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Document #: SD-W320-PMP-001

Title/Desc:
PROJECT MGMT PLAN FOR PROJECT W-320 TANK 241C106 SLUICING

Pages: 126

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN [redacted]

Proj. ECN W320-180

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	K. B. Ferlan,8K650,S2-48,372-0325	[] Yes [X] No	01/16/96
	5. Project Title/No./Work Order No. Tank 241-C-106 Sluicing/ W-320/D2MA1	6. Bldg./Sys./Fac. No. 241-C-106	7. Approval Designator Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-W320-PMP-001, REV. 3	9. Related ECN No(s). N/A	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Per Project Change Requests W320-051 and W320-054, editorial changes, additions and deletions to the following to reflect current project conditions:

Page: i, iii, iv, v, 1-1, 1-2, 2-2, 2-3, 3-1 thru 3-25, 4-1 thru 4-4, 5-1 thru 5-4, 6-1 thru 6-10, 7-1, 7-2, 8-1, 8-2, and GL-1.

Appendix: B, D, G, and H deleted, C changed to B, E changed to C, F changed to D, I changed to E, J changed to F, and K changed to G.

Page: A-4, C-1 thru C-14, D-1 thru D-10, E-1 thru E-14, F-1 thru F-8, G-1 thru G-6, and H-1 thru H-14

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

Updated verbage throughout the document to reflect the current phase of the project (construction, startup, and engineering during construction) deleted verbage throughtout the document that refered to the completed phases of the project (definitive design, and environmental/permitting). Test and evaluation plan now refered to in WHC-SD-W320-TP-001.

14. Distribution (include name, MSIN, and no. of copies)

Refer to attached Distribution Sheet

RELEASE STAMP

DATE: 3

STA 4 ID:

FEB 02 1996

A-7900-013-2 (11/94) GEF095

A-7900-013-1 (06/92)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) W320-180

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

20. Approvals

		Signature	Date
OPERATIONS AND ENGINEERING			
Cog. Eng.	K. B. Ferlan	KB Ferlan	1-16-96
Cog. Mgr.	D. A. Carter	D.A. Carter	1-16-96
QA	J. J. Huston	JJ Huston	1-16-96
Safety	N/A		
Environ.	N/A		
Other:			
Proj. Mgr.	K. W. Leliefeld	KW Leliefeld	1/16/96

	Signature	Date
ARCHITECT-ENGINEER		
PE		
QA		
Safety		
Design		
Environ.		
Other		
DEPARTMENT OF ENERGY		
Signature or a Control Number that tracks the Approval Signature	refer to page i	
RL Approval		
ADDITIONAL		

Project Management Plan for Project W-320, Tank 241-C-106 Sluicing

K. W. Leliefeld
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: W3 20-180 UC:
Org Code: 8K800 Charge Code: ~~D2M50~~ D2MA1 ~~1A5F~~ 2-1-96
B&R Code: Total Pages: 121

Key Words: Sluicing, Project Management

Abstract: This Project Management Plan establishes the organization, plans, and systems for management of Project W-320 as defined in DOE Order 4700.1, *Project Management System* (DOE 1987).

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2/2/96
Release Approval Date

DATE
STA: 4
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Release Stamp

Approved for Public Release

RECORD OF REVISION	(1) Document Number WHC-SD-W320-PMP-001	Page 1

(2) Title
Project Management Plan for Project W-320, Tank 241-C-106 Sluicing

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Engr.	(6) Cog. Mgr. Date
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1 RS	Per Project ECN W320-21, Editorial changes and Appendix J addition	DR Phillips Diane Rae Phillips	HR Gouge 6/14/94
2 RS	Per Project ECN W320-34, Editorial changes	Diane Rae Phillips DR Phillips	HR Gouge 9/4/95
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	Appendix - E: Addition, E-1 thru E-10		
	Appendix - F: F-5, F-8, F-9, F-11, F-13	Diane Rae Phillips	
3 RS	Per Project ECN W320-56, Editorial changes	DR Phillips	TN Shaw T.N. Shaw 9/4/
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	C-11, C-12, D-6, F-4, F-8, F-9, F-11,		
	F-13.		
	Appendix - K: Addition K1 - K16		
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	deletions to the following to reflect current		
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	Page: i, iii, iv, v, 1-1, 1-2, 2-2, 2-3,		
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	5-4, 6-1 thru 6-10, 7-1, 7-2, 8-1,		
	8-2, GL-1		
	Appendix: B, D, G, and H deleted, C changed		
	to B, E changed to C, F changed		
	to D, I changed E, J changed to F		
	and K changed to G.		
	Page: A-4, C-1 thru 14, D-1 thru 10, E-1		
	thru 14, F-1 thru F-8, G-1 thru 6,		
	H-1 thru H-14		

WHC-SD-W320-PMP-001
Revision 4

PROJECT MANAGEMENT PLAN FOR PROJECT W-320, TANK 241-C-106 SLUICING

Prepared for
Tank Waste Projects Division,
U.S. Department of Energy, Richland Operations Office
by
Project W-320
Westinghouse Hanford Company

WESTINGHOUSE HANFORD COMPANY APPROVAL:

Kenneth W Leliefeld — 1/16/96
K. W. Leliefeld — Date
Project Manager, Project W-320

U.S. DEPARTMENT OF ENERGY APPROVAL:

W J Taylor — 1/18/96
William J. Taylor, Director — Date
Tank Waste Retrieval, Treatment
and Immobilization Division

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PROJECT MANAGEMENT PLAN FOR PROJECT W-320, TANK 241-C-106 SLUICING

1.0 INTRODUCTION

A major mission of the U.S. Department of Energy (DOE) is the permanent disposal of Hanford Site defense wastes by utilizing safe, environmentally acceptable, and cost-effective disposal methods that meet applicable regulations.

The Tank Waste Remediation System (TWRS) Program was established at the Hanford Site to manage and control activities specific to the remediation of safety watch list tanks, including high-heat-producing tanks, and for the ultimate characterization, retrieval, pretreatment, and disposal of the low- and high-level fractions of the tank waste.

Project W-320, Tank 241-C-106 Sluicing, provides the methodology, equipment, utilities, and facilities necessary for retrieving the high-heat waste from single-shell tank (SST) 241-C-106. Project W-320 is a fiscal year (FY) 1993 expense-funded major project, and has a design life of 2 years including 1 year of retrieval operations.

Retrieval of the waste in tank 241-C-106 will be accomplished through mobilization of the sludge into a pumpable slurry using past-practice sluicing. The waste is then transferred directly to a double-shell tank (DST) for interim storage, subsequent pretreatment, and eventual disposal.

The following will be participants in Project W-320 activities. A detailed description of the management responsibilities is presented in Section 3.0.

- <u>DOE</u>
  - DOE-Headquarters (HQ) TWRS Division — Program Manager
  - DOE, Richland Operations Office, Office of Tank Waste Disposal (RL TWD) — RL Program Manager
  - RL Office of Tank Waste Projects (RL TWP) — Project Manager
- <u>Westinghouse Hanford Company (WHC)</u>
  - TWRS Projects — Integrating Contractor (IC)

- ICF Kaiser Hanford Company (ICF KH)

  - Engineering Division/ Construction Management Division — Onsite Engineering/ Construction Contractor (E/C)

This Project Management Plan (PMP) establishes the organization, plans, and systems for management of this project as defined in DOE Order 4700.1, *Project Management System* (DOE 1987). This PMP, prepared in accordance with the requirements of WHC-CM-6-2, *Project Management*, Section PM-7, "Project Management Plan," provides project-specific strategies and direction. This PMP supplements the approved Summary Project Plan (SPP) (RL 1995).

The project technical, cost, and schedule baselines are provided for in accordance with the approved functional design criteria (FDC) and engineering study letter report, and are described in Section 2.0 of this document. These baselines are summarized in the SPP. The environmental, safety, and health protection objectives, along with quality assurance (QA) requirements, also are described in Section 2.0. Organizational responsibilities and management system policies are outlined in Section 3.0. The project work breakdown structure (WBS) is described in Section 4.0. Systems engineering management is described in Section 5.0. Section 6.0 describes the project management and control system. Section 7.0 provides a requirements matrix. Advance Acquisition or Assistance Plans are provided in Appendix A. Environmental, Safety, and Health Protection Plans are provided in Appendix B. The Configuration Management Plan and Work Breakdown Dictionaries are provided in Appendixes C and D, respectively. Project Training Program Plans are detailed in Appendix E. The Qualification and Training Plan is presented in Appendix F. The Construction Plan is provided in Appendix G. Refer to WHC-SD-W320-TP-001, *Project W-320, Tank 241-C-106 Waste Retrieval Sluicing System Testing Plan* (Bellomy 1995) for the test and evaluation plan.

This PMP will be updated as required to incorporate changes resulting from project evolution or redirection. Revision to this PMP will result in either an individual page change or in the complete reissuance of the PMP depending on the scope of the change.

Significant project documents are as follows:

- WHC-SD-WM-ES-234, *Letter Report, Tank 241-C-106 Sluicing Project W-320* (WHC 1993)

- WHC-SD-W320-FDC-001, *Functional Design Criteria for Tank 241-C-106 Waste Retrieval, Project W-320* (Bailey 1995)

- "Tank 241-C-106 Sluicing Project Justification of Mission Need" (Lytle 1993)

- "Tank 241-C-106 Sluicing Project, Summary Project Plan" (RL 1995)

- WHC-SD-W320-QAPP-001, *Project-Specific Quality Assurance Plan* (Huston 1995).

2.0 OBJECTIVES

2.1 TECHNICAL OBJECTIVES

Tank 241-C-106 is a 2,006,050-L- (530,000-gal-) capacity SST located in the C Tank Farm in the 200 East Area of the Hanford Site. The tank has been used for radioactive waste storage since 1947. In the 1960's, tank 241-C-106 received high-level, strontium-bearing solids. In 1971, temperatures exceeding 99 °C (210 °F) were observed in the tank. To prevent the sludge from drying out and the tank from overheating, approximately 22,710 L (6,000 gal) of cooling water are added to the tank each month. The radioactive decay heat is removed by evaporative cooling of the waste. Tank 241-C-106 was withdrawn from active service in 1979 and is categorized as sound (i.e., not known to be leaking); however, the tank has the potential to start leaking at any time.

The high-heat waste stored in tank 241-C-106 has been identified as the fourth Priority 1 safety issue at the Hanford Site because of the requirement to continue the cooling water additions. If the cooling water additions were stopped, the tank temperatures would exceed current limits with the potential for structural failure of the tank. If the tank were to start leaking, cooling water additions would be continued to prevent structural damage.

In addition, the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1994) (also known as the Tri-Party Agreement), Milestone M-45-03, October 1997, requires initiation of waste retrieval from one Hanford Site SST as a demonstration of SST retrieval technology. The DOE has identified tank 241-C-106 as the M-45-03 retrieval demonstration tank. Washington State Department of Ecology has concurred with this selection.

The goals of Project W-320 are to retrieve the high-heat waste from tank 241-C-106, close the safety issue associated with the tank, and demonstrate initial waste retrieval technology for an SST.

Project W-320 will prepare tank 241-C-106 for waste retrieval, and prepare tank 241-AY-102 as the DST to receive the waste. The specific technical objectives are as follows.

- Provide retrieval equipment, ventilation systems, electrical distribution upgrades, waste transfer lines, and other equipment required to retrieve the waste from tank 241-C-106.
- Upgrade and modify tank farm utilities as required to facilitate retrieval operations.
- Protect the environment from the spread of contaminants during tank upgrades and retrieval operations, in accordance with the requirements of applicable regulations and agreements and commitments with regulatory agencies.

The scope of Project W-320 includes developing equipment for removing and packaging existing pumps in tanks 241-C-106 and 241-AY-102 (actual removal of existing pumps has been deleted through the change control process); the

equipment specific to retrieval of waste tank contents; all supporting structures; facilities; waste tank modifications; receiver tank system modifications necessary to receive tank 241-C-106 waste; the new, temporary, buried encased transfer line to and from the DST system; and all associated support equipment.

Detailed technical design criteria, functions, and standards for Project W-320 are provided in the FDC (Bailey 1995).

2.2 ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION

This project will comply with all applicable federal, state, and local environmental laws and regulations, including applicable waste volume reduction requirements and those covering gaseous, liquid, or solid effluents such as the *Clean Air Act of 1955* (CAA); *National Environmental Policy Act of 1969* (NEPA); and WAC 173-303, "Dangerous Waste Regulations."

It is the policy of WHC to comply with all applicable DOE Orders, policies, and requirements in the area of safety. The responsibility for developing and implementing an effective safety program begins at the highest levels of the DOE and WHC line management and rests with all elements of the organization. This responsibility includes establishing a work environment that encourages individual awareness, participation, and responsibility for safety. This approach establishes safety as the highest priority for all work activities, encourages active review and participation in the safety process, and assigns accountability throughout all levels of the project organization.

Project W-320 activities will be conducted in compliance with federal, state, and local regulations, laws, and standards for the protection of the environment, and the safety and health of the employees and the public. The policy for nuclear safety is provided in Secretary of Energy Notice 35-91, *Nuclear Safety Policy* (DOE 1991a).

2.3 QA

Quality assurance activities for all contractors involved in the design, construction, inspection, testing, and acceptance of Project W-320 will be formulated and executed by the IC to provide assurance that Project W-320 is designed and constructed as intended. The QA requirements will be in accordance with DOE Order 5700.6C, *Quality Assurance* (DOE 1991b). These requirements will be implemented in a graded approach, as defined in DOE Order 5700.6C.

An effective quality plan for Project W-320 is established through WHC-SD-W320-QAPP-001, *Project-Specific Quality Assurance Plan* (Huston 1995). The QA program will be implemented by the IC to ensure a requisite level of quality, safety, and environmental compliance in all areas of design, construction, test, and evaluation. Specific QA program objectives for all TWP, including Project W-320, will be described in TWP documents.

2.4 SCHEDULE

The overall objectives, based on the SPP, are depicted in the approved project master schedule. This schedule supports Tri-Party Agreement Milestone M-45-03, "Initiate Sluicing Retrieval of C-106." Project W-320 has been identified as Hanford Site Safety Initiative 6, "Accelerate retrieval of high-heat tank 241-C-106." The safety initiative requires initiation of waste retrieval from tank 241-C-106 on an accelerated basis with retrieval operations starting by October 1996. Changes to the approved master schedule have been made to support the Hanford Site safety initiative.

2.5 COST

The capital-versus-expense determination ruling recommends funding all tasks using a combination of expense and capital equipment not related to construction (CENRTC). The cost objective is to complete Project W-320 within a total project cost (TPC) as defined by the current project authorization.

The current budget requirements for Project W-320 for CENRTC and expense will be updated annually in the budget submittal and corresponding Project Data Sheet.

2.6 STAFFING

Onsite Operations and Maintenance Contractor (WHC) staffing will be used for expense and CENRTC items. Onsite E/C (ICF KH) staffing also will be used for CENRTC and expense design and construction work. The IC staff will be managed through use of an RL-approved earned value system using cost accounts to manage each work activity. The ICF KH staffing will be managed through a work order system and controlled via an approved earned value reporting system.

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3.0 MANAGEMENT RESPONSIBILITIES

3.1 PROJECT PARTICIPANT RESPONSIBILITIES

Major project functions have been identified and each participant has been assigned responsibility and direct accountability for performing these functions. Table 3-1 provides a summary of Project W-320 participant responsibilities associated with project activities, tasks, and products. The following discussion identifies, by organization, the roles and responsibilities of Project W-320 participants.

3.1.1 DOE

3.1.1.1 DOE-HQ Branch. The program manager serves as the DOE-HQ contact for the project, and ensures that all required DOE-HQ activities are accomplished. Specific activities include, but are not limited to, the following.

1. Provide programmatic direction, overview, and DOE-HQ coordination.

2. Provide for DOE-HQ approval of the SPP for Project W-320.

3. Establish and control the overall scope, cost, and schedule envelope for the project, as defined in the SPP.

4. Provide funding required for the design, construction, and startup of the project.

5. Approve changes to DOE-HQ controlled milestones which may impact the project's total estimated cost (TEC) or completion date.

6. Delegate authority to RL for the review, processing, and approval of project Key Decisions 3 and 4, project safety assessment, NEPA documentation, environmental permit applications, and operational readiness reviews (ORR).

3.1.1.2 RL TWP Office. The RL TWP Office is responsible for the management, administration, and performance of Project W-320 in accordance with established technical, cost, and schedule baselines. Specific management, administrative, and technical performance activities include, but are not limited to, the following.

1. Establish a project organization and delegate appropriate authority for execution of the project.

2. Ensure the establishment of the project technical, cost, and schedule baselines and the development and implementation of appropriate project controls for baseline management.

3. Provide overall direction, administration, and performance evaluation of the IC in its management of each project element.

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Project Management and Integration					
Project Plan	--	--	R, C	P, A	Final approval obtained at the acquisition executive level in DOE-HQ.
PSWBS	--	--	P	A	Approved as a part of the project plan.
PSWBS dictionary	--	--	P	A	--
Integration procedure development	C, R	C, R	P	A	WHC has lead for the development of all integration procedures.
Level 0 and 1 change requests	P	P	P, R	A	Level 0 changes are approved by RL. Level 1 changes are also approved by RL (contractor preparation and review as applicable).
Level 2, 3, and 4 change requests	P	P	P, R	A	Level 2 changes are approved by RL, Level 3 changes are approved by TWR, and Level 4 changes are approved by TWP (contractor preparation and review as applicable). Level 5 changes are originator controlled.
Other change requests	P	P	P, A	--	--
Surveillance of project activities	S	S	S	S	--
Business Management					
Contractor work breakdown structure code and dictionary	P	P	P, A	R	--
Project master schedules	C	C	P, A	A	Approved as a part of the project plan.
Contractor master schedules	P	P	P, A	R	--
Contractor detailed schedules	P	P	P, A	--	--
Cost reporting and analysis	P	P	P, R	R	--
Document control plan	P	P	P, A, S	--	Contained in the configuration management plan.
Records management plan	P	P	P, A, S	--	Contained in the configuration management plan.
Contractor work plans	P	P	A, S	--	--
Contractor staffing plans	P	P	A	--	--

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Monthly/quarterly report to RL	C	C	P	R	--
Monthly/quarterly report to DOE-HQ	--	--	C	P	--
Management reports, meetings, and reviews	P	P	P	P	--
Personnel training and qualification records	P	P	P, S	P, S	--
Project construction cost estimate (TEC/TPC)	P	P, C	C, A	R	--
Subcontracted fair cost estimate	--	P	--	--	--
Budget Submittal/CPDS	--	--	P	A	--
<u>Engineering</u>					
Prepare and maintain FDC	C	--	P	A	--
Prepare and maintain A-E LOIs	--	--	P, A	--	--
Review of design documents	R	C	C, A	S	CM reviews for constructibility.
Operability/maintainability review	C	C	P	--	--
<u>Design</u>					
Design drawings, specifications, and supporting documents for construction procurement packages	P, A	R	P, A, S	S	WHC approves for construction. Technical correctness of the ICF KH-produced design requires ICF KH approval. WHC approval required for the functional requirements of the design.
Independent design verification	P, A	--	P, A, S	S	ICF KH responsible for design verification of ICF KH-prepared design. WHC responsible for design verification for WHC-produced design.
Engineering configuration control	P, A	--	S	--	--
A-E training and qualification procedures	P, A	--	S	--	--
Facility siting	--	--	P, RA	A	RL matrix office (Site Infrastructure Division) has final approval.

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Incorporate results of engineering studies and testing	P, A	--	S	--	--
Document basis for design	P, A	--	S, C, P, A	--	--
Identify additional verification testing required	P	--	R, A	--	--
Factory acceptance test specification	P, A	R	P, R	--	--
Construction acceptance test specifications	P, A	R	R	--	--
Preoperational test specifications	C	--	P, R, A	S	--
Operational test specifications	C	--	P, R, A	S	--
Vendor designs	A	R	A, C, S	--	--
Spare parts requirements	P	C	P, A, C	--	--
Engineering during construction	P, A	C, R	S	--	--
As-built drawings	P, A	C	R, P, A	--	--
<u>Construction</u>					
Construction	S	P	S	S	--
Procurement	C	P	S, P	S	--
Preprocurement plans	C	P	A, P	--	--
Subcontracted construction specification	C	P, A	S	--	RL approval required only for those contracts that exceed thresholds. Thresholds are defined in ICF KH procedures.
Construction work packages	C	P, A	S, R	--	--
Subcontractor plan	C	P, A	R	--	--
Site utilization plan	C	P	S	--	--
Construction permits	--	P, A	A	--	Welding permits, excavation permits, etc.
CM construction procedure	--	P, A	R	--	--
Perform constructibility reviews	C	P	--	--	--

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Installation procedures	--	P, A	R	--	Developed in accordance with CM technical specifications.
Care and maintenance instructions	C	P, A	R, S	--	During storage and after installation prior to turnover.
Utility tie-ins	--	P, C	C, A	--	--
Surveys	--	P	--	--	--
Construction walkdowns/punch lists	P	P	P	--	--
Construction support facilities	P	P	S	--	--
Project security	--	P, A	P, R	S	Integration of security performed by WHC.
CM emergency plan	--	P, A	A	--	--
Labor relations	--	P	C	C	--
Procurement solicitation packages	R	P, A	S, P, A	S	--
Vendor qualification	C	P, A	S, P, A	S	--
Vendor submittals	A	P, R	R, P, A	S	--
Factory acceptance testing	--	A	S	S	Subcontractor/vendor performs factory acceptance testing.
Construction acceptance test procedures	R	P, A	R	--	Subcontractors may prepare procedure.
Perform construction acceptance testing	--	P, A	S	S	Subcontractor may perform construction acceptance testing. WHC will use test results as one of the bases for system/component acceptance.
Systems turnover	--	P	A	S	--
Construction completion report	--	P, C	P, A	A	RL Project's and Program's approvals required on "Official Acceptance of Construction."
<u>Startup and Operations</u>					
Project test plan	C	R	P, A	--	--
Care and maintenance instructions	C	--	P, A	--	--
Operational test procedures	R, C	C	P, A	--	--
Operational tests	--	--	P, A	S	--
Test reports	--	--	P, A	--	--

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Operational readiness review plan	C	--	P, A	R	--
Operational readiness review	C	C	P, A	S	--
Operator training	--	--	P	--	--
<u>QA</u>					
Develop QA plan	--	--	P, A	R	--
Contractor QA plans	P	P	P, A	--	--
QA audits and surveillance of participants	P	P	P	P	--
Internal QA audits and surveillance	P	P	P	P	--
Government acceptance inspections	P	P, C	C	S	WHC/ICF KH perform receiving inspections for procurement, not be confused with government acceptance inspections. ICF KH performs government acceptance inspections.
Audit schedule	P	--	P, A	--	--
<u>Safety</u>					
Independent safety review of design criteria	--	--	P, A	S	--
Independent safety review of plant design	C	--	P	S	--
Safety analysis of plant and process	C, R	--	P, A	A	Safety analysis documented in safety assessment. Approval delegated to RL. Approval via Safety Evaluation Report.
Preliminary safety evaluation	C, R	--	P, A	A	Approval delegated to RL. Approval via Safety Review letter.
Construction safety	--	P, A	S, P	S	--
Safety oversight and appraisal of contractor safety programs	--	P	P	S	--
Preliminary safety equipment list	C, R	--	P, A	--	--
Safety equipment list	C, R	--	P, A	A	Part of safety assessment.

Table 3-1. Tank 241-C-106 Sluicing Responsibility Assignment Matrix. (6 sheets)

Activity task product description	Engineering	Construction	IC	RL owner	Comments
Regulatory Compliance					
Environmental plan and procedures	C, R	C, R	P, A	R	--
CAA permits application	C	C	P, A	A	Issued by Washington State and EPA. Permits require approval of owner and operator.
RCRA permits application	C	--	P, A	A	Issued by Washington State. Permits require approval of owner and operator.
Prepare environmental documentation	C	C	P, R, A	A	Approval of NEPA documentation delegated to RL.

A = Approval
A-E = Architect-Engineer
C = Contributes input
CAA = Clean Air Act
CM = Construction Manager
CPDS = Construction project data sheet
DOE-HQ = U.S. Department of Energy-Headquarters
EPA = U.S. Environmental Protection Agency
FDC = Functional design criteria
IC = Integrating Contractor
ICF KH = ICF Kaiser Hanford Company
LOI = Letter of instruction
NEPA = National Environmental Policy Act of 1969
P = Prepares/provides
PSWBS = Project summary work breakdown structure
QA = Quality assurance
R = Reviews/comments
RA = Recommends approval
RCRA = Resource Conservation and Recovery Act of 1976
RL = U.S. Department of Energy, Richland Operations Office
S = Selected technical surveillance
TEC = Total estimated cost
TPC = Total project cost
TWP = Tank Waste Projects
TWR = Tank Waste Remediation
WHC = Westinghouse Hanford Company

4. Review the IC's QA program plans. Ensure that QA plans and QA implementing procedures meeting DOE policies and requirements are established and implemented by all project participants, and that appropriate RL-approved procedures for QA and safety are implemented.

5. Coordinate management reviews, assessments, and audits and/or surveillances of the project elements to ascertain that the project is complying with applicable DOE safety, environmental, QA, programmatic, and engineering standards.

6. Ensure appropriate control of project funding within the established thresholds.

7. Provide technical liaison and coordination with the DOE-HQ TWRS Program manager.

8. Provide review, processing, and approval of project Key Decisions 3 and 4, project safety assessment, NEPA documentation, environmental permit applications, and the PMP.

3.1.1.3 RL Matrix Organizations. The RL matrix organizations, as required, will provide guidance, support, and required approvals to the RL TWP Office for contractor actions as summarized below.

1. The RL TWRS Program Office, Office of Tank Waste Retrieval, Treatment, and Immobilization, has major responsibilities for tank waste remediation projects including approval of, and changes to, the FDC and operational and programmatic responsibility for Project W-320 following completion of the ORR.

   The RL Office of Tank Waste Retrieval, Treatment, and Immobilization will also ensure that project startup activities are conducted in a manner consistent with applicable criteria, codes, and standards through project completion.

   Additionally, the RL Office of Tank Waste Retrieval, Treatment, and Immobilization will participate in an oversight capacity in the ORRs conducted by the IC during the startup test program to ensure adequacy of designs, operations, maintenance, and procedures/documentation.

2. The Site Infrastructure Division provides matrix support in the areas of infrastructure management and BCS Richland, Inc.

3. The Program Support Division-Technical Support Branch within the TWRS Program Office provides overview of the IC's QA/quality control as well as safety and regulatory compliance.

4. The Procurement Division (PRO) is the contracting officer on the DOE prime contracts involved with contract administration. The PRO directs and coordinates procurement management for the contractors.

5. The Technical Support Division-Occupational Safety Branch supports Project W-320 with an overview of environmental, safety, and health policy and standards.

6. The Office of Field Chief Financial Officer supports the project in certification of funds availability, disbursement of allocated funds, and review of contractor accounting programs. This Office also provides support in the IC budget development process for Project W-320.

7. The Human Resources and Planning Division supports the project in personnel matters.

8. The Office of Environmental Assurance, Permits, and Policy supports the project in the implementation of, and compliance with, environmental regulatory requirements and DOE Orders.

3.1.2 WHC

3.1.2.1 WHC Project W-320 Organization. The WHC Project W-320 (W-320) organization has overall responsibility for project management and integration, business management, engineering and construction management, regulatory compliance, and startup, as well as project integration including business management and E/C management. The WHC W-320 organization shall ensure the project QA program requirements are distributed to all project participants for implementation. Specific activities in the support and accomplishment of these project functions include, but are not limited to, the following:

1. Project Support and Business Management

   a. This group is responsible for planning, estimating, baseline development/management, financial control and reporting systems, and information in direct support to W-320. Direct the activities required for implementing and integrating the project management and financial control systems for the new projects identified by the TWRS Retrieval Program Office.

   b. Develop and implement the project management and financial control systems consistent with DOE Orders and WHC policies and procedures.

   c. Direct and control the development and integration of project cost and schedule baselines for W-320. Coordinate and maintain the project cost estimate and schedule; coordinate associated budget and financial planning activities. Prepare and submit budget planning documents consistent with timing of the DOE budget cycle.

      Perform scope, schedule, and cost monitoring for all project activities.

d. Develop and implement performance measurement processes to track, evaluate, and report on effectiveness of project activities.

e. Develop, review, and maintain all project documentation, i.e., PMP and project-specific procedures.

f. Provide for the W-320 reporting inputs to monthly and quarterly DOE project reviews, etc. Prepare consolidated narrative, cost, schedule, funding, and staffing monthly progress reports. Keep the RL TWP Office informed of technical, cost, and schedule status and concerns.

g. Develop training plans and a training records system for W-320.

2. Environmental and Safety Compliance

Responsible and accountable for all aspects of environmental and safety compliance preparation for the tank 241-C-106 retrieval projects.

a. Establish project execution strategies, and prepare work scope directives (letters of instruction [LOI]) for all supporting organizations. Review and approve all work plans submitted by supporting organizations.

b. Direct the preparation of the Environmental documentation, including NEPA, CAA, and *Resource Conservation and Recovery Act of 1976* (RCRA) permit applications and modifications as required.

c. Interface with regulatory agencies for review of permit applications and design media, and for resolution of open items during the permitting process.

d. Review and approve all project safety documentation. Provide technical input for preparation of the safety documentation

e. Prepare integrated environmental/safety plans and schedules which include all project definition, regulatory compliance, construction, and startup interfaces. Make midcourse corrections to divisions of scope, methods of performance, and personnel assignments to accomplish environmental/safety activities safely, with a quality product, within budget, and on schedule.

f. Establish performance requirements and measurement standards for all environmental/safety organizations and contractors.

g. Overview environmental/safety optimization efforts from the standpoint of cost, reliability, maintainability, accuracy, and compliance with applicable codes, standards, and regulations.

3. Startup and OPS Interface Management

Responsible for all aspects of construction site preparation, equipment removal, procurement, construction, and startup of SST projects; safety on the construction site for all participating contractors, project staff, and operations and maintenance forces.

Prepare integrated procurement and construction plans and schedules which include all design and startup interfaces.

Establish performance requirements and measurement standards for all construction and startup organizations and contractors to ensure timely completion of planned work.

a. Establish the requirements and implement a system for access and work control during equipment removal, new construction, and startup testing to ensure worker safety and efficient use of project resources.

b. Interface with Tank Farm Operations for concurrence with the work control plans and performance of routine surveillance and maintenance work during construction and startup testing.

c. Perform construction walkdowns, and participate in construction acceptance testing and turnover.

d. Prepare startup test plans and procedures, train startup personnel, and perform the startup (preoperational) tests.

e. Perform maintenance on the completed systems and facility until turnover to Operations.

f. Establish an ORR process for SST waste retrieval projects.

g. Establish a training program for all project personnel required to perform project work in the C Farm and the AY Farm. The training program must include hands-on training with mockups or actual retrieval equipment. The training will address all work steps. Ensure that the E/C has a training program and training records system.

h. Provide a cost account manager for project construction and startup accounts.

i Provide Title III engineering oversight.

3.1.2.2 WHC Matrix Support. The WHC matrix organizations, as required, will provide guidance, support, and required approvals to WHC TWP for Project W-320 actions as summarized below.

1. The WHC Waste Tank Operations Department provides matrix support in the areas of Plant Engineering, Waste Tanks Environmental Compliance, waste sampling, routine monitoring of tank conditions, water additions, startup support, and radiological control.

2. The WHC QA organization provides independent review of safety, safeguards, emergency preparedness, and QA activities for all Project W-320 activities. The IC's QA organization shall prepare a plan that defines the project QA program requirements. The plan shall address the DOE Order 5700.6C requirements that are applicable to the project.

   The IC's QA organization shall conduct oversight activities (i.e., document reviews, surveillances, and audits) of project participants as necessary to ensure the project QA program requirements have been adequately implemented. This action ensures the requisite deliverables quality of project deliverables, including supporting documentation.

   The IC's QA organization shall report quality problems noted during oversight activities to the WHC W-320 organization for correction and shall ensure timely resolution of these problems and their root causes.

3. The TWRS Safety organization coordinates independent reviews of safety, safeguards, and emergency preparedness for all Project W-320 activities. These reviews include Nuclear Safety and Industrial Waste Tank Safety Support organizations. The Waste Tank Safety Support organization includes independent reviews by Industrial Safety, Industrial Hygienists, and Fire Protection.

4. The TWRS Industrial Health and Safety organization prepares the project hazards classification; preliminary safety evaluation; preliminary safety equipment list; and the safety assessment in support of project design, construction, and operations. The Tank Farm Safety Engineering organization also performs unreviewed safety question evaluations in support of tank sampling, pit cleanup, equipment removal, and other routine operations.

5. Westinghouse Hanford Company Procurement performs all equipment and systems procurement actions for the project.

6. The WHC Environmental Division coordinates and integrates all WHC environmental activities. These activities include preparation of NEPA documentation and environmental permit applications, and supporting the review and processing of these documents.

7. The Packaging Design Engineering group supports the project by providing design of waste storage containers.

8. The WHC Engineered Applications (EA) Division provides technical and engineering support for structural analysis, component design, design reviews, and systems engineering. The EA Division also is responsible for portions of the design for the equipment removal system.

9. BCS Richland, Inc. provides planning and integration support in the areas of computing, telecommunications, and information systems; and

provides records management/document control and publication services for all Project W-320 activities.

10. Pacific Northwest Laboratory provides technical support to WHC by providing estimates of tank waste composition; heating, ventilating, and air conditioning source terms; other technical reviews/inputs; and equipment removal system modeling.

11. The ARES Corporation provides independent project reviews.

12. The Advent Engineering Company performs the tank 241-C-106 structural analysis.

13. The CH2M Hill Corporation provides best available control technology for toxics and the best available radionuclide control technology analysis in support of air permitting.

14. The Raytheon Corporation provides the safety assessment analysis and documentation.

3.1.3 ICF KH

The Architect-Engineer (A-E), ICF KH, is responsible for the engineering during construction, procurement, and construction of Project W-320 systems in accordance with the FDC and LOIs prepared by the IC. The A-E services include, but are not limited to, the following.

1. Engineering Services During Construction

    a. Prepare engineering change notices during construction. Evaluate and approve construction nonconformance reports.

    b. Prepare estimates of increases or decreases in contract changes or claims, as required.

    c. Check all vendor shop drawings for conformity with the pertinent contract drawings and specifications.

    d. Observe the acceptance testing and acceptance of completed facilities.

    e. Observe tests of equipment and systems in accordance with approved test procedures. Report on test procedures and results of tests as required.

    f. Maintain design configuration control and records through completion of construction acceptance and startup testing.

    g. At completion of the construction work or separable portions thereof, furnish revised drawings (computer-aided design files), updated specifications to show the "as-built" condition, and all other project records to the IC in accordance with the requirements of the QA plan.

2. Procurement Activities

   a. Prepare bid/proposal documents. Prepare fair cost estimates for fixed-price acquisitions.

   b. Support procurement of retrieval and Equipment Removal Systems equipment construction materials.

   c. Establish and maintain deliveries of materials by required dates and within budget.

3. Design Phase Construction Activities

   a. Participate in design reviews with WHC.

   b. Review plans and specifications and make recommendations regarding feasibility, constructibility, materials, and economics. Suggest cost-saving alternatives that do not diminish design intent.

   c. Develop a detailed construction budget, construction plans and sequences, and a construction schedule that integrates with other project activities.

   d. Develop a cost control, cash flow schedule, and cost breakdown, and review initial subcontractor's cost breakdown to establish basis of payments to contractors.

   e. Conduct a labor survey, including an analysis of types and quantity of staffing required, and forecast of availability.

   f. Establish and implement comprehensive safety and security programs for the project construction activities. Interface with, and implement, the work control process developed by the IC.

4. Construction Phase Activities

   a. Provide direct hire construction services to meet project objectives, including labor, equipment, materials, management, and supervision necessary for construction, quality control, inspection, and acceptance testing.

   b. Coordinate work of specialty contractors, such as special equipment installation.

   c. Furnish and maintain governing lines and benchmarks to provide horizontal and vertical controls.

   d. Prepare bid/proposal documents for construction subcontractors; solicit, receive, and review bids/proposals; and make recommendations for contract awards. Prepare fair cost estimates on acquisitions.

e. Maintain cost account records for all work performed; maintain surveillance of accumulated costs, make comparisons with original estimates, and suggest necessary adjustments.

f. Prepare and submit change requests to WHC for approval and subsequent processing (within the DOE) as required.

g. Keep records of project progress during construction and submit weekly progress reports to WHC with information on the progress of each contractor including change requests and completion percentages.

h. Review and approve contractor applications for progress and final payments and make payments.

i. Establish procedures for handling and processing vendor submittals; maintain shop drawing log.

j. Transmit written guarantees/warranties, instruction manuals, and as-built drawings to the organization responsible for processing project records.

k. Maintain and manage a warehousing facility for procured equipment.

l. Perform and document equipment maintenance in accordance with manufacturer's warranty requirements until turnover to the plant Operations organization.

m. Conduct field or laboratory tests of construction work, materials, and equipment; provide for performance qualification testing of procured equipment.

n. Perform records management for procurement and construction activities, including as-built records and certified vendor information. Arrange for turnover of project documentation and files to the onsite Operations and Maintenance Contractor.

o. Identify and initiate site-specific permit activities, i.e., excavation permit, tie-in permit, core drill permit, radiation worker permit, and safety documentation, specific to construction work.

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4.0 WBS

The WBS defines Project W-320 by relating work elements and provides a basis for technical cost and schedule control. Major work activities have been defined that represent the project work to be accomplished in accordance with the project summary work breakdown structure (PSWBS) and the contractor work breakdown structure (CWBS) (Figure 4-1). A project-specific WBS has been prepared containing PSWBS and CWBS elements, and has been included as Table 4-1. The PSWBS dictionaries are included in Appendix D.

Figure 4-1. Work Breakdown Structure.

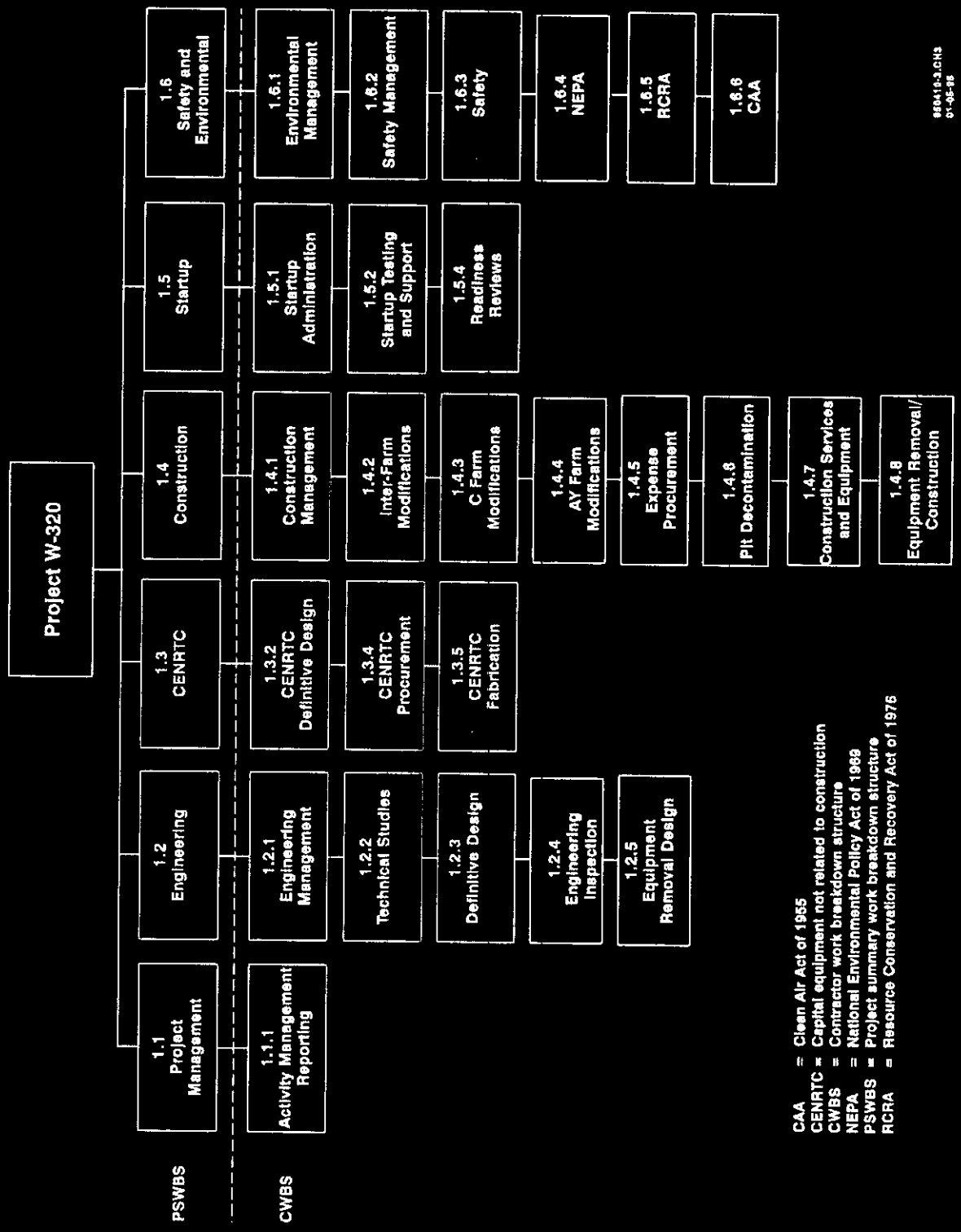

Table 4-1. Project W-320 Project-Specific Work Breakdown Structure. (2 sheets)

WBS index line number	WBS number	WBS level	Task description
1	1.0	1	Project W-320
2	1.1	2	Project Management
3	1.1.1	3	Activity Management Reporting
4	1.2	2	Engineering
5	1.2.1	3	Engineering Management
6	1.2.2	3	Technical Studies
7	1.2.3	3	Definitive Design
8	1.2.4	3	Engineering Inspection
9	1.2.5	3	Equipment Removal Design
10	1.3	2	CENRTC
11	1.3.2	3	CENRTC Definitive Design
12	1.3.4	3	CENRTC Procurement
13	1.3.5	3	CENRTC Fabrication
14	1.4	2	Construction
15	1.4.1	3	Construction Management
16	1.4.2	3	Inter-Farm Modifications
17	1.4.3	3	C Farm Modifications
18	1.4.4	3	AY Farm Modifications
19	1.4.5	3	Expense Procurement
20	1.4.6	3	Pit Decontamination
21	1.4.7	3	Construction Services and Equipment
22	1.4.8	3	Equipment Removal/Construction
23	1.5	2	Startup
24	1.5.1	3	Startup Administration
25	1.5.2	3	Startup Testing and Support
26	1.5.4	3	Readiness Reviews
27	1.6	2	Safety and Environmental
28	1.6.1	3	Environmental Management
29	1.6.2	3	Safety Management
30	1.6.3	3	Safety

Table 4-1. Project W-320 Project-Specific Work Breakdown Structure. (2 sheets)

WBS index line number	WBS number	WBS level	Task description
31	1.6.4	3	*National Environmental Policy Act of 1969*
32	1.6.5	3	*Resource Conservation and Recovery Act of 1976*
33	1.6.6	3	*Clean Air Act of 1955*

CENRTC = Capital equipment not related to construction
WBS = Work breakdown structure

5.0 SYSTEMS ENGINEERING MANAGEMENT

The basis of the systems engineering process for the TWRS Program will be presented in a systems engineering management plan. Systems engineering facilitates derivations of solutions to complex problems, such as SST and DST retrieval. This process is derived from DOE Order 4700.1 and from the overall process described in DOE/RL-92-59, *Tank Waste Remediation System Engineering Management Plan*, Annex I (RL 1994).

For this Secretarial Initiative project, the systems engineering process was modified in recognition that proven waste retrieval technology was being implemented and to facilitate the earliest possible remediation of the tank 241-C-106 high heat safety issue.

Systems engineering is implemented through a mission analysis, functions, and requirements development. Understanding the scope and depth of the problem and expectations after its resolution is necessary to develop a mission that achieves the goals of WHC. Based on the mission, functions are identified and requirements developed to meet the functions. Trade studies are performed. Alternatives are developed and evaluated against the ability to meet the functions and requirements. An architecture definition (selected design solution) is prepared yielding a technical baseline systems description. Functions and requirements (criteria) are developed from the highest level down to the details. These activities comprise the program development phase. For Project W-320, this process included numerous criteria development study analysis sessions and engineering studies (see WHC-SD-WM-ES-234 [WHC 1993]) and culminated in the FDC (WHC-SD-W320-FDC-001 [Bailey 1995]).

The second phase of the systems engineering process is project development. Design, cost, and schedule baselines are established from the conceptual design. Then the technical baseline is executed while verifying and integrating lower-level activities. Work proceeds through definitive design and includes equipment procurement and construction activities. The conceptual design phase of Project W-320 was omitted because of the implementation of known technology (past-practice sluicing) and the associated schedule.

During definitive design, drawings, specifications, estimates, schedules, and other engineering documents required for bid, award, procurement, construction, installation, and acceptance of work were developed. Design reviews and design verification were performed to ensure compliance with project criteria. Inspection plans also were developed at this time to ensure fabrication and construction meet detailed design requirements. In addition, test requirements and acceptance criteria were developed for Acceptance Test Procedures (ATP) and for inclusion in all procurement and construction specifications.

The standard Title I/Title II phases of definitive design have been combined into a one-step definitive design, with no formal hold points between Title I and Title II design. There was a 30% design review of the project design followed by 60% and 90% reviews of the individual procurement and

construction packages. This approach supported the fast-track design/ construction process implemented on the project to meet the safety initiative schedule.

As a check on the implementation of these F&Rs, a Critical Design Review (CrDR) was conducted. Though not fully complete at this time, the CrDR has not identified any significant problems in the implementation of the F&Rs for this project.

Safety documentation was also prepared during design. The preliminary safety evaluation (PSE) and preliminary safety equipment list (PSEL) are typically prepared during conceptual design. The PSE provides an initial assessment of critical criteria, credible accidents and consequences, and mitigating features of the design concept. Equipment (or systems) critical to mitigation of the accidents are identified in the PSEL. This information is then used to implement a graded QA system based on the safety classification of the systems.

There was no conceptual design prepared for Project W-320. The DOE-HQ issued direction to substitute a safety assessment for the full preliminary safety analysis report/final safety analysis report. The PSE/PSEL was prepared based on the project engineering studies and initial work during the one-step definitive design. The PSE approval was used to constrain the start of construction. The safety assessment was prepared during the remainder of definitive design, updated once during construction, and constrain the start of operations. In conjunction with preparation of the safety assessment, a fire hazards analysis wa also prepared.

Procurement of CENRTC consists of definitive design, drawings, and fabrication of specific components and the development of bid packages for other equipment; solicitation of vendor quotations; bid and award of vendor contracts; inspection and performance testing; and identification and resolution of defects, transportation, and storage.

Construction consists of physical construction and turnover of the system. Major construction activities include bid and award of major construction contracts; site preparation; construction of major structures; installation of equipment, piping, and controls; construction acceptance testing; and final site work. Title III engineering and inspection was initiated at the beginning of construction. Engineering during construction and construction inspection activities complete this phase. The ATPs, as identified in the procurement and construction specifications, are implemented to verify conformance to detailed design requirements.

Upon satisfactory completion of acceptance testing, functional systems will be turned over to Retrieval Operations in accordance with procedures for phased project turnover established in WHC-CM-6-2, *Project Management*, PM-21, "Project Acceptance and Closeout." Following turnover from the construction contractor, preoperational and operational testing will be performed in accordance with WHC-SD-W320-TP-001. The ORRs will then be conducted to evaluate the adequacy of the facility and the staff to initiate systems operation.

The final phase of the systems engineering process is identified as the operation phase. This includes activities associated with operational testing, operation, maintenance, etc. The final step in the process is post-operation decontamination and decommissioning. This step could involve a complete recycle through the entire system engineering process if decontamination and decommissioning is complex enough.

Following completion of sluicing operations, the equipment not needed to support final clean-out of tank 241-C-106 will be removed and packaged for eventual decontamination and disposal. This work is outside the project scope, but may be supported by project staff.

Integration of all portions of the waste retrieval is essential. A major benefit is elimination of duplication between the various retrieval activities. Integration of the program functions, waste retrieval process functions, and supporting functions is required. Personnel training and equipment/system testing activities are involved in each phase of the systems engineering process. Test and evaluation activities are performed in parallel with the baseline development for design input and configuration. The results are full systems meeting the mission requirements and functions and requirements. The Test and Evaluation Plan is included in WHC-SD-W320-TP-001.

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6.0 PROJECT MANAGEMENT SYSTEM

The policies and guidelines that apply to Project W-320 are provided in DOE Order 4700.1, *Project Management System* (DOE 1987); DOE Order 1332.1A, *Uniform Reporting System* (DOE 1985); and DOE N 4700.5, *Project Control System Guidelines* (DOE 1992). The objective of the project management system is to ensure that resources are allocated and used to achieve the design and construction of Project W-320 within the approved schedule and budget. This objective will be accomplished through technical, schedule, and cost baselines and through a work authorization and control system. This objective includes status of work performance with management reports, management reviews, and management actions to maintain the integrity of the baselines.

The implementation of DOE Order 4700.1 requirements for management of project key decisions includes transfer of the project secretarial officer approval authority to RL for Key Decisions 3 and 4. The SPP included authorization to proceed directly into definitive design based on a project engineering study scope description, schedule, and cost estimate. There was no conceptual design prepared for Project W-320. The baseline cost estimate was updated at the 40% and 90% definitive design points.

This section describes the project management system, including documentation; baseline management; project work authorization; project performance measurement and control; and project status, management reporting, and management reviews.

This is a standalone PMP, prepared in accordance with the requirements of WHC-CM-6-2, *Project Management*, PM-7, "Project Management Plan." In any instances of conflict between this project-specific PMP and the generic PMP (Sliter 1990), this project-specific PMP takes precedence.

Project W-320, Tank 241-C-106 Sluicing, is a "fast-track" design and construction project. As such, there were conditions associated with the start of work which necessitated waivers from procedural requirements, etc. These waivers, etc., are detailed in meeting minutes (Shrimpton 1993) and include the following:

- The approved SPP (RL 1993) shall be used until a project-specific PMP is issued.

6.1 PROJECT MANAGEMENT SYSTEM DOCUMENTATION

The SPP delineates the basis for the project; delegates responsibilities and authorities for the work; and defines the mission, technical plan, and project cost and schedule baselines. The PMP identifies the plans, organizational interfaces, and management control systems and reporting policies that will be used by the project participants during the life of the project.

Project management system requirements are established by the SPP and PMP policies and by project-specific needs. The PMP and its appendixes define management and integration roles and responsibilities; major project

participant interfaces; and management systems to be implemented for execution and control of work activities and products.

6.2 BASELINE MANAGEMENT

Based on work planning, a total project baseline has been established for all activities to the completion of Project W-320. The baseline consists of scope, schedule, and cost elements. Effective control of the project baseline is essential and changes to the baseline will be managed.

Changes to the controlled baseline documents are anticipated. Changes will be considered through submittal of change requests that justify proposed changes. For change control, this project will implement the provisions of WHC-CM-6-2, *Project Management*, PM-14, "Project Baseline Management and Change Control."

Table 6-1 provides a summary of the project baseline, and Table 6-2 provides a summary of the change control thresholds.

6.2.1 Technical Baseline Control

The scope baseline of the project is the combination of the technical baseline and the WBS dictionary description of the work to be performed. The WBS dictionary was defined at a level that enables identification of all project deliverables (hardware, software, and documentation). The project cost estimate may be used at the lowest level to itemize scope. If used in that manner, the WBS must be traceable in the estimate.

The WBS dictionary portion of the scope baseline must remain current with the project evolution, in a step-wise fashion. All project changes must include an assessment of changes in the detailed scope descriptions. The overall scope description may be updated at the discretion of the project manager.

The technical baseline is summarized in the FDC. The technical baseline evolves at lower levels with development of design drawings, specifications, and operations documentation. The FDC is approved by the DOE. The more detailed portions of the technical baseline are approved by the preparer and the IC (see Table 6-1).

These documents are regulated through a formal document control system managed by the IC. The control of approved project documentation is related but functionally distinct from project change control. The IC is responsible for the overall management, development, and maintenance of the baseline documentation. Control of design and construction media will be performed by the E/C until as-built documentation is complete. The documents will be turned over to the IC at that time. Any changes to the summary scope baseline will be processed through modifications to the FDC. Changes to the FDC will be in accordance with TWRS change control procedures and WHC document control procedures. Changes to lower-level technical baseline documents will be in accordance with WHC or ICF KH document control procedures.

Table 6-1. Summary of Baseline Information.

	Secretarial/program (Level 1)	Project (Level 2)	Contractor (Level 3)
Technical scope	System design: Design and construct a retrieval system for tank 241-C-106 to resolve the high-heat issue using past-practice sluicing technology. Receiver tank: 241-AY-102. Verification: A system is required to determine sluicing effectiveness. Exceptions: Notify DOE-HQ if it is determined that the project cannot be in compliance with any code or standard identified in the Functional Design Criteria.*	Functional Design Criteria*	Design documents specifications
Schedule	Project milestones (see Section 2.4)	Project summary schedule, WBS Level 2	Project master schedule, WBS Level 3
Cost	Cost: TPC and TEC are as defined in current authorization (see Table 6-2)	C usage (see Table 6-2)	None

*WHC-SD-W320-FDC-001, *Functional Design Criteria for Tank 241-C-106 Waste Retrieval, Project W-320*, J. W. Bailey, Westinghouse Hanford Company, Richland, Washington (Bailey 1995).

C = Contingency
DOE-HQ = U.S. Department of Energy-Headquarters
TEC = Total estimated cost
TPC = Total project cost
WBS = Work breakdown structure

6.2.2 Schedule Baseline Control

A project summary schedule has been established for baseline development and control. This schedule is included in the SPP and provides overall project schedule objectives. A project master schedule developed by the IC contains significant activities representing the workscope to be accomplished.

For each WBS identified in the PSWBS, a separate subproject schedule was prepared which identifies the activities necessary to successfully complete that phase of the project workscope. Each subproject schedule identifies the logic ties and interfaces necessary to coordinate the completion of that phase of the workscope with the other elements of the project summary schedule and contains sufficient detail to allow integration of all subproject schedules into the project summary schedule.

Table 6-2. Summary of Change Control Thresholds.

Threshold type	Secretarial/program	TWRS Program Office (RL)	Integrating Contractor
Technical	Any change impacting Level 1 baseline technical elements (see Table 6-1)	Any changes to RL milestone	Supplemental requirements documentation
Schedule	Any change to Level 1 milestones >4 months	Any change to Level 2 milestones	Contractor key milestones, project master schedule
Cost	Any change to TEC/TPC or any change in funding from $25M to $50M	Any change requiring the use of C. Any change from $50K to $25M.	Any change up to $50K within the PSWBS

C = Contingency
PSWBS = Project summary work breakdown structure
RL = U.S. Department of Energy, Richland Operations Office
TEC = Total estimated cost
TPC = Total project cost
TWRS = Tank Waste Remediation System

All subproject schedules will be resource loaded with staff hours and other direct costs. Schedule control of this project will be implemented through critical path schedule analyses, milestone controls, and corrective actions for schedule variances in excess of set thresholds as defined in WHC-CM-2-5, *Management Control System*, Section 3.1. Contractors will analyze schedule variances, evaluate trends, and schedule performance on their contractor master schedule. The IC will prepare performance and variance analyses on schedule performance at the PSWBS reporting level. When variance analyses reveal problems, the IC will ensure that appropriate corrective actions are taken by the affected participants.

The milestones depicted on the approved project summary schedule provide the basis for control and reporting. Changes in schedule dates for controlled milestones will be processed through change control. Changes in DOE-HQ milestones require DOE-HQ approval. All controlled milestones will have description sheets for definitions of milestone parameters. Changes to the project baseline schedule will be documented and approved based on the level of impact to the baseline. All proposed changes to the baseline schedule will be controlled under the requirements identified in Section 6.2 of this PMP. Proposed changes to elements of the schedule below the thresholds identified in Section 6.2 will be controlled in accordance with direction from the IC.

6.2.3 Cost Baseline Control

The initial project budget authority (BA) requirements and planned budget outlay (BO) were established through a letter report (WHC 1993). The BA for

Project W-320 is the contract budget base plus contingency, which is defined in the current project authorization. The BA is the summarization of the unallocated budget, committed funds, and BO (budgeted cost of work scheduled). Determining the BO requirements includes the following steps: (1) develop schedules, (2) develop estimates, (3) resource load schedules, and (4) determine annual projections of expenditures. The BA/BO requirements will be updated annually to reflect the ongoing planning and schedule activities, contract commitments, and actual progress. The BA requirement will consider the requirements of contract commitments and phase funding allowances. Carryover of expense funds to support the BA/BO profile will be required.

Cost control will be implemented by the W-320 organization through corrective action in response to cost variances that exceed set thresholds, and the preparation of estimates to complete (ETC). Each contractor will analyze cost variances that exceed established thresholds as defined in WHC-CM-2-5, Section 3.1. Variance analyses will be performed at the PSWBS reporting level. Each contractor will prepare ETCs at the work package level and report the ETCs at the CWBS level.

The IC has the primary responsibility for preparing variance and analyses on cost performance and ETCs at the PSWBS reporting level. Significant variances, beyond established PSWBS thresholds as defined in WHC-CM-2-5, Section 3.1, and corresponding variance analyses will be reported to the RL TWP Office with recommended corrective action. The ETCs for each PSWBS element will be prepared by the IC, based on the status of the work element, and reported monthly in the management review meeting (MRM). The ETCs will be based on latest performance data, current assessment conditions, current and projected pricing factors and rates, and knowledgeable forecasts of projected conditions.

Changes to the project cost baseline will be processed through change control in accordance with established thresholds. The IC will ensure that all project cost estimates and revised estimates are based on current schedules and that the basis for cost estimates is consistent with the documented project scope baseline.

Fair cost estimates were prepared by the E/C at the 90% design point for each procurement or construction package. Between the 30% and 90% design points, the E/C implemented a cost trending system to identify potential changes to the (30%) cost baseline.

The project cost baseline was updated via a change request at the 90% point of each package as required to meet the cost change control thresholds.

6.2.4 Funds Management

Baseline funding requirements by FY to meet project objectives also were established by a letter report (WHC 1993). Current budget year and outyear funding requests are prepared annually as part of the annual planning and budgeting cycle, and are included in construction project data sheets prepared by the IC for RL submission to the DOE-HQ. Changes to FY funding as a result of DOE-HQ or RL direction will be analyzed, impacts assessed, and changes processed, as appropriate, through change control.

Control of FY cost ceilings and appropriations will be accomplished in accordance with DOE-HQ-approved funding plan requirements and existing DOE-HQ and RL funds control policies and procedures. Funding authorizations to WHC will be through project authorization/modification prepared by the RL TWP Office. Project funding that is authorized but not spent (i.e., incomplete work, uncosted commitments) within an FY will remain with Project W-320 for use in the next FY in accordance with the project's cost, schedule, and scope baselines. Funds associated with incomplete work will be carried over as BO. Uncosted commitments will be carried over either as BO if costed in the next FY, or as BA if costed beyond the next FY.

Cost, commitment, and fund authority information will be provided by the IC in the MRM, as requested by RL. This information will be used to keep RL and IC management advised of current cost and commitment levels and potential funding impacts. Controls will be established to ensure costs and commitments do not exceed available funding.

6.2.5 Management Reserve

NOTE: The use of management reserve was deleted at the direction of the DOE (Nicoll 1995).

6.2.6 Contingency

Contingency funds have been established and identified on the project authorization. It is intended to cover costs that may result from unforeseen and unpredictable conditions and uncertainties within the defined project scope. A contingency analysis will be performed on all project cost estimates to determine requirements for each PSWBS cost element. Contingency is used for the following:

- Uncertainties due to design evolution
- Material pricing uncertainties
- Labor productivity uncertainties
- Errors and omissions
- Field work.

Management control of contingency will be provided through a structured process that includes formal authorization, routine status, and trend reporting. Use of contingency will be documented in logs maintained by the IC, and reviewed and monitored monthly through the MRM. Contingency management is addressed in Tables 6-1 and 6-2.

6.3 PROJECT WORK AUTHORIZATION

Overall work authorization occurs by contractual arrangements between the RL contracting officer and the IC.

In addition to the contractual authorization, specific authority to proceed with project work will be provided from the RL TWP Office to the W-320 organization, and from W-320 to project participants.

A work control system will be implemented for all field work within the tank farms by the IC and Construction Manager to ensure worker safety and efficient application of project resources. Authorization for specific work packages will be provided by discrete packages approved by the IC.

6.4 PROJECT PERFORMANCE MEASUREMENT AND CONTROL

Work planning, scheduling, budgeting, and authorization will be integrated to provide a baseline against which performance can be measured. Each contractor will use and maintain internal performance-based cost and schedule monitoring systems that provide responsible managers with performance data.

The cost and schedule baseline will be updated by the IC, in conjunction with the contractors, through performance measurement and control techniques that comply with the following DOE N 4700.5 (DOE 1992) criteria.

1. Actual project progress will be tracked against baseline budget estimates and schedule milestones on a monthly basis using earned value techniques to determine work progress.

2. Cost status will be provided monthly to the RL TWP Office through the MRM. The MRM will provide reporting information as specified in DOE Order 4700.1, *Project Management System* (DOE 1987), and DOE N 4700.5.

3. Schedule status of the project summary schedule will be provided monthly to the RL TWP Office, including any projected milestone delays, as part of the MRM.

4. Funding status will be provided monthly to the RL TWP Office as part of the MRM. Obligations and cost accruals made against the BA will be reported.

5. Cost and schedule trends will be monitored for potential unfavorable impacts.

6. Variance analyses will be performed for variances exceeding reporting thresholds.

7. A reassessment of the current FY project work plan will be performed annually by the project participants and coordinated by the IC. The reassessments will include, but not be limited to, the following.

    a. Estimates to complete will be developed for all ongoing activities, will reflect actual costs for work performed, and will include an evaluation of resources (labor, materials, etc.) needed to complete the remaining work. Work added, deleted, or deferred will be clearly identified, including reference to change request number and budget required for work to be carried over into the next FY.

b. Project schedules will be updated to show progress to date and schedule forecasts will be provided for remaining work. All major and key milestones will be evaluated and forecasted completion dates will be provided.

c. Current and projected staffing levels for each project participant will be provided.

d. Funding analyses for operating expense and facility and capital equipment will be prepared evaluating current funds availability and projected funds requirements.

6.5 PROJECT STATUS, MANAGEMENT REPORTING, AND MANAGEMENT REVIEWS

Project status will be provided in the form of routine and special reports and management reviews. Management reporting will comply with the requirements of DOE Order 4700.1, DOE N 4700.5, and DOE Order 1332.1A, *Uniform Reporting System* (DOE 1985). Specific project reporting requirements and responsibilities have been defined herein for cost and schedule. The IC will provide monthly activity and MRM briefings to the RL TWP Office. A summary of the project participants' activities and performance will be included in those briefings for the specified reporting period. The IC will provide for the monthly issuance of project status, cost and schedule performance, milestone status, and performance analysis at those briefings.

The RL TWP Office director will provide the DOE-HQ with monthly and quarterly reports, in accordance with DOE Order 4700.1. These reports will include the MRM and the quarterly Project W-320 project manager's report. The quarterly report will be compiled from the material generated at the project monthly management meetings. Midyear and year-end reviews will be provided by the RL TWP Office director to the DOE-HQ.

7.0 REQUIREMENTS MATRIX

The DOE Order 4700.1, Attachment II-4, provides "Guidance for preparing a Project Management Plan." The guidance includes a recommended plan format and contents. The Project W-320 PMP deviates from the recommended format in order to best present the management approach, but this PMP does cover the required contents. The DOE Order 4700.1 and PMP matrix, Table 7-1, serve as a requirement map. The DOE Order 4700.1 format requirements are listed along the vertical axis of Table 7-1, with a corresponding PMP section that satisfies these requirements arranged along the horizontal axis of the table. Where a requirement is discussed in more than one section of the PMP, all applicable PMP sections are identified.

Table 7-1. U.S. Department of Energy Order 4700.1 and Project Management Plan Matrix.

Project Management Plan for Project W-320, Tank 241-C-106 Sluicing / DOE Order 4700.1, Attachment II-4	Cover sheet	Introduction, Section 1.0	Objectives, Section 2.0	Management Organization and Responsibilities, Section 3.0	Work Breakdown Structure, Section 4.0	Systems Engineering Management, Section 5.0	Project Management System, Section 6.0	Responsibility Matrix, Section 7.0	Appendixes
Submission and Approval	X	–	–	–	–	–	–	–	–
Introduction	–	1.0	–	–	–	–	–	–	–
Objectives	–	–	2.0	–	–	–	–	–	–
Management Responsibilities	–	–	–	3.0	–	–	–	–	–
Work Plan	–	–	–	–	–	5.0	–	–	–
Work Breakdown Structure	–	–	–	–	4.0	–	–	–	–
Schedule	–	–	2.4	–	–	–	6.2.2	–	–
Logic Diagrams	–	–	2.4	–	–	–	–	–	–
Performance Criteria	–	–	2.0	–	–	–	–	–	–
Cost and Staffing Estimates	–	–	2.5	–	–	–	6.2.3	–	–
Project Functional Support Requirements	–	–	–	3.0	–	–	–	–	–
Project Management Measurement Planning and Control Systems	–	–	–	–	–	–	6.0/6.4	–	–
Information/Reporting	–	–	–	–	–	–	6.5	–	–
Systems Engineering Management	–	–	–	–	–	5.0	–	–	–
Management Reserve	–	–	–	–	–	–	6.2.5	–	–
Contingency	–	–	–	–	–	–	6.2.6	–	–
Quality Assurance	–	–	2.3	–	–	–	–	–	–
Utility Services	–	–	2.1	–	–	–	–	–	–
Requirements Matrix	–	–	–	–	–	–	–	7.0	–
Appendix A, Advance Acquisition or Assistance Plan	–	–	–	–	–	–	–	–	A
Appendix B, Environmental, Safety, and Health Protection Implementation Plan	–	–	–	–	–	–	–	–	B
Test and Evaluation Program Plan, WHC-SD-W320-TP-001	–	–	–	–	–	–	–	–	–

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9.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

A-E	Architect-Engineer
ATP	acceptance test procedure
BA	budget authority
BO	budget outlay
C	contingency
CAA	Clean Air Act of 1955
CENRTC	capital equipment not related to construction
CM	Construction Manager
CrDR	Critical Design Review
CWBS	contractor work breakdown structure
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
DST	double-shell tank
EA	Engineered Applications
E/C	Engineering/Construction Contractor
ETC	estimates to complete
F&R	functions and requirements
FDC	functional design criteria
FHA	Fire Hazards Analysis
FY	fiscal year
IC	Integrating Contractor
ICF KH	ICF Kaiser Hanford Company
LOI	letter of instruction
MRM	management review meeting
NEPA	National Environmental Policy Act of 1969
ORR	operational readiness review
PMP	Project Management Plan
PRO	Procurement Division
PSE	preliminary safety evaluation
PSEL	preliminary safety equipment list
PSWBS	project summary work breakdown structure
QA	quality assurance
RCRA	Resource Conservation and Recovery Act of 1976
RL	U.S. Department of Energy, Richland Operations Office
SA	Safety Analysis
SPP	Summary Project Plan
SST	single-shell tank
TEC	total estimated cost
TPC	total project cost
TWD	Tank Waste Disposal
TWP	Tank Waste Projects
TWR	Tank Waste Remediation
TWRS	Tank Waste Remediation System
WBS	work breakdown structure
WHC	Westinghouse Hanford Company

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APPENDIX A

PROJECT W-320 PROJECT MANAGEMENT PLAN, ADVANCE ACQUISITION OR ASSISTANCE PLAN

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APPENDIX A

PROJECT W-320 PROJECT MANAGEMENT PLAN, ADVANCE ACQUISITION OR ASSISTANCE PLAN

A1.0 INTRODUCTION

The Advance Acquisition or Assistance Plan (AAAP) provides the approach to implement the project's acquisition strategy.

A1.1 PURPOSE

The AAAP provides guidelines for implementing the Project W-320 acquisition strategy. The primary purpose of the AAAP is to describe Project W-320's acquisition objectives and contracting processes and to provide implementation requirements to project participants. The AAAP is not intended to be a detailed plan for implementation, but rather a framework for providing the requirements for lower-tier documents to effect implementation.

A1.2 SCOPE

This AAAP is organized to describe the project's acquisition approach and to provide requirements for acquisition implementation. Implementation narrative has been generally organized in accordance with the preparation guidelines in DOE Order 4700.1, *Project Management System* (DOE 1987). The AAAP requirements are intended to be applicable to the principal participants, as described in the *Project Management Plan for Project W-320, Tank 241-C-106 Sluicing* (PMP).

A2.0 APPROACH

A2.1 PROJECT PHASES

The technical, cost, and schedule objectives of Project W-320 are described in detail in the PMP. The primary purpose of the project is to provide a system that will allow retrieval and transfer of single-shell tank 241-C-106 waste to double-shell tank 241-AY-102 for future treatment and disposal. This objective will be met when the retrieval system and supporting systems provided by Project W-320 have completed startup testing and initiated waste retrieval operation through the operational readiness review process.

The project consists of four major phases: design, procurement, construction, and startup. The detailed design for all equipment, systems, and facilities will be provided during the one-step definitive design. This design will include equipment for retrieving waste from tank 241-C-106

and utilities and facilities to support the retrieval operations. The engineering phase overlaps the procurement and construction phases with inspection and "as-built" drawing services (Title III).

The procurement phase will consist of procuring the capital equipment not related to construction items and the equipment and materials used for the retrieval system. The procurement activities are closely tied to the construction work. The construction phase will consist of physical construction, acceptance testing, and turnover of the facilities for startup testing. The startup phase will verify the functionality of the installed equipment to perform the retrieval operations. An operational readiness review will be completed before the hot operations.

A2.2 ORGANIZATION RESPONSIBILITIES

The U.S. Department of Energy (DOE), Richland Operations Office (RL) retains overall project management responsibility. The Westinghouse Hanford Company (WHC) Single-Shell Tank Retrieval Projects (SSTRP) organization will integrate project functions; provide day-to-day technical, cost, and schedule management of the project; and be responsible for regulatory compliance and startup functions. The ICF Kaiser Hanford Company, the Engineering/Construction Contractor (E/C), is responsible for definitive design and engineering/inspection during construction of Project W-320. Westinghouse Hanford Company may develop the design for some portions of the project where required to meet the project schedule, apply existing designs from another project, or where defined by the Integrating Contractor project manager. The ICF Kaiser Hanford Company is the Construction Manager (CM) for Project W-320 and will be responsible for procurement and construction. This activity will be performed under the direction of WHC to ensure conformance with tank farm operating requirements. Project organization roles and responsibilities are further described in Section 3.0 of the PMP.

A2.3 COMPETITION POLICY

The CM will normally use competitive bid and negotiation methods of procurement for the procurement of materials and services, including construction. Under these methods, bids, quotations, or proposals are solicited from a reasonable number of sources considered responsible and capable of filling or fulfilling the requirements of the procurement action. A reasonable amount of time is allowed for submittal of bids, quotations, or proposals and these are handled in a manner that provides fair and equal treatment for all prospective bidders/offerers. The CM will select the contracting strategy that is most appropriate for the work scope of each contract and which supports the schedule for the work.

Subcontract and purchase orders will generally be firm-fixed-price. Solicitations will avoid restrictive specifications and requirements to the extent practicable. The CM will reserve the right to reject all bids/offers and resolicit if in the best interests of the government or if all bids/offers excessively exceed the independent cost estimates.

To ensure competitive acquisitions, the CM will normally give wide distribution of material, including appropriate publishing in *Commerce Business Daily*, informing potential suppliers and/or subcontractors as to how to get on the bidder's list, and identifying points of contact. The CM will establish and maintain a supplier record center as a primary source file/list of information on prospective supplier/subcontractor performance, financial, technical, quality, and survey information. In some cases where schedule compliance is critical, existing supplier/subcontractor lists shall be used in lieu of *Commerce Business Daily* announcements of work. Procurement documents will include applicable Rights in Data Clauses. For construction work, the CM will establish and maintain a list of prospective general and specialty contractors. Only those firms considered responsible and qualified to perform the required work will be solicited and awarded subcontracts.

Domestic manufacturing capability to produce nuclear-grade equipment and material has significantly diminished. Therefore, foreign procurements may result if it is judged that this is in the best interest of the public and the best technology and cost and/or schedule can be maintained. Approval from the DOE will be required for foreign solicitation.

A3.0 IMPLEMENTATION

A3.1 CONTRACTOR SOURCE SELECTION

A3.1.1 Major Site Contractors

Westinghouse Hanford Company is the Hanford Site Operations and Engineering Contractor. Westinghouse Hanford Company will develop the functional requirements for Project W-320 and operate the facilities for the DOE. Westinghouse Hanford Company was assigned Project W-320 responsibilities because of its current Hanford Site contract agreements, and was selected using the criteria in DOE/MA-0154, *Acquisition Regulations Handbook Source Evaluation Board* (DOE 1984).

A3.1.2 Other Major Contractors

The ICF Kaiser Hanford Company is the Hanford onsite E/C and CM and has been assigned Project W-320 responsibilities. The ICF Kaiser Hanford Company was selected using DOE/MA-0154 criteria.

A3.2 OTHER ANTICIPATED CONTRACTORS AND PARTICIPANTS

The SSTRP personnel will interact with personnel from the Savannah River Site in Aiken, South Carolina, and the Idaho National Engineering Laboratory in Idaho Falls, Idaho. These sites may provide technology, design, testing, fabrication, and construction information applicable to Project W-320 and lessons learned from these sites may be directly applied. Support also may be

obtained in the form of engineering analysis, documentation transfer, design review, and training. Long-term support required by Project W-320 will be identified in Memorandums of Understanding.

Other onsite contractors will be requested to perform selected task-specific activities for Project W-320 under Request for Services agreements, and for WHC under work orders within its scope of services.

A3.3 REPORTING REQUIREMENTS

Each of the major participants' plans and status report requirements will be specified. Cost performance reports will be required monthly. Management plans and control system descriptions will be required once after award and revised as required. All remaining plans and reports will be required on an as-needed basis.

A3.4 FUNDING PLAN

Phased funding to support the Project W-320 schedule is being requested in the budget submission to the U.S. Department of Energy-Headquarters (DOE-HQ). Budget authority and budget outlay requirements increase significantly starting in fiscal year 1994 to maintain project design, procurement, and construction momentum. Overall required funding profiles are shown in the Summary Project Plan (RL 1995).

A3.5 AWARD SCHEDULE

Award schedules for construction and procurement contracts will be developed for Project W-320. The planned configuration of design, construction, and procurement packaging will be included in Project W-320 construction plans to be developed by the E/C. The E/C will identify the type of award, estimated amount, and target dates for award and contract completion in the project schedule and cost estimate. Early procurement actions for long-lead time and specialty items required to support critical construction requirements also will be identified.

A3.6 CONTRACT INCENTIVES

To minimize technical and cost risks, it is the intent of Project W-320 to maximize the amount of fixed-price subcontracts for work outside radiologic control zones. The project also intends to minimize schedule risks with the application, to the greatest extent possible, of schedule incentives. Contract incentives have been, or will be, applied to most major participant contracts. All procurements and construction subcontracts will be either fixed price, fixed price with schedule incentives, or cost plus award fee.

A3.7 SOCIOECONOMIC PROGRAMS

Project W-320 will make socioeconomic contributions by requiring all major contractors to actively seek organizations that are new, small, disadvantaged, owned by women, handicapped staffed, or have a labor surplus. These organizations will be developed into qualified suppliers during the procurement process.

A3.8 EQUIPMENT AND SUPPLIES

Equipment and supplies will be acquired in accordance with the project plans and CM procurement policies and procedures approved by RL.

A3.9 RISK ASSESSMENT

An additional risk to the project is the lack of qualified vendors for Safety Class 1 equipment and materials. This may cause a lack of competition, with a corresponding risk of schedule extensions and cost increases. The E/C will identify an approach for addressing this potential problem, including but not limited to, market surveys to identify potential bidders, issuance of announcements to attract vendors through soliciting expressions of interest, and initiation of vendor prequalifications.

Adequate project-phased funding, as defined in Project W-320's required funding request in the budget submission to the DOE-HQ, is critical in order to meet stringent project cost and schedule objectives and maintain critical design and construction momentum on critical activities. Any significant deviation from required resources will substantially increase the risk of not meeting current cost and schedule targets.

A3.10 OTHER INFORMATION

The following AAAP elements, as described in DOE Order 4700.1, *Project Management System*, Attachment II-7 (DOE 1987), are not applicable to Project W-320:

- Anticipated organizational conflict of interest
- Concerns
- Patents and data
- Receipts
- Nongovernment participation
- Site selection and acquisition of real property
- Use of other procedures.

A4.0 REFERENCES

DOE, 1984, *Acquisition Regulations Handbook Source Evaluation Board*, DOE/MA-0154, U.S. Department of Energy, Washington, D.C.

DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

RL, 1995, "Tank 241-C-106 Sluicing Project, Summary Project Plan," U.S. Department of Energy, Richland Operations Office, Richland, Washington.

A5.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

AAAP	Advanced Acquisition or Assistance Plan
CM	Construction Manager
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
E/C	Engineering/Construction Contractor
PMP	Project Management Plan
RL	U.S. Department of Energy, Richland Operations Office
SSTRP	Single-Shell Tank Retrieval Projects
WHC	Westinghouse Hanford Company

APPENDIX B

PROJECT W-320 PROJECT MANAGEMENT PLAN, ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION IMPLEMENTATION PLAN

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APPENDIX B

PROJECT W-320 PROJECT MANAGEMENT PLAN, ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION IMPLEMENTATION PLAN

B1.0 IMPLEMENTATION POLICY AND PLAN

This section establishes the Environmental, Safety, and Health (ES&H) Implementation Plan for Project W-320. The Plan establishes the policies, objectives, strategy, and controls of the ES&H programs to be implemented in the design, construction, demonstration, and operation of the waste retrieval sluicing system (WRSS). This Plan contains a description of tasks and products needed to ensure compliance with ES&H requirements.

B1.1 POLICY AND OBJECTIVES

It is the policy of the U.S. Department of Energy (DOE) that all project activities be conducted in compliance with federal, state, and local laws and regulations for the protection of the environment and the safety and health of employees and the public. The project manager will ensure that pertinent laws, regulations, DOE Orders, and standards are identified during the planning, design, construction, and startup stages of the project. This policy is spelled out in Secretary of Energy Notice 35-91, *Nuclear Safety Policy* (DOE 1991).

B1.2 IMPLEMENTATION STRATEGY

This Plan provides the information and documentation requirements for the ES&H aspects of the WRSS project. Environmental, safety, and health requirements will be incorporated into the WRSS technical baseline documents. Review of the ES&H requirements will be performed in accordance with Engineering/Construction Contractor (E/C), Construction Manager, and Integrating Contractor (IC) policies and procedures. A formal system of management controls will be implemented to ensure that all aspects of the project are conducted in compliance with the documented ES&H requirements. These controls include the clear definition of responsibilities for ES&H implementation.

B2.0 ENVIRONMENTAL PROGRAM

The DOE Order 4700.1, *Project Management System* (DOE 1987), requires the DOE to perform environmental planning and review as an integral part of project management. Specific subjects to be addressed include environmental planning and *National Environmental Policy Act of 1969* (NEPA) compliance,

environmental permitting requirements, design review, environmental monitoring and reporting, environmental audits and surveillance, and training. The project shall prepare an environmental documentation plan which includes plans and resources estimates for NEPA documentation and environmental permits. Environmental monitoring and reporting activities are included in existing tank farm operational documentation (Harris 1993).

B2.1 NEPA COMPLIANCE

The NEPA compliance documentation required for Project W-320 is an Environmental Assessment (EA). The Action Description Memorandum (ADM) for the project was prepared in November 1993. The DOE review of the ADM was completed on September 17, 1993, with direction for an EA. The Project EA was completed and submitted to the DOE on December 2, 1993. The DOE processing of the NEPA documentation was completed and a finding of no significant impact (FONSI) was issued on February 17, 1995.

B2.2 ENVIRONMENTAL PERMITTING

The IC prepares the environmental permit applications or modifications to existing applications for the project. Permit applications are prepared to show compliance with the *Resource Conservation and Recovery Act of 1976* (RCRA), the *Clean Air Act of 1955* (CAA), and WAC 173-303, "Dangerous Waste Regulations."

The Washington State Department of Ecology (Ecology) is the regulating authority that issues RCRA and CAA permits. Ecology has the lead in coordinating permit requirements and interfacing with other regulatory organizations. A schedule for obtaining necessary permits has been provided by the IC.

Regulatory changes will be reviewed by the IC and impacts to the project will be evaluated. Any change in regulatory requirements having a significant impact on technical baseline documents will be communicated to the DOE, Richland Operations Office (RL) Tank Waste Projects Office in a timely manner.

B2.2.1 RCRA

The "Dangerous Waste Regulations" apply to all facilities within Washington State that treat, store, and/or dispose of dangerous waste. Under the dangerous waste program, all treatment, storage, or disposal facilities must obtain a permit. Facilities that existed on November 19, 1980, were granted an interim status permit application identifying their intent to treat, store, or dispose of dangerous waste. An application for a dangerous waste management permit consists of three collective submittals: the Notice of Intent (NOI), the Part A permit application, and the Part B permit application. Each submittal consists of various levels of detailed information concerning the facility.

For the Hanford Site, one dangerous waste permit will be issued for the Hanford Site facility. Upon completion of the unit-specific Part B permit

application process, each unit will be appended to the Hanford Site facility dangerous waste permit. Part A permit applications have been submitted for the single-shell tank (SST) and double-shell tank (DST) systems. A DST Part B permit application is being prepared, but will probably not be ready for submittal until after project completion. The SST system will not have a Part B permit, as the SST system will go from interim status directly to closure. Closure activities will be documented in a closure plan.

The existing Part A permit application required modifications for the SST systems though the modification was not significant enough to require an NOI. A modification of the DST Part A permit application is not required. The treatment descriptions included in the SST Part A permit application were revised to allow for the retrieval of the solids, interstitial liquids, and cooling liquid waste. Modifications of the DST Part B permit application also will be required to identify any DST system modifications resulting from the project retrieval activity and will be performed as part of the ongoing DST Part B permit preparation process after project completion.

B2.2.2 CAA

The installation and demonstration of the tank 241-C-106 sluicing system required several permits and approvals before construction, treatment, and disposal of the influent waste stream. These permits and approvals were issued by several regulatory agencies including the U.S. Environmental Protection Agency (EPA), Ecology, and the U.S. Department of Health (DOH). Radioactive air emissions are currently regulated by the EPA pursuant to 40 CFR 61, Subpart H, and the DOH pursuant to WAC 246-247. Both regulations required preconstruction approval from the respective agencies. Additionally, the DOH required information on the technologies chosen to control radioactive air emissions, including an assessment of all known control technologies. This assessment, referred to as a best available radionuclide control technology (BARCT) assessment, was prepared by CH2M Hill and evaluated the universe of available control technologies. For the tank 241-C-106 WRSS, the project must install the "best" technology, as determined by the BARCT assessment. The EPA also requires the sampling and monitoring system to meet specific criteria. These criteria, including requirements on the placement and number of sample probes, are not applicable since the estimated dose equivalent from the facility to the maximally exposed offsite individual is not greater than 0.1 mrem/year.

Nonradioactive air emissions of concern will fall into one of two categories: criteria pollutants and toxic air pollutants. Criteria pollutants are those pollutants subject to the Program Support Division (PSD) program, enforced in Washington State by Ecology. Ecology has incorporated, by reference, most of the federal PSD requirements. The tank 241-C-106 retrieval actions are not expected to have emissions exceeding the trigger levels for criteria pollutants.

Because of schedule considerations, a phased approach was followed in obtaining required permitting. Washington Administrative Code 246-247; 40 CFR 61, Subpart H (NESHAPS); and WAC 173-460 approvals were obtained in a phased approach. The first phase included obtaining approval for all construction activities not affecting tank air emissions. The second phase

obtained approval for construction activities affecting air emissions (e.g., the exhauster and ventilation system). It has been determined that the demonstration will not have emissions exceeding significance levels for any criteria pollutants under the PSD program. Installation of BARCT will be required by WAC 246-247.

B2.3 FACILITY DESIGN REVIEW

Design reviews were performed and documented to demonstrate that the environmental regulations, laws, and DOE Orders identified in the permit applications were considered in the design. A major review occurred at the 30% definitive design point. Additional specific reviews will occur as individual procurement and construction packages were issued. Information copies of the design documents were provided to the regulatory agencies.

B2.4 OPERATIONAL ENVIRONMENTAL MONITORING PLANS

In accordance with DOE Orders, an operational environmental monitoring plan will be prepared by the IC and approved for implementation before tank 241-C-106 retrieval system operational testing. The monitoring plan will be prepared to incorporate the requirements of DOE Orders as well as those established by regulatory agencies. Preoperational monitoring requirements to establish radiological and hazardous material environmental baseline data will be included in the plan, which will be approved by RL. This work is being performed by the Operations staff in parallel with the project activities.

B2.5 ENVIRONMENTAL REPORTING REQUIREMENTS

The tank 241-C-106 retrieval operations will be conducted under detailed technical specifications and procedures implementing applicable regulatory requirements and DOE Orders. Environmental reporting requirements, including those for routine and nonroutine release and disposal of material to the environment, will be established by the IC in accordance with applicable regulations and DOE Orders. The IC will develop procedures for implementation of reporting requirements. This work is being performed by the Operations staff in parallel with the project activities.

Reporting procedure development and maintenance is the responsibility of the IC. The IC will use site-developed procedures for reporting releases and disposal of materials to the environment.

B2.6 ENVIRONMENTAL AUDIT AND SURVEILLANCE SYSTEM

The IC will establish audit and surveillance programs to ensure compliance with environmental and regulatory requirements and DOE Orders for the project. The purpose of the system is to demonstrate compliance and identify project areas that are not in compliance with environmental program criteria and standards. The IC and RL Program Support Division-Technical Support Branch (PSD-TSB) will be responsible for the performance of audits and surveillances. Audits and surveillances will be performed on a regular basis.

B2.7 ENVIRONMENTAL TRAINING PROGRAM

The IC will establish the requirements for the selection, training, and retraining of all individuals who operate, maintain, or supervise activities associated with startup and operations of the tank 241-C-106 retrieval system. The environmental training activities for the project will be as outlined in WHC manuals, DOE requirements documents, and environmental permits. The IC will maximize the use of existing training courses. The IC will augment the existing site training program with project-specific course material relative to system orientation, operations, and hazardous material handling. Project-specific training and qualification plans shall be prepared, implemented, and maintained by the IC to ensure that the project meets established design and functional requirements. Appendix E details the Project W-320 Startup and Operations Training Plan.

B3.0 SAFETY AND HEALTH

Safety and health requirements are an integral part of the project management plan. The DOE Orders mandate extensive safety reviews of the design. Specific subjects to be addressed are safety analysis reports, safety review and appraisals, reporting requirements, emergency planning, and training.

B3.1 SAFETY ANALYSIS DOCUMENTATION

The safety documentation for Project W-320 consists of the following.

B3.1.1 Unreviewed Safety Question (USQ) Evaluation

To properly define the safety envelope for the waste retrieval of tank 241-C-106, it is necessary to perform an USQ evaluation. Unless specifically exempted by the Plant Review Committee, the USQ review process will be applied to all Tank Waste Remediation System proposed changes and discoveries. The result of this USQ screening process will be to eliminate those items that clearly could not pose an USQ. The USQ evaluation will be prepared in accordance with WHC-IP-0842, *Waste Tank Project Administration*, Section 15.9 (Ellis 1994), and referred to the Plant Review Committee.

B3.1.2 Hazard Classification (HC)

The facility HC was determined based on the safety analyses performed in accordance with established operating contractor procedures. The HC determined the appropriate review and authorization level of the Safety Assessment (SA) as well as provide a basis for applying a graded approach to the level of analysis and documentation of the SA. The HC will emphasize the importance of establishing quality in the safety analyses and will constitute

the documents necessary for the quality assurance program plan. The HC was prepared in accordance with WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*.

B3.1.3 Preliminary Safety Evaluation (PSE)

The PSE was prepared in accordance with WHC-CM-4-46 to identify major safety issues and to verify that the effects of these issues were minimized to the extent possible during the design phase. This PSE addresses the following areas:

- Evaluation of compliance with current safety requirements and safety-related design criteria
- Preliminary analysis of the design's ability to adequately confine the radiological and other hazardous materials under normal and abnormal/accident condition(s)
- Risk to the parent facility arising from construction activities and equipment removal
- Proposed changes to the existing facility safety analysis.

B3.1.4 Preliminary Safety Equipment List (PSEL)

The PSEL identifies the preliminary safety classification at the system level of equipment that will be used for the waste retrieval of the contents of tank 241-C-106. The PSEL emphasizes the importance of establishing quality in the safety analyses and identifies components/systems required for special consideration under a graded quality assurance program. These components are also identified in the project quality assurance program plan. The PSEL was prepared in accordance with WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*.

B3.1.5 Safety Equipment List (SEL)

The SEL identifies the safety classification at the item (component) level of equipment to be used for the waste retrieval of tank 241-C-106. The SEL was issued as a revision of the PSEL and included in the SA.

B3.1.6 SA

An SA was prepared for the project to identify hazards and assess risks associated with retrieval operations and the means for their elimination and control. The safety assessment addresses the requirements of DOE Order 5481.1B, *Safety Analysis and Review System* (DOE 1986).

The SA will serve as a means of refining the safety envelope for the waste retrieval of tank 241-C-106. The SA determines whether the sluicing of the material in tank 241-C-106 and transfer to tank 241-AY-102 can be

performed with an acceptable degree of risk. The SA will serve as a vehicle for ensuring that safety issues have been satisfactorily addressed in design and operating plans. The SA will have a limited duration of 1 year after initiation of the sluicing retrieval, but can be reissued after it is reviewed to ensure adequacy. The SA will accomplish the following.

1. Describe (bound) the task.
2. Identify potential accidents and their initiators.
3. Evaluate consequences and probabilities (risk).
4. Establish controls.

The SA identifies the principal design criteria in sufficient detail to provide reasonable assurance that safe operation can be achieved; and identifies and demonstrates conformance to applicable guides, codes, and standards. If a deviation from current DOE design criteria occurs, it will be evaluated, approved, and documented by RL PSD-TSB. The SA will provide early identification of potential health, safety, or environmental problems and assess design features, administrative controls, and operational safety requirements necessary to prevent or mitigate potential accidents.

The SA was prepared by the IC and will be approved by the DOE in accordance with WHC-CM-6-32, *Safety Analysis and Regulation Work Procedures*, Section WP-5.6. Compliance also shall be in accordance with WHC-CM-4-46, Section 3.0, "General Requirements," paragraph 4.4. The DOE has not specified a format for SAs in any DOE Orders. The DOE Office of Environmental Restoration and Waste Management (DOE-EM) has had a format for an SA developed by Science Applications International Corporation. The DOE-EM has directed WHC to use this format for SAs submitted to them (Tseng 1993).

The SA will be revised to reflect design and safety analysis changes and will be maintained as a "living document."

The SA will be updated to describe and provide the safety assessment of the final facility designs. The SA will include or reference detailed operational safety requirements, and applicable codes, standards, and guides.

B3.2 SAFETY REVIEWS AND APPRAISALS

Independent safety reviews of the facility design, safety analyses, and related documentation have been conducted to ensure compliance with safety and health protection standards and requirements. The E/C has reviewed the design for safety and health impacts. Review of changes to technical baseline documents for safety impacts will be performed either as changes are made or on an annual basis by the E/C and IC.

Audit, surveillance, and appraisal systems will be established to ensure compliance with safety and regulatory requirements and DOE Orders. The purpose of the systems will be to demonstrate compliance and identify project areas that are noncompliant with safety program criteria and standards. The IC will be responsible for the performance of audits, appraisals, and surveillances. Audits, appraisals, and surveillances will be performed on an "as-needed" basis during the construction phases, and as specified by WHC procedures during the operations phases of each project. The RL PSD-TSB will

ensure that the project participants comply with safety criteria in accordance with DOE policy and with established standards and criteria.

B3.3 OCCURRENCE REPORTING REQUIREMENTS

Notification, investigation, and reporting requirements for occurrences related to safety controls and procedures will be specified in accordance with DOE Orders. Unusual occurrence reports will be prepared for events that adversely affect, or potentially affect, occupational or public health or facility safety, reliability, or performance. Additional details on roles and responsibilities during construction, startup, and operations are provided in Appendix C.

B3.4 EMERGENCY PLANS

Emergency plans to handle potential accidents will be prepared in accordance with DOE Orders. Plans will include emergency response and medical response to radiation incidents. The plans will be prepared by the IC and approved by RL and Ecology before startup.

B3.5 TRAINING PROGRAM

Programs will be established by the IC for the selection and training of all individuals who operate, maintain, or supervise activities on the project. The project will maximize the use of existing training courses and use existing WHC training programs where appropriate. The project-specific training courses will be developed to augment the existing training program, if required. The specific training plans will address normal procedures, emergency actions, radiation and hazardous chemical control practices, location and functions of safety systems, operational or design change control procedures, and operational safety requirements. Additional details on startup and operational training are provided in Appendix E.

B3.6 CONSTRUCTION PLAN

The Construction Plan defines overall responsibilities and outlines the general scope of the Project W-320, Tank 241-C-106 Sluicing construction effort. Project W-320 will design, construct, and start up a system to retrieve and transfer the contents from single-shell tank 241-C-106 to double-shell tank 241-AY-102. The project consists of design, procurement, equipment removal, construction, and startup. For more details, see Appendix G.

B3.7 HEALTH AND SAFETY PLAN

The day to day construction and operation of W-320 will be conducted in accordance with WHC-SD-WM-HSP-002, *Tank Farm Health and Safety Plan* (Erickson 1994).

B4.0 REFERENCES

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

Clean Air Act of 1955, as amended, 42 USC 7401, et seq.

DOE, 1986, *Safety Analysis and Review System*, DOE Order 5481.1B, U.S. Department of Energy, Washington, D.C.

DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

DOE, 1991, *Nuclear Safety Policy*, Secretary of Energy Notice 35-91, U.S. Department of Energy, Washington, D.C.

Ellis, S. H., 1994, *Waste Tank Project Administration*, WHC-IP-0842, Rev. 39, Westinghouse Hanford Company, Richland, Washington.

Erickson, A. M., 1994, *Tank Farm Health and Safety Plan*, WHC-SD-WM-HSP-002, Westinghouse Hanford Company, Richland, Washington.

Harris, J. P., 1993, *Permitting Plan for Project W-320, Tank 241-C-106 Waste Retrieval Sluicing System (WRSS)*, WHC-SD-W320-EV-001, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

National Environmental Policy Act of 1969, 42 USC 4321, et seq.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

Tseng, J., 1993, "Safety Documentation for Tank 241-C-106 Retrieval Operations," U.S. Department of Energy, Washington, D.C.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," *Washington Administrative Code*, as amended.

WAC 246-247, "Radiation Protection--Air Emissions," *Washington Administrative Code*, as amended.

WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-6-32, *Safety Analysis and Regulation Work Procedures*, Westinghouse Hanford Company, Richland, Washington.

B5.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

ADM	Action Description Memorandum
BARCT	best available radionuclide control technology
CAA	Clean Air Act of 1955
DOE	U.S. Department of Energy
DOE-EM	U.S. Department of Energy-Office of Environmental Restoration and Waste Management
DOH	U.S. Department of Health
DST	double-shell tank
EA	Environmental Assessment
E/C	Engineering/Construction Contractor
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ES&H	Environmental, Safety, and Health
FONSI	finding of no significant impact
HC	hazard classification
IC	Integrating Contractor
NEPA	National Environmental Policy Act
NOI	Notice of Intent
ORR	operational readiness review
PSD-TSB	Program Support Division-Technical Support Branch
PSE	preliminary safety evaluation
PSEL	preliminary safety equipment list
RCRA	Resource Conservation and Recovery Act of 1976
RL	U.S. Department of Energy, Richland Operations Office
SEAC	Safety and Environmental Advisory Council
SEL	safety equipment list
SST	single-shell tank
USQ	unreviewed safety question
WRSS	waste retrieval sluicing system

APPENDIX C

PROJECT W-320 PROJECT MANAGEMENT PLAN, CONFIGURATION MANAGEMENT PLAN

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APPENDIX C

PROJECT W-320 PROJECT MANAGEMENT PLAN, CONFIGURATION MANAGEMENT PLAN

C1.0 INTRODUCTION

The purpose of this Configuration Management Plan is to define the processes employed for controlling the design, the design documents and records, and changes to the design for the duration of the project.

The format and content of this document have been developed based on DOE Order 4700.1, *Project Management System*, Chapter III, Attachment III-5.

In accordance with DOE Order 4700.1, the objectives of Configuration Management are as follows.

1. Assist in achieving, at the lowest cost, the required system performance and operational efficiency.

2. Promote the maximum degree of design and development latitude, yet provide the appropriate degree and depth of configuration control.

3. Attain maximum efficiency in the management of configuration changes with respect to their necessity, benefit, cost, timing, and implementation.

4. Provide a systematic review of all changes to ensure that all primary and secondary effects of proposed changes are identified and their costs/benefits are weighed in making a decision to incorporate a change.

Most of these objectives are addressed in Westinghouse Hanford Company (WHC) and ICF Kaiser Hanford Company (ICF KH) issued procedures. The WHC procedures that implement configuration management requirements can be found in WHC-SD-WM-QAPP-018, *Tank Waste Projects Quality Assurance Program Plan*. The ICF KH procedures relating to Project W-320 configuration management actions are referenced in the appropriate sections of this Configuration Management Plan. Those not specifically addressed in the referenced project procedures are delineated in the following sections.

C2.0 ORGANIZATION

The project organization structure and responsibilities are detailed in Section 3.0 of the Project Management Plan.

C3.0 TECHNICAL BASELINE IDENTIFICATION

Section 6.2 of the Project Management Plan details the Baseline Management procedures and overall baseline control process.

C3.1 FUNCTIONAL REQUIREMENTS BASELINE

The functional requirements baseline is presented in WHC-SD-W320-FDC-001, *Functional Design Criteria for Tank 241-C-106 Waste Retrieval, Project W-320.*

C3.2 TECHNICAL REQUIREMENTS BASELINE

The process for developing and maintaining the technical baseline is detailed in the *Engineering Process Manual*, ENG 2.1, "Definitive Design Mobilization and Planning." All design inputs are documented and approved on the Technical Data Checklist, which is kept current for the duration of the job in accordance with ENG 2.1.

C3.3 DESIGN REQUIREMENTS BASELINE

The *Definitive Design Plan*, W320DDP, details the design scope by discipline and describes how the design is to be packaged and issued for construction. Process control descriptions (PCD) are being prepared for each subsystem that together make up the sluicing system. The PCDs describe how the requirements of the functional design criteria are met by the design.

C3.4 PRODUCT CONFIGURATION BASELINE

C3.4.1 Design Documents

The following ICF KH procedures are used in the preparation and control of definitive design documents including drawings, calculations, and specifications:

- ENG 2.1, "Definitive Design Mobilization and Planning"
- ENG 2.2, "Design Document Preparation"
- ENG 2.3, "Checking Design Documents"
- ENG 2.4, "Review and Approval of Design Documents"
- ENG 2.5, "Release of Design Documents."

C3.4.2 Issuing Preliminary Documents

Before issuing a document for construction (Revision 0, 1, 2, etc.) a document may be issued as "preliminary" (Revision A, B, C, etc.) to provide a static basis for cost re-estimation or in order to issue a current design configuration. The document will be prepared, reviewed, and approved in accordance with ENG 2.1, "Definitive Design Mobilization and Planning;"

ENG 2.2, "Design Document Preparation;" and ENG 2.4, "Review and Approval of Design Documents." Once the document is reviewed and approved it may be issued as a preliminary document.

C3.4.3 Final Review and Approval

Procedure ENG 3.3, "Final Design Completion," describes the process for final review and approval of design documents after construction is completed. This process includes preparing as-built design documents, reconciling as-built conditions with design requirements and analyses, and turning over project records to the customer.

For each document issued as Revision A, an Engineering/Construction Change (ECC) Log must be initiated to track changes to that document. The ECC Log must show the document title and number; the current document revision; all ECCs with changes affecting that document; which ECCs are outstanding; and for ECCs that have been incorporated, into which document revision the ECC was incorporated. The ECC Log is maintained by the Document Control clerk, who also maintains the original copies of the ECCs.

C4.0 CONFIGURATION CHANGE CONTROL

Figure C-1 illustrates the overall configuration change control process.

C4.1 PROCEDURES

C4.1.1 All Engineering/Design Configuration Changes

Configuration changes are initiated and controlled in accordance with PM 7, "Baseline Change Control."

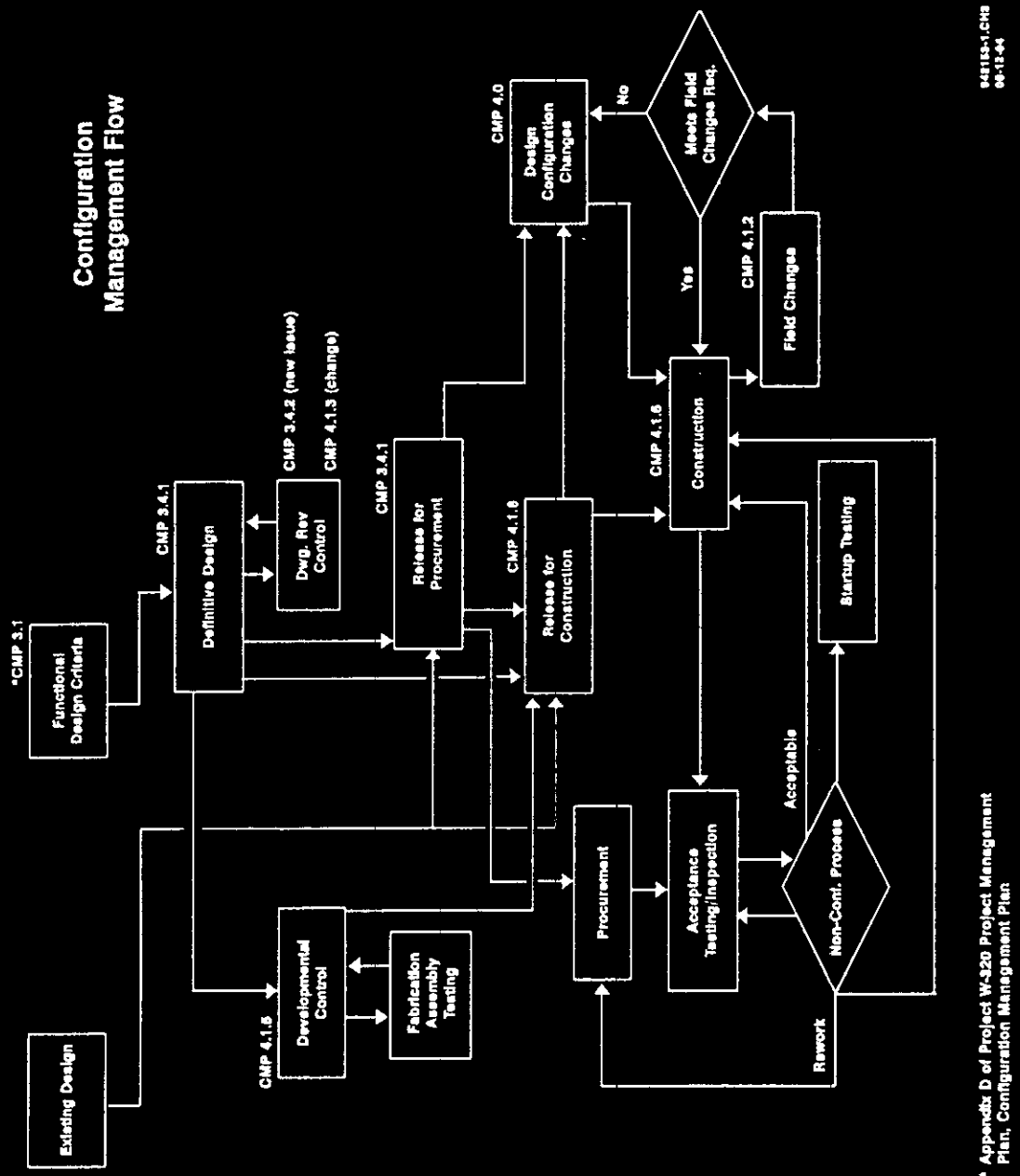
C4.1.2 Changes to Issued Documents--Revision 0, 1, etc.

The process for initiating, preparing, and approving changes to approved definitive design documents is detailed in ENG 3.2, "Engineering Changes." All proposed changes to project documentation are required to have a project-specific Engineering Change Notice assigned by WHC Document Control.

C4.1.3 Changes to Documents Issued "Preliminary"--Revision A, B, etc.

Several design documents will be issued "preliminary" (see Section 3.4.2) to establish control of the design at a given point. To change a preliminary document, an ECC must be generated in accordance with PM 7. In the General Description section of the ECC form, in addition to providing the required description, the proposed change must be classified as either a minor or a major change. Minor changes are those that do not affect the design basis,

Figure C-1. Configuration Control Process.



the code requirements, the project scope, or the quality requirements, and do not change engineered equipment. A marked-up (red-lined) version of the document clearly showing the proposed change must be attached to the ECC.

If the change is minor (e.g., administrative/typographical errors, labeling changes, etc.), the ECC is processed in accordance with PM 7, requiring the approval of the cost account manager and the project manager. Once the project manager has approved the change, it may be incorporated into the working copy of the design media, and therefore becomes the basis for further design or design changes. All applicable changes must be in compliance with PM 7.

If the change is major, the ECC must be approved by the project manager and reviewed and approved by the appropriate WHC technical personnel. Once approved by WHC, the change may be incorporated into the working copy of the design media in the same manner as a minor change.

Each document issued "preliminary" has an ECC Log that accompanies it (see Section 3.4). The ECC Log for the affected document must be updated to show that there is an outstanding revision to that document. The ECC Log shows which ECC contains the change information. The ECC Log and the original ECCs are maintained by the Project W-320 Document Control clerk.

If a change or if the accumulation of changes is of such a magnitude that a new revision of the "preliminary" document is justified, the project manager may authorize the incorporation of all outstanding changes into a new "preliminary" revision. The Log is then updated to show that the ECCs are no longer outstanding and into which revision of the document they were incorporated.

C4.1.4 Records Management

The control, maintenance, and closeout of project documentation are detailed in PM 8, "Project Documentation."

C4.1.5 Development Control

An approved Project Deviation (Number PM 8.0D1) from the requirements of PM 8 allows the use of preliminary drawings for fabrication of equipment removal system (ERS) components by ICF KH (known as Development Control). *Project W-320 Equipment Removal System Development Control Engineering Work Plan for ICF KH Designed Components*, WHC-SD-W320-WP-003, describes the requirements for the Development Control process. The WHC-designed ERS components were performed per WHC-SD-W320-WP-002.

C4.1.6 Process Control Packages (PCP)

Process control packages are initiated and controlled in accordance with the *Construction Process Manual*, CON 1.2. The purpose of the procedure is to establish a method of preparing and implementing construction work packages.

The packages are used to identify, control, and document construction activities requiring Performance Assurance and Quality Control inspections.

C4.2 INTERFACE CONTROL

C4.2.1 Interface Between Project Systems and/or Disciplines

In accordance with ENG 3.2, the project lead engineer is responsible to review all identified changes and coordinate the interfaces among all portions of the design/installation.

C4.2.2 Interface to Cost and Schedule Control

Design changes are documented by ECCs. The ECC includes estimates of cost and of schedule change. The project manager and the project lead engineer evaluate the ECC for technical, cost, and schedule impacts and approve or disapprove the ECC. Approved ECCs are forwarded to the Integrating Contractor for review.

Between the 30% and 90% design points, cost variances were analyzed based on estimates to complete that are performed at a work package level and reported at the contractor work breakdown structure level. Cost trending were reported monthly to identify potential changes to the 30% cost baseline.

A Change Request will be generated in accordance with PM 7 when the cost of an ECC or the sum of costs for current ECCs becomes ≥$50,000. The Change Request provides the interface between design changes and cost and schedule control.

C4.2.3 Interface with Other Projects Onsite

As Integrating Contractor, WHC has responsibility to identify other projects onsite that may have an affect on, or be affected by, Project W-320.

C5.0 STATUS RECORDING AND REPORTING

The procedures for reporting project status, for management reporting, and for management reviews are contained in Section 6.5 of the Project Management Plan.

C6.0 SPECIAL CONSIDERATIONS

See Section D4.1.5, "Development Control."

C7.0 REFERENCES

Construction Process Manual, ICF Kaiser Hanford Company, Richland, Washington.

Definitive Design Plan, W320DDP, Westinghouse Hanford Company, Richland, Washington.

Engineering Process Manual, ICF Kaiser Hanford Company, Richland, Washington.

Functional Design Criteria for Tank 241-C-106 Waste Retrieval, Project W-320, WHC-SD-W320-FDC-001, Westinghouse Hanford Company, Richland, Washington.

Project W-320 Equipment Removal System Development Control Engineering Work Plan for ICF KH Designed Components, WHC-SD-W320-WP-003, Westinghouse Hanford Company, Richland, Washington.

Project Management System, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

Tank Waste Projects Quality Assurance Program Plan, WHC-SD-WM-QAPP-018, Westinghouse Hanford Company, Richland, Washington.

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APPENDIX D

PROJECT W-320 PROJECT MANAGEMENT PLAN, PROJECT-SPECIFIC WORK BREAKDOWN STRUCTURE DICTIONARIES

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APPENDIX D

PROJECT W-320 PROJECT MANAGEMENT PLAN, PROJECT-SPECIFIC WORK BREAKDOWN STRUCTURE DICTIONARIES

D1.0 INTRODUCTION

To understand the work content of every work breakdown structure (WBS) element, dictionary sheets are prepared. These dictionaries provide a description of each WBS element down through the cost account level. The purpose of the dictionary is to clarify the boundaries of each WBS element provided in Section 4.0 and determine the type of work that falls into that element. The dictionary is used as a guide by the activity manager in preparing the work scope description of the authorizing document. Table D-1 and Figure D-1 present the dictionary sheets for Project W-320.

D2.0 SUMMARY LISTING

Table D-1. Project-Specific Work Breakdown Structure Dictionary.

WBS index line number	WBS number	WBS level	Task description
1	1.0	1	Project W-320
2	1.1	2	Project Management
3	1.1.1	3	Activity Management Reporting
4	1.2	2	Engineering
5	1.2.1	3	Engineering Management
6	1.2.2	3	Technical Studies
7	1.2.3	3	Definitive Design
8	1.2.4	3	Engineering Inspection
9	1.2.5	3	Equipment Removal Design
10	1.3	2	CENRTC
11	1.3.2	3	CENRTC Definitive Design
12	1.3.4	3	CENRTC Procurement
13	1.3.5	3	CENRTC Fabrication
14	1.4	2	Construction
15	1.4.1	3	Construction Management
16	1.4.2	3	Inter-Farm Modifications
17	1.4.3	3	C Farm Modifications
18	1.4.4	3	AY Farm Modifications
19	1.4.5	3	Expense Procurement
20	1.4.6	3	Pit Decontamination
21	1.4.7	3	Construction Services and Equipment
22	1.4.8	3	Equipment Removal/Construction
23	1.5	2	Startup
24	1.5.1	3	Startup Administration
25	1.5.2	3	Startup Testing and Support
26	1.5.4	3	Readiness Reviews
27	1.6	2	Safety and Environmental
28	1.6.1	3	Environmental Management
29	1.6.2	3	Safety Management
30	1.6.3	3	Safety
31	1.6.4	3	National Environmental Policy Act of 1969
32	1.6.5	3	Resource Conservation and Recovery Act of 1976
33	1.6.6	3	Clean Air Act of 1955

CENRTC = Capital equipment not related to construction
WBS = Work breakdown structure

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.1
TITLE: Project Management
CONTRACTOR: WHC

INDEX LINE NO.: 2-3

DATE: July 1995

REVISION NO. AND AUTHORIZATION: Revision 2

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: Management
Staff
Secretarial support

Sources: Publishing
Contracted consultants
Computer support

Other Direct Costs: Travel and living
Computer purchases
Office supplies/furniture
Training fees - classes, seminars, presentations, and training materials
Personnel moves (includes telephone and computer)

TECHNICAL CONTENT:

Provide project integration and services as required to manage the project. Provide project management documentation as required to satisfy U.S. Department of Energy-Headquarters (DOE-HQ) and U.S. Department of Energy, Richland Operations Office (RL) Orders, including, but not limited to, DOE Order 4700.1, *Project Management System* (DOE 1987); DOE Order 6430.1A, *General Design Criteria* (DOE 1989); DOE Order 5700.6C, *Quality Assurance* (DOE 1991); WHC management directives and procedures; and compliance with state and local laws.

WORK STATEMENT:

Project management and administrative work performed to support the project, including, but not limited to:

- Project management and integration
- Business management
- Qualification and training management
- Preparation and support of validation and annual revalidation
- Preparation and maintenance of project management plan
- Preparation of project authorization and modification requests
- Preparation and maintenance of quality assurance project plan
- Project status reporting
- Project closeout and files turnover.

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.2
TITLE: Engineering
CONTRACTOR: WHC

INDEX LINE NO.: 4-9

DATE: July 1994

REVISION NO. AND AUTHORIZATION: Revision 1

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: Management
Secretarial support
WHC assigned organization(s)
ICF KH (all disciplines)

Services: Reproduction

Other Direct Costs: Travel

TECHNICAL CONTENT:

Provide system and design engineering services for completion of definitive design, which will provide the design media to support procurement, construction, and startup. Also provide the field engineering services based on the approved definitive design media, i.e., construction drawings and construction specifications. Most of the work is performed at lower WBS levels and includes technical studies, conceptual design, preliminary design, detailed design, and field engineering inspection.

WORK STATEMENT:

The Engineering activity encompasses all work efforts required to develop, verify, control, document, and approve the preliminary and detailed designs plus Field Engineering and Inspection activities in accordance with the functions and requirements and contract requirements. The work activities include, but are not limited to, the following:

- IC and A-E engineering management
- Maintenance of design criteria
- Design reviews
- Trade studies and Value Engineering studies
- Preparation, review, and approval of engineering change packages
- Design of C Farm, AY Farm, and interfarm modifications
- Preparation of estimates and schedules
- Support of definitive design reviews
- Development of procurement specifications
- Preparation of inspection plans
- Verification of contract/vendor submittals

Figure D-1. Dictionaries. (8 sheets)

- Verification of workmanship
- Testing (i.e., soil compaction)
- Survey verification
- Engineering resolution of field issues
- A/I vendor inspections
- Identification and resolution of defects
- Acceptance of construction (A/I services)
- As-building of project drawings
- Turnover of project media and files.

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.3
TITLE: CENRTC
CONTRACTOR: WHC

INDEX LINE NO.: 10-13

DATE: July 1995

REVISION NO. AND AUTHORIZATION: Revision 2

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: ICF KH (all disciplines)
WHC assigned organization(s)

Services: Procurement contracts
Subcontracts

TECHNICAL CONTENT:

Procure capital equipment not related to construction (CENRTC) items and services to ensure vendor compliance with procurement specifications and to ensure CENRTC procurement activities are conducted in accordance with applicable DOE Orders and WHC A-E procedures. Fabricate and assemble CENRTC items into working systems as required by approved design.

WORK STATEMENT:

Perform those activities associated with the acquisition/fabrication of major equipment. Work performed for this WBS element supports the following activities:

- Procurement and fabrication of CENRTC items
- Pre-bid advertising for major projects
- Preparation of procurement bid packages
- Issuance of documents and coordination of bidder site inspections
- Evaluation of bids
- Preparation of fair cost estimates as required
- Award of contracts
- Inspection and performance testing at vendor sites
- Preparation of project management documentation.

CENRTC:

- Equipment removal system equipment
- Automated data processing equipment
- Miscellaneous items at C Farm and AY Farm.

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.4
TITLE: Construction
CONTRACTOR: WHC

INDEX LINE NO.: 14-20

DATE: July 1994

REVISION NO. AND AUTHORIZATION: Revision 1

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: Management
Secretarial support
Clerical support
ICF KH (all disciplines)
WHC assigned organization(s)

Services: Procurement contracts
Subcontracts

Other Direct Costs: Travel and living

TECHNICAL CONTENT:

Perform construction functions in accordance with approved design media; applicable portions of DOE Orders; and WHC, A-E contractor, and subcontractor procedures. Ensure activities comply with applicable federal, state, and local regulations.

WORK STATEMENT:

The work elements encompassed by this WBS element include construction management, business management, procurement, contract and subcontract administration, configuration management, construction-related quality assurance and control, construction engineering, construction forces, construction/procurement subcontracts, health physics technician support, and "Persons-in-Charge" to direct the field activities. The work scope includes, but is not limited to, the following:

- Preparation and approval of construction plans, schedules, and work packages
- Training of field crews and supervision
- Direction and oversite of field crews by "Persons-in-Charge"
- Preparation of submittals
- Advance procurement to expense-funded equipment and material
- Bid and award of offsite construction contract
- Fixed-price contract management
- Mobilizing to onsite location
- Trenching

Figure D-1. Dictionaries. (8 sheets)

- Transfer pipe fabrication and installation
- Vent station fabrication and installation
- Electrical, instrument, and control system installation
- Hydrotesting
- Sitework and backfilling
- Identification and correction of uncompleted work (punchlisting)
- Work acceptance
- Contract closeout
- Projects records close-out.

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.5
TITLE: Startup
CONTRACTOR: WHC

INDEX LINE NO.: 21-25

DATE: July 1995

REVISION NO. AND AUTHORIZATION: Revision 2

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: Management
Secretarial support
WHC assigned organization(s)
Startup engineers
Technician

Services: Publishing
Equipment vendors
Calibration

Other Direct Costs: Travel

TECHNICAL CONTENT:

Startup includes the work items following construction to complete a comprehensive startup readiness review, and to prepare for operations. Major items include preparing startup plans, procedures, and documentation; performing operational testing; and conducting readiness reviews.

WORK STATEMENT:

Determine the waste retrieval system operational interfaces; identify operator startup testing training requirements; develop procedures, perform testing; and verify, demonstrate, and provide documentation required to ensure that the retrieval system meets operational design parameters. Specific items include, but are not limited to, the following:

- Startup management and integration
- Development and implementation of startup plans and schedules
- Health physics, operations, and maintenance
- Startup training
- Preparation of operational test procedures (OTP)
- Performance of OTP in the startup tests
- Operational readiness review checklists, plans, and documentation
- Submitting readiness review to RL for approval
- Preparation of operating procedures
- Preparation of preventive maintenance procedures
- Walk-down of construction work and generation of completion open items.

Figure D-1. Dictionaries. (8 sheets)

WORK BREAKDOWN STRUCTURE DICTIONARY

PART II - ELEMENT DEFINITION

WBS ELEMENT CODE: 1.6
TITLE: Safety and Environmental
CONTRACTOR: WHC

INDEX LINE NO.: 26-32

DATE: July 1994

REVISION NO. AND AUTHORIZATION: Revision 1

ELEMENT TASK DESCRIPTION

COST CONTENT:

Labor: Management
Staff
Secretarial Support

Sources: Publishing
Contracted consultants
Computer support

Other Direct Costs: Travel and living

TECHNICAL CONTENT:

Provide services, as required, to manage the preparation and submittal of environmental, safety, and structural analyses documentation to comply with DOE-HQ and RL Orders, WHC management directives and procedures, and state and local laws.

WORK STATEMENT:

Project management administrative work performed to support the project, including, but not limited to, the following:

- Environmental documentation preparation
- Safety documentation preparation and structural analysis preparation.

D3.0 REFERENCES

Clean Air Act of 1955, as amended, 42 USC 7401, et seq.

DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

DOE, 1989, *General Design Criteria*, DOE Order 6430.1A, U.S. Department of Energy, Washington, D.C.

DOE, 1991, *Quality Assurance*, DOE Order 5700.6C, U.S. Department of Energy, Washington, D.C.

National Environmental Policy Act of 1969, 42 USC 4321, et seq.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

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APPENDIX E

PROJECT W-320 PROJECT MANAGEMENT PLAN, STARTUP AND OPERATIONS TRAINING PLAN

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APPENDIX E

PROJECT W-320 PROJECT MANAGEMENT PLAN, STARTUP AND OPERATIONS TRAINING PLAN

E1.0 INTRODUCTION

As specified in DOE Order 4700.1, *Project Management System* (DOE 1987), test and evaluation (T&E) plans shall be prepared, implemented, and maintained by the Integrating Contractors to ensure that the project meets established design and functional requirements. This Startup and Operations Training Plan augments the T&E plan to provide the strategy and requirements for project training required to support the testing activities. Other project training requirements are included in Appendix G.

This Plan addresses training requirements for the project systems, subsystems, and individual pieces of equipment. In addition, this Plan coordinates operator training with the facility design, equipment procurement, construction, and operations schedules.

The content of this Plan addresses the following areas:

- Preoperational/startup training
- Operational training and system orientation
- Maintenance training (project scope only includes maintenance work associated with post-construction through startup training)
- Emergency response training
- Training documentation (specifications/procedures)
- Environmental training (see Appendix B, Section B2.7).

Table E-1 is a matrix table that presents the training requirements, anticipated locations for training, and training phases associated with the waste retrieval program. This information is provided as a guideline for development of the project-specific plans and procedures.

E2.0 TRAINING SUMMARY

The training strategy and sequence includes needs assessment and training program development as the initial steps as shown in Figure E-1. Actual training includes introductory sessions on the basic technology and operating conditions. The training consists of hands-on experience with actual production equipment. This training shall be coupled closely with the system testing phases for maximum knowledge transfer.

Table E-1. Training Strategies and Locations.

Categories (functions) of training	Hanford Site classroom	Hanford Site facility	Work site
Preoperational/startup training			
Test engineer	No	Yes	Yes
Operators	No	Yes	Yes
Operational training (operators)			
HVAC procedure	Yes	Yes	Yes
Sluicing procedure	Yes	Yes	Yes
All other procedures	No	No	Yes
Maintenance training (maintenance personnel)			
All procedures	No	No	Yes
Emergency response training (fire, spills, decontamination, etc.)			
All procedures	No	No	Yes

The training functions, requirements, and locations are presented in Table E-1. The table is divided into two locations: the suitable training and test sites or fixtures at the Hanford Site and the work site. Adjustments may be required in the presented philosophy as the Tank Waste Remediation System training program is further developed.

E2.1 DEFINITIONS

The following definitions apply to activities at Project W-320.

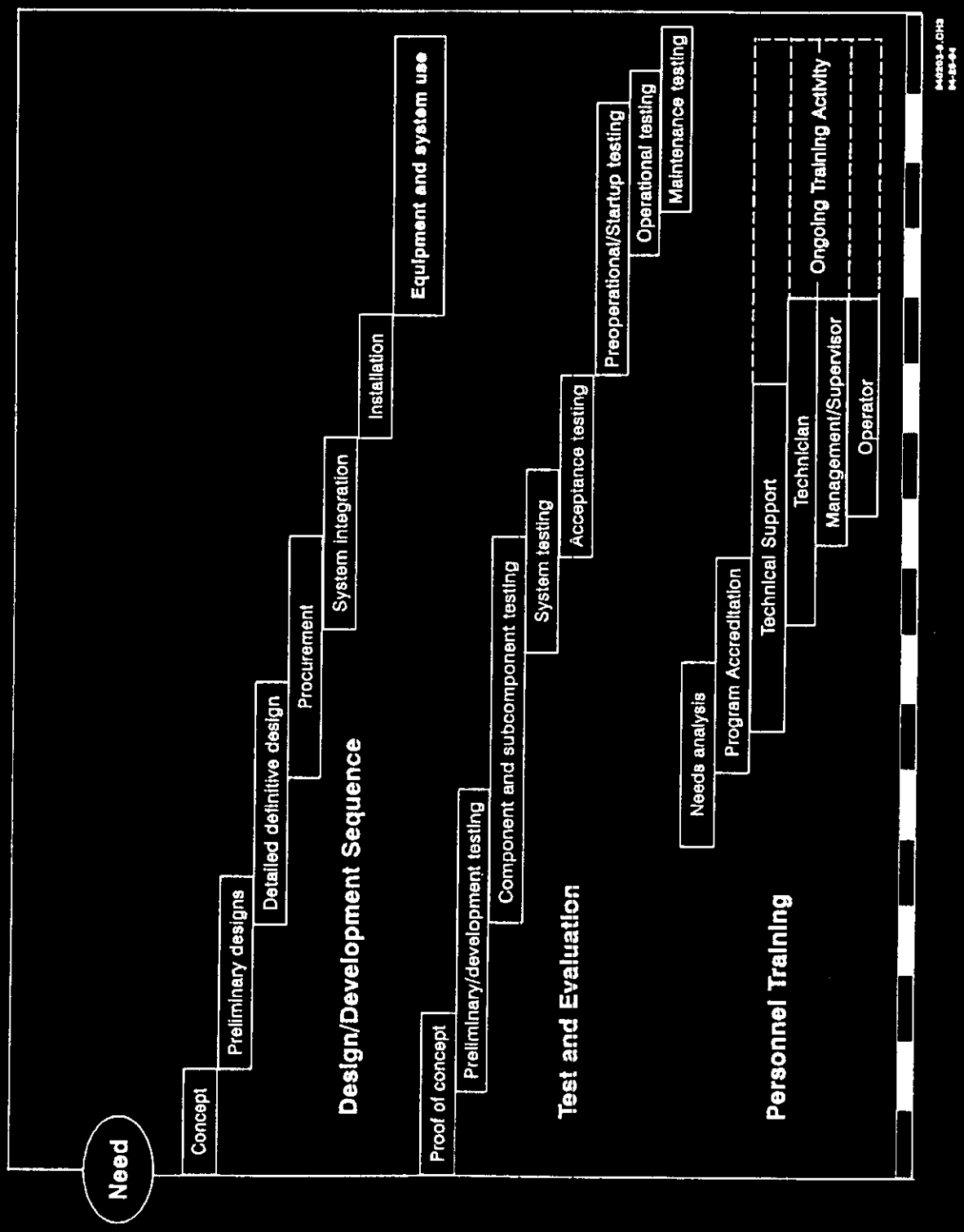
Hanford Site Facility. Location of training while working with the test engineers during testing activities within the onsite facilities.

Maintenance Training. Training that is conducted during or before maintenance operations to provide hands-on experience. Maintenance training is considered a non-project activity funded by operations.

Operational Phase. The work site dry-runs just before operations initiation and the on-the-job training/experience during operations.

Preoperational Phase. Training that occurs during the startup testing and operational readiness review and work site/equipment walkaround/downs.

Figure E-1. Risk-Based Timing and Involvement in Training and Testing.



E3.0 REFERENCES

DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

E4.0 GLOSSARY

ABBREVIATIONS AND ACRONYMS

T&E test and evaluation

APPENDIX F

PROJECT W-320 PROJECT MANAGEMENT PLAN, QUALIFICATION AND TRAINING PLAN

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APPENDIX F

PROJECT W-320 PROJECT MANAGEMENT PLAN, QUALIFICATION AND TRAINING PLAN

F1.0 PURPOSE

This Qualification and Training Plan defines qualification and training requirements for Project W-320, Tank 241-C-106 sluicing.

This Plan is based on DOE Orders 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities* (DOE 1991a); 5480.18A, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities* (DOE 1991b); and 4700.1, *Project Management System* (DOE 1987); WHC-CM-2-15, *Training Administration Manual*; and WHC-SD-WM-QAPP-018, *Tank Waste Projects Quality Assurance Program Plan* (Hall 1995).

F2.0 SCOPE

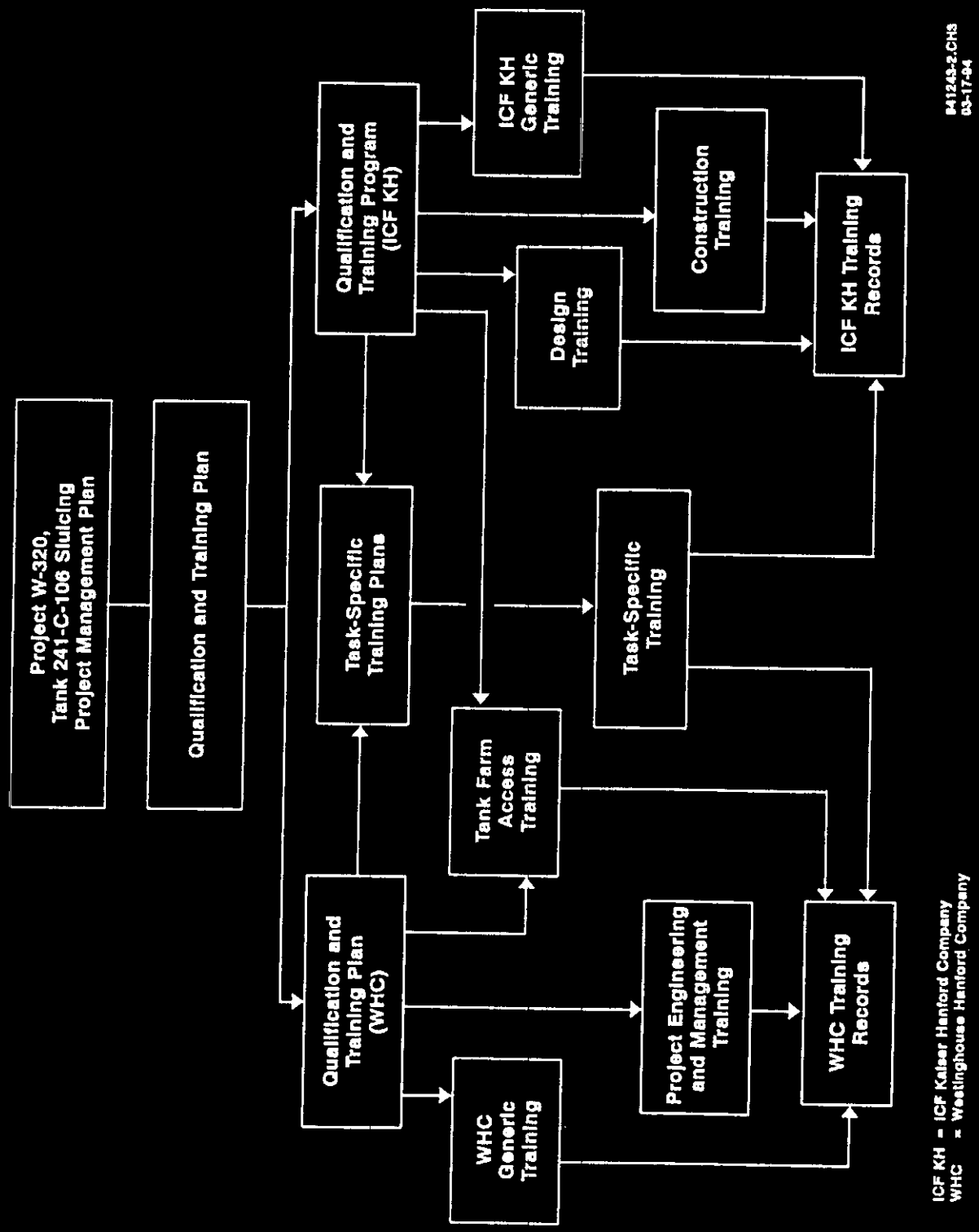
This Plan is applicable to Single-Shell Tank Retrieval Projects staff, and ICF Kaiser Hanford Company Design and Construction staff performing work on Project W-320. Specifically, this Plan is applicable to those performing personnel activities affecting quality, environmental compliance, and safety. Single-Shell Tank Retrieval Projects and ICF Kaiser Hanford Company Design and Construction shall develop and implement their own specific qualification and training programs as shown in Figure F-1.

F3.0 STRATEGY FOR TRAINING

Performance-based training shall be implemented for project activities affecting quality, environmental compliance, and safety. All participants shall develop specific qualification and training programs for their respective areas of responsibility, as shown in Figure F-1. Qualification and training plans shall be prepared and approved by the responsible project participant management. Westinghouse Hanford Company (WHC) shall review these plans for compliance with applicable requirements. Westinghouse Hanford Company shall perform routine surveillances of the qualification and training programs and implement corrective action, as appropriate.

The qualification and training programs shall include references to existing, company-generic programs and systems where possible. Project-specific training requirements shall be defined, performed, and recorded in accordance with approved programs. Specific certification for specialized

Figure F-1. Project W-320 Qualification and Training Plan Chart.



tasks (i.e., welding, nondestructive examinations, rigging, etc.) shall be in accordance with WHC or ICF Kaiser Hanford Company standards. Tank farm entrance requirements shall be in accordance with WHC requirements.

F4.0 REFERENCES

DOE, 1987, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, D.C.

DOE, 1991a, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, DOE Order 5480.20, U.S. Department of Energy, Washington, D.C.

DOE, 1991b, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities*, DOE Order 5480.18A, U.S. Department of Energy, Washington, D.C.

Hall, L. R., 1995, *Tank Waste Projects Quality Assurance Program Plan*, WHC-SD-WM-QAPP-018, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-2-15, *Training Administration Manual*, Westinghouse Hanford Company, Richland, Washington.

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PROJECT W-320 CONSTRUCTION PLAN

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APPENDIX G

PROJECT W-320 CONSTRUCTION PLAN

G1.0 INTRODUCTION

This Construction Plan defines overall responsibilities and outlines the general scope of the Project W-320, Tank 241-C-106 Sluicing construction effort. This Construction Plan is not intended to be approved by any parties outside the immediate Westinghouse Hanford Company (WHC)/ICF Kaiser Hanford Company (ICF KH) project team. Any questions regarding the purpose and use of this plan should be directed to the ICF KH Construction superintendent or ICF KH project manager.

G2.0 SUMMARY

Project W-320, Tank 241-C-106 Sluicing, will design, construct, and start up a system to retrieve and transfer the contents from single-shell tank 241-C-106 to double-shell tank 241-AY-102. The project consists of five major phases: design, procurement, construction, and startup. This plan describes the following:

- Construction of the retrieval and transfer systems
- Acceptance testing, and turnover of the facilities for startup.

Construction of the retrieval and transfer system is divided into the following three geographic areas.

- ICF KH onsite construction forces (CF) at and within C Tank Farm
- Fixed-price contractor for the transfer lines between farms
- ICF KH onsite CF at and within AY Tank Farm.

Details of the onsite CF efforts in the farms are itemized later in this plan.

Acceptance testing and turnover plans will be developed separately from this document.

G3.0 ORGANIZATION RESPONSIBILITIES

For identification of personnel, see Figure 3-5 in Section 3.0 of the Project W-320 Project Management Plan. The responsibilities of the identified positions are as listed below. Additional roles and responsibilities are defined in the Project W-320 Project Management Plan, Section 3.0.

Project Manager (WHC)--Responsible for overall coordination and performance of the project including schedule and cost baseline decisions. The project manager will interface support from the various WHC departments, ICF KH, and any other supporting organizations. The project manager is the main point of contact with the U.S. Department of Energy, Richland Operations Office.

Project W-320 Startup and OPS Interface Manager (WHC)--Provides coordination and integration of project construction activities, and is the primary point of contact with Operations, Health Physics, construction matrixed support, and the cost account manager for project expense and capital construction accounts. Provides technical and financial direction to CF and the fixed-price contractors, through ICF KH.

Person in Charge (WHC PIC)--Provides oversight and coordination of project construction activities. Coordinates reviews and routing of the construction work packages by the Operating Contractor. Project PICs will be trained and qualified to WHC Tank Farm Operations standards, with authority to coordinate all construction activities as delineated in WHC-IP-0842, *Tank Farm Administration Manual* (Ellis 1994).

Architect-Engineer/Construction Manager (ICF KH)--Responsible for cost and schedule baseline control for ICF KH. This position is the main point of contact for all ICF KH activities.

Superintendent (ICF KH)--Responsible for management of all direct hire field construction staff and associated coordination with the fixed-price contractor.

Construction Engineer (ICF KH)--Responsible for field engineering and performance/coordination of construction support functions including procurement, inspection, planning, scheduling, and field changes.

Package Planner (ICF KH)--Prepares construction work packages to be used within the operating facility boundaries including coordination of reviews, incorporation of comments, and modifications (changes).

Project Engineering Manager (WHC)--Manages WHC engineering support through the construction and startup phase of the project.

Contracts Administrator (ICF KH)--Develops formal documentation for the bidding, award, and administration (changes and payment) of the fixed-price contractor.

Construction Management Field Engineer--Responsible for field oversight of the fixed-price contractor.

Training Coordinator--Respective training coordinators ensure that all project personnel meet and maintain the training required within position-specific and CF training matrixes.

G4.0 WASTE HANDLING PLAN

Any radioactive wastes and wastes generated inside the tank farms by this project will be processed in accordance with Tank Farm Operating Procedures TO-100-052, *Segregate, Package and Inventory of Radioactive Waste* (Lance 1993a), and TO-100-055, *Set-up/Operate Satellite Accumulation Areas* (Lance 1993b). The ICF KH will package and log the wastes into the appropriate WHC 90-day storage area.

Construction forces or fixed-price construction wastes generated outside a radiologically controlled area (nonradiation contaminated) will be handled in accordance with the ICF KH Environmental Protection Program and Procedure ENV 3, "Waste Management."

Any contaminated soil excavated by the project will be used as backfill material; no allowance has been made for disposal of contaminated soil.

Flushing water will be containerized and disposed of as dust control or in a suitable drain as required by WHC Operations.

G5.0 PROJECT SAFETY

Construction will be performed in accordance with the existing ICF KH Industrial Safety and Industrial Hygiene Programs. Construction site safety will be the responsibility of the ICF KH construction supervision and ICF KH safety personnel.

The ICF KH supervision will develop a job safety analysis (JSA) for each job control system (JCS)/process control package (PCP) work package and other construction activities. The JSA will identify the hazards associated with the various job activities, and the protective measures required to protect life and health. The JSA form will be reviewed and approved by ICF KH Industrial Safety and Industrial Hygiene representatives as well as WHC Industrial Health and Safety (IH&S) representatives. Westinghouse Hanford Company IH&S concurrence will be denoted by signature on the PCP cover. The approved JSAs will be forwarded to WHC Safety for information.

All personnel requiring access to a construction site or zone must first read, sign, and comply with the associated JSA for that activity or area. As a minimum, all posted construction areas require hard hats, safety glasses, and substantial leather footwear. Hard-toed shoes are required for all craftspeople or working personnel in posted construction areas.

In addition to ICF KH construction site requirements including the JSA/job hazard analysis, WHC personnel will comply with all WHC Health and Safety procedures. Westinghouse Hanford Company PICs shall provide oversight and guidance to the ICF KH supervisor for safety, radiological, and intrusive work within the tank farms. The WHC PICs shall stop work that violates the requirements or conditions of the JCS/PCP work package, violates tank farm procedures, or is deemed unsafe.

G6.0 QUALITY ASSURANCE

For onsite CF, quality control will be performed by ICF KH in accordance with existing ICF KH procedures and the design requirements.

For the fixed-price contractor, quality control will be provided in accordance with the approved fixed-price contractor's quality assurance plan, as required by the bid documents.

The *Project-Specific Quality Assurance Plan* (Huston 1995), *ICF KH Quality Assurance Plan* (KAP 2.0), and existing ICF KH Quality Control procedures (will be listed in the PCP as required) will provide definitive guidance for quality control field activities.

Quality assurance surveillances will be performed by WHC Quality Assurance to document the adequacy of the ICF KH programs.

G7.0 TITLE III INSPECTION

The ICF KH will provide third-party inspection services for all construction activities as required by the design documents and noted in the Project W-320 Inspection Plan.

G8.0 CHANGE CONTROL

Change control during construction shall conform to the Project W-320 Configuration Management Plan (see Appendix C).

Lost time in the field will be documented through the use of "White Cards." White Cards will contain information on the amount of staff hours lost and the reason. White Cards will be assembled periodically on an Engineering Construction Change (Form number KEH-1080-00) and forwarded to the Project W-320 Construction manager (WHC) for appropriate action/funding.

G9.0 SUBMITTALS

Submittals will be processed through ICF KH Submittal Document Control in accordance with ICF KH Procedure KAP 7.4, "Submittal Process."

Any submittal requiring WHC review and approval will be forwarded to the Project Engineering manager (WHC) for approval.

G10.0 CONSTRUCTION WORK PACKAGES

Work packages will be prepared for all onsite CF work within the tank farms and other major efforts outside the tank farms. Work packages within the tank farms will be a combined WHC JCS and ICF KH PCP. The package will meet the procedure requirements of the WHC and ICF KH systems.

Construction forces work outside the tank farm may have construction work sequence (CWS) packages prepared at the discretion of the superintendent. The CWS will be an informal package (for construction use only) to help control the scope and activities being performed. The CWS will be used during situations in which design documents may not be descriptive enough to identify the extent or priority of the activities. Other minor construction activities in uncontrolled areas may be performed without work packages as determined by the superintendent.

Any construction packages used will contain the complete documentation including permits, design media, and authorization forms necessary to perform the work.

The fixed-price contractor will not use any formal construction package system.

The following is a preliminary listing of the construction work packages the CF will prepare.

Inter-Farm Piping - Design Package 1

The excavation between farms by CF does not require a work package. Fixed-price construction work packages will conform to the requirements of the Fixed-Price Contract and Contractor Quality Assurance Plans.

Control Trailer Installation - Design Package 2

Work packages are not required for fixed-price construction.

AY Farm - Design Package 3

1. Installation of the underground utilities, including, but not limited to, the following:

   - Excavation of utility lines trench
   - Installation of required lines (i.e., air lines, water lines, etc.)
   - Necessary compaction tests to allow backfill of trench
   - Backfill.

2. Installation of the transfer lines and pit modifications, including, but not limited to, the following:

   - Hand excavation of the piping trench from the farm boundary to the tank pits
   - Installation of the transfer lines
   - Decontamination of the tank pits
   - Hand excavation of the pits
   - Core drilling and installation of new nozzles
   - Application of protective coatings
   - Tie-ins to transfer lines
   - Necessary compaction tests to allow backfill of the trench
   - Backfill.

3. Completion of miscellaneous site work and concrete pads, including, but not limited to, the following:

   - Fabrication of motor control center (MCC) enclosure skid
   - Installation of MCC enclosure skid and pad.

4. Installation of cathodic protection equipment, the remaining electrical work, cable/wire pulls, and terminations of power and control wiring.

5. Installation of the distributor and supernate pump with winch.

6. Installation of the pit jumpers including, but not limited to, the following:

   - Fabrication
   - Installation of jumpers
   - Installation of jumper valves
   - Installation of associated instrumentation.

7. Installation of required instrumentation to support AY Farm construction activities including, but not limited to, the following:

   - Installation of conduit and wire to the interconnecting panel
   - Installation of major instrumentation systems including the following:
     - Process monitoring and control
     - Leak detection

- Closed-circuit television
- Monitoring of various utilities
- A temperature monitoring and control system (TMACS) interface/interconnection to the intra-farm connecting panel.

8. Installation of a redundant Safety Class 1 seismic detection skid including, but not limited to, the following:

   - Safety Class 1 seismic detection system
   - Class 1E breaker
   - Seismic detection switch
   - Power supply.

C Farm - Design Package 4

1. Installation of the underground utilities including, but not limited to, the following:

   - Excavation of the utilities trench
   - Installation of required lines (i.e., air, H_2O, chilled water support, and chilled water return)
   - The direct burial conduit (just east of the utilities trench)
   - Necessary compaction tests to allow backfill of the trench
   - Backfill.

2. Installation of the transfer lines (encased piping) and pit modifications, including, but not limited to, the following:

   - Hand excavation of the piping trench from the farm boundary to the tank pits
   - Installation of the transfer lines
   - Decontamination of tank pits
   - Hand excavation of pits
   - Core drilling, and installation of new nozzles
   - Application of protective coatings
   - Tie-ins to transfer lines
   - Necessary compaction tests to allow backfill of the trench
   - Backfill.

3. Completion of miscellaneous site work and concrete pad installations, including, but not limited to, the following:

   - Fabrication of heating, ventilating, and air conditioning (HVAC) major component skids

   - Installation of skids (i.e., chiller, exhaust, etc.)

   - Solenoid pit.

4. Fabrication and installation of new cover blocks.

5. Fabrication and installation of the HVAC process building, including, but not limited to, the following:

   - HVAC connecting ductwork
   - Associated utility lines
   - HVAC Class 2 monitor and instrumentation
   - Drains.

NOTE: The above packages also will incorporate the requirements of Design Package 5.

6. Installation of cathodic protection equipment, the remaining electrical work, cable pulls, and terminations of power and control wiring.

7. Installation of sluicer equipment, including, but not limited to, the following:

   - Sluicers
   - Slurry pump with winch
   - Heel pump with winch.

8. Installation of the pit jumpers, including, but not limited to, the following:

   - Fabrication
   - Installation of jumpers
   - Installation of jumper valves
   - Installation of associated instrumentation.

9. Installation of required instrumentation to support C Farm construction activities, including, but not limited to, the following:

   - Conduit and wire from the local instrument to the interconnecting panel

   - Installation of major instrumentation systems including the following:

     - Process monitoring and control

- HVAC monitoring and control
- Leak detection
- Sluicer control
- Closed-circuit television for in-tank and farm surveillance
- Utility monitoring (various)
- A TMACS interface/interconnection to the intra-farm connecting panel.

NOTE: Package 9 may be required to work with other PCPs to facilitate construction completion.

10. Installation of redundant Safety Class 1 skid, including, but not limited to, the following:

    - Safety Class 1 seismic detection system
    - Class IE breaker
    - Seismic detection switch
    - Power supply.

HVAC - Design Package 5

Incorporated into work packages listed under Design Package 4.

Equipment Procurement - Design Package 6

No packages are required.

G11.0 CONSTRUCTION PACKAGE PREPARATION

The ICF KH will prepare the construction work packages with the existing project personnel (construction engineers) as augmented with the existing CF PCP preparation personnel. If additional personnel support is required, job shoppers will be used as interim support.

G12.0 WORK RELEASE

Work release for CF work packages will be performed by either the JCS or with the Work Release Authorization Form in accordance with ICF KH Procedure IS 12. During situations in which a JCS/PCP is prepared, no other work release document is required. Where the JCS/PCP is not used, the Work Release Authorization Form provided through ICF KH Procedure IS 12 will be used to control the release of work.

The Work Release Authorization Form from IS 12 also will be used to control the release of work with the fixed-price contractor. The fixed-price contractor's work will be released by portions of the scope depending on operational hazards to be mitigated in each area or portion.

G13.0 SCHEDULE

The project baseline schedule will be used to report the status of the construction activities in accordance with the requirements of the Project W-320 Project Management Plan, Section 6.5. Construction engineers will determine progress and provide that information to the Project Controls personnel. The Construction Management field engineer will determine the status of the fixed-price contractor's work. Progress will include the percent complete for each activity in progress (used to determine earned value), actual start and completion dates, and forecast completion dates for in-progress activities. Earned value will be determined by multiplying the percent complete by the resource-loaded baseline for each activity. A monthly status report will be provided to the Project W-320 Construction manager (WHC). The report will include staff power reports, baseline schedule status, critical path status, and schedule/cost variance analysis at the contractor work breakdown structure level.

Detailed rolling schedules (4- or 6-week rolling schedules) will be prepared to control the activities in the field. These schedules will be prepared by Project Controls from input received from the superintendent and construction engineers. The rolling schedules will be prepared at a level of detail controlled by the superintendent and will not be a formal reporting document to the project management team. The activities on the detailed schedules will be tied to the upper-level schedule activities, which will allow a higher level of accuracy in progressing the work.

Coordination between the various projects in the area and the fixed-price construction contractor will be performed through weekly progress and coordination meetings. These meetings will be attended by the superintendents from the projects in the area and a representative of the fixed-price contractor(s).

G14.0 START OF CONSTRUCTION

The initial activity, which defines the "start of construction," will be defined on the project baseline schedule.

Before project construction can officially begin, the following documents and/or conditions need to completed.

- Receive Key Decision 3 from the U.S. Department of Energy.

- Receive Finding of No Significant Impact and other environmental permits.
- Complete the project preliminary safety evaluation.
- Receive Letter of Instruction from WHC directing ICF KH to proceed.
- Receive funding for construction, authorized via Project Authorization Modification.

G15.0 CONSTRUCTION EQUIPMENT

Construction equipment requirements for this project are minor in nature. For the more standard construction activities on the remainder of the project, existing equipment available at the Hanford Site and from local rental companies will be sufficient to meet the construction needs.

G16.0 ASSUMPTIONS AND UNCERTAINTIES

The successful completion of the Project W-320 construction schedule is based on the following assumptions.

- Design is completed and drawings are released in accordance with the current design schedule.
- The 241-C Farm is accessible, as is tank 241-C-106.
- Contamination is insignificant between 241-C Farm and 241-AY Farm.
- Personal protective equipment (mask) requirements are in accordance with the current estimate (not required except for tank-intrusive work).
- Support from full-time health physics technicians and operations (operator, sniffer, etc.) is available as needed with minimum or no construction downtime.
- Full-time PIC support is available.
- Adequate resources are available and are onsite.
- Significant weather problems do not impact the scheduled construction activities.
- Design concept, estimated costs, and estimated staff hours do not vary significantly from the current 40% estimate and schedule.

- Operational activities and priorities do not significantly impact the current estimate and schedule.
- Currently, soils that are not contaminated beyond the levels of the removal area are returned as backfill; this practice will continue.

G17.0 REFERENCES

Ellis, S. H., 1994, *Tank Farm Administration Manual*, WHC-IP-0842, Rev. 39, Westinghouse Hanford Company, Richland, Washington.

Huston, J. J., 1995, *Project-Specific Quality Assurance Plan*, WHC-SD-W320-QAPP-001, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Lance, D. R., 1993a, *Segregate, Package and Inventory of Radioactive Waste*, Procedure TO-100-052, Westinghouse Hanford Company, Richland, Washington.

Lance, D. R., 1993b, *Set-up/Operate Satellite Accumulation Areas*, Procedure TO-100-055, Westinghouse Hanford Company, Richland, Washington.

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