

Sta. 4 (CS)

OCT 14 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1  
1. EDT 619350

2. To: (Receiving Organization) <b>Distribution</b>		3. From: (Originating Organization) <b>Engineering Support</b>		4. Related EDT No.: <b>NA</b>	
5. Proj./Prog./Dept./Div.: <b>SNF Project A.13</b>		6. Design Authority/ Design Agent/Cog. Engr.: <b>D. R. Precechtel</b>		7. Purchase Order No.: <b>NA</b>	
8. Originator Remarks: <b>This document is transmitted for approval and release.</b>				9. Equip./Component No.: <b>NA</b>	
11. Receiver Remarks:    11A. Design Baseline Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				10. System/Bldg./Facility: <b>241-AW-105</b>	
				12. Major Assm. Dwg. No.: <b>NA</b>	
				13. Permit/Permit Application No.: <b>NA</b>	
				14. Required Response Date:	

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 Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-SNF-DRR-010	All	0	Sludge Receiving Station 90% Design Review Report	NA	1,2	1	

16. KEY						
Approval Designator (F)		Reason for Transmittal (G)			Disposition (H) & (I)	
E, S, O, 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	/	SRS Design Authority	<i>D.R. Precechtel</i>	10/14/96	R3-48	1	/	V. C. Boyles	<i>V.C. Boyles</i>	10/8/96	R1-43
		Design Agent				1	/	C. P. Shaw	<i>C.P. Shaw</i>	10/18/96	S2-24
1	/	TWRS Design Authority	<i>H. H. Zinda</i>	10-16-96	R3-56	1	/	J. R. Thielges	<i>J.R. Thielges</i>	10/8/96	L6-38
1	/	Cog. Mgr.	<i>C. J. Alderman</i>	10-16-96	R3-48						
1	/	QA	<i>C. A. Sams</i>	10-9-96	S5-13						
1	/	Safety	<i>P. L. Smith</i>	10/10/96	R3-08						
1	27	Env.	<i>J. D. Guberski</i>	10/14/96	R3-51						

18. S. A. Brisbin <i>S.A. Brisbin</i> 10/14/96 Signature of EDT Date Originator		19. <i>D.R. Precechtel</i> 10/14/96 Approved Representative Date for Receiving Organization		20. D. R. Precechtel <i>D.R. Precechtel</i> 10/14/96 Design Authority/ Cognizant Manager		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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# Sludge Receiving Station 90% Design Review Report

S. A. Brisbin  
DE&S Hanford, Richland, WA 99352  
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 619350 UC: 600  
Org Code: 2C500 Charge Code: LD089  
B&R Code: EW3135040 Total Pages: 31 52 *KMD 10/14/96*

Key Words: Sludge Receiving Station, TWRS, AW Tank Farm, design review

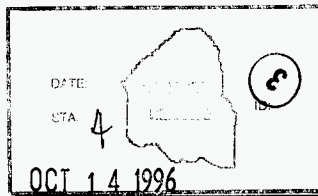
Abstract: The Sludge Receiving Station will be used to directly transfer K Basins sludge from the Sludge Transportation System into double-shell tank 214-AW-105.

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*[Signature]*  
Release Approval

*10/14/96*  
Date



Approved for Public Release

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**SLUDGE RECEIVING STATION  
90% DESIGN REVIEW REPORT**

**1.0 INTRODUCTION**

The Sludge Receiving Station will be used to directly transfer K Basins sludge from a Sludge Transportation System into a selected double-shell tank (DST). Current baseline is that the selected DST will be 241-AW-105. The Sludge Receiving Station consists of a nonpermanent, intra-farm transfer line (with double containment), a pipe jumper inside the pump pit connecting the transfer line to an existing DST riser, and a spill retention basin.

**2.0 SCOPE**

The scope of this review was to verify that the Sludge Receiving Station design conforms to the functional design criteria and that the assumptions used for the seismic/structural analysis were correct.

**3.0 DISCUSSION**

Jim Thielges, Design Review Chairman, opened the meeting. Following the opening remarks, the meeting was turned over to Sherri Brisbin. Sherri asked if there were any comments on the minutes from the September 12, 1996, design review briefing. No one had any comments. Meeting minutes are provided in Appendix A. Sherri then began a discussion of the review comment records (RCRs) received to date. The RCR comments were tentatively dispositioned by acceptance, rejection, or identification of further actions to close the comment. Dispositioned RCRs are provided in Appendix B.

Because neither the safety assessment nor the structural/seismic analysis is complete, it was suggested that this is not a 90 percent design review. Initially, agreement was made to redefine the completion percentage. Although all analyses are not complete, draft analyses have been prepared in conjunction with the design and the design is based on similar designs that have been implemented in the past. Further review with SNF Project management led to a decision to maintain the initial completion percentage, 90 percent. There is some risk associated with that decision; however, the SNF Project feels that the risk is manageable.

During discussion of comments, Vic Boyles indicated that the current schedule (1 year or less for transfer of all sludge into the DST) is very aggressive from a Tank Waste Remediation System perspective.

Following comment resolution, Jim Thielges led a discussion of the design review checklist. The completed checklist is provided in Appendix C.

4.0 ACTION ITEM

Provide DRAFT Structural Analysis for review in early October 1996.  
 Actionee: Dennis Crass/Ann Wellner.

5.0 ATTENDEES

Meeting attendees were:

<u>Name</u>	<u>Phone</u>	<u>Organization/Function</u>
C. J. Alderman	376-1796	SNF Engineering Support
*V. C. Boyles	373-1321	TWRS Evaporator Project
S. A. Brisbin	376-9180	SNF Engineering Support
D. B. Campbell	376-8356	TWRS Design
D. W. Crass	372-2034	Tank System Integration/ Design Agent
W. G. Farley	376-9192	TWRS SAR Engineering
K. L. Pearce	376-3782	SNF Engineering Support
J. E. Pieper	376-4175	ETF Rad Con
*D. R. Precechtel	376-3329	SNF Engineering Support/SRS Design Authority
*C. A. Sams	376-9618	TWRS QA
*C. P. Shaw	376-0814	Equipment Engineering
*P. L. Smith	372-2471	TWRS Safety
D. H. Splett	373-7827	RL-SFD
*J. R. Thielges	376-9029	Design Review Chairman
W. W. Wassberg	372-1958	Mactec
A. F. Wellner	372-1101	ICF KH Engineering/ Design Agent
*H. H. Ziada	376-0910	TWRS Design Authority

\* Denotes member of Design Review Committee.

J. D. Guberski, TFTP Environmental Compliance and Support Services, was also a member of the design review committee.

APPENDIX A--MEETING MINUTES

**MEETING MINUTES**  
**Design Review Briefing for the Sludge Receiving Station**

The design review briefing for the Sludge Receiving Station was held on September 12, 1996.

The attendees were:

Wendy Adams (for *Chuck Sams)	TWRS QA
*Vic Boyles	Evaporator Project
Sherri Brisbin	SNF/Engineering Support
*Kelly Carothers	TWRS Design Authority
Dennis Crass	Tank Systems Integration (Design Agent)
Phil Daling	PNNL
John Guberski	TWRS Environmental Compliance
*Oscar M. Holgado	DOE-RL SFD
Mike McWethy	SNF/Engineering Support
Frank W. Moore	SNF/K Basins Projects
Frank Muller	SNF/K Basins Projects
Kathleen Pearce	SNF/Engineering Support
*Donald Precechtel	SNF/Engineering Support (SRS Design Authority)
*Craig Shaw	TWRS Equipment Engineering
*Peter L. Smith	TWRS Nuclear Safety
*Dale Splet	DOE-RL SFD
*Jim Thielges	Equipment Development (Design Review Chairman)
Shakir Zaman	TWRS Nuclear Safety

\*Denotes member of Design Review Committee

Jim Thielges opened the meeting by welcoming attendees. The meeting attendees then introduced themselves. Jim then presented the briefing scope.

Sherri Brisbin described the design review package and explained the status of its contents. The design review committee was requested to review: the drawing tree, drawings, the approach for the seismic/structural analysis, the ALARA checklist, and the design review checklist. The design review checklist will be completed at the design review meeting. Reviewers were requested to provide RCR comments at the design review meeting, or sooner if possible. Sherri explained that under the current schedule, this project will be put "ON HOLD" until FY98. Therefore, it is desirable to incorporate as many comments as practical and issue the documentation in a form that is not acceptable for construction, but readily retrievable.

Dennis Crass described the Sludge Receiving Station and explained the changes that were made since the last review. Dennis indicated that concrete blocks may be required under the jack stands to meet seismic/structural requirements. Dennis indicated that we may be able to reduce or eliminate the shielding blocks following completion of the final seismic and shielding

**MEETING MINUTES**  
**Design Review Briefing for the Sludge Receiving Station**

analyses. Dennis recommended draining the flush hose following use in lieu of providing heat trace. Heat trace required for the length of hose being considered would have a significant current load.

Dennis also described the approach that was being used for the seismic/structural analysis. Dennis indicated that a draft structural analysis will be completed by the end of September.

A question was raised regarding the status of the air emission calculations for the tank farm. Kathleen Pearce indicated that these calculations have not been initiated.

John Guberski indicated that there are two, one million gallon liners available onsite if anyone is interested.

Don Precechtel asked what the impact of increasing the design life from the current 3 years to 5 or 10 years would be. Dennis Crass indicated that no significant problems would be anticipated. However, a different material may be required for the inner hose. The spill retention basin is already a replaceable item.

The design review meeting will be scheduled for September 25, 1996 at 8:00 am at 2752E/C101.

**Action:** Design Review Committee members are to have RCR comments to Sherri Brisbin as soon as possible, but no later than the September 25, 1996, design review meeting.



APPENDIX B--RCRs

<b>REVIEW COMMENT RECORD (RCR)</b>	1. Date September 25, 1996	2. Review No.
	3. Project No. A.13	4. Page 1 of 3

5. Document Number(s)/Title(s) Sludge Receiving Station 90% Design Review	6. Program/Project/ Building Number SNF Project/A.13	7. Reviewer Hussan H. Ziada	8. Organization/Group TWRS Design Authority	9. Location/Phone 2750E/A120 376-0910
------------------------------------------------------------------------------	------------------------------------------------------------	--------------------------------	------------------------------------------------	---------------------------------------------

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s) 11. CLOSED
Organization Manager (Optional)	Reviewer/Point of Contact
Date 10-10-96	Date
<i>Hussan H. Ziada</i> Author/Originator	<i>M. Briskin</i> 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
	<b>General Comments</b>			
1	The stage of this design is not at 90%, because the package does not include the safety analysis, complete structural and seismic analysis, and definitive drawings. The safety analysis report may result in changes in the design and the structural and seismic analysis. Technically, this stage is not more than a 60% review.		Because this design is based on designs that have already been implemented, the "design" is assumed to be at 90%. Because the subject analyses are not complete, there is some risk associated with that assumption. However, the SNF Project is willing to accept that risk. The subject analyses will be complete before the design is finalized in FY98.	
2	The FDC should contain information that specifies the applied loading conditions on the different components and the design criteria to be used for the structural and seismic analysis. Section 3 of the FDC is a suitable place for this information.		A Structural Design Criteria document will be issued as supplemental design criteria. This document will apply to the entire Sludge Removal System--not just the Sludge Receiving Station.	
3	The references in the FDC should include UBS, AISC, and ACI for Codes and Standards. ANSI B31.3 should be changed to ASME/ANSI B31.3 (Chemical Plant and Petroleum Refining Piping).		The FDC is already released and not a subject of this review; however, the references will be corrected when the FDC is revised.	

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## REVIEW COMMENT RECORD (RCR)

1. Date <b>September 25, 1996</b>	2. Review No.
3. Project No. <b>A.13</b>	4. Page <b>2 of 3</b>

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
4	The FDC does not include information on the sludge characteristics (e.g., sludge concentration, maximum particle size, etc.). This was accepted to be in Section 3 per Item 11 of the RCR provided by Hassan Ziada.		The FDC was extensively revised since the last review. The required information is reference in Section 2.2.	
5	Page 16 of the FDC is missing.		This page was lost during duplicating. Page 16 was provided at the design review.	
6	In the Dose Rate Calculations, the units in the tables are not consistent, some are 18" and 48" and others are 0.5 m and 1.0 m.		Comment noted. This document has already been issued and is not part of the formal review.	
	Drawing Tree and Design Drawings			
1	Drawing H-14-100727 is not included in the list of drawings (upper left corner) in the Drawing Tree.		Drawing will be revised as necessary.	
2	The number of sheets of some drawings in the Drawing Tree does not match with the Design Drawings (Drawings 100776, 100777, 100780, 100781, and 100783).		Drawing(s) will be revised as necessary.	
3	Add the word "DETAILS" at the end of the title of drawing H-14-100788 in the Drawing Tree.		Accept.	
4	The two missing drawings (H-14-XXXX) need to be provided before the end of the fiscal year.		Not accepted. These drawings may not be needed at all. Regardless, these drawings will not be completed in FY96.	
5	The title of drawing H-14-100788 is not consistent on both sheets and to the title on the Drawing Tree.		Drawing titles will be corrected as necessary.	
	Seismic/Structural Analysis			
1	The piping analysis should consider seismic, pressure, dead weight, and temperature loading.		Accept.	
2	The pit (or riser) should be analyzed for the interface loads imposed by the mounted jumper and distributor.		We will verify that this is bounded by the existing analysis. If not, we will update the existing analysis.	

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## REVIEW COMMENT RECORD (RCR)

1. Date <b>September 25, 1996</b>	2. Review No.
3. Project No. <b>A.13</b>	4. Page <b>3 of 3</b>

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
3	The Spill Retention Basin although it is off-the-shelf item, needs to be analyzed and qualified for seismic loading, either by the vendor or end user.		Need will be verified following completion of the safety assessment.	
4	The Offload Platform (Support Stand) should be analyzed for wind loads, and vibrations and drop loads (if any).		These will be evaluated to determine which are apply and analyzed accordingly.	
5	After the safety report is completed, the analysis should be revised in accordance with the specified safety class.		Accept.	

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MHC-SD-SMF-DRR-010, Rev. 0

<b>REVIEW COMMENT RECORD (RCR)</b>	1. Date <b>9/26/96</b>	2. Review No. <b>1</b>
	3. Project No.	4. Page <b>1 of 2</b>

5. Document Number(s)/Title(s) <b>K-Basins 90% Conceptual Design Review</b>	6. Program/Project/ Building Number <b>SNF Project - Sludge Offload Station</b>	7. Reviewer <b>J. D. Guberski</b>	8. Organization/Group <b>TFTP Environmental Compliance &amp; Support Services</b>	9. Location/Phone <b>2750/A101 376-5084</b>
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional) _____	Date <u>10/9/96</u>	Reviewer/Point of Contact _____ Date _____
	Author/Originator <u>J. D. Guberski</u>	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	Drawing H-14-100776, sheet 2, North arrow points East		Arrow will be corrected.	
2	Drawing H-14-100776, sheet 4, Ball valve, item 60, needs to be rotated so handle is on south side of piping. Operations & Maintenance need to access valve. This is difficult as orientated.	Yes	Change will be evaluated and updated as necessary.	
3	Drawing H-14-100776, sheet 4, leak detector, items 39, 40 & 64, need to be rotated so leak detector is on south or south-east side of piping. Maintenance needs to be able to remove leak detector for maintenance and calibration. This is difficult as orientated.	Yes	Change will be evaluated and updated as necessary.	
4	Drawing H-14-100776, sheet 6, recommend rotating leak detector and ball valve so they can be accessed through cover block cut out for operation or maintenance. Consider enlargement of cutout to allow for this if current opening is to small.	No	Recommendation will be considered; however, initial seismic/structural analysis has been performed and a larger hole may have a significant impact.	

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MHC-SD-SNF-DRR-010, Rev. 0

REVIEW COMMENT RECORD (RCR)

1. Date 9/26/96	2. Review No. 1
3. Project No.	4. Page 2 of 2

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
5	The soon to be issued Tank Farms Basis for Interim Operation [BIO] document limits fuel capacity of vehicles to <60 gallons if vehicle fuel tank or fuel lines are at same height or lower than a riser that connects to tank. This may be applicable to transport vehicle.	No	Comment noted. This should not impact the design of the transport system, but it may impose administrative constraints on the tractor before it can enter the tank farm.	

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MHC-SD-SNF-DRR-010, Rev. 0

## REVIEW COMMENT RECORD (RCR)

<b>REVIEW COMMENT RECORD (RCR)</b>	1. Date <b>September 24, 1996</b>	2. Review No. <b>1077.96</b>
	3. Project No. <b>AW-105</b>	4. Page <b>1 of 2</b>

5. Document Number(s)/Title(s) <b>K Basin Sludge Off Loading to TK AW-105</b>	6. Program/Project/ Building Number <b>K Basin/AW105</b>	7. Reviewer <b>J. E. Pieper</b>	8. Organization/Group <b>ETF Rad. Con. Tech. Support</b>	9. Location/Phone <b>200E-M0393 376-4175</b>
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s) <b>SAB for J. E. Pieper <sup>SAB</sup> Verbal Concurrence 9/25/96</b>	11. CLOSED
Organization Manager (Optional)	Date <u>9/25/96</u> Reviewer/Point of Contact <u>J. E. Pieper</u> Author/Originator	Date _____ 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	Design drawings			
2	<p>H-14-100727 sht 4: I recommend that Fifteen inches of concrete is not cost beneficial and should be reduced. I recommend that a worker occupancy (time and location) estimate be made to clarify the shielding "goal".</p> <p>The 15 inches appears to be based on a 2000 hour per year occupancy at one meter from the transfer pipe. Twenty six (26) transfers per year, with sixteen hours per transfer is 416 hours per year and at a distance of 25 meter may be a better estimate of the envelope for the workers occupancy and location. This has a significant effect on the being able to reduce the shielding. If in fact the transfer and flush can be performed remotely no shielding at all may be necessary! With a high cost savings.</p>		Accept. Current shielding is a carryover from conceptual design. Shielding analysis and design will be updated to reflect new piping size, etc.	
3	H-14-100727 sht 1 : With the expected number of transfers please verify that a prepared road bed for the truck is not necessary.		Vic Boyles, AW Farm Operations representative, indicated that a prepared road bed is not required.	

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MHC-SD-SNF-DRR-010, Rev. 0

<b>REVIEW COMMENT RECORD (RCR)</b>		1. Date September 24, 1996	2. Review No. 1077.96
		3. Project No. AW-105	4. Page 2 of 2

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
4	H-14-100727 sht 1 : Even though a "dry disconnect" might work properly, I recommend a stainless steel pan under each connection.		Accept.	
5	H-14-100727 sht 1 : The "3" DBL CHECK VALVE" under the truck bed shown at E-5 may just be a crud collector and not of value. A ball valve with a extension handle may work better.		This valve is part of the Sludge Transportation System. We do not have a design for that system yet. The comment will be retained and evaluated during design of the Sludge Transportation System.	
6	H-14-100727 sht 1 : Please review whether the hose under the truck may require support to prevent "sagging" and unnecessarily collecting sludge.		This is part of the Sludge Transportation System. See disposition #5.	
7	H-14-100781 part 10, subassembly, jumper : please verify that this eight foot long "L" shaped jumper does not require an additional support in the middle (from the floor of the pit) to allow proper connection and prevent sagging.		Accept.	
8	H-14-100727, C-7: I recommend that the "VALVE SHUT OFF" on the truck have a horizontal collector handle, so that it may be easily shut of by personnel on the ground beside the truck (from the side opposite the transfer line).		See disposition #6.	
9	ALARA Design Review Check List : I recommend that this form be filled out with the expectations of the design and best estimates. This would have been useful in the quantification of the amount of shielding necessary. Since it leads you to estimate the time, distance and number of personnel.		Accept. ALARA checklist will be updated.	

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MHC-SD-SNF-DRR-010, Rev. 0



## REVIEW COMMENT RECORD (RCR)

1. Date <b>09/23/96</b>	2. Review No. <b>2</b>
3. Project No. <b>A.13</b>	4. Page <b>1 of 2</b>

5. Document Number(s)/Title(s) <b>WHC-SD-SNF-CDR-008, Rev.0 Conc. Des. Report for Sludge Receiving Station</b>	6. Program/Project/ Building Number <b>Spent Nuclear Fuels/Proj.A.13/ AW</b>	7. Reviewer <b>V. C. Boyles</b>	8. Organization/Group <b>Evaporator Project</b>	9. Location/Phone <b>2750E/373-1321</b>
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional) _____	Date <u>10/8/96</u>	Reviewer/Point of Contact _____
	Author/Originator <u>VC Boyles</u>	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	On CDR-008///Page 2, sec.2.0 says 1/2000 to 12/2000. But WHC-SD-SNF-020, Rev.0 says 11/97 and DOE's press release of August 6, 1996, DOE says all work will be complete by 6/2000. Which is right? You need to be consistent. I think you need to start your transfers early in 1999.		The schedule is a moving target, but the baseline is still 1/2000 to 12/2000.	
2	On CDR-008///Page 2, 7th para. Give a range of shipment volumes expected and estimate the total volume to be shipped for all of campaign.		This information can be found in WHC-SD-SNF-FDC-004 and WHC-SD-SNF-DB-012. Shipment size is expected to be 3-6 m <sup>3</sup> . About 60 shipments are currently anticipated.	
3	On CDR-008///Page 4, sec.4.3, 2nd par. Add a sentence saying that the floor of the basin will be sloped so there will be a low point for pumping out if there is a spill. Also in this par. it says that the trailer will be 30 feet long. Yet drawings H-14-100727 sh.2 and H-14-100778 say 40 feet. Which is right? I prefer the 30 feet. The shorter the better for farm access.		30 ft is correct. Drawings will be corrected.	

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REVIEW COMMENT RECORD (RCR)

1. Date 09/23/96	2. Review No. 2
3. Project No. A.13	4. Page 2 of 2

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
4	On CDR-008///Sec.4.4.2, 1st Par., 3rd sentence. Please reword to say minimal flushes will be used. The 3200 gallons should be deleted. If you pick anything, say 1000 gallons since we have water trucks with that capacity.		Conceptual estimate is based on twice the maximum container volume. This doesn't need to be available all at once, it just needs to be available. This will be clarified in the systems design description.	
5	DWG.H-14-100727, sh.2 How does the hose reel connect to transfer line to flush either the tank or transfer line? How do you isolate one route while you are flushing the other? I see the valves on the pumpout line but no others. How are you assuring no backflow in the flush system? Suggest you show a piping schematic flow diagram of the flush system showing valves, backflow, etc. This could be added to H-14-100785. Need also to show flush line to hose reel and valving and hose reel to the rest of the system. Also, if you are going to pump the retention basin, show the piping arrangement on this.	Y	There is no longer a hose reel. There is only one reoute, the flush water will be routed through the Transport System and transfer line. Details will be added to drawings to depict sump pump and flush line tie into transfer line.	
6	DWG.H-14-100727, Sh.3 and 5. These drawings show a valve in the 1 1/2 inch pipe jumper. All the other drawings do not. Which is right? I don't see the value of having this valve.		Drawing 100727 is not correct. It will be corrected.	

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<b>REVIEW COMMENT RECORD (RCR)</b>	1. Date	2. Review No. TBD
	3. Project No. TBD	4. Page 1 of 1

5. Document Number(s)/Title(s) Sludge Receiving Station 90% Design Review	6. Program/Project/ Building Number K Basin	7. Reviewer Craig Shaw	8. Organization/Group 74F10 TWRS DB Eq. Eng.	9. Location/Phone 200E MO 047 376-0814
------------------------------------------------------------------------------	---------------------------------------------------	---------------------------	----------------------------------------------------	-------------------------------------------

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (Optional)	Date _____ <i>Craig Shaw</i> Reviewer/Point of Contact	Date _____ Reviewer/Point of Contact
	Date _____ <i>A. Prabhu</i> Author/Originator	Date _____ 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	H-14-100727 Sh 5 Is the design of the double check valve such that waste can get stuck between the gates? Does it need a pressure vent or drain?		The double check valve design will be examined to ensure that waste will not be trapped. Also, the designer will verify if a pressure vent or drain is required.	
2	H-14-1000776 Sh 2 Does the flush hose clean the transport tank as well as piping to the waste tank? Is the pumpability of the sludge determined before it leaves K-Basin?		Yes, the flush hose cleans the transport system and transfer line. The sludge will be pumped into the container at K Basins.	
3	H-14-100776 Sh 8 Part 36 If there is a massive leak into the secondary this hose will whip around spreading sludge all over. Suggest it be held down with a lead brick or something.		The designer will develop a "clamp" to hold down the hose.	

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# REVIEW COMMENT RECORD (RCR)

	1. Date <p style="text-align: center;">9/25/96</p>	2. Review No.
	3. Project No.	4. Page <p style="text-align: center;">1 of 1</p>

5. Document Number(s)/Title(s) <b>SLUDGE TRANSFER OFF LOAD SYSTEM 90% DESIGN REVIEW</b>	6. Program/Project/ Building Number <b>SNFP</b>	7. Reviewer <b>Don Precechte1</b>	8. Organization/Group <b>2C500</b>	9. Location/Phone <b>2752/E115 376- 3329</b>
------------------------------------------------------------------------------------------------	-------------------------------------------------------	--------------------------------------	---------------------------------------	-----------------------------------------------------

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
_____ Organization Manager (Optional)	_____ Date <u>10/4/96</u>	_____ Reviewer/Point of Contact
	_____ Author/Oriinator	_____ Author/Oriinator

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.	Design Drawings, H-14-100727, sht 1. SNF interface sheet (IC-033) should be revised based on more defined interfaces from this drawing.		Accept.	
2.	H-14-100776, sht 1. In note 3, we call out for pressure testing the system but do not specify what the test pressure and operating pressure should be. Suggest adding required pressures (150 PSIG ?).		Accept. The requirements will be defined and added.	
3.	H-14-100776, sht 2. Suggest adding a note to sheet 1 which states the requirements for blowing out all flush hoses after each use of flush hoses to prevent freezing.		Accept. Note will be added.	
4.	H-14-100776, sht 3. Add reference for tool required to rotate distributor assembly.		Accept.	
5.	H-14-1000779, sht 1. General comment. In the parts list, all fasteners called out recommend the use of any grade of material. If this is acceptable it should be based on seismic/structural analysis.		Accept. Upon completion of the seismic analysis, drawings will be updated to reflect analysis results.	
6.	Section 7, General comment. A copy of any Siesmic/Structural analysis should be added to this section for review.		Draft seismic analysis is expected 9/30/96. Draft will be routed for review in early October 1996.	

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MHC-SD-SNF-DRR-010, Rev. 0

# REVIEW COMMENT RECORD (RCR)

<b>REVIEW COMMENT RECORD (RCR)</b>	1. Date 9-26-96	2. Review No. 1077.96
	3. Project No. K-basins	4. Page 1 of 2

5. Document Number(s)/Title(s)  Section through the TWRS Receiving Station and DST	6. Program/Project/ Building Number K-basins	7. Reviewer Jeff Ranschau	8. Organization/Group TWRS-Safety	9. Location/Phone 2751E/373-4462
------------------------------------------------------------------------------------------	----------------------------------------------------	------------------------------	--------------------------------------	-------------------------------------

17. Comment Submittal Approval:  _____ Organization Manager (Optional)	10. Agreement with indicated comment disposition(s)  10-10-96 Date	11. CLOSED  _____ Reviewer/Point of Contact _____ Date _____ 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	Drawing H-14-100776 sheet 5, zone F-6: It is stated that the control relay stand will be secured in place with sand bags. If this control relay unit is an integral part of the leak detection system, a more structurally sound method of securing the unit may be required. If this control relay unit is part of a safety class or safety significant system, a different means of securing the unit may be required.  Suggested action: Verify that the use of sand bags for securing the control relay stand, as stated on the drawing, is adequate. If this is not an appropriate means of securing the stand, make the appropriate changes to the drawing.	JR	The design to secure the relay stand will be changed to a configuration similar to that used for TMACS.	
2	Drawing H-14-100785, zone F-6: The 120 VAC heat trace must be protected by ground-fault protection equipment (GFPE) per the requirements of NEC Article 427-22. Also, specify the length and wattage per foot of the heat trace.  Suggested action: Include details on the drawing to show GFPE for the 120 VAC heat trace. Also, verify that heat loss calculations have been done to determine length of heat trace required and specify length and wattage per foot of the heat trace on the drawing.	CM	Accept.	

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MHC-SD-SNF-DRR-010, Rev. 0

## REVIEW COMMENT RECORD (RCR)

1. Date <p style="text-align: center;">9-26-96</p>	2. Review No. <p style="text-align: center;">1077.96</p>
3. Project No. <p style="text-align: center;">K-basins</p>	4. Page <p style="text-align: center;">2 of 2</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
3	<p>Drawing H-14-100786 sheet 2, zone D-6: The equipment ground is shown connected to one side of the solenoid or coil. Per NEC Article 250, an equipment ground cannot be a current carrying conductor except during fault conditions.</p> <p>Suggested action: Verify that the equipment ground connection is in compliance with NEC Article 250.</p>	CM	Accept.	
4	<p>Drawing H-14-100786 sheet 2, zone D-3: The intrinsically safe conductors in the hazardous area must be light blue in color and the wiring must be properly labeled as required by Article 504 of the NEC.</p> <p>Suggested action: Include details on the drawing to state the color coding and labeling requirements for the intrinsically safe wiring of the Class I area.</p>	JR	Accept.	
5	<p>Drawing H-14-100786 sheet 2, zone E-3: The type of intrinsically safe barrier is not specified. Grounding is not shown on the hazardous side of the barrier.</p> <p>Suggested action: Specify the name, model, and type of the intrinsically safe barrier on the drawing. Show grounding on the hazardous side of the barrier.</p>	CM	Accept.	
6	<p>Drawing H-14-100786 sheet 2, zone D-3: The wiring method to be used for the hazardous area is not specified. The "approved" seal cannot be specified without identifying the wiring method.</p> <p>Suggested action: Specify the wiring method and seal to be used for the hazardous area.</p>	CM	Accept.	
7	<p>Drawing H-14-100787 sheet 1, zone F-7: Ground-fault protection equipment (GFPE) is required for the heat trace circuit.</p> <p>Suggested action: Include details on the drawing to show GFPE for the 120 VAC heat trace circuit.</p>	CM	Accept.	

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MHC-SD-SNF-DRR-010, Rev. 0

**DON'T SAY IT** --- *Write It!*

DATE: 9/24/96

TO: D.H. Splett

S7-41

FROM: W.W. Wassberg

X3-71

Telephone: 372-1958

cc:

SUBJECT: Review of the 90% Design Review of the K Basin Sludge Receiving Station

Have reviewed the above document and found it to be in order except that several key items are waiting for the 100% design review. Many of the major ALARA issues still need to be completed.

If you have any questions please contact me.

APPENDIX C--DESIGN REVIEW CHECKLIST



Design Review Checklist (Page 1 of 9)

Document(s) Reviewed: Drawing Tree \_\_\_\_\_  
 Design Drawings \_\_\_\_\_

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
1	Have assumptions necessary to perform the design task been adequately described and are they reasonable? Where necessary, have assumptions been identified for reverification when the design task has been completed?	Yes			See RCR comments.
2	Have the appropriate Quality Assurance requirements been specified?	Yes			
3	Were sources of information identified?	Yes			
4	Does the design meet the established requirements or design criteria?	Yes			See RCR comments.
5	Does the design meet established requirements for associated system physical and functional interfaces?	Yes			
6	Have the interface requirements with site construction drawings been clearly specified and are they achievable?	Yes			See RCR comments.
7	Are there any interface problems?		No		None identified.
8	Has appropriate consideration been given to use of standardized parts, materials and processes, and have engineering standards and criteria been specified properly in the design?	Yes			See RCR comments.

Design Review Checklist (Page 2 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
9	Does the design represent the simplest design consistent with functional requirements and expected service conditions?	Yes			Based on previous designs.
10	Can the equipment be readily assembled/disassembled as designed?	Yes			
11	Does the design minimize overall cost to the extent practicable?	Yes			See RCR comments.
12	Has the cost estimate been verified by an independent reviewer?	Yes			
13	Are the specified materials compatible with each other and the environmental conditions to which the material will be exposed?	Yes			Based on FDC requirements using proved designs.
14	Are the applicable codes, standards and requirements, including revisions, properly identified and are their design requirements provided for?	Yes			See RCR comments.
15	Have modifications to commercial grade items and any associated verification operations or tests been appropriately documented?			NA	
16	Have qualified and certified parts been specified?	Yes			See RCR comments. Will be completed by final design review.
17	Have available data on similar designs been used?	Yes			

Design Review Checklist (Page 3 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
18	Does the design meet functional requirements?	Yes			In progress.
	a. Stresses are within design limits?	Yes			In progress.
	b. Derating is used?	Yes			In progress.
	c. Steady-state and transient conditions?	Yes			In progress.
	d. Have actual and "worst case" condition stresses been considered rather than nominal average stresses?	Yes			In progress.
19	Will the design meet the following environmental conditions?				
	a. Temperature (steady-state and transient)	Yes			In progress.
	b. Flow (steady-state and transient) including induced vibration	Yes			In progress.
	c. Pressure (steady-state and transient)	Yes			In progress.
	d. Seismic/natural phenomena	Yes			In progress.
	e. Nuclear radiation	Yes			In progress.
	f. For seismic category I items, impact of non-seismically qualified equipment which is/will be near by (3 over 1 problem)			NA	
20	Is the design producible by conventional means?	Yes			
21	Do manufacturing, processing, and fabrication procedures minimize stress corrosion and fatigue?			NA	

Design Review Checklist (Page 4 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
22	Are the specified construction materials resistant to the following as applicable: a. Moisture b. Oxygen c. Acids d. Salts e. Radiation	Yes Yes Yes Yes		NA	
23	Do the clearances and tolerances take into account the effects of age and wear?			NA	
24	Are mechanical tolerances within the limits of normal shop practice?	Yes			
25	Are assembly clearances adequate?	Yes			
26	Have allowable leakages been specified?	Yes			Designed for zero leakage.
27	Have non-corrosive materials been used where required?	Yes			
28	Does the design avoid any materials unproven for use in the anticipated environment?	Yes			
29	Can the assembly be stored for extended periods of time without degrading effects?			NA	
30	Has the design appropriately considered maintenance, operation and reliability, including maintenance procedures and techniques, unique maintenance requirements and frequencies?		No		Will be addressed prior to operation.
31	Are coatings (or finishes) compatible with the expected environment? With expected usage?	Yes			

Design Review Checklist (Page 5 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer	
Item	Review Consideration	Yes	No	NA	Remarks	
32	Are surface finish requirements the least stringent possible?			NA	<p><i>This is not NA</i>  <i>Surface finish is</i>  <i>important to decor</i>  <i>Radioactive &amp; dangerous</i>  <i>waste contaminants</i>  <i>J.D. Sulzski</i></p>	
33	Are required tolerances, fabrication techniques, processes, etc., consistent with standard practices?	Yes				
34	Can the design and its parts be easily inspected for conformance to engineering specifications?	Yes				
35	Has adequate accessibility been provided for in-service inspection?	Yes				
36	Does the design meet all established safety requirements?	Yes				In progress.
37	Has an acceptable level of radiation exposure been defined?	Yes				
38	Have personnel radiation protection requirements been considered and identified?	Yes				
39	Have nuclear criticality safety considerations been incorporated?	Yes				In progress.
40	Have necessary features been provided to maintain personnel radiation exposure as low as reasonably achievable?	Yes				
41	Can the hardware be adequately disposed of after use if it is radiologically or chemically contaminated?	Yes				<p>← See comment on # 32 J.D. Sulzski</p>
42	Have requirements for receiving and storing the equipment item been defined?			No		

Design Review Checklist (Page 6 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
43	Have adequate acceptance criteria been specified and are the verification methods stated appropriately?		No		
44	Have any locking devices, that are critical to operation or that will be inaccessible after assembly, been sufficiently evaluated and tested to assure their adequacy?		No		
45	Have welding, bolting, joining methods been adequately specified?	Yes			In progress.
46	Will a Design Qualification Checklist (DQC) (for Seismic I equipment) be required? - If yes, will WHC or a subcontractor execute the DQC? - If no, attach separate justification			NA	
47	Have NDE methods been applied correctly?	Yes			
48	Will a separate Acceptance Test Spec/Procedure be required? - If yes, identify responsible organization(s) for preparation and issue (TBD if unknown)	Yes			TBD
49	Have human factors engineering and operability been considered?	Yes			
50	Is an Operation and Maintenance Manual required? If so, have requirements been clearly identified?	Yes		No	

Design Review Checklist (Page 7 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
51	Are current operating documents (procedures, specifications, etc.) applicable to the design or are changes necessary?		No		
52	Does the design use engineered safety and operational protections to avoid an excessive risk-taking dependence on administrative infallibility?	Yes			
53	Are reliability requirements specified? If so, does the reliability analysis of the design meet the specified reliability requirements?	Yes		NA	Analysis not required.
54	Have all credible non-standard conditions been properly considered?	Yes			In progress.
55	Is the equipment, system, or facility operable?			NA	
56	Is the equipment design adequate to implement the proposed maintenance philosophy?	Yes			
57	If any development work is needed, has it been funded or performed?			NA	
58	Has drawing traceability been provided?	Yes			
59	Has the need for safety analysis of this design been determined by Safety?	Yes			
60	Is the equipment, system, or facility covered by an existing Safety Analysis Report? If not, complete the safety analysis in time to incorporate findings of the analyzed in the design.		No		In progress.

Design Review Checklist (Page 8 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
61	Does the design match the intended (and possible abnormal) methods of operation of the system or facility?	Yes			
62	Do the reliability, availability, and maintainability (RAM) analyses of the design support the RAM requirements?			NA	
63	Is a single point failure analysis required?				TBD per safety analysis
64	Are all indication lights and electrical control considered fail-safe?			NA	
65	Do the design media, format, content, reproducibility, and quality comply with all applicable requirements (including Hanford Plant Standards and referenced codes and standards)? Are the drawings structured to meet the needs of users after project completion?	Yes			See RCR comments.
66	Have availability of power requirements for the project been verified?	Yes			In progress.
67	Have requirements for providing as-built drawings been specified?	Yes			Per EP requirements.
68	Is the design in compliance with applicable regulatory requirements and/or WHC regulatory commitments?	Yes			In progress.
69	Are design tolerances appropriate and applied in a cost-effective manner and are standard materials and material sizes used where practicable?	Yes			



Design Review Checklist (Page 9 of 9)

A.13 Sludge Process and Loadout System		Design Phase			Cognizant Engineer
Item	Review Consideration	Yes	No	NA	Remarks
70	Is all computer software and data properly identified and controlled?	Yes			

## DISTRIBUTION SHEET

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		ECN No. NA

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