tank decontamination or another appropriate method. Before using decontamination solutions on the outside of the tanks, the floor must be inspected for cracks or other openings that could provide a pathway to soil. This inspection will be performed as described in Section 7.1.4 in conjunction with mapping of potential through-thickness cracks. Any such cracks will be mapped. The cracks will be sealed before beginning treatment or other engineered containment devices (e.g., portable catch basins, liners) will be used to collect and contain solutions.

Decontamination residues will be collected, designated, and managed as described in Section 7.2.3. If it is not possible to meet the clean closure performance standard, contaminated portions of the tanks could be removed, designated, and disposed of accordingly. The inspections for a clean debris surface will be documented on an inspection checklist similar to Figure 7-1.

The outside of the D-8 tank was painted in 1992. The only material expected on the D-8 tank before painting would have been grease from the agitator or other mechanical devices. The cleaning of the tank necessary before painting would have removed any dangerous waste residues, such as crystals, from the salts or caustic. Also, the process of removing the paint from the outside of the tank is a radiological concern. Therefore, no cleaning of the outside of the D-8 tank is proposed. All of the tanks will be removed from service at the time of closure and disposed as part of the PFP complex decommissioning process.

7.1.3 Activities for Closure of the Internal Piping and Ancillary Equipment

The internal piping will be rinsed and the rinsate will be sampled and analyzed for constituents of concern. If the rinsate does not designate based on the concentrations of the constituents of concern, the internal piping will be blanked to ensure that the tanks are isolated and the piping will be considered clean with respect to RCRA. If it is not possible to meet the clean closure standard, portions of the internal piping will be removed, designated, and disposed of accordingly. The ancillary equipment will be removed, designated, and disposed of accordingly.

7.1.4 Activities for Closure of the Concrete

The concrete vaults will be inspected visually and surveyed radiologically before any decontamination. The purpose of the inspection will be twofold: to identify and map any cracks in the concrete that might have allowed contaminants a pathway to the soil below (Section 7.1.5); and to identify areas that potentially are contaminated with dangerous waste or dangerous waste residues. The inspection standard will be a clean debris surface as defined in Chapter 6.0, Section 6.2.1. The inspection of the concrete for a clean debris surface will be documented on an inspection checklist. Those areas already meeting the standard can be clean closed as is, based on Ecology acceptance of the completed inspection checklist.

Those potentially contaminated areas will undergo decontamination to meet the clean closure standard of a clean debris surface. Concrete surfaces indicated by visual examination as being potentially contaminated will have the surface layer removed to a depth of 0.6 centimeter by scabbling or other approved methods. This will not threaten the environment, even if potential through-thickness cracks had been found during the inspection, because concrete decontamination (scabbling) will not employ liquid solutions that could enter cracks and because scabbling residues will be vacuumed away from cracks as any residue is generated.

Achievement of a clear debris surface will be documented on an inspection checklist similar to Figure 7-1. Decontamination residues will be collected, designated, and managed as described in Section 7.2.3.

Based on the operating history of the D-6 tank, the D-6 vault is presumed clean of dangerous waste materials and residues. Waste transfer piping for the active tank system passes through the D-6 vault; however, this piping is constructed of solid piping with no joints or seals. There have been no failures of this piping since 1987. Any contamination on the vault concrete reasonably can be assumed to be due to D-6 tank operations, which ceased before the tank system became a RCRA TSD unit therefore is not subject to RCRA closure requirements.

7.1.5 Activities for Closure of the Soils Directly Beneath the Unit

The concrete vaults always have had a system to collect leaks or spills and channel these to sumps from which the solutions were pumped back into the tank system. The soils only could be contaminated where the concrete failed. Concrete surfaces will be inspected to identify cracks (if any) that could provide a pathway for dangerous waste or dangerous waste residues to the underlying soils (Section 7.1.4). If no cracks are noted, the soil will be considered clean closed. If it is determined that soil contamination is possible, investigation and potential cleanup of the soils will be coordinated with the CERCLA remedial action process for the operable unit.

The concrete directly below the tanks cannot be inspected visually. However, if no cracks, leaks, or severe corrosion were observed in the bottom of the tanks during visual inspection it will be reasoned that dangerous waste solutions could not have penetrated to the concrete directly below the tanks and to the soil underneath.

7.2 MATERIAL REMOVED DURING CLOSURE

This section addresses regulated materials that will be removed during closure and identifies the decontamination or treatment necessary for these materials.

7.2.1 Scrap Metal

Any metal not radioactively contaminated could be removed as recyclable scrap metal. Under the scrap metal exclusions of WAC 173-303-120(2)(a)(iv), recyclable scrap metal is not subject to the dangerous waste designation requirement. At closure, the cost effectiveness of decontamination of metals for recycling as scrap will be weighed against the cost of alternative waste management options.

Decontamination of scrap metal will be to remove visible waste residues in order to minimize dangerous waste produced during recycling and to minimize the potential for contact with waste during scrap handling. Decontamination methods could include physical extraction methods from Table 1, "Alternative Treatment Standards for Hazardous Debris": (40 CFR 268.45), or other methods such as hand washing, brushing, scrubbing using a cleaning agent, or rinsing with water. Residue removal from scrap metal does not equate to a clean debris surface standard. Decontaminated scrap metal will be inspected randomly to ensure residue removal. Recyclable material must be radiologically surveyed in accordance with established procedures to allow its free release.

7.2.2 Debris

Contaminated debris that are not reusable equipment or considered recyclable as scrap metal will be removed for disposal. Before removal (where

accessible) or after removal, these materials will undergo waste designation. Materials that do not exceed dangerous waste designation levels will be managed and disposed of as low-level or nonregulated waste. Materials that designate as dangerous waste might be removed and transported to the T Plant Complex for treatment before disposal as low-level or nonregulated waste. Alternately, these materials might be decontaminated in-place or treated at the unit after removal.

The goal of decontamination in-place is to ensure that the materials will not be hazardous debris when finally removed for disposal. Decontamination in-place could use an appropriate physical extraction method from Table 1, "Alternative Treatment Standards for Hazardous Debris" (40 CFR 268.45), such as high pressure water blasting, and will be to a level that ensures a nondangerous waste designation on removal. Decontamination in-place could use other method(s) that will reduce surface contamination to below designation levels. Such methods include hand washing, brushing, or scrubbing using a cleaning agent and rinsing with water. The decontamination activity could occur using a tank, trough, or vessel to contain wash and rinse water.

7.2.3 Waste Management, Transport, and Disposal

Decontamination waste, treatment residue, and/or closure debris will be placed in containers at appropriate satellite accumulation areas at the unit. When full, these containers will be moved to a designated accumulation area at the unit to await designation in accordance with WAC 173-303-070 and disposal. Containers used for transfers of regulated materials will be U.S. Department of Transportation-approved containers compatible with the waste being transferred (e.g., 210-liter containers). The containers will be labeled and shipped offsite under manifest according to WAC 173-303-180 and WAC 173-303-190 or transferred to an onsite TSD unit. After designation, waste could be disposed as follows:

- Dangerous waste could be transported offsite or to an onsite storage unit to await final disposal or treatment
- Low-level radioactive waste could be disposed onsite in the Low-level Burial Grounds
- Mixed waste would be transferred to the Central Waste Complex for storage to await treatment before final disposal
- Nondangerous and nonradioactive solid waste could be disposed through contracts with the city of Richland.

7.3 SCHEDULE OF CLOSURE

Once the PFP complex transition activities are complete and the final inventory of waste is removed from the 241-Z Treatment and Storage Tanks, closure activities will begin. The schedule for the final use of the 241-Z Treatment and Storage Tanks will be determined as part of the Defense

Nuclear Facility Safety Board Recommendation 94-1 *Hanford Site Integrated Stabilization Management Plan* and the Multi-Year Program Planning process. Closure activities cannot begin until the 241-Z Treatment and Storage Tanks cease receiving waste from PFP operations and the final waste inventory is removed.

A schedule for closure activities is presented in Figure 7-2. This proposed schedule is greater than 180 days long.

7.4 AMENDMENT OF PLAN

Any amendments to the closure plan will be submitted in accordance with Chapter 11.0, Section 11.1.10 of the General Information Portion (DOE/RL-91-28).

7.5 CERTIFICATION OF CLOSURE

Certification of closure (Figure 7-3) will be submitted in accordance with Chapter 11.0, Section 11.1.11 of the General Information Portion (DOE/RL-91-28).

TYPICAL CHECKLIST

This checklist is intended to document a "clean debris surface" for the following components, structures and/or materials.

1. Building/location: _____

2. Component(s)/Area(s): _____
3. Material (e.g., concrete, metal): _____

4. Decontamination/Treatment Method[1] (NA if not performed): _____

5. Decontamination/Treatment Parameters (NA if not applicable):
   a. Temperature _____
   b. Propellant _____
   c. Solid media (e.g., shot, grit, beads) _____
   d. Pressure _____
   e. Residence time _____
   f. Surfactant(s) _____
   g. Detergents _____
   h. Grinding/striking media (e.g., wheels, piston heads) _____
   i. Depth of surface layer removal (cm) (e.g., for concrete)
   j. Other _____

   The decontamination of the components/areas/materials identified in steps 1 - 3 was completed as specified at steps 4 and 5. Enter NA if decontamination was not performed for these materials.

   _____ _____ / _____
   Title Signature Date

6. Performance Standard:

   I have visually inspected the above identified material before/after (circle one) decontamination/treatment in accordance with the closure plan (if specified above). All dangerous waste residues have been removed to attain a clean debris surface[2].

   Authorized Representative: _____ / _____
   Signature Date

Notes:
1. Although not mandatary, decontamination may use a physica. extraction method from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45). Treatment will use an appropriate Table 1 method.
2. Clean debris surface as defined in Table 1, Alternative Treatment Standards for Hazardous Debri. (40 CFR 268.45): Surface, when viewed without magnification, is free of all visible contaminated soil and dangerous waste, except allowed as follows:
   (a) Residual staining from soil and waste consisting of light shadows, slight streaks, and minor discoloration
   (b) Soil and waste in cracks, crevices, and pits limited to no more that 5 percent of each square meter of surface area.

Figure 7-1. Typical Clean Debris Surface Inspection Checklist.

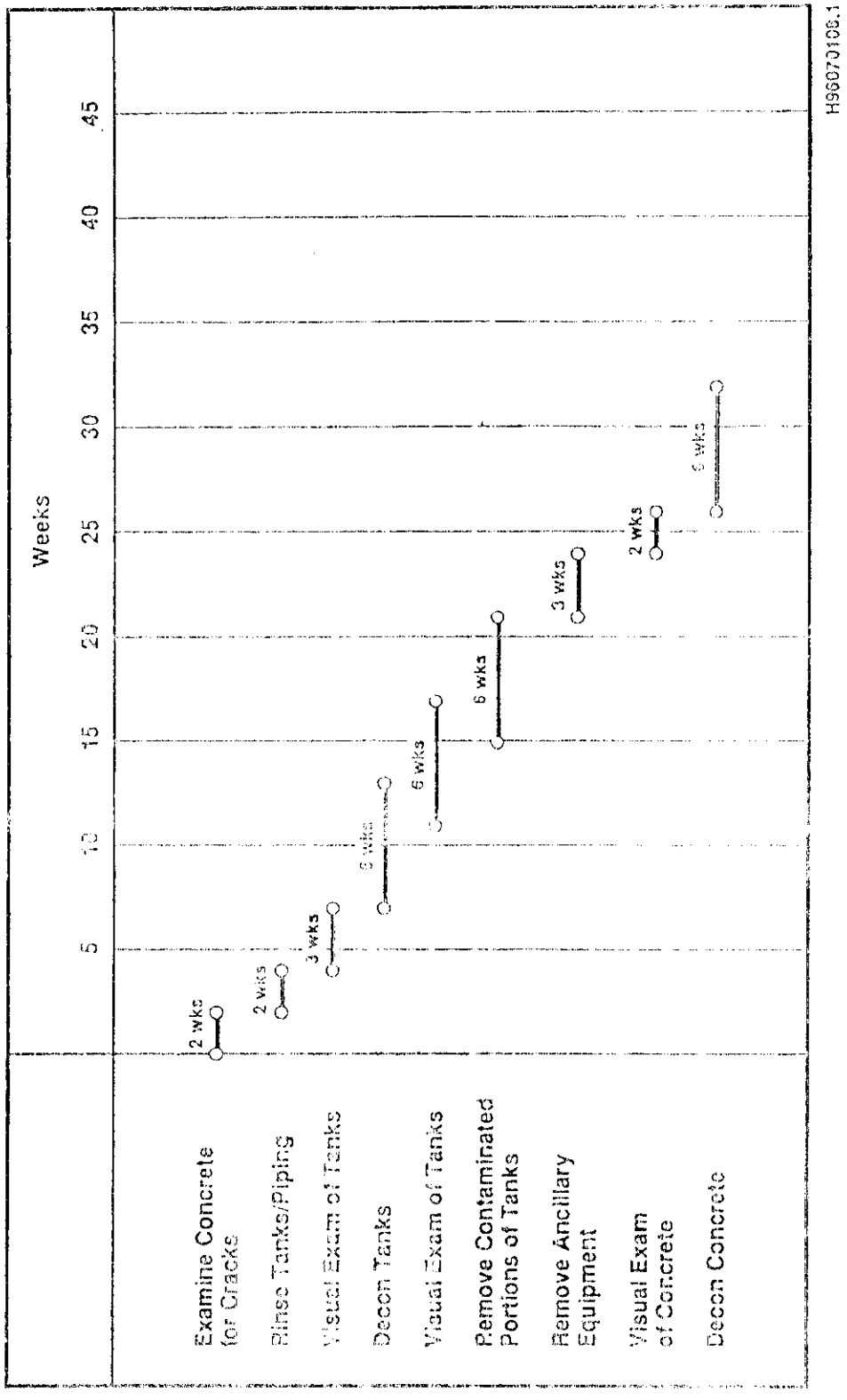

Figure 7-2. Closure Activities Schedule for the 241-Z Treatment and Storage Tanks.

CLOSURE CERTIFICATION
FOR

_____

Hanford Site
U.S. Department of Energy, Richland Operations Office

We, the undersigned, hereby certify that all _____ _____ closure activities were performed in accordance with the specifications in the approved closure plan.

_____ _____
Owner/Operator Signature DOE-RL Representative Date
(Typed Name)

_____ P.E.# _____ State _____ _____
Signature Independent Registered Professional Engineer Date
(Typed Name, Professional Engineer license number, state of issuance, and date of signature)

Figure 7-3. Typical Closure Certification.

CONTENTS

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8.0 POSTCLOSURE

This closure plan is proposing clean closure of the 241-Z Treatment and Storage Tanks. If the clean closure performance standards are not met and further cleanup is not effective, it is proposed that closure be integrated with and occur during the PFP Complex decommissioning process. If required, a preclosure workplan will be prepared in conjunction with development of the transition end point criteria and surveillance and maintenance plan for the entire PFP Complex (Ecology et al. 1996, Chapter 8.0).

However, if it is determined that postclosure care is required for the 241-Z Treatment and Storage Tanks, a postclosure plan will be prepared to address the requirements of WAC 173-303-610(1)(b).

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CONTENTS

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9.0 REFERENCES

Bramson, J.E., 1993, *Plutonium Finishing Plant Aqueous Waste Tank System Integrity Assessment Report*, WHC-SD-CP-ER-041, Westinghouse Hanford Company, Richland, Washington.

DOE/RL-90-39, *Double-Shell Tank System Dangerous Waste Permit Application*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Guidance for Clean Closure of Dangerous Waste Facilities*, Publication 94-111, Washington State Department of Ecology, Olympia, Washington.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order*, as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Olympia, Washington.

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APPENDIX A

ANNUAL TESTING COMPLIANCE

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CLOSE OUT FORM
ENVIRONMENTAL COMPLIANCE ISSUES
IDENTIFIED IN DOE/RL LETTER 95-PCA-342
DATED JULY 6, 1995

Tracking Number: 16.2.1 Date: 3-21-96

Compliance Issue Description: The 241-Z Facility does not perform annual testing of tank systems containing hazardous waste as required for interim status facilities without compliant secondary containment.

Basis for Close Out: The requirements for annual integrity testing of interim status tank systems are found at WAC 173-303-400(3)(a) incorporating by reference 40 CFR 265.193.(i)

> "(i) All tank systems, until such time as secondary containment meeting the requirements of this section is provided, must comply with the following:
>
> (1) For non-enterable underground tanks, a leak test that meets the requirements of §265.191(b)(5) must be conducted at least annually;
>
> (2) For other than non-enterable underground tanks and for all ancillary equipment, an annual leak test, as described in paragraph (i)(1) of this subsection, or an internal inspection or other tank integrity examination by an independent, qualified, registered professional engineer that addresses cracks, leaks, corrosion, and erosion must be conducted at least annually. The owner or operator must remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed.
>
> (3) The owner or operator must maintain on file at the facility a record of the results of the assessments conducted in accordance with paragraphs (i)(1) through (i)(3) of this section."

An integrity assessment of the tank system was completed in October 1993 and the system was found to be fit for use. TPA Milestone M-32-01 (attached) recognizes the existing secondary containment system as sufficient to allow the operation of the 241-Z Facility as long as certain operational restrictions are met.

The 241-Z facility dangerous waste tank system has continuous leak detection monitoring equipment. The leak detection monitoring system currently in place coupled with the acceptability of the existing secondary containment (as limited by M-32-01 and outlined in M-32-01-T02) are sufficient to satisfy secondary containment requirements. Therefore, annual testing of this tank system is not required.

CLOSE-OUT FORM TRACKING NUMBER #16.2.1 (cont'd)

Resolution: The Washington Department of Ecology and the U.S. Department of Energy are in agreement that the annual testing compliance issue at PFP associated with the requirements of 40 CFR 265.193.(i) is resolved provided that PFP: 1) maintain continuous leak detection monitoring of the 241-Z facility dangerous waste tank system; 2) continue to operate within the M-32-00 operational restrictions and; 3) document this agreement in the 241-Z Facility Part B Permit application, Closure Plan, or Pre-Closure Work Plan that will be submitted for Tri-Party Agreement milestone M-20-48A (attached). This milestone has a completion date of December 1996.

This represents the agreement by the specified Agencies to the resolution described above for this compliance issue. The persons signing below represent that they are authorized to agree on behalf of their respective Agencies to this resolution.

Ecology _____ Date 3-26-96

DOE Program _____ Date 3-21-96

DOE EAP _____ Date 4/1/96

Interim Status Dangerous Waste Tank Systems Hanford Federal Facility Agreement and Consent Order Milestone M-32

M-32-01	**Complete Plutonium Finishing Plant (PFP) Tank Interim Status Actions.** Stabilization activities at the Plutonium Finishing Plant (PFP), dependent on evaluation of alternatives under the National Environmental Policy Act, will be limited to a liquid waste generation of 300,000 gallons or less to the 241-Z tank system. The waste is temporarily stored in the 241-Z Tank System prior to transfer to the Double-Shell Tank Farms. Following any such stabilization activity, the PFP will not initiate any additional mission(s), except as described below, that results in the discharge of waste to the 241-Z tanks prior to completion of tank system upgrades necessary for compliance with state and federal dangerous waste regulations. Glove-box scale, laboratory, plant maintenance, and miscellaneous support activities necessary for safe, secure storage of materials and protection of personnel and the environment will continue. With exception of the stabilization activities, discharge to 241-Z will be limited to 50,000 gallons per year until compliance is achieved or terminal cleanout is completed. Any terminal cleanout discharge requirements in excess of 50,000 gallons per year will be reviewed and approved by the three parties prior to implementation.	Dec. 94
M-32-01-T01	Complete and submit integrity assessment report for PFP interim status tank system. Provide a schedule to address any deficiencies described in the report related to tank system compliance (Deficiencies not addressed in this schedule will be addressed in the compliance strategy of target action M-32-01-T02).	Oct. 93
M-32-01-T02	Submit proposed compliance strategy for remaining dangerous waste tank system issues.	June 94
M-32-01-T03	Complete construction of piping upgrades between 234-5Z, 236-Z and 241-Z Tank System (Project C-031H).	Dec. 94

Table D. Major and Interim Milestones

Number	Milestone	Due Date
	DISCUSSED PURSUANT TO M-81-02-T01. THE SODIUM WILL BE STORED AS PRODUCT MATERIAL IN THE SODIUM STORAGE FACILITY UNTIL THE FINAL DISPOSITION OF THE MATERIAL IS DETERMINED. FFTF IS PROCEEDING ON THE BASIS OF PROVIDING RCRA AND WAC 173-303 COMPLIANT STORAGE FOR THE SODIUM. THE SODIUM REACTION FACILITY AVAILABILITY AND REGULATORY STATUS WILL BE DETERMINED BY THE 1998 EVALUATION/DECISION POINT. IF THE SODIUM USE FOR THE TWRS IS CONFIRMED, A REQUEST FOR PROCEDURAL CLOSURE AS DEFINED IN SECTION 6.3.3 OF THE TRI-PARTY AGREEMENT WILL BE SUBMITTED FOR THE SODIUM STORAGE FACILITY AND SODIUM REACTION FACILITY UNITS. IF THE SODIUM IS DETERMINED TO BE A WASTE, A CLOSURE PLAN WILL BE SUBMITTED FOR THE TWO UNITS.	
M-20-33	SUBMIT 216-A-10 CRIB AND 216-A-36B CRIB CLOSURE/POSTCLOSURE PLANS TO ECOLOGY AND EPA IN COORDINATION WITH THE WORK PLAN FOR OPERABLE UNIT 200-PO-2 (TO BE SATISFIED BY M-13-11).	6/30/1998
M-20-39	SUBMIT 216-S-10 POND AND DITCH CLOSURE/POSTCLOSURE PLAN TO ECOLOGY AND EPA IN COORDINATION WITH THE WORK PLAN FOR OPERABLE UNIT 200-RO-1 (TO BE SATISFIED BY M-13-15).	6/30/1999
M-20-48A	SUBMIT A PFP PART B PERMIT APPLICATION OR CLOSURE PLAN TO EPA AND ECOLOGY. A PART B PERMIT APPLICATION OR CLOSURE PLAN FOR THE 241-Z TSD UNITS WILL BE DEVELOPED AND SUBMITTED TO EPA AND ECOLOGY IN ACCORDANCE WITH THEIR RESPECTIVE AUTHORITIES. AN ENVIRONMENTAL IMPACT STATEMENT (EIS) IS BEING PREPARED FOR THE SHUTDOWN AND CLEANOUT OF PFP PROCESS AREAS AND STABILIZATION OF THE FACILITY. THE RECORD OF DECISION (ROD) FOR THE EIS WILL DETERMINE IF A PART B PERMIT APPLICATION IS NEEDED FOR THE 241-Z TSD UNITS OR IF A CLOSURE PLAN (OR PRE-CLOSURE WORK PLAN) WILL BE DEVELOPED.	12/31/1996
M-20-52	SUBMIT 216-A-37-1 CRIB CLOSURE/POSTCLOSURE PLAN TO ECOLOGY AND EPA IN COORDINATION WITH THE WORK PLAN OF OPERABLE UNIT 200-PO-4 (TO BE SATISFIED BY M-13-12)	10/31/1998
M-20-53	SUBMIT 207-A RETENTION BASIN CLOSURE/POSTCLOSURE PLAN TO ECOLOGY AND EPA IN COORDINATION WITH THE WORK PLAN OF OPERABLE UNIT 200-PO-5 (TO BE SATISFIED BY M-13-16).	10/31/1999
M-20-54	SUBMIT 241-CX TANK SYSTEM CLOSURE/POSTCLOSURE PLAN TO ECOLOGY AND EPA IN COORDINATION WITH THE WORK PLAN OF OPERABLE UNIT 200-SO-1 (TO BE SATISFIED BY M-13-17)	2/28/2000
M-24-00	INSTALL RCRA GROUNDWATER MONITORING WELLS AT THE RATE OF 29-CY 1989, 30-CY 1990, AND UP TO 50/YEAR THEREAFTER	12/31/1999

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