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ENGINEERING DATA TRANSMITTAL

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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)	(H)	SIGNATURE/DISTRIBUTION								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1,2	1	Cog. Eng. L. M. McWethy	<i>[Signature]</i>	5/21/96	R3-48	P. L. Smith	<i>[Signature]</i>	5/21/96	R3-08	1,2	1
1,2	1	Cog. Mgr. C. J. Alderman	<i>[Signature]</i>	5/21/96	R3-48	J. R. Thielges	<i>[Signature]</i>	5/21/96	L6-38	1,2	1
1,2	1	V. C. Boyles	<i>[Signature]</i>	5/22/96	R1-43						
1,2	1	J. D. Guberski	<i>[Signature]</i>	5-22-96	R1-43						
1,2	1	O. M. Holgado	<i>[Signature]</i>	5-21-96	ST-41						
1,2	1	C. A. Sams	<i>[Signature]</i>	5/22/96	SS-13						
1,2	1	C. P. Shaw	<i>[Signature]</i>	5/23/96	HS-09						

18. L. M. McWethy <i>[Signature]</i> Signature of EDT Originator	5/21/96 Date	19. C. J. Alderman <i>[Signature]</i> Authorized Representative of Receiving Organization	5/20/96 Date	20. C. J. Alderman <i>[Signature]</i> Cognizant Manager	5/22/96 Date	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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# Preliminary Design Review Report - Sludge Offload System

L. M. McWethy

WHC, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

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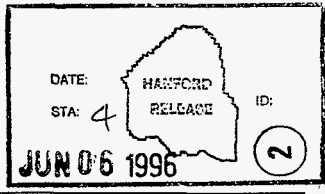
Abstract: This report documents the conceptual design review of the sludge offload system for the Spent Nuclear Fuel Project. The design description, drawings, available analysis, and safety analysis were reviewed by a peer group. The design review comments and resolutions are documented.

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Release Approval

6/5/96  
Date



Release Stamp

Approved for Public Release

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PRELIMINARY DESIGN REVIEW REPORT - SLUDGE OFFLOAD SYSTEM

1.0 Introduction

The scope of the project is the design of a non-permanent offload system for transferring sludge from a transport system into a selected double-shell tank (DST) system. Modifications required for the installation include the addition of a shielded transfer line, a spill retention basin, and support instrumentation for leak monitoring during transfer operations.

2.0 Scope

The committee reviewed the available documentation for the design of the sludge offload system. In particular, the following were reviewed:

- WHC-SD-WM-FDS-052, Rev. 13, Functional Design Criteria for the Sludge Offload System, April 1996.
- Draft document, K Basin Sludge Study Assessment - Preliminary Hazards Identification and Analysis, April 1996.
- Draft drawing, H-14-100727, 4 sheets, Tank AW-103 Temporary Transfer Line Interface Control, January 1996.
- WHC-SD-WM-ES-383, Rev. 0, Shielding Requirements for K Basin Waste Transfer Line, March 8, 1996.

3.0 Summary

The scope of the design review included the Functional Design Criteria document, the conceptual design drawings, the draft PHA for offloading sludge, and the shielding analysis.

After opening remarks, Jim Thielges turned the meeting over to Sherri Brisbin for discussions on the design review comments received. All comments were dispositioned by acceptance, rejection or identifying necessary actions to close the comments. The completed Review Comment Data Base is attached to document this review process.

Jim Thielges then led the discussion of the design review checklist. The approved checklist is attached. The action items identified for the

committee during the review were discussed and are also attached. This concluded the design review meeting.

The design review committee noted the change in preferred location for sludge disposal. It is considered 99% likely that the tank AW 105 will be used for sludge disposal. For subsequent design purposes, tank AW 105 should be assumed. This change satisfies Action Item 3 (Appendix D).

The Design Review Committee concluded that the design requirements are sufficiently defined to proceed with detailed design.

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APPENDIX A

Design Review Committee Members

DESIGN REVIEW COMMITTEE MEMBERS

Chairman	J.R. Thielges
Secretary	L.M. McWethy
QA	C.A. Sams
Safety	P.L. Smith
Environmental	J.D. Guberski
Facility Rep	V.C. Boyles
Mechanical	C.P. Shaw
DOE Rep	O.M. Holgado

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APPENDIX B

Attendees List for the Preliminary Design Review



ATTENDEES LIST FOR THE PRELIMINARY DESIGN REVIEW - APRIL 30, 1996

<u>Name</u>	<u>Telephone</u>	<u>Organization</u>
C.J. Alderman	376-1796	SNF Engr. Support
V.C. Boyles	373-1321	Evaporator Support
S.A. Brisbin	376-9180	SNF Engr. Support
D.W. Crass	372-2034	TWRS/TSI
O.M. Holgado	373-0598	DOE RL/SFD
L.M. McWethy	376-9507	SNF Engr. Support
F.W. Moore	373-4079	SNF K Basins Projects
K.L. Pearce	376-3782	SNF Engr. Support
D.R. Precechtel	376-3329	SNF Engr. Support
J.R. Thielges	376-9029	ETTP-ED
C.A. Sams	373-9618	TWRS QA
C.P. Shaw	376-0814	TWRS DBEE
P.L. Smith	372-2471	TWRS-NSS
A.F. Wellner	372-1101	Engr. Support
H.H. Ziada	376-0910	TWRS D.A.

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APPENDIX C

Design Review Checklist

WHC-SD-SNF-DRR-008, Rev. 0  
K-BASINS SLUDGE OFFLOAD SYSTEM  
CONCEPTUAL DESIGN REVIEW CHECKLIST

Documents Reviewed:

- "Functional Design Criteria for the K-Basins Sludge Offload System," Draft SD-WM-FDC-052, Rev. B.
- Draft Shielding calculations
- Preliminary Hazards Analysis
- Interface drawing H-14-100727, "Tank AW-103 Temporary Transfer Line Interface Control"

Yes

No

NA

- |                                     |                          |                          |   |
|-------------------------------------|--------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Were the design inputs correctly selected?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are assumptions necessary to perform the design activity adequately described and reasonable? |

Assumptions changing tank to AW-105

- |                                     |                          |                          |   |
|-------------------------------------|--------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed? |
|-------------------------------------|--------------------------|--------------------------|---|

Will be entered into data base and tracked

- |                                     |                          |                          |  |
|-------------------------------------|--------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Was an appropriate design method used? |
|-------------------------------------|--------------------------|--------------------------|--|

In accordanced with WHC Engineering Practices

- |                                     |                          |                                     |   |
|-------------------------------------|--------------------------|-------------------------------------|---|
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Were the design inputs correctly incorporated into the design?  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Is the design output reasonable compared to design inputs?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions? |

With incorporation of RCR comments

- |                                     |                          |                          |   |
|-------------------------------------|--------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Does the design meet established requirements for associated system physical and functional interfaces? |
|-------------------------------------|--------------------------|--------------------------|---|

With incorporation of RCR comments and tank change assumption.

*J. Thielges, Chairman*  
Checklist Completed By

4/30/96  
Date

APPENDIX D

Action Item List

Action Item List

<u>Action Item</u>	<u>Due Date</u>
• Dennis Crass will talk to John Strelow on the natural forces requirements identified in GC-LOAD-01.	May 15
• Hassan Ziada will determine the classification of the offload project as a major project subject to restrictive dose rate requirements or not.	May 15
• The Design Review Committee will document the change from the reference tank being AW-103 to it being AW-105 (99% confidence).	May 15
• Kathleen Pearce will report the Safety Class of the Offload System equipment as soon as identified by the ongoing safety analysis study.	May 15
• Kathleen Pearce will identify the TWRS DOE person responsibility for approval of the FDC.	May 15
• Hassan Ziada will identify the detailed requirements appropriate for inclusion in the initial release of the FDC and provide them for inclusion as soon as possible.	May 17

APPENDIX E

Review Comment Record

# REVIEW COMMENT RECORD (RCR)

1. Date 4/24/96	2. Review No. 1
3. Project No. A.13	4. Page 1 of 1

5. Document Number(s)/Title(s) Dwg. H-14-100727	6. Program/Project/ Building Number Spent Nuclear Fuels/Proj. A.13/AW	7. Reviewer V. C. Boyles	8. Organization/Group Evaporator Project	9. Location/Phone 2750E/373-1321
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17. Comment Submittal Approval:  Organization Manager (Optional) _____	10. Agreement with indicated comment disposition(s)  Date <u>5/22/96</u>	11. CLOSED  Date _____	14. Hold Point  Date _____
	<i>VC Boyles</i> Reviewer/Point of Contact _____ Author/Originator	Reviewer/Point of Contact _____ Author/Originator	

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Tank AW-105 is now the receiver tank.		Accept.	
2	Move the leak retention pad to AW-105 similar to current dwg. except rotate pad 180 degrees. Bring truck in from the eastern gate south to the end of farm and turn north on the west side of AW-105.		Accept.	
3	For water supply activate the abandoned water line near the flush pit that runs south through the middle of the tank farm. See drawing H-2-70407 zone E/5 and H-2-70401 (E022104). The cut and capped portion near the flush pit will need to be reattached. A short section of overground pipe would be needed adjacent to AW-105. Heat trace the overground portion.		Not Accepted. A hose with freeze protection will be provided.	
4	Use prior design of overground system. Suggest reducing proposed line size (sludge distributor nozzle is only 1" dia.). Look at existing design on ECN's 626427, 618349 and 626429, drawing H-2-818284 (shielding) and pit entry spool pieces and mods. on ECN's 620379, 622123, 622514 and 624949.		Accept.	
5	Do not tie into the blank nozzle into the pit as currently proposed. Cut a slot in the pit cover and using a flex tie directly to pump. This will simplify design and minimize removal costs as well as ALARA.		This alternative will be evaluated by the design agent and the reviewer.	

*the distributor  
VCB  
5/22/96*

*rigid jumper  
VCB  
5/22/96*

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">4/24/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">1 of 1</p>

5. Document Number(s)/Title(s)  WHC-SD-WM-FDC-052, Rev. B Functional Design Criteria For The Sludge Offload System	6. Program/Project/ Building Number Spent Nuclear Fuels/Proj.A.13/AW	7. Reviewer  V. C. Boyles	8. Organization/Group  Evaporator Project	9. Location/Phone  2750E/373-1321
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17. Comment Submittal Approval: \_\_\_\_\_ 10. Agreement with indicated comment disposition(s) 11. CLOSED

Organization Manager (Optional) \_\_\_\_\_ Date 5/22/96 Reviewer/Point of Contact V.C. Boyles Reviewer/Point of Contact \_\_\_\_\_

Author/Originator \_\_\_\_\_ Author/Originator \_\_\_\_\_

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Pg.9,Sec.3.2.1. Add Leak Detectors will be installed and operable		Accept.	
2	Pg.9,Sec.3.2.1 Delete last bullet. Not needed		Accept.	
3	Pg.9,Sec.3.2.2 first bullet. Reduce flow to minimize life cycle costs. Suggest 50gpm or less. Piping would also be downsized.		Accept.	
4	Pg.10,Sec.3.2.2 Add bullet. Transfer system shall have the capability to be water flushed.		Accept.	
5	Pg.15,Sec.5.1.4 Consider raising the 0.5m/hr reqmt. Seems low if we are transferring 100 gpm. (Transfer would only take 10 minutes if it was a 1000 gallon transfer).		Accept.	
6	Pg.26,Sec.7.0 Add SAR SD-WM-SAR-034, Rev.0-A Addendum		Accept.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">4/24/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">1 of 1</p>

5. Document Number(s)/Title(s) K-Basin Sludge Assessment-April 1996	6. Program/Project/ Building Number Spent Nuclear Fuels/Proj.A.13/AW	7. Reviewer V. C. Boyles	8. Organization/Group Evaporator Project	9. Location/Phone 2750E/373-1321
--	---	-----------------------------	---	-------------------------------------

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional) _____	Date <u>5/22/96</u>	Reviewer/Point of Contact <u>V.C. Boyles</u>
	Author/Originator _____	Author/Originator _____

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Pg.1,2nd par. Tank selection is now tank AW-105 instead of AW-103		Accept.	
2	Pg.9, first par. below bullets. Line size and flowrate may change. Check with Engrg.		Accept.	
3	Pg.10, first par. Refers to a 3" line but page 9 mentions a 2" line. Note also that engrg. may change line sizes to minimize life cycle costs.		Accept.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <b>April 26, 1996</b>	2. Review No.
3. Project No. <b>A.13</b>	4. Page <b>1 of 4</b>

5. Document Number(s)/Title(s) <b>WHC-SD-WM-FDC-052, Rev. B Functional Design Criteria for the Sludge Off-load System.</b>	6. Program/Project/ Building Number <b>K-Basin Sludge Transfer to Tank Farms</b>	7. Reviewer <b>H. H. Ziada</b>	8. Organization/Group <b>TWRS Facility Operations Design Authority</b>	9. Location/Phone <b>H5-S2, ETC-2, Rm 212 376-0910</b>
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional)	<b>S-24-96</b> Date	<i>Hasan H. Ziada</i> Reviewer/Point of Contact
	Date	Date
	Author/Originator	Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Title Page: Shafik Rifaey, manager of TWRS Facility Operations Design Authority Should be included in the WHC Approval.	y	Partially Accept. Will add to EDT. Title page will be deleted.	
2	Contents: Table of contents is not consistent with the text page numbers. The Table should be consistent with the text.	y	Accept.	
3	Sec. 1, general: A system overall description is not provided. A system description should be provided for components, functions of components and systems, and interfaces from beginning to end of the process with other systems. This is important to understand the applicability of the FDC.	y	Accept.	
4	Sec.1.1, Pg. 2, third paragraph, replace: An alternative study, with: Alternative studies.		Accept.	
5	Sec. 1.3, first paragraph: the sentence indicates that the system will in close proximity to the selected DST. Any additional loads on the tanks should be within the tank load capacity. Add to the sentence that the system should be within the tank dome load capacity.	y	Accept.	
6	Sec. 1.4, first sentence: The offload system will interface directly with the selected DST, add: and the transportation system.	y	Accept.	

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WHC-SD-SMF-DRR-008, Rev. 0

# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">April 26, 1996</p>	2. Review No.
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">2 of 4</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
7.	Sec. 1.4, general: this section does not provide details of the interface components, which is helpful in determining the bounds of the offload system. This section should include the description of the interface components such as the connections with the transportation system, the connections with the selected tank riser, etc.	y	Accept.	
8	Sections 2, 3, and 4, general: the FDC does not provide sufficient details to guide the design and analysis of the system. This may result in costly designs and inefficient process. The FDC should provide guidelines for the capacities, dimensions or sizes of the components; applied loads; applicable sections of the code; etc. Some of the needed details appear in the following items.		Accept. Document author will work with reviewer to ensure adequate detail is provided.	
9	Sec. 2.1: first bullet, provide capacity of spill retention basin and the pump associated with it.  Second bullet, specify number of manpower and qualifications.  Fifth bullet, shall provide information on flushing system, instrumentation for leak detection that provided by the transportation system.  Seventh bullet, piping requirements need not to be here, the proper place is in section 3.2 (piping and vessels).	y	Accept.  Not accepted. This is an operational requirement. Manpower and qualification requirements will be identified in operating procedures.  Accept.	
10	Sec. 3.1: provide details on range and sensitivity of instrumentation. Identify applicable sections of DOE 6430.1a and other codes, if possible.	y	Not accepted. Instrument range and sensitivity will be provided in the procurement specification for the transport system.	
11	Sec. 3.0: this section should specify the characteristic of the transferred waste (e.g., concentration of the sludge, viscosity, max. particle size, etc.). This information is essential in designing the system.	y	Accept.	
12	Sec. 3.2.1: fourth bullet states that the transfer line shall discharge into the selected DST via a nozzle or riser. This is wide open, indicating the discharge can be via any opening regardless of size or location, which may lead to a complicated design. Specify that the transfer should be via the central riser, if not feasible should be via a riser close to the center. Also specify the minimum diameter of the riser to be used.		Accept.	y

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# REVIEW COMMENT RECORD (RCR)

1. Date April 26, 1996	2. Review No.
3. Project No. A.13	4. Page 3 of 4

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
13	<p>Sec. 3.2.2: second bullet, the piping requirement is insufficient. Specify the max. or min. piping size and type.</p> <p>Third bullet, specify what are the criticality conditions.</p> <p>Fourth bullet does not provide enough information for design analysis to comply with ASME B31.3. The FDC should provide loading conditions (pressure, seismic, vibration, shock, temperature, etc.) and system requirements (relief systems, isolation, etc.). It also should refer to a structural design criteria, in which the structural requirements and applicable codes will be specified.</p>	y	Accept.	
14	<p>Sec. 3.4.1: the FDC should provide the required capacity of the spill retention basin.</p>	y	Accept.	
15	<p>Sec. 3.4.2: first bullet, the FDC should specify the loads imposed on the basin (truck load and location, seismic, etc.) and specify what is the design code to be used (e.g. AISC or other codes).</p> <p>Third bullet, the FDC should specify the pump capacity, discharge volume, etc. This will help in the design and selection of the pump type, and inlet and outlet piping connections.</p>		Accept.	
16	<p>Sec. 4.3.2: specify capacity of water supply for flushing.</p> <p>Sec. 4.3.6, lighting: the FDC should provide solution if lighting is not sufficient for night operations at tank site.</p>	y	Accept.	
17	<p>Sec. 5.1.1, general: the FDC does not provide safety class at this time. However, the design and analysis cannot proceed without safety class definition. The FDC should provide the safety class of the systems and components as soon as possible in order to proceed in a timely manner.</p>	y	Not accepted. Safety class will be determined and documented by PNNL. A reference will be provided to that document.	
18	<p>Sec. 5.1.4: specify normal and abnormal events.</p>		Not accepted. This will be defined by PNNL.	

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# REVIEW COMMENT RECORD (RCR)

REVIEW COMMENT RECORD (RCR)		1. Date April 26, 1996	2. Review No.
		3. Project No. A.13	4. Page 4 of 4

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
19	Sec. 5.4: specify natural loads to be considered and the design codes to be applied (SDC 4.1, AISC, etc.). Also the safety class has to be known before any evaluation can be done. A structural design criteria should be referred to in this section.	y	Not accepted. Since SDC 4.1 was replaced by GC-LOAD-01 and DOE 6430.1A, criteria is already there.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">April 29, 1996</p>	2. Review No. <p style="text-align: center;">TBD</p>
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">1 of 1</p>

5. Document Number(s)/Title(s) <p style="text-align: center;">Sludge Offload System</p>	6. Program/Project/ Building Number K Basin	7. Reviewer <p style="text-align: center;">Craig Shaw</p>	8. Organization/Group 74F10 TWRS DB Eq. Eng.	9. Location/Phone 2920 GW 376-0814
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional) _____ Date <u>5/23/96</u>	Reviewer/Point of Contact <u>Craig Shaw</u> Date _____	Reviewer/Point of Contact _____ Date _____
Author/Originator _____		Author/Originator _____

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	General: Because of the very conceptual stage of this design no detailed design comments can be given.		Accept.	
2	FDC Sec 2.1 & 2.2 The capabilities to unplug a transfer line need to be added. Probably a high pressure water source which could direct the plug to either the tank or transport container. The pressure required to remove a plug will likely set the design pressure of the transfer pipe.		Accept.	
3	The rheology of the sludge must be at least approximated, i.e viscosity and solids settling etc. to design the pump and transfer line.		Accept. Will provide or reference rheology information.	
4	Safety Assessment: 3.1.2 Container. The baffles to mitigate sloshing will make internal decontamination much harder. Will the benefit of the baffles be greater than their harm?		Baffles will not be provided. Sloshing will be administratively controlled by limiting speed.	
5	The SA contains "After the sludge is loaded into the container, the container contents will be sampled and chemically adjusted to meet AW tank farm acceptance criteria." No way to do this is mentioned in the drawings or FDC.		Sampling and chemical adjustment will be performed at the K Basin prior to shipment.	
6	Make sure the HEPA filters for the container vent have their effectiveness rated at "zero" flow.		This comment will be included in the procurement specification for the transport system.	
7	SA sec 3.2 Be careful in how the acceptance criteria for the "helium leak test" is worded. When checked with helium almost nothing is zero leak. You will need to specify a leak rate and a method of checking		The container will be designed with the capability of being leak tested; however, helium leak testing is not planned due to ALARA considerations.	
8	H-14-100727 What is the leak retention pad made from, steel, concrete, wood?		The liner is a commercialy available poly liner designed specifically for a tanker truck.	

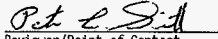
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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">4/29/96</p>	2. Review No. <p style="text-align: center;">451.96</p>
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">1 of 3</p>

5. Document Number(s)/Title(s)  K-BASINS SLUDGE OFFLOAD SYSTEM CONCEPTUAL DESIGN REVIEW	6. Program/Project/ Building Number A.13	7. Reviewer  PETER L. SMITH	8. Organization/Group  TWRS-NSS	9. Location/Phone  BLDG. 2751, D111 372-2471
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional) _____	Date <u>5/23/96</u>	Date _____
	 Reviewer/Point of Contact	Reviewer/Point of Contact _____ Author/Originator _____

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	In the FDC on Page 1 a paragraph on the KW fuel storage basin seems to have been inadvertently deleted.		Not accepted. This section was intentionally removed as requested by other reviewers.	
2	In the FDC on Page 7, Paragraph 2.2, add DOE Order 6430.1A to the second bullet to be consistent with Paragraph 5.4, and to be more inclusive of requirements.		Accept.	
3	In the FDC on Page 16, as a minimum a paragraph on Industrial Hygiene must be added with their manual CM-1-11. Also, the fire protection manual should be added, CM-4-41. Since the Nuclear Safety group is the key group in coordinating the review of all documents, it would be appropriate to include a paragraph on Nuclear Safety. We are included in Paragraph 5.1.1 in a loose manner, and you could expand this paragraph.		Accept.	
4	In the FDC on Pages 22 thru 26, some redundancy exists; i.e. documents are listed in both Paragraph 6.0 and 7.0. ASME B31.3 is not listed and other documents could be added. I would suggest a review of the Replacement Cross-Site Transfer System(W-058 Project) FDC to aid in developing a complete list of documents.		Accept.	
5	All of the following comments are applicable to the PHA. Figure 2.1 is written in hieroglyphics, please make it intelligible.		Accept.	
6	In Table 2.1 on Page 4 please add reverse flow, high temperature, and wrong material added.		Will review to determine if these elements need to be added. Temperature is already in the table.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">4/29/96</p>	2. Review No. <p style="text-align: center;">451.96</p>
3. Project No. <p style="text-align: center;">A.13</p>	4. Page <p style="text-align: center;">2 of 3</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
7	In the introduction on Page 1 the scope of this PHA is specified as the transfer of the sludge from the truck to the DST, and flushing out the pipe and the tank on the truck. However, in the subsequent paragraphs the truck and trailer and the tank on the truck are included in the PHA. This discrepancy needs to be resolved.		Accept.	
8	On Page 12, a flexible metal transfer line is described, but there is no such line in the design.		Accept. Will correct.	
9	In Table 4.2, a crane falling over on the line should be considered and a backhoe digging up the line should also be considered.		Accept.	
10	On Page 44, Paragraph 6.2.1, provide references and say no possible flood in 200 Area, and delete all the rest of the paragraph. It is of no interest.		Accept.	
11	On Page 45, Paragraph 6.2.2, you need to reference your wind data and recheck your values. In 1990 there were wind gusts up to 91 mph on the Hanford Reservation per a telecon with the PNNL weather station.		Accept.	
12	It would be a good idea to talk with the TWRS FSAR authors concerning their findings for the Hazards analysis. I can provide the names of these people, if this idea appeals to you. A review of the Cross-Site Transfer System PSAR could also be instructive.		This is being done. The TWRS Authorization Basis point-of-contact interfaces directly with PNNL.	

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REVIEW COMMENT RECORD (RCR)

1. Date April 29, 1996	2. Review No. 451.96
3. Project No. FDC-052	4. Page 1 of 3

5. Document Number(s)/Title(s) FDC-052, K Basin Sludge Offload System	6. Program/Project/ Building Number FDC-052	7. Reviewer J. E. Pieper	8. Organization/Group ETF Rad. Con. Tech. Support	9. Location/Phone 200E/MO393 376-4174
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17. Comment Submittal Approval: \_\_\_\_\_ 10. Agreement with indicated comment disposition(s) 11. CLOSED

Organization Manager (Optional) \_\_\_\_\_ Date 5/27/96 Reviewer/Point of Contact [Signature] Date \_\_\_\_\_ Reviewer/Point of Contact \_\_\_\_\_  
 Author/Originator \_\_\_\_\_ Author/Originator \_\_\_\_\_

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	<p>Section 1.4, second paragraph : I agree Tank Safety Assurance should provide general safety (department) guidance and coordinate all required safety (department) reviews, (industrial Hygiene, Industrial Safety, Nuclear Safety, and Fire Protection), the functions within the safety department.</p> <p>There is another department within WHC called Radiological Safety that advises on the implementation of the Hanford Site Radiological Control Manual and 10 CFR 0835 Occupational Radiation Protection. I request that additional wording be added to this last paragraph:</p> <p>"... all required safety reviews. General radiological safety guidance and reviews will be provided and coordinated through each facility's Radiological Control Organization. Pacific Northwest National Laboratory.....".</p> <p>Due to the extensive Radiological Regulations (to which the company is continually being audited), it is requested that a Radiological Control Department signature (separate from the Safety department signature) be on documents that address personnel working with radioactive material.</p>		Accept.	

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REVIEW COMMENT RECORD (RCR)

1. Date April 29, 1996	2. Review No. 451.96
3. Project No. FDC-052	4. Page 2 of 3

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
2	Section 2.1 : I recommend deleting the last bullet as it is currently worded and replacing it with :  "The sludge offload system life-cycle Man-Rem, including removal and disposal, shall be minimized by engineering design."		Accept.	
3	Section 3.0, second paragraph : I recommend that the word "recovery" be removed from the last sentence. An additional sentence could be added "The fail-safe upon power loss shall include the minimization of personnel radiation exposure during recovery."		Accept.	
4	Section 3.4 : I recommend adding additional wording to elaborate on "safe condition" such as -- "..establish a safe condition (unpressurized and with retention of radioactive minimized)."		Accept.	
5	Section 3.4.2, last bullet : I recommend adding to the end of the sentence "..prevention into the sump pump line"		Accept.	
6	Section 4.2 : Please review, isn't this the section where the "heat trace" shown on drawing 100727 should be mentioned ?		Accept. Will review.	
7	Section 4.7: I recommend modifying the wording in the last sentence to "...paid to minimization of liquid retention and ease (containment and speed) of replacement of pumps, valves..."		Accept.	
8	Section 5.1, last paragraph : I recommend rewording "...collective dose (including D&D (section 5.7)) shall be \$30,000."		Accept.	
9	Section 5.8 : Please change the words "health physics" to "radiological control".		Accept.	
10	PHA, page 10, Radiation levels : DOT does not require 2 mrem to the occupant of the tow vehicle if the occupant is on a Radiation Dosimetry program. You may wish to review this requirement if is going to impact the shield design.		Accept.	
11	PHA, section 3.1.4 : Remember that venting of the container will be required during unloading, please review the wording of the third line.		Accept.	

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REVIEW COMMENT RECORD (RCR)

1. Date April 29, 1996	2. Review No. 451.96
3. Project No. FDC-052	4. Page 3 of 3

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
12	<p>Section 3.2, fifth bullet: I recommend rewording to delete the words "a berm over it to provide"</p> <p>eight bullet : Though the AW farm is a RBA, not requiring Protective clothing, the RWP for personnel performing the transfer of the waste from the transport trailer has not been written yet. For the operations of connecting and disconnecting the potentially contaminated couplings personnel will be required to wear PPE. I recommend that this information be added so as to not mislead the reader.</p>		Accept.	

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1. Date	04/17/96	2. Review No.	1
3. Project No.	K-Basin	4. Page	1 of 7

REVIEW COMMENT RECORD (RCR)

5. Document Number(s)/Title(s)	MHC-SD-WM-FDC-052, Rev. B <i>Functional Design Criteria for the Sludge Offload System</i>
6. Program/Project/ Building Number	K-Basis Sludge Transfer to AW-103
7. Reviewer	S. M. Stahl
8. Organization/Group	TWRS Authorization Basis/Authorization
9. Location/Phone	A2-34 Fed. Bldg. Rm 235/ 376-8022

17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional) \_\_\_\_\_ Date \_\_\_\_\_  
 Reviewer/Point of Contact \_\_\_\_\_  
 Reviewer/Point of Contact \_\_\_\_\_ Date \_\_\_\_\_

Author/Originator \_\_\_\_\_ Author/Originator \_\_\_\_\_

16. Status	Y	13. Comment(s)/Discrepancy(s) (Provide technical justification for the resolve and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	Y	15. Disposition (Provide justification if NOT accepted.)
	Y	General: Per MHC-CM-6-2, <i>Project Management</i> , Section 1.0, "The functional design criteria define the project scope and technical requirements, including regulatory guidelines and requirements. The functional design criteria document is the technical baseline document for the project. The functional design criteria document is prepared by the user/sponsor organization in accordance with MHC-IP-1026, Appendix D, 'Functional Design Criteria' and is submitted to RL for review and approval before ..." MHC-SD-WM-FDC-052, Revision B follows the outline and format of MHC-IP-1026, Appendix D, but does not include the required level of detail as specified in the comments that follow.		Y	Not accepted. MHC-IP-1026 is a guidance document.
	Y	Title Pg.: MHC Approval must include Shifrik Ritaeay who is the manager of TWRS Facility Operations Design Authority.		Y	Accept. Will add name to EDT. Approval page to be deleted.

1. Date	04/17/96	2. Review No.	1
3. Project No.	K-Bastin		
4. Page	2 of 7		

REVIEW COMMENT RECORD (RCR)

12. Item	13. Comment(s)/Discrepancy(ies) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
3	<p>Appendix D, "Functional Design Criteria":</p> <p>General: Per WHC-IP-1026, <i>Engineering Practice Guidelines</i>.</p> <p>1. The FDC is to be processed as a supporting document in accordance with WHC-CM-6-1, EP-1.12.</p> <p>2. Fig. 1 from Appendix D is the DOE approval page format to be used for FDCs. Other approvals are to be obtained on an EDT in accordance with WHC-CM-6-1, EP-1.6.</p> <p>The Draft FDC is not consistent with these requirements as follows:</p> <p>a. The FDC approval page is not consistent with Fig. 1 from WHC-IP-1026, App. D and;</p> <p>b. The FDC does not include and EDT with the appropriate approval signatures required per WHC-CM-6-1, EP-1.6 and WHC-CM-3-5, section 12.7.</p>	Y	The approval page will be deleted. Approval will be via EDT.	
4	<p>General: Applicable design criteria and analysis criteria that are to be included in the functional Design Criteria are dependent on formal safety classification for the sludge offload system. The safety class designation for the system has not been specified as required per WHC-CM-1-3, MRP 5.46, "Safety Classification of Systems, Components, and Structures."</p>	Y	MRP 5.46 is obsolete. Agree that safety classification needs to be formally done--it will be performed prior to definitive design.	
5	<p>General: A system overview has not been provided that defines the elements of the system being designed, their functions, the starting and endpoints of the systems as well as interface connections. A system description should be provided to facilitate understanding of the scope and applicability of the requirements.</p>	Y	Accept.	
6	<p>Page 3, section 1.3, "Site Location," 1st bullet: The item notes that portions of the sludge offload system could be located directly over the selected DST. This should not be part of the FDC unless it can be demonstrated by analysis that applicable tank dome load requirements would not be exceeded. I recommend that the FDC specifically exclude the design from being located such that it has an effect on tank dome load.</p>	Y	Will change wording per Hussan Ziada comment 5.	

# REVIEW COMMENT RECORD (RCR)

1. Date  
04/17/96

2. Review No.  
1

3. Project No.  
K-Basin

4. Page  
3 of 7

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
7	Page 3, section 1.4, "Project Interfaces:." This section does not provide an adequate level of detail consistent with WHC-IP-1026, App. D. It notes that the offload system will interface directly with the selected DST. It should specify the interface components such as applicable DST Tank Farm and unit, DST pump pit, riser, etc. It should specify power supply needs and fresh water supply needs as known at this stage of the project. Possible affects on road and rail access should also be specified.	Y	Partially accept. Because of uncertainty associated with which tank will be used, the FDC will be left general--this was recommended during an earlier review. Specific info will be controlled via interface drawing. Power and water needs are identified in later sections of the document.	
8	Page 4, section 1.4, "Project Interfaces," 2nd sentence: It is stated that there may be a marginal increase in demand for electric power and supply water due to operation of the transportation system. This is inadequate. The power requirements should be specified (e.g., 240 volts AC) as well as minimum fresh water supply needs.	Y	Not accepted. Detailed information will be provided on the interface drawing.	
9	Page 6, section 2.1, "Project Criteria, Functional Requirements:" The offload system functional requirements do not provide sufficient detail to permit detailed design, consistent with WHC-IP-1026, Appendix D requirements. The following information is not specified in sufficient detail: <ul style="list-style-type: none"> <li>o Sump Pump and Spill Retention Basis performance requirements e.g., capacity.</li> <li>o Operational requirements e.g., redundancy, reliability, cyclic duty, 90 day storage limit.</li> <li>o Personnel requirements such as number and type. It only states that manned support needs to be provided for operation.</li> <li>o Identification of any high risk issues/assumptions that could impact the technical baseline such as the K-Basin waste source term determination.</li> <li>o Process piping requirements are stated which should not be in this section, instead they should be in the "Piping and Vessels" section.</li> </ul>	Y	Accept. Capacity information will be provided.  Not accepted. Availability factor already identified.  Not accepted. Specific manpower requirements will be identified in operating procedures.  Not accepted. Issues will be documented and statuses via interface control documents.  Accept.	
10	Page 8, section 3.0, "Process Criteria," 2nd sentence: The sentence states that the project shall be designed to handle waste streams that are considered to be ... above the DOE radionuclide requirements for secondary containment. The meaning of this is not clear as stated. It could be interpreted that the design of the secondary containment does not meet DOE requirements for the K-Basin sludge waste.	Y	Accept.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">04/17/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">K-Basin</p>	4. Page <p style="text-align: center;">4 of 7</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
11	Page 8, section 3.1, "Instrumentation and Control," 1st sentence: The sentence states that instrumentation shall be provided for early detection of leakage. This is not sufficient to direct detailed design. The requirements specified should include: system response time, minimum volume of leakage expected to be detected, applicable alarm and shutdown system interlocks, range and accuracy requirements, seismic requirements, reliability, maintenance requirements, power requirements, fail safe criteria, etc.	Y	Partially accept. Additional detail will be provided as currently available.	
12	Page 8, section 3.2, "Piping and Vessels:" ASME B31.3 requirements are identified as applicable, but this has not been confirmed with safety class determination for the piping.	Y	Not accepted. ANSI B31.3 will be used. The applicable sections will be determined by the safety classification.	
13	Pages 8 - 10, section 3.2, "Piping and Vessels:" The piping and vessel requirements are insufficient to direct detailed design. Addition requirements should include: seismic, pressure, temperature, vibration, stress, shock, isolation requirements, relief systems, etc.	Y	Accept.	
14	Pages 8 - 10, section 3.2, "Piping and Vessels;" Additional applicable requirements from DOE 6430.1A should be specified such as that tank and piping systems shall be of welded construction to the fullest extent practical. Materials of construction shall be selected to minimize all form of corrosion (1323-5.2)		Accept.	
15	Page 9, section 3.2.1, "Piping and Vessels Functional Requirements," 3rd bullet: It is stated that the transfer line shall discharge into the selected DST via a nozzle or riser. This mandates that the design would accommodate either connection and could lead to unnecessary design complications. The expected tank inlet should be specified.		Partially accept. More specific criteria will be called out (a connection in the central pump pit which utilizes a slurry distributor); however, a specific inlet will not be identified.	
16	Page 9, section 3.2.1, "Piping and Vessels Functional Requirements," 6th bullet: It states that cathodic protection shall be provided. This may not be necessary considering limited design life and anticipated corrosion rates.		Accepted.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">04/17/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">K-Basin</p>	4. Page <p style="text-align: center;">5 of 7</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
17	<p>Page 10, section 3.4.1, "General Mechanical Process, Functional Requirements:" It states that a spill retention basin shall be provided to contain the entire contents of the transportation container in the event of a spill. This needs to be more specific to identify the maximum volume that the spill container must hold (i.e., gallons of waste). Additionally, per DOE 6430.1A, for outdoor confinement structures such as the spill retention basin, the capacity must also include maximum predicted precipitation (1323-5-1). Applicable seismic criteria have not been specified either.</p>	Y	Partially Accept. TWRS Environmental Compliance will review to determine if maximum predicted precipitation is required.	
18	<p>Page 11, section 3.4.2, "General Mechanical Process, Performance Requirements," 1st bullet: It states that a sump pump for removing spills from the spill retention basin is to be included. This is not sufficient information for detailed design development. Applicable safety class requirements, performance characteristics, power source (e.g. oil or electric), operating environment, maintenance and surveillance characteristics, availability and reliability, pump operation logistics (e.g., control panel, shutoff switches, instrumentation), etc. have not been specified.</p>	Y	Partially accept. Additional information will be provided as known today.	
19	<p>Page 12, section 4.3.2, "Utilities, Water:" It is stated that raw water for flushing shall be provided. Minimum flow, pressure, and availability of the water supply should be specified as well as location limitations if any. It must also state that backflow prevention devices are required for the raw water connection system. Raw water addition must also be metered to determine volume of water added to the tank farm waste stream.</p>	Y	Accept.	
20	<p>Page 12, section 4.3.2, "Utilities, Water:" No water provisions for fire protection have been specified. Fire fighting capability for postulated tanker truck fires needs to be available and specified as a requirement.</p>	Y	Not accepted. Such requirements will be determined by the SA.	
21	<p>Page 12, section 4.3.4, "Utilities, Electrical:" A requirement for one 240 VAC single phase power supply is made. Additional provisions should be specified such as availability, backup, grounding, insulation, loads, etc.</p>	Y	Not accepted. Specific requirements are identified in the National Electrical Code.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">04/17/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">K-Basin</p>	4. Page <p style="text-align: center;">6 of 7</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
22	Page 13, section 4.4, "Communication Systems:" Standard issue radio communication devices are to be provided. This may not be adequate for appropriate action and response to postulated accidents. Depending on results of accident analysis, this requirement may need to be more specific.		Not accepted. Unless required by the SA or ops, radios will be used.	
23	Page 13, section 4.7, "Maintenance:" Insufficient requirements are specified. Other maintenance considerations should include ALARA practices, protection from environment, decontamination, access requirements, material selection, and level of documentation necessary to support maintenance.	Y	Not accepted. This is an O&M requirement--not to be covered in the FDC.	
24	Page 15, section 5.1.1, "Safety Analysis/Safety Assessment," 2nd paragraph: It states that a safety assessment will be prepared in accordance with a Letter of instruction. It should also state that the safety assessment should be in accordance with DOE-STD-3011-94 and a graded approach application of DOE-STD-3009-94. DOE-STD-1027-92 should be noted as applicable for hazards analysis.	Y	Accept.	
25	Page 15, section 5.1.1, "Safety Analysis/Safety Assessment," 2nd paragraph: It states that a safety assessment will be completed and approved prior to operation of the sludge system. An Unreviewed Safety Question Evaluation must be performed PRIOR to start of any construction or field modification activities in the Tank Farms. The results of this USQ Evaluation will likely determine that DOE approval of the safety assessment is required PRIOR to conduct of these activities, not prior to operation.	Y	Accept.	
26	Page 15, section 5.1.3, "Contamination Control:" This section should specify that the criteria and guidance to ensure radioactive contamination control measures are incorporated during facility design are included in WHC-CM-4.9, Section 3.		Not Accepted. WHC-CM-4-9 is obsolete. It was replaced by WHC-SD-GN-DGS-30011.	
27	Page 15, section 5.1.4, "Shielding:" The requirement should state that the shielding design must be adequate to ensure the maximum dose to individuals does not exceed the occupational exposure limits of WHC-CM-4-9, Section 8.0. DOE 6430.1A states: "Specifically, the shielding shall be designed with the objective of limiting the total EDE to less than 1 rem per year to workers, based on their predicted exposure time in the normally occupied area" (1300-6.2). This requirement should also be added.	Y	See comment disposition 26. Limits are defined in HSRCM-1.	

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# REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">04/17/96</p>	2. Review No. <p style="text-align: center;">1</p>
3. Project No. <p style="text-align: center;">K-Basin</p>	4. Page <p style="text-align: center;">7 of 7</p>

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
28	Page 16, section 5.1.6, "Fire Protection:" This states that fire protection will be defined during the design process and that a Fire Hazards Analysis is required as part of the safety documentation. The FHA should be deemed to be particularly important for this project. It should be completed as early as practical to permit appropriate design considerations.		Accept.	
29	Page 17, section 5.2.1, "Dangerous Waste Requirements:" This section should also refer to applicable requirements from DOE 6430.1A, section 1300-8.2, "Hazardous Waste Requirements."		TWRS Environmental Compliance will review and determine if reference to DOE 6430.1A is required.	
30	Page 18, section 5.2.2, "Airborne Release Requirements:" This section should also refer to applicable requirements from DOE 6430.1A, section 1300-9, "Effluent Control and Monitoring."		See comment 29.	
31	Page 18, section 5.4, "Natural Forces:" This section should also refer to the design considerations on natural forces from SDC 4.1.		Not accepted. SDC-4.1 is obsolete. It was replaced by GC-LOAD-01 and 6430.1A.	
32	Page 18, section 5.5, "Design Format:" This section includes a requirement for two way traceability between project drawings and reference drawings. This implies that reference drawings would require revision to refer back to project drawings. This appears to be an unnecessary expense and may be difficult to implement considering the number of outstanding ECNs to existing drawings.		Accept.	
33	Page 19, section 5.6, "Quality Assurance:" This section should also state that DOE 5700.6C requirements apply to all participants in development, design, procurement, construction, or testing.		Not Accepted. 5700.6C is applicable to non-nuclear facilities. AW tank farm is a nuclear facility.	
34	Page 20, section 5.7.1, "DOE Regulations:" WHC-IP-1026, App. D recommends that DOE 5820.2A, Chapter V also be referred to.		Accept.	
35	Page 20, section 5.7.2, "Miscellaneous Design Features:" WHC-IP-1026, App. D recommends that additional requirements and design features that simplify ultimate decontamination and decommissioning are specified in WHC-QM-7-5, Section 6.4.		Not accepted. Section 6.4 applies to surplus facilities going to BHI for D&D, not D&D performed during operations.	

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APPENDIX F

Design Review Briefing for K Basin Sludge Offload System

DESIGN REVIEW BRIEFING FOR K BASIN SLUDGE OFFLOAD SYSTEM

LOCATION: 2752/C101

TIME: 9am April 16, 1996

The briefing for the K Basin sludge offload system was conducted as scheduled. The attendee list is attached. After introductions by Jim Thielges, Review Chairman, Sherri Brisbin discussed the documents to be reviewed, and Dennis Crass reviewed the system layout at tank farms and took questions on the interfaces, design aspects at tank farms, and limiting conditions of interest. The following notes were taken to remind the reviewers of areas of interest.

1. The tentative location of sludge disposal was given as AW-103, but that was immediately changed to indicate a more likely location of AW-105.
2. The Off Load system consists of the spill retention basin, double piping to connect the transport truck to the central pump pit, shielding, leak detection, water supply and power supply. The conceptual design is a 3" pipe inside a 6" outer pipe, mostly on the ground, with a half shell concrete shield. The connection to the central pit is through a 3" nozzle, which connects by a 2" transfer connector to a slurry slinger in the tank. The system will include heat tracing on the line to permit winter transfers. Cathodic protection may also be provided. Pump motor size will dictate power requirements. The transport package will furnish the sludge transfer pump and may include independent power supply. The tank farms has water sources for flush water for the transport package and the transfer line.
3. Considerations for sizing the connecting line include:
  - line slope (normally 1/4" per foot)
  - slurry velocity to maintain suspension
  - pumping pressure required (safety implications)
  - rheological properties of sludge (due May 1)
  - Reynolds number of the flow
  - Disposal favors a 1" flex line which can be coiled into a barrel for final disposal without contaminating the outer piping

4. Nominally two transfers a month are planned, with about a 20% sludge mixture. A slinger is required in the tank to disperse the sludge in the tank and prevent an accumulation of sludge in one area.
5. The target of less than 30% solids in the transport package must be controlled at the loading station. Instrumentation will be provided to assure control of the solids loading fractions at K Basins.
6. Delays in transportation must be anticipated, when unforeseen circumstances at the tank farm preclude offloading a sludge shipment. The sludge system must accommodate certain delays, by either offloading the sludge back to K Basins (very undesirable and only considered as an off-normal event) or accommodating the delays by temporary storage of sludge in the transport package.
7. Drip free connections will be used at both ends of the transfer line, with caps provided to insure a sealed system between transfers.
8. Testing of this system with a sludge simulant is recommended. Such a test should be done at a cold test site rather than at the tank farm.

Please send RCR comments via cc:mail to both Sherri Brisbin and Jim Thielges or via hard copy to Sherri Brisbin (R3-48), as soon as available.

ATTENDEES AT THE April 16, 1996 BRIEFING

NAME	TELE.	MISN	RESPONSIBILITY
J.R. (Jim) Thielges	376-9029	L6-38	Review Chairman
L.M. (Mike) McWethy	376-9507	R3-48	Review Secretary
S.A. (Sherri) Brisbin	376-9180	R3-48	Sludge Transport Cog.
K.L. (Kathleen) Pearce	376-3782	R3-48	Sludge TWRS Cog.
V.C. (Vic) Boyles	373-1321	R1-43	Evaporator Project
C.A. (Chuck) Sams	373-9618	S5-13	TWRS QA
D.W. (Dennis) Crass	372-2034	H5-68	TWRS/TSI
A.F. (Ann) Wellner	372-1101	H5-70	TWRS/TSI
S.H. (Shafik) Rifaey	373-2108	S1-57	D.A.
C.J. (Carol) Alderman	376-1796	R3-48	SNF Eng. Support
F.J. (Frank) Muller	376-2619	X3-85	Sludge Proj. Eng.
D.R. (Don) Precechtel	376-3329	R3-48	Sludge D.A.
C.P. (Craig) Shaw	376-0814	H5-09	TWRS-Safety Eq.
S.M. (Sheldon) Stahl	376-8022	A2-34	TWRS SAR Eng.
S.H. (Hassan) Ziada	376-0910	H5-52	TWRS D.A.
F.W. (Frank) Moore	373-4079	X3-85	K Basins Projects
P.M. (Phil) Daling	372-4239	K8-07	Safety Assessment
P.L. (Peter) Smith	372-2471	R3-08	TWRS-Nuc. Saf. Sup.

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APPENDIX G

Agenda of the Design Review

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K Basins Sludge Offload System

Preliminary Design Review

April 30, 1996

Conference room C101, Building 2752E

The purpose of this design review is to review the design of the K Basins Sludge Offload System at the conceptual stage. Items being reviewed include the draft Functional Design Criteria, draft interface drawing, draft shielding calculations, and draft hazards analysis.

AGENDA

Welcome	Jim Thielges
Review Briefing Minutes	Mike McWethy
Dispositions RCRs	All
Other Comments	All
Design Review Checklist	Jim Thielges
Summarize Action Items	Mike McWethy