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ENGINEERING DATA TRANSMITTAL

Page 1 of 3

1. EDT 617641

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	ILAW Disposal Project	NA
5. Proj./Prog./Dept./Div.:	**6. Design Authority/ Design Agent/Cog. Engr.:**	**7. Purchase Order No.:**
W-465	T. A. Carlson 372-3473	NA
8. Originator Remarks:		**9. Equip./Component No.:**
For approval by January 27, 1997, to meet milestone T34-97-100.		NA
		10. System/Bldg./Facility:
		NA
11. Receiver Remarks: **11A. Design Baseline Document?** [ ] Yes [X] No		**12. Major Assm. Dwg. No.:**
		NA
		13. Permit/Permit Application No.:
		NA
		14. Required Response Date:
		1/27/97

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Desig-nator	(G) Reason for Trans-mittal	(H) Origi-nator Dispo-sition	(I) Receiv-er Dispo-sition
1	HNF-SD-W465-SOW-001	-	0	Conceptual Design Statement of Work for the Immobilized Low-Activity Waste Interim Storage Facility Project	NA	1,2	1	

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN
1		Design Authority C. A. Petersen 1-16-97 H5-51			
		Design Agent			
1		Cog.Eng. T. A. Carlson 1/16/97			
1		Cog. Mgr. J. A. Voogd 1/16/97			
		QA			
		Safety			
		Env.			

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
T. A. Carlson 1/16/97	J. A. Voogd 1-16-97	C. A. Petersen 1-16-97	[] Approved [] Approved w/comments [] Disapproved w/comments
Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	Design Authority/ Cognizant Manager / Date	

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JAN 24 1997

97-WDD-012

Mr. H. J. Hatch, President
Fluor Daniels Hanford, Inc.
Richland, Washington

Dear Mr. Hatch:

CRITICAL DECISION 1 FOR PROJECT W-465, IMMOBILIZED LOW ACTIVITY WASTE INTERIM STORAGE, CONTRACT NUMBER DE-AC06-96RL13200

The attached memorandum from Alvin L. Alm, Assistant Secretary for Environmental Management, to Richland Operations Office Manager grants approval to start conceptual design of Immobilized Low Activity Waste Interim Storage Project W-465. Accordingly, Fluor Daniel Hanford is authorized to begin the conceptual design of Project W-465.

The Waste Disposal Division concurs with the Preliminary Design Requirements Document (HNF-SD-W465-DRD-001), and the Statement of Work (HNF-SD-W465-SOW-001), which are the bases for the conceptual design for Project W-465. Please notify this office if any changes in these documents are required.

If any direction is provided by a Contracting Officer's Representative (COR) which your company believes exceeds the COR's authority, you are to immediately notify the Contracting Officer and request clarification prior to complying with the direction.

If you have any questions, please contact Clarence V. Banks, of my staff, on 376-6128.

Sincerely,

WJ Taylor

William J. Taylor, Director
Waste Disposal Division

WDD:CVB

Attachment

cc w/attach:
H. Boston, LMHC
J. Voogd, LMHC

United States Government Department of Energy

memorandum

DATE: December 26, 1996

REPLY TO ATTN OF: EM-38

SUBJECT: Approval of Critical Decisions for Phase I Immobilized High-Level and Low-Activity Waste Interim Storage and Tank Farm Restoration and Safe Operations Projects (Projects W-464, W-465 and W-314)

TO: Manager, DOE Richland Operations Office

I have informed the Secretary of Energy of my decision to approve start of Conceptual Design for the two interim storage projects, as well as my approval of the baseline for the Tank Farm Restoration and Safe Operations project. You may pursue the appropriate design activities immediately.

In recognition that these projects are part of a Strategic System, I have also requested delegation of subsequent Critical Decisions and baseline change control authority to you. I believe, and expect the Secretary will agree, that given the nature and cost of these projects, this authority should appropriately reside at the field.

If you have any questions, please call me or Ken Lang of my staff at 301-903-7453.

Alvin L. Alm
Assistant Secretary for
Environmental Management

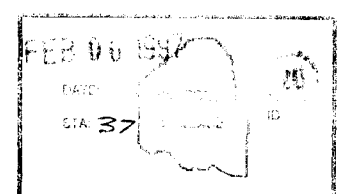
Conceptual Design Statement of Work for the Immobilized Low-Activity Waste Interim Storage Facility Project

T. A. Carlson
Fluor Daniel Northwest, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL-13200

EDT/ECN: 617641 UC: 721
Org Code: 408 Charge Code: D4DN1
B&R Code: EW3130010 Total Pages: 39

Key Words: Statement of work, low-activity waste, interim storage

Abstract: The Immobilized Low-Activity Waste Interim Storage subproject will provide storage capacity for immobilized low-activity waste product sold to the U.S. Department of Energy by the privatization contractor. This statement of work describes the work scope (encompassing definition of new installations and retrofit modifications to four existing grout vaults), to be performed by the Architect-Engineer, in preparation of a conceptual design for the Immobilized Low-Activity Waste Interim Storage Facility.



Release Approval Date

Release Stamp

Approved for Public Release

CONCEPTUAL DESIGN STATEMENT OF WORK FOR THE IMMOBILIZED LOW-ACTIVITY WASTE INTERIM STORAGE FACILITY PROJECT

January 1997

Prepared for
U.S. Department of Energy
Richland, Washington

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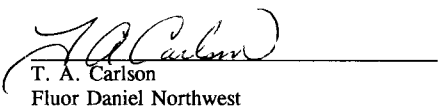
Project Hanford Management Contractor Technical Representative Approvals

Document Title: Conceptual Design Statement of Work for the Immobilized Low-Activity Waste Interim Storage Facility Project

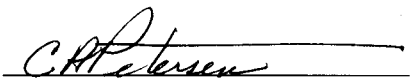
Prepared by:



T. A. Carlson
Fluor Daniel Northwest
Richland, Washington

1/21/97
Date

Reviewed by:



C. A. Petersen,
Numatec Hanford Corporation
Richland, Washington

1/21/97
Date

Approved by:

J. A. Voogd, Project Manager
Immobilized Low-Activity Waste Interim
Storage Facility Project
Lockheed Martin Hanford Corporation
Richland, Washington

1-21-97
Date

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TABLES

CONCEPTUAL DESIGN STATEMENT OF WORK FOR THE IMMOBILIZED LOW-ACTIVITY WASTE INTERIM STORAGE FACILITY PROJECT

1.0 INTRODUCTION

1.1 REQUESTED SERVICES

This Statement of Work (SOW) describes the work scope to be performed by the Architect-Engineer (A-E), under the direction of the Technical Representative (TR). Specifically, the A-E shall prepare a conceptual design (CD) for the Immobilized Low-Activity Waste (ILAW) Interim Storage Facility. The A-E consists of Fluor Daniel Northwest (FDNW) as the primary design agent. The contract number for this work is TBD.

The CD work scope covers the initial design phase of the ILAW Interim Storage Facility Project, hereafter referred to as the Project. This initial design phase entails services for CD development and issuance of the conceptual design report (CDR) for the ILAW Interim Storage Facility. A large fraction of the CD effort will encompass definition of new installations and retrofit modifications to four existing grout vaults, hereafter referred to as the Grout Vaults.

In parallel to the ILAW Interim Storage Facility CD development, a Tank Waste Remediation System (TWRS) privatization activity, contracted separately by the U.S. Department of Energy (DOE), is in progress. Input from this activity will be incorporated into the ILAW Interim Storage Facility CD as appropriate. As part of the CD effort, FDNW may be required to support technical interface development activities between the Project and the privatization contractors.

1.2 BACKGROUND

As part of the TWRS Program, the DOE has embarked upon a course to acquire Hanford Site tank waste treatment and immobilization services using privatized facilities (i.e., privately developed, financed, constructed, owned, operated, decontaminated, decommissioned, and closed [RL 1996]). Successful bidders (i.e., vendor or team of vendors awarded a contract) are to be paid for the immobilized Hanford Site tank waste (product) after it is produced, thereby recouping their investment. This plan contains a two-phased approach. Phase I is a proof-of-principle and commercial demonstration-scale effort and Phase II is a full-scale production effort. Details of the TWRS Program schedule are shown in Table 1-1.

Table 1-1. Tank Waste Remediation System Program Schedule.

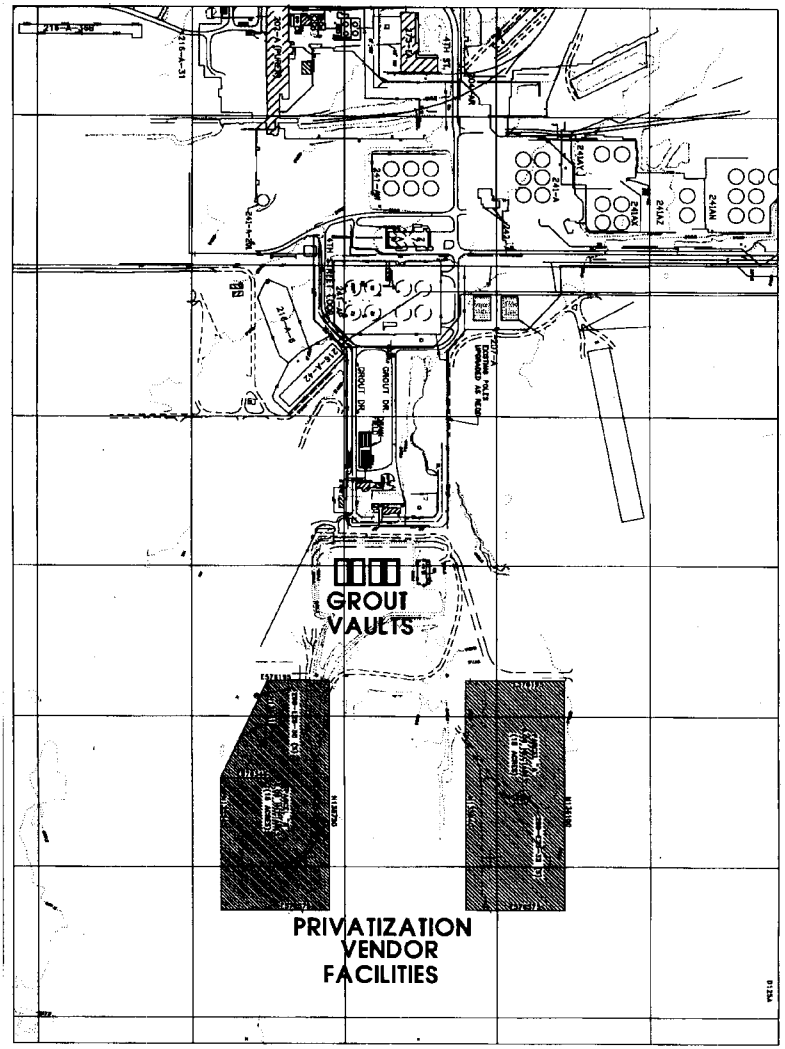
Activity	From	To
Phase I Proof-of-Concept Demonstration		
Minimum order quantity operations	June 1, 2002	June 1, 2007
Extension operations	Completion of minimum order quantity	June 1, 2011
Phase II Full-Scale Production		
Award contract	2005	--
Design, permitting/licensing, construction	2005	2013
Operations	2013	2028
Decontamination and decommissioning	2028	2033
Grout Vault Modifications		
Detailed design	October 1999	March 2001
Construction	August 2000	December 2001
Receipt of Phase I Product	June 2002	April 2006*

*Vaults reach capacity.

In accordance with the solicitation of Phase I services, transportation, interim storage, and disposal of various products from the demonstration plants (e.g., immobilized high-level waste [HLW], ILAW, separated cesium, etc.) are to be furnished by RL. Therefore, a facility for storage of ILAW must be provided until additional storage vaults or a disposal facility can be furnished. The recommended path forward (Taylor 1996) for ILAW storage entails retrofit modification of the Grout Vaults to render them suitable for an interim storage mission .

The Grout Vaults are located in the 200 East Area of the Hanford Site, approximately 48 km (30 mi) northwest of Richland, Washington. Four unused Grout Vaults have been approved/accepted for use as the interim storage facility for ILAW to be received from private vendors (for reference see the Alternative Generation and Analysis [AGA] report [Burbank 1996a]). Figure 1-1 illustrates the Grouts Vaults location relative to the 200 East Area.

Figure 1-1. Grout Vaults Location Relative to the 200 East Area.



These structures consist of four below grade (built by project B-714) and a 5th vault number 218-E-16-101 not a part of this scope, cast-in-place concrete vaults approximately 15-m (49-ft) wide, by 38-m (125-ft) long, by 10-m (33-ft) deep. The ILAW interim storage project would utilize all of the four available concrete vaults. Mechanical, electrical, instrumentation, and support services previously housed in portable (mobile) instrument houses no longer exist.

The vaults are covered by a thick reinforced concrete slab and precast concrete panels. The panels have penetrations to satisfy a variety of access requirements, such as grout distribution piping, excess water removal, level monitors, and vault ventilation. Approximately 101.6 cm (40 in.) of shielding backfill (an asphaltic infiltration barrier) covers each vault to shield operations personnel from ionizing radiation.

Each vault has an interior volume of approximately 5,700 m^3 (1,600,000 gal). The Grout Treatment Facility (GTF) which includes the grout vaults is (identified in the TWRS Environmental Impact Statement) an existing Treatment, Storage, and Disposal unit.

1.3 PROJECT OBJECTIVES

The Project objective is to perform retrofit modifications and install any new features (i.e., transport systems, other structures, and components) to allow the safe, economic, environmentally sound receipt, and storage and retrieval of ILAW from private vendors. The Project objective also includes providing a transportation system for transport of ILAW from the vendors' plants to the vaults, and the entry path by which access will be made into the vaults (i.e., from the top or ends).

This project can be broken into the following subsystems:

- Transportation
  - Transporters
  - Shielded Containers
- Material Handling Systems
  - Cranes
- Storage Structures
  - Vaults
  - Ventilation

- Support Structures
  - Control Room
  - Change Rooms
  - Maintenance Facility
- Infrastructure
  - Road Access
  - Electrical
  - Water
  - Fire
  - Sanitary
  - Sewer
- Telecommunications/Automated Data Processing (ADP)/Accountability.
- Other Project Interface Definition
  - W-503, Electical System Project Execution
  - W-504, Water System Project Execution
  - W-505, Site Development/Roads Project Definition
  - W-506, Liquid Effluent Project Execution

1.4 STAFF INTEGRATION

The CD work scope described in this SOW requires a strong interface with other Hanford Site programs and activities. To achieve an effective integration of all project participants (including the TR and U.S. Department of Energy, Richland Operations Office [RL] personnel), key FDNW personnel and a significant majority of their technical staff shall be located in the Tri-Cities, Washington. This arrangement will facilitate the total project team integration and allow efficient input of technical information during the CD effort. Key A-E management personnel and some technical staff are expected to have sufficient working experience at the Hanford Site and with the Grout Vault Project (B-714) and be identified in the CD work plan.

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2.0 WORK SCOPE

FDNW shall be fully responsible and accountable for the work performed under this SOW. This work scope includes professional quality, technical accuracy, cost-effectiveness, coordination, and development of all design drawings, cost estimates, schedules, technical reports, calculations, and other CD services performed under this SOW. All design services and technical work required to produce acceptable design media shall meet quality standards and shall comply with all applicable criteria, such as federal and state regulations, industry standards, and the TR's requirement documents.

2.1 GENERAL

FDNW shall perform the CD in a manner consistent with project objectives, technical scope, budget, and schedule. The CD shall be developed in sufficient detail to establish the overall project scope, design features, and concepts including: process; mechanical; electrical; heating, ventilating, and air-conditioning (HVAC); instrumentation; control; vault configuration; control and maintenance building configurations; supporting system designs; infrastructure interfaces, etc. In addition, FDNW shall also provide special design support media (letter reports,studies), including but not limited to process hazards; fire hazards; shielding; reliability, availability, and maintainability; vault and plant total operating efficiency; interaction; safety assessments; retrievability;[1]

The CD work shall be documented and summarized in a CDR. All design media prepared under this contract shall become the property of the DOE. FDNW shall use the following principal objectives to develop the CD for the Project.

- Meet all technical requirements as imposed by the Design Requirements Document (DRD).
- Provide the minimum construction cost consistent with operational, environmental, security, and safety requirements.
- Meet safety, environmental, security, energy, and quality assurance (QA) requirements imposed by the DRD.
- Meet all applicable federal, state, and local requirements.

[1]This design should not do anything to preclude retrievability.

2.2 DESIGN RESPONSIBILITY

FDNW shall ensure that new installations and retrofit modifications to Grout Vault systems, structures, and components, which are provided to support the overall ILAW interim storage facility design, satisfy all the project DRD criteria.

2.3 DESIGN REPORT REQUIREMENTS

Conceptual design encompasses those efforts that further develop a project's technical scope, ensure project feasibility and performance levels, develop cost estimates, provide a complete description of the project, and develop design parameters for all engineering disciplines and facility functional descriptions.

The CD effort shall utilize the existing Grout Vault (B-714) design, and associated engineering and project documents to the fullest extent practical. FDNW shall be responsible to retrieve and review (from Project Holding) those files and documents they feel applicable to delivering the most cost effective report.

Table 2-1 is a summary list of deliverables needed to support the "validation" process, and denotes who has the lead responsibility:

Table 2-1. Summary List of Deliverables to Support Validation Process.

Deliverable	Lead responsibility
Definitive Design Schedule (DRD)	FDNW
Design concepts and architectures Construction Schedule	FDNW
Cost estimate: Total estimated cost Other project cost	 FDNW TR
Energy Conservation Report	FDNW

FDNW = Fluor Daniel Northwest
TR = Technical Representative.

The two following items will require some limited support from FDNW, as needed to provide design guidance and cost/budget information, etc..

- Level I Baseline Schedule
- Additional supporting documentation (e.g., safety documentation, project plan).

2.4 SCHEDULE

The CD efforts for the ILAW Interim Storage Facility Project is scheduled to begin in February 1997, with CDR completion (for Project Hanford Management Contractor [PHMC] and RL review) by September 1997. The CD deliverables are presented in Table 2-2.

Table 2-2. Conceptual Design Deliverable Schedule.

Deliverable	Date
Submit conceptual design work plan revision	15 work days after kick-off meeting
30% Review--Flow Sheet(s) and Single design concept for further development including sketches in sufficient detail to convey all pertinent concepts, see Section 3.4.6.4	March 31, 1997
Submit 90% media including a Design Report, Cost Estimate, Drawing Package, Specifications, and all other contractual specified documents and deliverables, see Section 3.4.6.4	June 20, 1997
Issue final CDR including those items in Table 2-1	TBD
Note: An informal/over-the-shoulder review will be made at the 60% stage	May 9, 1997 (approximately)

CDR = Conceptual Design Report
Note: Specifics of 30%, 60%, and 90% reviews are covered in Section 3.4.6.4.

2.5 BASIS OF DESIGN

The CD shall meet the requirements specified in the Project DRD (Burbank 1996b), which will be provided by the TR at the start of the CD effort. This document may be revised as required by the TR in accordance with approved change control procedures.

2.6 PRELIMINARY INFORMATION

The following provides a preliminary list of information items that will be available at the beginning of the CD effort.

Criteria documents

- DRD (Burbank 1996b)
- Project summary work breakdown structure

Information documents

- Permitting Checklist
- ICF Kaiser Hanford design, construction, and as-built drawings for the existing structures, and other pertinent documents (from the B-714 design media)
- AGA Report (Burbank 1996a), Reference: Section 5

The applicable version of the technical criteria documents shall be established by the TR. Any deviation from technical criteria documents shall require appropriate TR and/or RL approvals.

3.0 PROJECT MANAGEMENT

This section describes the project management approach and the requirements for FDNW's project management system for the Project CD effort.

3.1 MANAGEMENT APPROACH

RL is the owner of the Grout Vaults and the overall ILAW storage facility. Oversight of the Project activities will be provided by the director of the DOE-RL/TWRS Waste Disposal Division. Overall project management will be provided by the TR TWRS Immobilization, Storage, and Disposal Project Office, hereafter referred to as the TR's Project Office. Administration of the FDNW contract will be provided by the designated TR's contract specialist assigned by the TR's Procurement organization.

3.2 TECHNICAL DIRECTION

The TR's Project Office has the responsibility and authority for technical direction of FDNW's activities within the scope of this SOW. Any changes to the requirements of this SOW, or direction that impacts any of the contract cost/schedule provisions or its terms or conditions, must come only from the TR's contract specialist.

3.3 CONCEPTUAL DESIGN WORK PLAN

The CD work plan shall identify objectives, approach, activities, deliverables, overall schedule, and resources required to accomplish each specific task. The work plan information should be presented in a manner consistent with the contractor work breakdown structure (CWBS). The estimated number and type of engineering sketches, specifications, calculations, reports, etc., for each work element shall be provided. The work plan shall include, but not be limited to, the following.

- Identify the objective, technical approach, and organizational structure.
- Describe the technical scope of work to be performed for each task including, but not limited to, those listed in Sections 3.0 and 4.0. To the extent possible, describe the level of details planned for each task.
- For each task, identify the activities to be performed, and list specific documents and types of design sketches/diagrams/schedules to be produced. When appropriate, include a bar chart schedule with total resources required, including estimated staff hours.

- Include the contract master schedule per Section 3.4.2.

The work plan shall meet all deliverables and CD work scope as defined in the latest approved SOW. The work plan shall include all applicable items defined in Sections 3.0 and 4.0 of this SOW. The work plan shall be submitted for TR review and approval. FDNW shall maintain the approved CD work plan, review at a minimum on a monthly basis, and inform the TR of any changes or deviations that will result in changes to the CD work scope and schedule.

3.4 BUSINESS MANAGEMENT

3.4.1 Project Planning and Budgeting

FDNW shall provide support (mainly a schedule, monthly report, and cost roll-up) and develop information, as requested by the TR's Project Office, to support preparation of documentation as required for budget submittals and other planning activities.

3.4.2 Work Planning and Scheduling

The project summary work breakdown structure (PSWBS), shown in Table 3-1, shall be used by FDNW as the basis for developing its own CWBS. FDNW's work definitions, budgets, schedules, and cost estimates shall be prepared in accordance with the their CWBS.

Table 3-1. Project Summary Work Breakdown Structure.

Work breakdown structure number	Title
1	TWRS Program
1.3	Waste Disposal
1.3.4	Storage and Disposal
1.3.4.1	Low-level waste disposal
1.3.4.1.1	Project Administration
1.3.4.1.1.1	Maintenance of Fiscal Year Work Plan
1.3.4.1.1.2	Prepare Activity Data Sheet
1.3.4.1.1.3	Prepare Multiyear Program Plan
1.3.4.1.1.4	Project Management Support
1.3.4.1.2	Systems Definition
1.3.4.1.2.1	Incidental waste
1.3.4.1.2.2	Initial Storage Design Requirements Document
1.3.4.1.2.3	Privatization Interface
1.3.4.1.2.4	PA Team/Disposal Project Interface
1.3.4.1.2.5	Interim Storage Facility Permitting Requirements
1.3.4.1.3	Performance Assessment
1.3.4.1.4	Facilities
1.3.4.1.4.1	Initial Storage (W-465)
1.3.4.1.4.2	Project Manager
1.3.4.1.4.3	Conceptual Design
1.3.4.1.4.4	Definitive Design
1.3.4.1.4.5	Construction/Startup
1.3.4.2.2	Operations
1.3.4.2.2.1	Pre-Production Operations
1.3.4.2.2.2	Phase I/II Operations
1.3.4.2.2.3	Post-Production Operations
1.3.4.2.4.4	Deactivation

FDNW shall prepare a contract master schedule. This schedule shall be developed in sufficient detail to plan and control the required work tasks. The schedule shall be included in the work plan and contain the following:

- Be a time-phased, resource-loaded, logic-based schedule for all CD tasks
- Indicate key deliverables, including those required by this SOW
- Be supported by lower-level discipline schedules as necessary
- The schedule should be reviewed monthly and updated to reflect agreed-upon changes, and placed under change control.

3.4.3 Work Breakdown Structure

FDNW shall develop a CWBS for review and approval by the TR. The CWBS shall identify all work to be accomplished. All planning and performance measurement shall be based on the approved CWBS and include the following requirements.

- Be compatible with and support the PSWBS.
- Provide for a logical CWBS and PSWBS roll up of all budget, earned-value, and cost data.
- Provide a CWBS dictionary description for each element.

3.4.4 Work Authorization and Funds Control

All work authorization and funds control and changes to work scope resulting from technical direction issued by the TR's Project Office shall be in accordance with the FDNW "master contract."

3.4.5 Performance Measurement and Reporting

FDNW shall submit and provide cost and schedule input on the last Monday of the fiscal month in accordance with the TR's Project Office requirements, that provide integrated CWBS cost/schedule data for measuring performance. Earned value progress and any changes in the latest revised estimate shall be included in the cost performance report with variance explanations. All of FDNW's detailed budget information (staff hours and dollars) below the CWBS level shall be available for review by the TR as required.

Variance analysis shall be on the current month and cumulative-to-date, and shall include cause, effect, and corrective action. Variance analysis shall be prepared at the CWBS level with explanation lower as required to adequately address problems (offsetting variances). Variance analysis thresholds (current month and cumulative-to-date) shall be given by the TR.

3.4.6 Management Reports, Meetings, and Reviews

3.4.6.1 Management Reports. FDNW shall provide monthly activity status reports that shall be submitted with the cost performance reports and shall include, but not be limited to, the following information:

- Project manager's narrative highlights and status assessment for each CWBS element including activities planned for the next month
- Issues/concerns (cost, schedule, technical), recommended resolution, and progress toward resolution
- New or outstanding agreements and/or commitments for problem or technical issue resolution.

3.4.6.2 Kick-Off Meeting. A design kickoff meeting will be held at FDNW's offices after issuance of a Notice To Proceed. The meeting will provide a "facilitated partnering session", set up by the TR, for RL project management, and the principals of FDNW before preparation of the work plan. This meeting will focus on a discussion of the CD work scope and the goal, role, and responsibility of each project participant. Pertinent documents also will be reviewed and discussed. FDNW will explain how they intend to take advantage of previous experience and personnel.

3.4.6.3 Monthly Review Meetings. Monthly meetings shall be held at the FDNW offices, before issuance of the monthly report or immediately thereafter, to review work progress. During these meetings, FDNW shall present project technical progress, cost, and schedule status for each task. During the presentation, FDNW shall identify existing or anticipated problem areas for each task (including impacts); and discuss corrective actions reporting on progress towards their closure. FDNW shall prepare and distribute the meeting minutes within 10 working days after the meeting. Minutes shall emphasize agreements, commitments, and planned actions. The minutes text shall receive the TR's management concurrence before minutes issuance.

3.4.6.4 Design Completion and Design Reviews. Design review meetings shall be convened at the 30 percent and 90 percent completion points to ensure that the design objectives are being achieved. An in-process 60 percent design review will be held as described below.Design reviews shall be identified in the work plan. The following definitions for

design reviews will be considered the minimum requirements with final details as negotiated with FDNW.

A 30 percent design completion is the point when a flowsheet or material handling diagram has sufficient detail to be the basis for a single design approach from that point forward, (e.g., various design concepts have been developed and evaluated such that a single concept is selected for development into the final design). Deliverables include the following:

- Entry concept--preferred options considered, sketches, layouts, etc.
- A CDR outline
- Transport system concept - sketches, configuration, etc.
- Flowsheet(s) or material flow diagrams (MFD), including throughput; product description and characteristics; and interfaces with other projects, existing and future facilities
- A description of existing conditions, facility, and available equipment
- A single design concept for further development including sketches in sufficient detail to convey the concept
- Any uncertainties that require resolution and the stage at which resolution must occur
- Outline and approach to all other CD issues.

A 60 percent design completion will be the point where detailed sketch drafts and draft outline specifications are available for initial review such that sufficient detail is provided so that the design development can be well understood. The design and construction approach should be understood and agreed to at this point (build to print, performance specification, design-build, etc.). See Schedule Section 2.4.

A 90 percent design completion is the point where FDNW has completed all the design media for that stage of design and is ready to submit the entire design package to the design agent for review. Further work on any portion of the package is limited to incorporating design review comments from the design authorities review. The principal deliverables at 90 percent are as follows:

- Executive summary
- Existing conditions/configuration description

- Construction access assessment
- Preliminary structural analysis
- Outline specifications
- A completed sketch package
- A major equipment list
- Cost estimate (TEC), and BA/BO schedule
- Flowsheet(s)/MFD(s)
- Definitive Design schedule
- Construction schedule.

For the 30 percent design review, FDNW shall plan a one to two day meeting at their offices with the principals of FDNW and the TR to reach a consensus of the 30 percent approach above. Comments about the content will be informally (via sketch markups, and/or note, letter type responses) issued, and only those things found to be of significant technical nature will be formally documented, action traced and resolved in a timely fashion, to not jeopardize design completion.

For the 90 percent formal review, FDNW and the TR shall pre-agree on the location for this meeting depending upon timing, staff, etc., and shall be conducted in accordance with requirements of the TR's Project Office design procedures and guidelines.

At the completion of the Conceptual Design and before transmittal of the FDNW design package for review, a summary level "walk-through" of the design shall be presented by FDNW's lead engineer, after which final review comments will be prepared and submitted, by the TR, to FDNW.

All three of these reviews shall be indicated on the contractor master schedule.

3.4.6.5 Coordination Meetings. Coordination meetings, including telephone conferences, will be held, as required, between the TR and FDNW to discuss various project issues as they arise. Meeting minutes will be prepared by FDNW and issued to the meeting participants within three working days of the meeting for review and comments. Meeting minutes shall be issued within seven working days of the meeting. The minutes text shall receive the TR's Project Office concurrence before minutes issuance.

3.4.6.6 Communications. Any oral communications (including telephone conferences and meeting minutes), or informal written communications (e.g.,cc:mail, facsimiles), having an

impact on the approved workscope shall be brought to the attention of the TR by FDNW as soon as possible, but absolutely before any action is taken by FDNW. If appropriate, these communications will be formalized by official written communication from the TR.

3.5 DOCUMENT REQUIREMENTS

Record documents and contract documents will be generated during the course of the design. Record documents are those end-item documents required by this SOW. Contract documents are those documents that implement the contract and include the contract and all requirements, references, records, and other related documents.

3.5.1 General Data

All engineering sketches shall be prepared using a computer-aided design and drafting (CADD) process. Any exceptions shall be identified and submitted for the TR's Project Office approval. Software used for CADD tools must be available to the TR. If A-E proprietary software is used, the TR shall have free access to it after the CD phase. All commercial software user rights will be transferred to the TR on or before the project completion.

Full-size sketches shall be 71 by 102 cm (28 by 40 in.). Reduced sketches can be 36 by 50 cm (14 by 20 in.) if mutually agreed upon by the TR and FDNW. Sketches included in topical reports can be 28 by 43 cm (11 by 17 in.) or 21 by 28 cm (8.5 by 11 in.). Sketch sizes other than those listed may be accepted on a mutually agreed upon basis. Reproducibles for sketches shall be furnished by FDNW pending approval by the TR.

3.5.2 Document Control

Preparation, identification, approval, transmittal, and final disposition of record documents shall conform to FDNW's established procedures or special instructions. Use of contract documents shall be controlled in accordance with FDNW's established procedures or special instructions.

3.5.3 Document Identification and Format

3.5.3.1 Numbering System. FDNW is required to use a numbering system for all documents, including correspondence, technical reports, sketches and specifications, etc. The numbering system will be developed by FDNW and concurred with by the TR.

3.5.3.2 Format. Each deliverable record document shall show the following:

- Project and contract identification
  - ILAW Interim Storage Facility
  - Project number: W-465
  - Contract number: To be determined
- Originating firm's name
- End-item document title
- Work breakdown structure (WBS) number
- Document identification number (on each page)
- Document descriptive title
- Revision or addendum number or letter (on each page with revised portion of the page indicated)
- Issue or revision date (released documents only)
- Total number of pages and number of each page
- Table of contents or attachments (as needed)
- Approval signature and title of responsible person in originating firm (for released documents only).

3.5.3.3 Engineering Sketches. Sketch numbers will be provided by the TR. Each sketch shall include a list of interfacing sketches.

3.5.4 Document Approval

All engineering sketches and technical documents submitted to the TR's Project Office for review shall first be thoroughly reviewed by appropriate members of FDNW's technical staff. Final engineering sketches, reports, and documents submitted for TR acceptance shall be approved by FDNW. FDNW shall have written procedures in place that delineate the requirements for reviewing, checking, technical editing, and approval of documents before issuance.

Acceptance by the TR is the act of reviewing an activity or document, and acknowledging that it may be used for the purpose intended at that time. Acceptance by the

TR does not ensure that future changes will not be required, and does not convey or imply approval, or assumption of responsibility for the activity or document. The originator remains fully responsible for all aspects of the activity or document, for fulfilling all specifications, and for any other obligation or liability otherwise arising under a specification, agreement, or contract.

3.5.5 Document Transmittal

Unless otherwise agreed upon, transmittal of record documents shall include one reproducible and 10 copies. For documents larger than 21 by 28 cm (8.5 by 11 in.), full-size, photo-quality reproducibles shall be included. Transmittal of record documents produced electronically shall include indices that identify directory and data set file names. Transmittals shall be documented on a suitable, sequentially numbered form that contains a standard document identification number, distribution, and space for reviewers to note the disposition of listed attachments in accordance with DOE Order 1324.5B, Records Management Program (DOE 1995) and the FDNW Project document transmittal procedure.

3.5.6 Record Files

Record files with current and previous revisions shall be maintained for record documents in accordance with FDNW's approved configuration control program. At the conclusion of CD, the TR will advise FDNW of the file's disposition. FDNW shall keep duplicate copies of data to meet code or legal requirements, as necessary.

3.6 QUALITY ASSURANCE

FDNW shall have an established QA Program that complies with those sections of 10 CFR 830.120, "Quality Assurance," that are relevant to the particular tasks being performed.

3.6.1 Audit Accessibility

FDNW shall provide access to all documents, files, and workstations for purposes of audit or surveillance of ongoing activities by the TR and/or RL, their designated agents. FDNW shall provide support, as requested, for audits or surveillances conducted by the Buyer, or the TR in conjunction with other project participants and specialists.

3.7 SYSTEMS ENGINEERING MANAGEMENT

The TR Systems Engineering requirements will be satisfied if, as a minimum the following elements are provided as part of the CDR: Project Design Concepts; Outline Design Specifications; Logistics Plans (MFDs); Project Management Reports; and if required Results of Ventilation Calculations including an Energy Conservation Report, and piping and instrumentation diagrams (P&IDs). One exception to this list is Project Interface Control Documents.

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4.0 DESCRIPTION OF REQUIRED SERVICES

FDNW is the fully responsible design agent for translating Project requirements into a cost-effective CD that satisfies all programmatic and technical requirements. The tasks described in this section are those that the TR has specifically identified as necessary for CD development but does not include "all technical tasks" that are necessary to produce an acceptable CD. FDNW is required to supplement this task list by adding other necessary work items or upgrading the TR's work scope definition of identified tasks, as necessary to satisfy its assessment of the effort needed to produce an acceptable CD satisfying all technical and quality requirements.

4.1 DESIGN OBJECTIVES

The overall CD objective is to develop an initial project cost and schedule baseline, consistent with program goals, that defines the project cost, and schedule performance. The CDR effectively forms a significant fraction of the initial project design requirements baseline (DRB) through the development of supporting documents as identified in Table 2-1.

The principal objectives of the CD are as follows:

- Develop Grout Vault(s) retrofit modifications and a transportation system to a level of detail sufficient to develop budget validation documents, in accordance with the schedule in Table 2-2.

- Develop a Remote Handling system and a Maintenance building (with cleanup considerations for "contaminated versus non-contaminated" trucks, cranes, casks, etc., trade-offs for doing this work in other existing site facilities) in support of the Grout Vaults.

- A single method of ingress/egress was not agreed to (of the three methods in the AGA report). Therefore, this needs identification early in the conceptual stage and before the 30 percent design stage.

- Identify engineering assessments which could reduce technical uncertainties and project cost. Perform such assessments as directed by the TR.

- Establish the initial cost and schedule project baseline, further define the technical scope and document them in a CDR.

4.2 WORK ITEMS

FDNW is required to perform, at a minimum, the following Project activities:

1. Review preliminary information (include identification of all documents to be used from Project B-714) provided for the Project (Section 2.6).

2. Update the current Engineering Work Plan, Revision 2 (dated August 13, 1996), in accordance with Section 3.3, that describes the means by which FDNW will prepare the CD, including specific technical tasks identified in this SOW. In addition, provide the services defined in this SOW. Fully define the level of technical detail that will be provided in the design media, such as plant arrangements, electrical one-line diagrams, flow diagrams, piping and instrumentation diagrams, and other relevant depictions. These design media shall adequately present the ILAW interim storage facility design concept by outlining new and modified facility features, vault arrangements, etc.

3. Prepare a CDR that meets the requirements of the DRD (Burbank 1996b), and establish the project cost estimate and schedule. The CDR shall describe the ILAW interim storage facility, and address the risks and uncertainties associated with the selected design concept(s). The CDR also shall include the BA/BO schedules and project deliverable schedules.

4. Prepare a project cost estimate at the WBS level, based on techniques such as material takeoffs and vendor quotations, and recent facility (i.e., Spent Nuclear Fuel transport system truck, trailer, cask, etc.) costs. The estimate shall use rates included in approved Hanford Site construction estimate factors. The BA/BO schedules, estimator's work sheets, vendor quotations, and basis of the estimate for each item shall be included. FDNW shall develop a total estimated cost (TEC) with contingency. The Project cost estimate data shall be electronically stored, and shall be capable of providing information sorts by DOE code, WBS, work package, facility, system, and Construction Specification Institute format.

5. Development of the construction schedules for the overall ILAW Interim Storage Facility Project including all its major components. Prepare, as a minimum, a preliminary list of items for the following:

   - Long lead equipment
   - Long lead time for fabrication
   - Major equipment
   - Safety Class equipment.

6. Perform all engineering tasks necessary to develop a CD of the ILAW Interim Storage Facility Project that depicts new and modified facility features, transportation system and equipment arrangements. Conceptual Design sketches

(with related design analyses), and outline specifications, shall be prepared and issued to document new and modified design features and related design analyses, and to establish the engineering baseline for support systems, and facilities in a cost-effective manner. As a minimum, the following types of engineering sketches, and outline specifications shall be developed, as required, to depict new installation of and retrofit modification to structures, systems, and components:

- Site plans
- Site layout
- Flow Sheets
- Architecture/Civil/Structural
- General arrangement
- Space allocations
- Electrical
- Mechanical
- Communication system
- Fire detection/protection
- HVAC
- Transportation systems
- Support systems.
- Infrastructure interfaces
- Life Safety.

To the maximum extent possible, use of existing (i.e., B-714) engineering documents and studies shall be made to develop the CDR.

7. Prepare a preliminary project interface control document. Identify all ILAW Interim Storage Facility interfaces between it and facility systems, and facilities outside the vaults. Particular emphasis shall be directed towards interface requirements related to the ILAW production facilities and Hanford Site infrastructure. Define the following, at a minimum:

   - Physical interface points and requirements, new and retrofit facility modifications, including transportation systems (e.g., size requirements; handling features, such as lifting pintle design, flow capacity, pressure, and materials of construction).

   - Functional interfaces such as effluents, solid waste, support facilities, etc. not covered by the existing facility operation.

   - Technical requirements of interfacing facilities/system for new and retrofit modifications.

   Where interface information is available, and required for design, it shall be so noted in the interface control document.

8. Provide design feature input, to the Safety Analysis organization, for development of a preliminary safety evaluation (PSE) as requested by the TR's Project office. Include support for the following activities:

    a. Support development of preliminary hazards assessments.

    b. Support development of a summary-level listing of radioactive and hazardous material inventories.

    c. Development of a summary-level report that specifies safety-related design criteria applicable to the project and generally describes how the design will meet these criteria.

    d. Support development and screening of potential accident scenarios, based on preliminary design concepts, hazards assessments, hazardous material inventories, and safety class designations.

9. Prepare topical reports to document significant technical findings and/or describe significant Value Engineering studies for those items specified in Section 2.1, and recommendations. For each individual task, prepare a summary task plan that identifies the specific areas to be addressed. The task plan shall clearly describe the work scope, resource requirements, assumptions, schedule, and deliverables. Each report shall clearly summarize the results of the studies and design recommendations. Special tasks that require topical reports shall include, but not be limited to, the following.

    a. Modifications to the existing Grout Vaults will require engineering analysis and structural re-qualification for the structure, and crane rail supports.

    b. Perform required preliminary shielding analyses and calculations, which shall be included in the CDR. The TR will review and concur with source terms, and bases for assumptions, in support of the shielding design .

    c. Evaluate whether the existing (Grout Vaults as modified) safety classification, components, and structures are sufficient for the Project interim storage mission. (i.e., ICF KH A/E STD GC-LOAD-01). Determine preliminary safety class designations for new and modified systems, components, and structures. Prepare and issue a safety class designation document.

10. Provide material flow diagrams, necessary to support CD development. This work element requires a conceptual engineering effort to develop a physical process flow (time/motion) description for ILAW onsite transport and emplacement into interim storage (i.e., operational steps, sequences, durations, etc. associated with the movement of ILAW boxes from production facilities

through interim storage). Also, determine the number of on-site casks and transporters required to support the receipt rate. The basis for the above statements are specified in the DRD (Burbank 1996b).

The box/container physical process flow shall cover the period beginning with receipt at the production facility, through transport to and unloading at the Grout Vaults. At the time of acceptance, the ILAW canister or boxes are contained within an onsite shipping cask that is ready to be loaded on a transportation vehicle. The shipping cask has been certified by the producer to satisfy all onsite transport requirements (e.g., leak-tight, free of surface contamination, etc.).

The existing Grout Vault design is based on a specific concept for the receipt of waste certification data packages to the grout vaults that have been determined to be the accepted approach for use per the Alternatives Generation and Analysis Report for Immobilized Low-Level Waste Interim Storage Architecture (Burbank 1996a). More than one concept of vault entry for waste emplacement was developed but a preferred option was not selected. Access concepts must be evaluated and a preferred alternative selected early in Conceptual Design as a basis for proceeding.

11. As part of design development for process systems, support systems, and facilities, FDNW may be directed to perform additional (not routine design) special studies/tasks, by the TR, to evaluate alternatives and document design recommendations. After such formal direction is provided, then FDNW shall proceed with the following as guidance: Such studies shall be documented in topical reports that contain technical findings, tradeoffs, developments, analysis performed, recommendations, etc. A standard format shall be developed by FDNW with concurrence from the TR for use in preparing study reports. A detailed outline, including alternatives to be evaluated, work statements, decision hold points, and cost and schedule of each study, in the standard format, shall be submitted for TR approval. Once approved for execution, each task shall be monitored under a traceable budget and schedule baseline.

    Alternatives selected for evaluation in a study shall not be limited to the requirements of the baseline documents. Selected alternatives shall be documented and maintained, and shall become part of the final documentation or report file. Proposed changes to the baseline documents that are necessary to implement the approved study recommendation shall be submitted for TR approval before the changes are implemented. These studies, in addition to studies performed during the normal course of FDNW's work, shall be reviewed in accordance with the design review procedure. The potential cost savings associated with each study alternative shall be quantified by performing a rough order-of-magnitude (ROM) cost estimate in conjunction with study preparation. Each ROM cost estimate shall be prepared at the direct cost level.

12. Develop preliminary process control philosophies, potential failure recovery features, and process operation sequences as required to define new features and retrofit modifications.

4.2.1 Design Media Transmittal

All information and design media developed during the CD phase, including all support data necessary to understand the basis and assumptions for the design, must be forwarded to the TR for use as a basis in future design phases.

5.0 REFERENCES

10 CFR 830.120, "Quality Assurance," Code of Federal Regulations, as amended.

Burbank, D. A., 1996a, Alternatives Generation and Analysis Report for Immobilized Low-Level Waste Interim Storage Architecture, WHC-SD-W465-AGA-001, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Burbank, D. A., 1996b, Design Requirements Document for Immobilized Low-Activity Waste Interim Storage, HNF-SD-W465-DRD-001, Rev. 0 (to be released), SGN Eurisys Services Corporation, Richland, Washington.

DOE, 1991, Records Management Program, DOE Order 1324.5B, U.S. Department of Energy, Washington, D.C.

RL, 1996, TWRS Privatization Request for Proposals, DE-RP06-96RL13308, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Taylor, W. J., 1996, letter to the President, Westinghouse Hanford Company, Richland, Washington, 96-WDD-149, (September 27), U.S. Department of Energy, Richland, Washington.

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6.0 GLOSSARY

LIST OF TERMS

A-E	Architect-Engineer
ADP	Automated Data Processing
AGA	Alternative Generation and Analysis
ANTP	After notice to proceed
AWP	Approved work plan
BA/BO	Budget authorized/budget obligation
CADD	Computer-aided design and drafting
CD	Conceptual design
CDR	Conceptual design report
CFR	Code of Federal Regulations
CWBS	Contractor work breakdown structure
DOE	U.S. Department of Energy
DRB	Design requirements baseline
DRD	Design requirements document
FDH	Fluor Daniel Hanford
FDNW	Fluor Daniel Northwest
GTF	Grout Treatment Facility
HLW	High-level waste
HVAC	Heating, ventilating, and air conditioning
ILAW	Immobilized low-activity waste
MFD	Material flow diagrams
P&ID	Piping and instrumentation diagram
PSE	Preliminary Safety Evaluation
PSWBS	Project summary work breakdown structure
QA	Quality assurance
RL	U.S. Department of Energy, Richland Operations Office
ROM	Rough-order-of-magnitude
SOW	Statement of work
TBD	To be determined
TEC	Total estimated cost

LIST OF TERMS

TR	Technical Representative
TWRS	Tank Waste Remediation System
WBS	Work breakdown structure

DISTRIBUTION SHEET

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