JUN 13 1995

21

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

609344

2. To: (Receiving Organization) Mechanical Systems & Equipment		3. From: (Originating Organization) Mechanical Systems & Equipment		4. Related EDT No.: NA	
5. Proj./Prog./Dept./Div.: TWRS 74740 74746		6. Cog. Engr.: S. A. Krieg <i>ACK</i> N333		7. Purchase Order No.: NA	
8. Originator Remarks: Original release of Formal Design Review Report				9. Equip./Component No.: NA	
				10. System/Bldg./Facility: NA	
11. Receiver Remarks:				12. Major Assm. Dwg. No.:	
				13. Permit/Permit Application No.: NA	
				14. Required Response Date: NA	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-DRR-049		0	Flexible Receiver Adapters Formal Design Review	NA	1	1	1

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

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog.Eng. S A Krieg	<i>SA Krieg</i>	4/16/95	HC-13	D.E. LEGARE	<i>DE Legare</i>	4/15/95	(1)		
1	1	Cog. Mgr. R K Brown	<i>RK Brown</i>	6-12-95		CSTI	<i>CSTI</i>	6-12-95	(2)	A3-36	
		QA				Control	<i>Control</i>	6-12-95	(1)	A3-36	
		Safety									
		Env.									

18. S. A. Krieg <i>SA Krieg</i> Signature of EDT Originator Date 4/16/95		19. R. K. Brown <i>RK Brown</i> Authorized Representative Date for Receiving Organization 6-12-95		20. R. K. Brown <i>RK Brown</i> Cognizant Manager Date 6-12-95		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
---	--	--	--	---	--	---	--

RELEASE AUTHORIZATION**Document Number:** WHC-SD-WM-DRR-049, Rev. 0**Document Title:** Flexible Receiver Adapter Formal Design Review**Release Date:** 6/13/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

V. L. Birkland
V.L. Birkland

6/13/95

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SUPPORTING DOCUMENT		1. Total Pages 308
2. Title Flexible Receiver Adapter Formal Design Review	3. Number WHC-SD-WM-DRR-049	4. Rev No. 0
5. Key Words Flexible, Design Review, Tank Farms, Adapters.	6. Author Name: S. A. Krieg <i>S. A. Krieg</i> Signature Organization/Charge Code 74720 74700/N3233	
7. Abstract This document details the formal (90%) design review for the flexible receiver adapters and platforms. The results of the 30% and 50% design reviews are included in the appendices.		

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

8. RELEASE STAMP

To: R. K. Brown H5-68

There are ten open items that were transferred from the RCRs to the open item list (Appendix E) that remain to be addressed. The structural calculations were independently reviewed by L. A. Rodgers of ICF KH Mechanisms Engineering and were not part of this design review. The SAIC "Field Verification Report" was not part of the data officially reviewed by the committee although several comments were presented.

R. K. Brown
Page 2
June 9, 1995

The Design review Committee finds that the Flexible Receiver adapters and platforms, as designed by SAIC and WHC, meet the design specifications in Appendix F. This finding is subject to the satisfactory resolution of the open items listed in Appendix E. The RCRs (see Appendix D) have been closed and the open items transferred to the open item list as indicated by the reviewer's signature in the "CLOSED" box on the RCR.

FLEXIBLE RECEIVER ADAPTER DESIGN REVIEW COMMITTEE

S. A. (Stu) Krieg	Design Review Chairman
W. R. (Bill) Jaquish	Design Review Secretary
J. J. (John) Verderber	Quality Assurance
L. E. (Larry) Thomas	Safety
O. H. (Hal) Halvorson	Operations
G. L. (Greg) Ralston	Safety Equipment Development
V. R. (Val) Enderlin	Mechanisms Engineering
S. W. (Steve) Shaw	Transportation & Packaging
A. K. (Kip) McDowell	Environmental
P. F. (Paul) Kison	TWRS Plant Engineering

The cognizant WHC engineer for this task is D. E. Legare and the cognizant manager is R. K. Brown, of Special Projects, Upgrades Engineering.

For the Committee:

S. A. Krieg
Chairman

W. R. Jaquish
Secretary

mq

APPENDICES

- A. Checklist
- B. List of Drawings Reviewed by the Committee
- C. Meeting Notices and Sign-in Sheets
- D. Review Comment Records
- E. Open Item List
- F. List of Design Requirements
- G. 30% and 50% Design Review Data

APPENDIX A

DESIGN REVIEW CHECKLIST

Design Review Checklist

EP4.1

Document(s) Reviewed: Flexible Receiver Adapters
Cognizant Engineer: D. E. Legare

Project Item	System/Component Review Consideration	90% Design Phase			Remarks
		Yes	NO	NA	
1.	Have assumptions necessary to perform the design task been adequately described and are they reasonable?	✓			
2.	Have the appropriate Quality Assurance requirements been specified.	✓			
3.	Were sources of information indentified?	✓			
4.	Does the design meet the established requirements or design criteria?	✓			
5.	Does the design meet established requirements for associated system physical and functional interfaces?	✓			
6.	Have the interface requirements with site drawings been clearly specified and are they achievable?	✓			
7.	Are there any interface problems?			✓	NOT IN DES REV SCOPE
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?	✓			
9.	Can the equipment be readily assembled/disassembled as designed?		✓		SEE OPEN ITEM LIST
10.	Does the design minimize overall cost to the extent practicable?			✓	SEE OPEN ITEM # 4
11.	Are the specified materials compatible with each other and the environmental conditions to which the material will be exposed?	✓			
12.	Are the applicable codes, standards and requirements, including revisions, properly identified and are their design requirements provided for?	✓			
13.	Have modifications to commercial grade items and any associated verification operations or tests been appropriately documented.			✓	
14.	Have available data on similar designs been used.	✓			
15.	Does the design meet functional requirements	✓			

Design Review Checklist (Continued)

Project Item	System/Component Review Consideration	90% Design Phase			Remarks
		Yes	NO	NA	
16.	Will the design meet the following environmental conditions? a. Temperature (steady-state and transient) b. Flow (steady-state and transient) including induced vibration c. Pressure (steady-state and transient) d. Seismic/natural phenomena e. Nuclear radiation	✓			
17.	Do manufacturing, processing, and fabrication procedures minimize stress corrosion and fatigue?			✓	
18.	Are the specified construction materials resistant to the following as applicable: a. Moisture b. Oxygen c. Acids d. Salts e. Radiation	✓			
19.	Do the clearances and tolerances take into account the existing conditions at the tank farms?	✓			
20.	Are assembly clearances adequate	✓			
21.	Have allowable leakages been specified?			✓	
22.	Have non-corrosive materials been used where required?	✓			
23.	Does the design avoid any materials unproven for use in the anticipated environment?	✓			
24.	Can the assembly be stored for extended periods of time without degrading effects?	✓			
25.	Has the design appropriately considered maintenance, operation and reliability, including maintenance procedures and techniques, unique maintenance requirements and frequencies?		✓		SEE OPEN ITEM LIST
26.	Are coatings (or finishes) compatible with the expected environment? With expected usage?	✓			
27.	Are surface finish requirements the least stringent possible?	✓			

Design Review Checklist (Continued)

Project Item	System/Component Review Consideration	90% Design Phase			Remarks
		Yes	NO	NA	
28.	Are required tolerances, fabrication techniques, processes, etc., consistent with standard practices?	✓			
29.	Can the design and its parts be easily inspected for conformance to engineering specifications?	✓			
30.	Does the design meet all established safety requirements.	✓			
31.	Has an acceptable level of radiation exposure been defined?		✓		EXPOSURE TO PERSONNEL TO PERFORM TASK NOT DEFINED - RADIATION FIELD IS DEFINED
32.	Have necessary features been provided to maintain personnel radiation exposure as low as reasonably achievable?		✓		ALARA. Installation/Removal Review not complete.
33.	Can the hardware be adequately disposed of after use if is radiologically or chemically contaminated?	✓			
34.	Have requirements for receiving and storing the equipment/item been defined?		✓		NEED W-DOE buy-in for storage.
35.	Had adequate acceptance criteria been specified and are the verification methods stated appropriately?			✓	Not defined in drawing stage of design.
36.	Have welding, bolting, joining methods been adequately specified?	✓			
37.	Have NDE methods been applied correctly?	✓			
38.	Has human factors engineering and operability been considered?		✓		See open item list
39.	Are current operating documents (procedures, specifications, etc.) applicable to the design?		✓		
40.	Does the design utilize engineered safety and operational protections to avoid an excessive risk-taking dependence on administrative infallibility?			✓	
41.	If any development work is needed, has it been funded or performed?		✓		Platform design for assembly not complete.
42.	Has drawing traceability been provided?	✓			
43.	Has the need for safety analysis of this design been determined by Safety?	✓			
44.	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 analysis in the design.			✓	

Design Review Checklist (Continued)

Project Item	System/Component Review Consideration	90% Design Phase			Remarks
		Yes	NO	NA	
45.	Does 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 need of user?	✓			
46.	Have availability of power requirements for the project been verified?		✓	✓	Adapter assemblies do not require power.
47.	Is the design in compliance with applicable regulatory requirements and/or WHC regulatory commitments?	✓			

APPENDIX B
DRAWING LIST

Dwg No	Dwg Title	Shts
H-2-79140	LLCE Hydraulic Support Jack Cylinder Tubing Arrangement	2
H-2-79149	LLCE Slide and Support Assembly	6
H-2-79191	LLCE Flexible Receiver Adapter Assembly	3
H-2-79193	Flexible Receiver Adapter Platform & Gasket Details	1
H-2-79195	LLCE Flexible Receiver Adapter Wash Ring Assembly	2
H-2-79198	241 Washer Base Assembly	1
H-2-79201	LLCE 50" Bellows	2
H-2-79220	TWRS - 42" Flexible Receiver Assembly CR-106-06B Heel Pit	1
H-2-79328	TWRS 4" & 6" Flexible Receiver Assembly	1
H-2-79337	TWRS 4" & 6" Washer Assembly II	4
H-2-820729	Heel Pit 241-CR-06B Shielded Work Platform	1
H-2-820734	Heel Pit 241-CR-06B Spool Piece Installation	2
H-2-820735	Sluicing Pit 241-AY-02B Spool Piece Assembly	5
H-2-820737	Heel Pit 241-CR-06B Spool Piece Assembly	4
H-2-824701	Kit, Seismic Restraint, Internal	3
H-2-824702	Kit, Seismic Restraint, External	1
H-2-824703	LLCE Platform Assembly 7' X 7'/1 Piece	1
H-2-824704	LLCE Platform Assembly 11' X 11'/1 Piece	3
H-2-824705	LLCE Platform Assembly 8' X 8'/1 Piece	3
H-2-824706	LLCE Platform Assembly 9' X 9'/1 Piece	3
H-2-824707	LLCE Platform Assembly 13' X 8'/1 Piece	3
H-2-824709	LLCE Platform Assembly 16' X 10'/1 Piece	3
H-2-824710	LLCE Platform Assembly 15'-6" X 18'/2 Pieces	4
H-2-824711	LLCE Platform Assembly 12' X 11'-6"/1 Piece	3
H-2-824712	LLCE Platform Assembly 10' X 8'/1 Piece	2
H-2-824713	LLCE Platform Assembly 22'-8" Sq/3 Pieces	4
H-2-824714	LLCE Platform Assembly 15' X 17'/2 Pieces	5
H-2-824715	LLCE Platform Assembly 22' X 20'/3 Piece	5
H-2-824716	LLCE Platform Assembly 11'-5" X 15'-2"/1 Piece	3
H-2-824717	LLCE Flexible Receiver Adapter 38" Plate	1
H-2-824718	LLCE Flexible Receiver Adapter 50" Plate	1
H-2-824719	LLCE Flexible Receiver Adapter 50" Wash Ring Assembly	2
H-2-824722	LLCE FRRRA/Platform Installation Catch/U-301B/12	2
H-2-824723	LLCE FRRRA/Platform Installation Catch/ER-311/12	2
H-2-824724	LLCE FRRRA/Platform Installation Catch/A-350/12	2
H-2-824725	LLCE FRRRA/Platform Installation Catch/151-AZ/12	2
H-2-824726	LLCE Flexible Receiver Adapter 50" Plate	1
H-2-824727	LLCE FRRRA/Platform Installation Catch/UX-302/12	2
H-2-824728	LLCE Flexible Receiver Adapter 50" Plate	1
H-2-824729	LLCE FRRRA/Platform Installation DCRT/244-U/15	2
H-2-824730	LLCE FRRRA/Platform Installation DCRT/244-CR-003/A	2
H-2-824731	LLCE FRRRA/Platform Installation DCRT/244-TX/3	3

Dwg No	Dwg Title	Shts
H-2-824732	LLCE FRRRA/Platform Installation DCRT/244-A/F	3
H-2-824733	LLCE FRRRA/Platform Installation DCRT/244-BX/2	3
H-2-824734	LLCE FRRRA/Platform Installation DCRT/244-CR-003/P	2
H-2-824735	LLCE FRRRA/Platform Installation DCRT/244-S/H	3
H-2-824736	LLCE FRRRA/Platform Installation DCRT/244-TX/2	3
H-2-824737	LLCE FRRRA/Platform Installation DCRT/244-U/2	3
H-2-824738	LLCE FRRRA/Platform Installation 101-AN/1A/3A	2
H-2-824739	LLCE FRRRA/Platform Installation 102-AN/2A/3A	2
H-2-824741	LLCE FRRRA/Platform Installation 101-AP/1A/3A	2
H-2-824742	LLCE FRRRA/Platform Installation 102-AP/2D/13	2
H-2-824743	LLCE FRRRA/Platform Installation 103-AP/3A/3A	2
H-2-824744	LLCE FRRRA/Platform Installation 103-AP/--/4	2
H-2-824745	LLCE FRRRA/Platform Installation 104-AP/4A/3A	2
H-2-824746	LLCE FRRRA/Platform Installation 105-AP/5A/3A	2
H-2-824747	LLCE FRRRA/Platform Installation 106-AP/6A/3A	2
H-2-824748	LLCE FRRRA/Platform Installation 107-AP/7A/3A	2
H-2-824749	LLCE FRRRA/Platform Installation 108-AP/8A/3A	2
H-2-824750	LLCE FRRRA/Platform Installation 101-AW/1A/3A	2
H-2-824751	LLCE FRRRA/Platform Installation 101-AW/--/4A	2
H-2-824752	LLCE FRRRA/Platform Installation DCRT/244-TX/3	2
H-2-824754	LLCE FRRRA/Platform Installation 103-AW/3A/3A	2
H-2-824755	LLCE FRRRA/Platform Installation 104-AW/4A/3A	2
H-2-824756	LLCE FRRRA/Platform Installation 105-AW/5A/3A	2
H-2-824757	LLCE FRRRA/Platform Installation 106-AW/6A/3A	2
H-2-824758	LLCE FRRRA/Platform Installation 101-AY/1B/1C	2
H-2-824759	LLCE FRRRA/Platform Installation 102-AY/2D/1C	2
H-2-824760	LLCE Flexible Receiver Adapter 50" Gasket	1
H-2-824762	LLCE FRRRA/Platform Installation 106-C/6A/9	2
H-2-824763	LLCE FRRRA/Platform Installation 106-C/6C/3	2
H-2-824764	LLCE FRRRA/Platform Installation 106-C/6B/13	2
H-2-824765	LLCE Flexible Receiver Adapter 48" Plate	1
H-2-824766	LLCE FRRRA/Platform Installation 106-C/--/8	2
H-2-824767	LLCE FRRRA/Platform Installation 106-C/--/14	2
H-2-824768	LLCE Flexible Receiver Adapter 50" Plate	1
H-2-824769	LLCE Flexible Receiver Adapter Plate Adapter	1
H-2-824770	LLCE FRRRA/Platform Installation 101-SY/--/17C	2
H-2-824771	LLCE FRRRA/Platform Installation 101-SY/--/17B	2
H-2-824773	LLCE FRRRA/Platform Installation 101-SY/--/1B	2
H-2-824774	LLCE FRRRA/Platform Installation 101-SY/--/14A	2
H-2-824775	LLCE FRRRA/Platform Installation 102-SY/2E/24A	2
H-2-824776	LLCE FRRRA/Platform Installation 102-SY/2A/3A	2
H-2-824777	Washer Assembly	1

Dwg No	Dwg Title	Shts
H-2-824778	LLCE FRRRA/Platform Installation 102-SY/--/4A	2
H-2-824779	LLCE FRRRA/Platform Installation 103-SY/3A/3A	2
H-2-824780	LLCE FRRRA/Platform Installation 103-SY/--/4A	2
H-2-824781	LLCE FRRRA/Platform Installation 101-AZ/1C/1D	2
H-2-824782	LLCE FRRRA/Platform Installation 101-AY/1D/1A	2
H-2-824783	LLCE FRRRA/Platform Installation DCRT/244-TX/7	3
H-2-824786	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824787	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824788	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824790	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824791	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824794	LLCE Flexible Reciever Adapter Base Assembly	1
H-2-824795	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824796	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824797	LLCE Flexible Receiver Adapter Split Spool	1
H-2-824798	LLCE Flexible Receiver Adapter Split Spool Adapter Kit	1
H-2-824799	LLCE Flexible Receiver Adapter Split Spool	1
H-2-824800	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824801	LLCE Flexible Receiver Adapter Base Assembly	1
H-2-824802	LLCE Flexible Receiver Adapter Stabilizer Assembly	1
H-2-824803	LLCE Flexible Receiver Adapter 48" Plate	1
H-2-824804	LLCE Flexible Receiver Adapter 48" Spacer Assembly	1
H-2-824805	LLCE Flexible Receiver Adapter 38" Wash Ring Assembly	2
H-2-824806	LLCE Flexible Receiver Adapter Assembly	1
H-2-824807	LLCE Flexible Receiver Adapter Assembly	1
H-2-824809	LLCE Flexible Receiver Adapter Assembly	1
H-2-824810	LLCE Flexible Receiver Adapter Assembly	1
H-2-824816	LLCE Flexible Receiver Adapter Assembly	1
H-2-824818	LLCE Flexible Receiver Adapter Assembly	2
H-2-824819	LLCE Flexible Receiver Adapter Assembly	2
H-2-824821	LLCE Flexible Receiver Adapter 50" Spacer Assembly	1

APPENDIX C
DRAWING LIST

Westinghouse
Hanford Company

WHC-SD-WM-DRR-049

Revision 0

Page C-2

Internal
Memo

From: Special Projects
Phone: 376-0931 H5-68
Date: January 19, 1995
Subject: FLEXIBLE RECEIVER RISER ADAPTER - FORMAL DESIGN REVIEW BRIEFING

To:	J. K. Bajwa	H4-62	D. E. Legare	H5-68
	W. H. Crowley	H5-11	A. K. McDowell	R1-51
	C. W. Dunbar	R1-30	W. E. Meeuwsen	R1-51
	V. R. Enderlin	H5-70	G. L. Ralston	H5-09
	K. L. Engelhardt	S6-30	M. A. Richman	S1-57
	O. H. Halvorson	T4-08	S. D. Riesenweber	R1-30
	W. R. Jaquish	H5-70	H. L. Roach	H5-72
	F. P. Johansen (SAIC)		L. A. Rodgers	H5-53
	W. S. Josephson	N3-11	S. W. Shaw	G2-02
	C. M. Keller	H5-70	L. E. Thomas	R3-08
	P. F. Kison	S2-45	G. D. Thompson	H5-70
	S. A. Krieg	H5-68	T. A. Tomaszewski	H5-72
	SAK File/LB		C. L. Uhlman	H5-11

A design review briefing for the Flexible Receiver Adapters (FRAs) will be held on February 1, 1995 and February 2, 1995, starting at 8:30 a.m. at the ETC-2 Building, Room 24. This meeting will initiate the formal design review for the FRAs at the 90% design review state. The Design Review Package will be available at the kick-off meeting. Comments are to be returned on RCRs to S. A. Krieg by February 14, 1995 for compilation and resolution prior to the design review meeting. It is preferable that the RCRs (Site Forms WEF011) be completed and returned electronically by CC:Mail.

The design review meeting will be held at 8:30 a.m. February 21, 1995 and February 22, 1995, at ETC-2, room 24. At this meeting each reviewer's comments will be discussed to determine if they have been resolved to the reviewer's satisfaction and/or if additional action is required.

The purpose of this review is to determine the technical adequacy of the design. The 30% and 50% design reviews for this subject have been completed, and the review meeting notes are included as part of the design review package.

The Design Review Committee members are listed below. The chairman was selected by the TWRS Special Projects Manager, R. K. Brown. The committee members were selected by the chairman and approved by the manager of TWRS Special Projects.

DESIGN REVIEW COMMITTEE

S. A. (Stu) Krieg
W. R. (Bill) Jaquish
M. A. (Mitch) Richaman
L. E. (Larry) Thomas
O. H. (Hal) Halvorson
G. L. (Greg) Ralston
V. R. (Val) Enderlin
S. W. (Steve) Shaw
A. K. (Kip) McDowell
P. F. (Paul) Kison

Design Review Chairman
Design Review Secretary
Quality Assurance
Safety
Operations
Safety Equipment Development
Mechanisms Engineering
Transportation & Packaging
Environmental
TWRS Plant Engineering

The cognizant WHC Engineer for this task is P. A. Titzler, and the cognizant Manager is R. K. Brown.

S. A. Krieg
Design Review Chairman

Concurrence:
R. K. Brown
TWRS Special Projects

dmn

February 1, 1995

**MEETING AGENDA
FOR
90 PERCENT DESIGN REVIEW**

**KICK-OFF MEETING
FLEXIBLE RECEIVER ADAPTERS/PLATFORMS**

INTRODUCTION

P. A. Titzler

PURPOSE AND SCOPE OF THE REVIEW

S. A. Krieg

PRESENTATION

FLEXIBLE RECEIVER VIDEO

D.E.Legare

30% AND 50% DESIGN REVIEW ACTION ITEMS

G. D. Thompson

DESIGN INTERFACES AND BACKGROUND

F. P. Johansen
D. E. Legare

DESIGN DRAWINGS

F. P. Johansen (SAIC)
D. E. Legare/C. M. Keller

COMMITTEE INSTRUCTIONS AND REVIEW SCHEDULE

S. A. Krieg

FLEXIBLE RECEIVER ADAPTOR DESIGN REVIEW MEETING SIGN IN SHEET

DATE: 02/01/95		LOCATION: ETC2/24	TIME: 8:30
NAME	PHONE	ORGANIZATION	
S. A. Krieg	376-0931	WHC/ SPECIAL PROJ	
G L Rotstein	2-2138	WHC / TWRS - Safety Equip Dev	
O. A. Halvorsen	372-2179	WHC/TWRS DPS TECH	
Tom Tomaszewski	376-4858	PACKAGING ENGINEERING	
HANK Rouch	376-5545	Analysis Services	
CRAIG KELLER	376-2137	Analysis Services	
P A TITZLER	376-9662	TWRS SPECIAL PROJ.	
Don Logare	376-3489	" " "	
Kip McDowell	373-5619	TWRS Environmental Engineering	
W/G CONN	372-7700	SAIC	
JOE CRUZ	372-7771	SAIC	
Fred Johansen	619-458-3721 372-7700	SAIC	

SIGN IN SHEET

[illegible]

From: Special Projects
Phone: 376-0931 H5-68
Date: February 6, 1995
Subject: FLEXIBLE RECEIVER RISER ADAPTER - FORMAL DESIGN REVIEW BRIEFING

To:	J. K. Bajwa	H4-62	D. E. Legare	H5-68
	W. H. Crowley	H5-11	A. K. McDowell	R1-51
	C. W. Dunbar	R1-30	W. E. Meeuwsen	R1-51
	V. R. Enderlin	H5-70	G. L. Ralston	H5-09
	K. L. Engelhardt	S6-30	M. A. Richman	S1-57
	O. H. Halvorson	T4-08	S. D. Riesenweber	R2-76
	W. R. Jaquish	H5-70	H. L. Roach	H5-72
	F. P. Johansen (SAIC)		L. A. Rodgers	H5-53
	W. S. Josephson	N3-11	S. W. Shaw	G2-02
	C. M. Keller	H5-70	L. E. Thomas	R3-08
	P. F. Kison	S2-45	G. D. Thompson	H5-70
	S. A. Krieg	H5-68	T. A. Tomaszewski	H5-72
	SAK File/LB		C. L. Uhlman	H5-11
			J. J. Verderber	S1-57

The last session of the design review briefing for the Flexible Receiver Adapters will be held on Wednesday February 8, 1995 at 8:00 a.m. in ETC-2 conference room 24. The final review packages will be presented at this meeting.

The design review team will meet following the briefing to discuss scope and progress of the review effort.

Stuart A. Krieg
Special Projects

**FLEXIBLE RECEIVER ADAPTOR
DESIGN REVIEW MEETING
SIGN IN SHEET**

DATE: 02/08/95		LOCATION: ETC2/24	TIME: 8:00
NAME	PHONE	ORGANIZATION	
S. A. KRIEG	376-0931	WHC/TWRS-SP	
P A TITZLER	376-9662	WHC/TWRS SP. PMS.	
D E Legare	376-3489	WHC/ " " "	
T. K. BAJWA	372-1478	SA & NE	
G.D. Thompson	376-2067	KEH / Analytical services	
L.E - THOMAS	372-2402	TWRS NSS	
S.W. SHAW	372-1746	PP & T	
O. A. Halvorsen	372-2179	WHC/OPS/Tech Support	
T. J. VERDERBER	373-3644	WHC / QA	
Hank Rouch	376-5595	ICF Kaiser / Anal. services	
C.M. Keller	376-2137	KEH / Analytical Services	
BILL JAQUISH	376 9325	ICF KAISER HANFORD / M.E.	
V R ENDERLIN	376 9259	" "	
EJ CRUZ	372-7771	SAIC - Richland	
FRED JOHANSEN	372-7738 (619) 458-3721	SAIC - San Diego	

LLCE Adaptor 90% Design Review
Review Committee Meeting 2/8/95

Committee Action Items

The design requirements document needs to be reviewed by the committee.

The 30% and 50% design review presentations and comments need to be reviewed by the committee.

The charter of the review committee needs to be clearly defined. The products of the committee need to be defined (RCR forms, review document, signature of drawings, etc).

Economics of Approach

There is strong concern regarding the economics of the selected approach. Recommend an evaluation of the assembly, staging, installation, decontaminating, and disassembly costs. This should include labor, materials, and special equipment required to conduct the equipment removal operation.

Seismic Design Requirements

The seismic requirements have resulted in complex designs for the adaptor platforms. This will greatly increase the manufacturing, assembly, installation, decontamination, and storage costs of the platforms. It is strongly recommended that the need for the seismic restraints be reviewed with the intent to eliminate the seismic restraints.

If, however the seismic restraints are required, the torque values of the wedge restraints must be specified on the installation drawings.

Use of Standard Parts and Materials

Delete use of "any grade" fasteners in part list.

Review use of different materials for same use (304, 304L, 316 SS).

Review use of multiple sizes of threaded rod on bellows.

Review use of stainless steel parts and carbon steel parts in contact.

Replace SS fasteners with CS for adaptor assembly.

The thread class and type must be specified for all fasteners and threaded rod.

Operations

There is concern that the receiver will operate correctly with the receiver, platform, adaptor installed off center of the risers per the installation drawings. A review of the receiver is out of scope of this design review and

its capabilities are not known by the committee.

Where is the ALARA review document?

Review the use of lead shielding. It is not clear that this shielding is required.

Review need for three-legged platform.

Decontamination

There is concern that the interface between the flexible receiver and adaptors is a potential contamination trap.

Recommend using blind holes to attach the adaptor bellows to the platforms.

The P-seal on the adaptor is a potential contamination trap.

Storage and Handling

There is concern regarding the storage space required for the adaptors. At issue is the space and volume requirements for storing the adaptor equipment.

Where will the adaptors be stored? Where will the adaptors be stored once they are contaminated?

There is concern over the ability to easily assemble large adaptors in the field. This includes aligning mating pieces, aligning bolt patterns, staging the segments for assembly, and hoisting the assembled adaptors from horizontal to vertical.

There is a concern regarding the need to provide temporary storage of access cover plates. At issue is the storage requirements after the plates have smearable contamination on the underside.

Adaptor and Platform Assembly

The procedure required to fasten the two piece platforms together will be difficult to implement. Since this is a fallout of the seismic requirements, the requirement to bolt these two pieces together should be considered during the review of the need for the seismic requirements.

There is concern that the number of fasteners to attach the adaptor assemblies is excessive. The fastener quantity needs to be reduced. Alternatively the use of barrel type clamps to attach the adaptor assemblies should be reviewed.

The use of guide pins to assemble the adaptor tubes is recommended.

There is no keying or marking to align the adaptor pieces to the platform.

There is concern that the WHC, ICF Kaiser, and SAIC designed parts will mate together. The hole dimensioning and tolerances will control this.

Dimensioning

True position tolerancing should be uniformly applied.

Drawing Practice

The platform drawings are generally unclear. The top plate, I-beam, and assembly dimensions are included in the same view. There is too much information and the drawings are difficult to read. Recommend additional detail figures on same drawings.

It is noted that there are redundant weld callouts on the same drawing in different views.

Welding specifications are not called out in the drawings.

Hoisting and Rigging

There is concern over the capacity of the hoist rings.

The safe working load must be identified.

The weights of the major assemblies should be included in the assembly drawings.

There is concern on the procedure to lift the large adaptors from horizontal to vertical. The major issues are bending the adaptors and damage to the p-seal.

There is concern over the steps to attached the in-bag hoist hook to the equipment. This does not appear to be a trivial matter.

Manufacturing

The internal adaptor welds need a "grind smooth" callout.

Review attachment of lower p-seal to adaptors. Several adaptor bases have concave shapes.

**FLEXIBLE RECEIVER RISER ADAPTERS
90% DESIGN REVIEW**

**90% DESIGN REVIEW
PRELIMINARY BRIEFING - 2
RISER ADAPTER DESIGNS
FOR THE FLEXIBLE RECEIVER SYSTEM**

FEBUARY 8, 1995

ETC 2, ROOM 24

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
90% DESIGN REVIEW**

THE FRRA DESIGNS INCLUDES 6 ADAPTER DIAMETERS, 12 ADAPTER LENGTHS, 16 PLATFORM SIZES AND 51 EQUIPMENT REMOVAL SITES

<u>ADAPTER</u>		<u>ADAPTER</u>	
<u>DIA.</u>	<u>LENGTHS</u>	<u>PLATFORMS</u>	<u>SITES COMPONENTS</u>
50"	6 EA	3 NEW/ 1 NEW [4 L]	10 15 NEW
48"	6 EA	7 NEW	23 12 NEW
44"	1 EA	1 MOD.	4 3 EXIST.
38"	4 EA	2 NEW/ 1 EXIST.	4 5 NEW/ 3 EXIST.
12" AG	2 EA	1 EXIST[4/6]	9 1 NEW/1 EXIST.
10"	1 EA	1 EXIST[4/6]	1 2 NEW/1 EXIST. WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
90% DESIGN REVIEW**

ADAPTER LENGTHS VARY FROM 5' TO 24'

**ADAPTER
DIAMETER**

**ADAPTER
LENGTHS**

50"

5', 6', 8', 12', 13', 17'

48"

7', 10', 11', 12', 22', 24'

44"

10'

38"

7', 9', 10', 11'

12" AG

1', 2'

10"

10'

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
90% DESIGN REVIEW**

**THE ADAPTER REQUIRE 10 SPECIAL NON-SYMETRIC BASE
PIECES TO ACCOMODATE COMPLEX PIT EQUIPMENT LAYOUTS**

<u>DIA.</u>	<u>TOP PLATE</u>	<u>BELLOWS</u>	<u>WASH RING</u>	<u>SPACER</u>	<u>BASE</u>
50"	3 NEW	1 NEW	2 NEW	4 NEW	5 NEW
48"*	2 NEW	1 NEW	1 NEW	3 NEW	5 NEW
44"	-	1 EXIST.	1 EXIST.	1 EXIST.	-
38"	1 NEW	1 EXIST.	1 EXIST/ 1 NEW	1 EXIST/ 2 NEW	1 NEW
12" AG	-	-	1 EXIST.	1 NEW	-
10"	1 NEW	-	1 EXIST.	1 NEW	1 NEW

***EXISTING DESIGNS FOR 4 COMPONENTS**

WHC/SAIC

[30] From: Stuart A Krieg at ~WHC208 2/17/95 10:14AM (776 bytes: 6 ln)
To: Valerie R Enderlin at ~WHC240, O A (Hal) Halvorson at ~WHC73,
William R Jaquish at ~WHC165, Paul F Kison at ~WHC305, Stuart A Krieg,
A K McDowell at ~WHC266, Gregory L Ralston at ~WHC207, Steven W Shaw,
Larry E Thomas at ~WHC289, John J Verderber at ~WHC235, Richard K Brown
Subject: Flexible Receiver Adapter Design Review

----- Message Contents -----

Meeting Reminder

The Flexible Receiver Adapter Design Review Meeting will be
held in ETC2 room 24 from 8am to 4pm on 2/21/95 and 2/22/95.

S A Krieg

February 21, 1995

**AGENDA
FOR
90 PERCENT DESIGN REVIEW MEETING
FLEXIBLE RECEIVER ADAPTERS/PLATFORMS**

- 1 INTRODUCTION S. A. Krieg
- 2) GENERAL COMMENTS SAIC/TITZLER/LEGARE

Review of committee RCR general comments

Additional general comments

- The internal contamination traps need to be eliminated. These include ledges, bolt holes, welds, etc.
- The lock washers on the adapter flanges should be eliminated or replaced with flat washers.

- 3) RCR REVIEWS
- Thomas (Safety)
 - Verderber (Quality Assurance)
 - McDowell (Environmental)
 - Halvorson
 - Shaw
 - Enderlin
 - Jaquish
 - Roach
 - Keller
 - Ralston
 - Kison

- 4) COMMITTEE INSTRUCTIONS AND REVIEW SCHEDULE S. A. Krieg

FLEXIBLE RECEIVER ADAPTOR
90% DESIGN REVIEW MEETING
SIGN IN SHEET

DATE: 02/21/95		LOCATION: ETC2/24	TIME: 8:00
NAME	PHONE	ORGANIZATION	
S.A. KRIEG	376-0931	WHC/ TWRS- SP	
VR ENDERLIN	376 9259	ICF/KEH /MECH ENG	
SW SHAW	372-1762	WHC / T&P	
J.J. VERDERBER	373-3644	WHC / TWRS QA	
D.A. Halvorsen	372-2179	WHC / TWRS Tech Supp.	
C.M. KELLER	376-2137	KEH/ ANALYSIS SVCS	
DE Legare	376-3489	WHC / Special Projects	
PA TITZLER	376-9662	WHC / TWRS SP PROJ.	
GP Thompson	376-2067	KEH/ Analytical Services	
W.R. JAQUISH	376-9325	WHC KEH/ MECH ENG.	
FP. Johansen	372-7738	SAIC	

APPENDIX D
DRAWING LIST

REVIEW COMMENT RECORD (RCR)	1. Date February 7, 1995	2. Review No. na
	3. Project No. na	4. Page 1 of 3

5. Document Number(s)/Title(s) Flex Receiver Adapter, Drawing Package A, Type 4	6. Program/Project/ Building Number Flex Adapter	7. Reviewer Halvorson	8. Organization/Group TWRS Operations/Tech Support	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	General - The installation and removal of the total package needs to be reviewed as it is very labor intensive and will be expensive to use the system as designed.		Accept. Assembly, installation, and removal will be reviewed.	Open
2	Drawing H-2-824722 - How will the units be handled? Lifting lugs need to be added so the units can be handled.		Accept. Lifting lugs added to 3 leg stand. Eyebolts will be used for other components.	
3	Drawing H-2-824722 - To ease the assembly of the pieces recommend that guide pins be designed to align the platform, wash ring, and adaptor. Also this idea will help align the "bag system".		Accept, guide pins will be added where appropriate.	
4	Drawing H-2-824722 - As designed the adapter and platform will need to be assembled over the pit or a special jig developed to assemble and transport the unit to the pit. Is the project going to furnish this jig as assemble of the unit over the pit is not acceptable?		Accept, Design and fabrication of special hardware for installation ix expected to occur in FY 96.	
5	Drawing H-2-824727 - Part number 4 is the platform design while the bullet indicates that it is the adapter, which is it? Clearly identify the components.		Accept, corrected changed to p/n 5	

REVIEW COMMENT RECORD (RCR)			1. Date February 7, 1995	2. Review No. na
			3. Project No. na	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
6	Drawing H-2-824806 - For short term use why are lock washers needed? Why are the lock washers carbon steel when the nuts and bolts are sst? Why are 2 lock washers called out for every nut and bolt combination? Review the need for lock washers and the material call out if needed.		Accept, lockwashers removed.	
7	Drawing H-2-824802 - Part number 12 is designed to be placed into part number 14, this is not possible as the ID of part number 14 is 3.5 inches and the OD of part number 12 is 3.75. Review the part sizes.		Accept, corrected	
8	Drawing H-2-824802 - How is the jack screws operated? There does not appear to be any method to adjust the elevation of the jack screws.		Corrected. Part 6 welded to part 7 to provide wrench adjustment at the base.	
9	Drawing H-2-824777 - Details of the material locations is missing from this drawing. Clearly identify the location of material called out in the material list. A review of the capability to decontaminate this unit needs to be done.		Accept	
10	Drawing H-2-824801 - What type of finish do the welds on the inside surfaces of the adapter have. Recommend that the welds be ground smooth. The seal at the bottom of the adapter is a trap for radiation. Review the design to eliminate the trap.		Accept, 125 surface finish specified for interior welds.	
11	Drawing H-2-79149 - Why is there a slide gate on the assembly? The area that the assembly slides into is open to the environment therefore will need to be sealed to prevent any release to the environment plus it is a catch for any liquids that may drip from the LLCE as it is pulled up and before the sleeve is sealed. Remove the slide gate or redesign the unit.		Accept, Eliminated slide plate.	

REVIEW COMMENT RECORD (RCR)			1. Date February 7, 1995	2. Review No. na
			3. Project No. na	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	Drawing H-2-79149 Sheet 2 - Part number 17 is not shown on the parts/material list. Either identify part number 17 on the list or delete the number from the drawing.		Accept, corrected	
13	Drawing H-2-79149 Sheet 6 - Part number 13 OD of the seal looks like it will not mate to the ring of Drawing H-2-824777. Review the dimensions of the components mating. The location of the bolt holes in relationship to the tab holes appears to be orientated erroneously. Check the hole orientation with sheet 5 of this set of drawings.		Accept, corrected	

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Revision 0
Page D-4

REVIEW COMMENT RECORD (RCR)	1. Date February 10, 1995	2. Review No. na
	3. Project No. na	4. Page 1 of 4

5. Document Number(s)/Title(s) LLCE FRRA PLATFORMS, DRAWING PACKAGES B, TYPE 7	6. Program/Project/ Building Number LLCE	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
--	--	--------------------------	--	--------------------------------------

17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Al Halvorson 6/6/95
Date
Don Legare 6/6/95
Author/Originator

Date

Reviewer/Point of Contact

Al Halvorson 6/6/95
Date
Don Legare 6/6/95
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 - A review of the design objectives need to be accomplished to see if a more cost effective design could be developed. A bridge design with removal sections that could shorten or lengthen the unit appears to be able to eliminate the need for earthquake restraints and the design could have minimal effect on the pits themselves.		Accept, being reviewed	Open
2	Drawing H-2-824816 - Why are lock washers used for a temporary connection? Delete the use of lock washers on temporary connections.		Reject	
3	Drawing H-2-824816 - Need a quick disconnect on part number 26.		Accept, corrected	
4	Drawing H-2-824816 - How will the parts be assembled? No lifting lugs or guide pins shown to allow the units to effectively assembled. Include lifting lugs and guide pins on components.		Accept, corrected, Lifting lugs added to top plate, other components lifted with eye bolts. Assembly procedure will be developed.	Open
5	Drawing H-2-824816 - Parts 16, 17, 22, and 23 are not shown on the assembly diagram. Review drafting procedures for inclusion of the piece numbers.		Accept, corrected	

REVIEW COMMENT RECORD (RCR)			1. Date February 10, 1995	2. Review No. na
			3. Project No. na	4. Page 2 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
6	Drawing H-2-824816 - Parts numbers 25 and 26 do not show the material type. Review drawings for inclusion of the material specifications call out.		Accept, corrected	
7	General - A review of the cost effectiveness of the design needs to be done for installation, assembly, storage, and removal. The design does not appear to be very operational/maintenance friendly.		Accept. Assembly, installation and removal will be reviewed.	Open
8	Drawing H-2-824717 - The orientation of the pipe that is used for the spray ring will be interfered with if anything is installed in the tapped hole that is located in the upper right hand corner of the plate. Review the drawing for interferences of this form.		Accept, corrected. See assy	
9	Drawing H-2-824717 - The seal and how the flexible receiver connect to the plate needs to be reviewed for places that contamination can be caught and interferences with this design.		Accept	
10	Drawing H-2-824717 - The holes at the 3'4 1/2" and 3'9" cannot go through the plate as these will become places of potential contamination. Change the depth of the holes to eliminate this potential problem.		Accept, corrected	
11	Drawing H-2-824805 - What type of weld finish is required for the interior welds? Specify the interior weld finish.		Accept, A 125 surface finish for interior welds has been added.	
12	Drawing H-2-824805 - Question the use of a 2" weldolet, as design it looks like a interference will be at the juncture of the weldolet and the plate. Review the clearance to be able to fabricate the spray ring assembly.		Reject, no interference	

WHC-SD-WM-DRR-049
 Revision 0
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REVIEW COMMENT RECORD (RCR)			1. Date February 10, 1995	2. Review No. na
			3. Project No. na	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	Drawing H-2-824805 - How are the spray ring jets installed? Show how the spray ring jets are installed.		Accept, corrected	
14	Drawing H-2-820737 - The ID of the adapter is 38.5" while the spray ring is 38", this will leave a ledge that will allow contaminants to collect which is a poor design. Review the inside dimensions for consistency for a smooth interior surface.		Accept	
15	Drawing H-2-820737 - The tolerances for this drawing is tighter than the mating pieces. Review design for consistency of tolerances and dimensional units.		Accept	
16	Drawing H-2-820737 - Part 3 list does not agree with Part list 16 and 17 lengths on drawing H-2-824816. Correct one or the other drawing lengths.		Accept, Corrected with ECN 609840	
17	Drawing H-2-820737 - The elbow specified for the wash ring is different than part number 14 on drawing H-2-824805. Review part call out for consistency.		Reject, part is designed and built for project W320.	
18	Drawing H-2-824791 - What is the orientation of the adapter piece? Show the orientation of the components.		Accept, corrected. See View A-A on assembly drawing H-2-824816.	
19	Drawing H-2-824791 - The seal is design for a trap situation between the seal and the wall. Turn the seal around to minimize the potential for a trap.		Reject, current design provides improved sealing and outside location of P-seal will interfere with some adjacent equipment	
20	Drawing H-2-824791 - The tap holes should not go through the cover. Review the design to see if the tap holes can be made to be sealed to minimize a potential contamination are.		Accept, corrected.	
21	Drawing H-2-824701 - Why are SST bolts used for holding CS together? Review the need for SST bolts.		Reject, sst used for anti-rust	

REVIEW COMMENT RECORD (RCR)		1. Date February 10, 1995	2. Review No. na
		3. Project No. na	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.)
22	Drawing H-2-824701 - What is the material of the thread rod parts number 7, 8, and 9? Add material specification for these part to the parts list.		Seismic restraints have been eliminated.
23	Drawing H-2-824701 - A stop needs to be added to the top to assure that the slide unit cannot be removed over the upper range of the unit.		Seismic restraints have been eliminated.
24	Drawing H-2-824702 - Why is the washer plate hardened? Question the added expense for hardening the plate. Why is there threads on part number 3/4 end plate? Review the need for threaded holes.		Seismic restraints have been eliminated.

REVIEW COMMENT RECORD (RCR)	1. Date February 10, 1995	2. Review No. na
	3. Project No. na	4. Page 1 of 3

5. Document Number(s)/Title(s) LLCE FRRA PLATFORM DRAWING PACKAGE C, TYPE 16	6. Program/Project/ Building Number LLCE	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	Drawing H-2-824819 - Why are SST lock washers used on the assembly of the flexible receiver adapter? Review the need for lock washers on the flexible receiver adapter.		Reject	
2	Drawing H-2-824819 - What are the nut settings for parts number 54 on part number 50? Locate the nuts on part number 50.		Accept, corrected. Bellows adjustment added to installation drawings.	
3	Drawing H-2-824819 - Why are parts number 43, 44, 46, and 47 316 SST? Other drawings have these parts 304L or 304. Why are these parts different in size than other drawings? The other wash ring size is 2 inch. Review drawings for consistent size and material call outs.		Designs following existing designs and built hardware. All sst materials are compatible	
4	Drawing H-2-824803 - The design of the plate and mating unit is designing a place for contamination to gather which is poor design practices. Review design for ledges and other areas that could trap contamination.		Reject, 48" plate design has been eliminated. Will use 50" plate.	
5	Drawing H-2-79195 - Why is part number 17 3/4" SST? The other drawings have the same part 1/4" SST. Review the drawing for need of the heavier plate.		Reviewed and rejected, thickness needed for stability	

REVIEW COMMENT RECORD (RCR)			1. Date February 10, 1995	2. Review No. na
			3. Project No. na	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
6	Drawing H-2-79195 - The spray ring feed pipe is a different size and different materials than the other spray ring designs. Review the drawings for consistency on size and material.		Accept, corrected with ECN 609840.	
7	General - The ID of the components that make up the adapter are of different dimensions. Review the interior dimensions for consistency to eliminate any potential trap areas.		Accept, reviewed, corrected where possible.	
8	Drawing H-2-824787 - Why is the upper plate, part number 14, and barrel, part number 15, 304 SST while it is the mating pieces are 304L? Review the design for consistent use of material specifications.		Accept, material changed to 304/304L.	
9	Drawing H-2-824787 - What is the weld finish on the inside of the flexible receiver adapter? Define the weld finish on the inside of the flexible receiver adapter.		Accept, A 125 surface finish specified for interior welds.	
10	Drawing H-2-824787 - The seal at the bottom of the adapter is a trap design. Review the design to minimize traps for contamination.		Reject, see similar RCR comment	
11	General - Suggest that National Consensus Codes and Standards be used for any fabrication. Review the use of Hanford Standards on drawings as a bidder will not know what they are and will not be used to using them thus they will include additional costs to comply with the Hanford Standards.		Accept, The use of hanford standards has been reduced where possible.	
12	Drawing H-2-824704 - Why are parts number 15 and 16 SST? Review the need for SST items in the design.		SST used for anti-rust	
13	Drawing H-2-824701 - What is the material for parts number 7, 8, and 9? Add the material specification for the parts.		Reject, Seismic restraints have been eliminated.	

REVIEW COMMENT RECORD (RCR)	1. Date February 10, 1995	2. Review No. na
	3. Project No. na	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
14	Drawing H-2-824701 - Why is SST used on parts number 20, 21, and 22? The remainder of the pieces are CS so there does not appear to be any reason for these components to be SST. Review the need for SST components.		Reject, design eliminated.	
15	Drawing H-2-824701 - Design of the retainer, part number 13, tolerances and its mating component part number 14 are such that they may not match up if they are at the worst tolerance. Review tolerances for mating components.		Reject, design eliminated.	
16	Drawing H-2-824701 - Parts number 4/5/6 need a stop to make sure that the wedge cannot be ran all the way off the top. Review the drawing for use.		Reject, design eliminated.	
17	Drawing H-2-824702 - Why is part number 5 hardened? Review the design for the need to hardening of this part.		Reject, design eliminated.	
18	Drawing H-2-824702 - Why does the end plate on part number 3/4 have threaded holes? Review the need for threaded holes on the end pieces.		Reject, design eliminated.	

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5. Document Number(s)/Title(s) LLCE ADAPTER ASSEMBLY, DRAWING PACKAGE D, TYPE 12 & 15	6. Program/Project/ Building Number LLCE\ADAPTER ASSEMBLY	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	Drawing H-2-824725 - Item number 5 has the wrong drawing number for this LLCE FRRA. Correct the drawing number.		Accept, corrected	
2	General - There are no hoisting or lifting rings to handle the flex receiver adapter while on its side. Add a lifting mechanism to allow movement of the unit on its side.		Accept, Installation, assembly, and disassembly procedure including design of additional hardware will be developed.	Open
3	Drawing H-2-824752 - Part number 5 has the wrong drawing number for the LLCE FRRA. Correct the drawing number.		Accept, corrected	
4	Drawing H-2-824816 - There is not a quick disconnect shown on part number 16. Add the quick disconnect to the parts list.		Accept, corrected.	
5	Drawing H-2-824816 - Why are lock washers used for connections that are temporary. Delete the use of those lock washers that are only used on components that are connected for a short period of time.		Reject	
6	Drawing H-2-824816 - The material call outs for part numbers 25 and 26 are missing. Add the material call outs for these parts.		Accept, corrected.	

REVIEW COMMENT RECORD (RCR)		1. Date February 13, 1995	2. Review No. na
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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.)
7	Drawings H-2-824816 - Why is part number 50 3/4" threaded rod, all the other rods are 1"? Use consistent sizes for the same function.		Different sizes used on different size bellows, 28-50"
8	Drawing H-2-824737 - Note number 3 calls out the approximate weight for the assembly as it was originally designed but the design has been modified so the note needs to be removed. The approximate weight of the assembly needs to be identified so Operations and Maintenance can allocate appropriate equipment to handle the units. Delete the note and add a weight column to the part table.		Accept, H-2-820737 revise with ECN 609840.
9	General - The inside bore of the LLCE FFRA needs to be reviewed for lips and crevices that could trap contamination. The inside bore needs to be relatively smooth with no lips or rough surfaces to trap contamination.		Accept, reviewed, corrected where possible.
10	Drawing H-2-824791 - There is a need for a orientation arrow on this piece to assure that the component will be installed correctly. Add arrow for orientation for assembly.		Accept, corrected.
11	Drawing H-2-824791 - The seal needs to be turned around so the "P" section is on the outside of the sleeve. This will minimize a potential trap point for contamination.		Reject, see previous disposition.
12	Drawing H-2-824791 - Base assembly top view shows the bolt holes going thru the top plate, this will cause a trap point for contamination. Use a tap and drill and not penetrate the plate.		Accept, corrected.

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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	Drawing H-2-824791 - Question the use of Hanford Standards for welding. The use of a National Consensus Standard will be easier for a vendor to fabricate the unit. It will also allow less paper to be part of a bid package thus reducing the cost.		Reject, Equivalent national standard is not available.	
14	Drawing H-2-824705 - Why are part numbers 15 and 16 SST? Delete the unnecessary use of SST nuts and bolts in the design.		Reject, anti-rust	
15	Drawing H-2-824706 - Why are part numbers 15 and 16 SST? Delete the unnecessary use of SST nuts and bolts in the design.		Reject, anti-rust	
16	Drawing H-2-824706 - The platform top view terminology is different than that of Drawing H-2-824705. Use consistent terminology for the same parts.		Accept	

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5. Document Number(s)/Title(s) LLCE FRRA PLATFORM DESIGN E, TYPE 9	6. Program/Project/ Building Number LLCE/FRRA	7. Reviewer HALVORSON	8. Organization/Group TRWS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	Drawing H-2-824807 - Why are SST component fasteners used for part numbers 18, 19, 21, and 22? Review the use of SST components for temporary connections.		Used for anti-rust	
2	General - Review the inside surface of the adapter assembly for any potential lips or spots where contamination could be trapped.		Accept, reviewed, corrected where possible.	
3	Drawing H-2-824800 - The seal needs to be turned around so the "P" section is on the outside of the tube section. This will minimize a potential spot for hazardous contaminants to be trapped.		Reject, see previous RCR disposition.	

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5. Document Number(s)/Title(s) LLCE FRRA ADAPTER AND PLATFORM DRAWING PACKAGE F, TYPE 18	6. Program/Project/ Building Number LLCE/FL;EX RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Author/Originator

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-2-824732 - Why are SST bolts and washers being used for parts 9 and 10? Review the need for SST components.		Anti-rust	
2	Drawing H-2-824818 - Why are lock washers being used for temporary connections? Review the need for lock washers on connections that are short term use.		Reject	
3	Drawing H-2-824818 - The drawing for part number 19 was not included in the package so I was not able to review the drawing with this package.		Handed out during meeting	
4	Drawing H-2-824818 - Review the inside of the adapter assembly for any trap or lips that could hold contamination.		Accept, reviewed, corrected where possible.	
5	Drawing H-2-824818 - The pipe and pipe fittings are 304 SST while on other drawings it is 304L. Review drawings for consistent material call outs for the same components.		Accept, Material callout changed to 304/304L.	
6	Drawing H-2-824818 - No quick disconnect shown on part number 35. Add quick disconnect to the parts list.		Accept, corrected.	

REVIEW COMMENT RECORD (RCR)			1. Date February 14, 1995	2. Review No. na
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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	Drawing H-2-824818 - No review of the interface between the flexible receiver and the adapter has been done. A review of this interface should be done to minimize potential for contamination traps and interferences.		Accept, reviewed, minimized	
8	Drawing H-2-824818 - The bellows retaining bolts are not designated for positioning on the rods. Add a note to the drawing for the retaining bolt location.		Accept, Bellows compression info added to installation drawings.	
9	General - A review of the bolt holes need to be done to assure that the holes do not penetrate into the contamination zone of the adapter.		Accept, will correct where possible	
10	General - The use of consistent terms needs to be reviewed. The drawings use decimal and degrees/minutes for angle, the dimensions use decimal and fractions, this adds to confusion for personnel. Use the same convention throughout all, drawings.		Accept	
11	Drawing H-2-824821 - Detail C shows 2 different size welds than other drawings for the same weld. This could be because the plate for the flange is 1/2 inch while on other drawings it is 1/4 inch. Review drawings for consistent use of the same material and welding for the same function.		Accept, welds reviewed	
12	Drawing H-2-824714 - Why is SST used for parts number 22, 23, 24, 25, 26, 27, and 30. Review the need for SST fasteners.		sst used for anti-rust	

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5. Document Number(s)/Title(s) LLCE FRRA ADAPTER AND PLATFORM DRAWING PACKAGE G, TYPE 5	6. Program/Project/ Building Number LLCE FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECHNICAL SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Don Legan 6/6/95
Author/Originator

Don Legan 6/6/95
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 - Why are SST parts being used for parts 9 and 10 on the installation drawings? Review the need for SST fasteners.		sst used for anti-rust	
2	Drawing H-2-79191 - Why are lock washers used on temporary connections? Review the need for lock washers on temporary connection.		Reject	
3	Drawing H-2-79191 - The feed piping for the wash system is different in size and material than the other drawings for the same type of device. Review the drawings for consistent use of material and size.		Accept, corrected on ECN 609840.	
4	Drawing H-2-79191 parts list extra sheet - Part number 38 drawing is not part of this package so it could not be reviewed.		Accept, corrected on ECN 609840.	
5	Drawing H-2-79191 adapter assembly extra sheet - Part number 28 is not shown on the parts listing. Add part number 28 to the parts list and whatever the reference drawing is to fabricate the component.		Accept, corrected on ECN 609840.	
6	Drawing H-2-824803 - Review the orientation of the wash feed piping and the corner lifting device.		Accept	

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3. Project No. na		4. Page			
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	General - Review the design for potential areas to trap or hold contaminates on the inside of the adapter assembly.		Accept, reviewed, corrected where possible.		
8	Drawing H-2-79195 - Why are the washer assembly piping a different size and material than other similar components on other drawings? Review the drawings for consistent use of materials and sizing of the components.		Accept		
9	Drawing H-2-824786 - Detail B needs to have the "p" seal reversed to minimize the potential for a trap.		Reject, see previous dispositions.		

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5. Document Number(s)/Title(s) LLCE FRRA FLEXIBLE RECEIVER DRAWING PACKAGE H, TYPE 17	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Don Legare 6/6/95
Author/Ori ginator

Don Legare 6/6/95
Author/Ori ginator

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-2-824742 - The drawing for part number 5 is missing so I was unable to review this drawing.		824819 supplied at meeting	
2	Drawing H-2-824742 - Why are parts 9 and 10 SST? Review the need for SST fasteners on temporary connections.		sst used for anti-rust	
3	Drawing H-2-824707 - Why are parts numbers 15 and 16 SST? Review the need for SST fasteners for carbon steel components.		sst used for anti-rust	

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5. Document Number(s)/Title(s) LLCE FRRA FLEXIBLE RECEIVER DRAWING PACKAGE I, TYPE 1	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

Organization Manager (Optional)

10. Agreement with indicated comment disposition(s)

Date

DL Halvorson 6/6/95
Reviewer/Point of Contact

Don Lepore 6/6/95
Author/Originator

11. CLOSED

Date

DL Halvorson 6/6/95
Reviewer/Point of Contact

Don Lepore 6/6/95
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-2-824797 - Why is the plate on parts number 13 and 14 304 SST? The rest of the SST is 304L and other material is 304L. Review the material call outs for consistency.		Accept, Material changed to 304/304L.	

REVIEW COMMENT RECORD (RCR)	1. Date February 15, 1995	2. Review No. na
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5. Document Number(s)/Title(s) LLCE FRRA ADAPTER DRAWING PACKAGE J, TYPE 24 AND 29	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	Drawing H-2-824751 - Why are SST bolts and nuts and washers specified for connections to a carbon steel flange? Review the need for SST fasteners.		sst used for anti-rust	
2	Drawing H-2-824751 - Part number 7 how will this gasket be installed? Review the installation of this gasket.		Gasket to be split and rebonded. See General Note #4 on drawing.	
3	Drawing H-2-824751 - Identify the relationship of the plan view to the riser. The drawing does not show which riser the plan view is showing.		Accept, corrected, riser id on sht. 1	
4	Drawing H-2-824766 - same comments as for drawing H-2-824751		Accept, corrected, riser id on sht. 1	
5	Drawing H-2-824767 - same comments as for drawing H-2-824751		Accept, corrected, riser id on sht. 1	
6	Drawing H-2-824770 - same comments as for drawing H-2-824751		Accept, corrected, riser id on sht. 1	
7	Drawing H-2-824771 - same comment as for drawing H-2-824751		Accept, corrected, riser id on sht. 1	
8	Drawing H-2-824773 - same comment as for drawing H-2-824751		Accept, corrected, riser id on sht. 1	

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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
9	Drawing H-2-824774 - same comment as for drawing H-2-824751		Accept, corrected, riser id on sht. 1		
10	Drawing H-2-824778 - same comment as for drawing H-2-824751		Accept, corrected, riser id on sht. 1		
11	Drawing H-2-824780 - same comment as for drawing H-2-824751		Accept, corrected, riser id on sht. 1		
12	Drawing H-2-79337 - Why are we using lock washers, part number 22, for a temporary connection? Review the need for lock washers.		Reject		
13	Drawing H-2-79335 - This design has been modified to not use thredolets and a different scheduled pipe. Review the drawing for consistency with other washer designs.		Reject, Washer has already been fabricated.		
14	Drawing H-2-79335 - What is the weld finish for the interior welds? The interior areas need to be reviewed for potential areas that can hold contaminations.		Accept, Will review for contamination areas. Interior welds have a 125 surface finish specified.		
15	General - The use of Hanford Standards for welding and inspection will create a problem with as a vendor as they will be use to operating with National Consensus Standards and there is a potential for conflict between the 2 standards. Recommend the use of National Consensus Standards on all drawings.		Will eliminate the hanford standard where possible and go to national standards.		
16	General - The plate steel is specified as 304 in places and 304L in other places. Use only one type of material to decrease the fabrication and control problems.		Accept, material changed to 304/304L.		

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5. Document Number(s)/Title(s) LLCE FRRA DRAWING PACKAGE K, TYPE 14	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Don Legan 6/6/95
Author/Originator

Don Legan 6/6/95
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-2-824775 - Part number 5 drawing was not included in the package. The drawing was not reviewed, if this drawing is required to be reviewed it will need to be submitted.		Accept, corrected, submitted	
2	Drawing H-2-824775 - Why are SST fasteners being used to connect carbon steel components? Review the need for SST fasteners.		sst used for anti-rust	
3	Drawing H-2-824819 - Why are lock washers used for temporary connections? Review the need for lock washers.		This design has been eliminated. 50" adaptors will be used for all previous 48" locations.	
4	Drawing H-2-824819 - The bellows restraint bolts distance is not specified on the drawing. Include the bellows restraint bolts distance.		This design has been eliminated.	
5	Drawing H-2-824819 - The washer piping on other drawings is schedule 160 but on this drawing it is schedule 80. Review the schedule differences and use consistent schedules and appropriate fittings.		This design has been eliminated.	
6	Drawing H-2-824819 - The orientation of the washer connection to the lifting lug needs to be reviewed.		This design has been eliminated.	

REVIEW COMMENT RECORD (RCR)			1. Date February 15, 1995	2. Review No. na
			3. Project No. na	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
7	Drawing H-2-824804 - The 2 standards for welding and inspection are part of the notes, which standard takes precedence if there is a conflict? Use only one standard for reference I recommend that the national consensus standard be used.		This design has been eliminated by changing to 50" adaptors.	
8	Drawing H-2-824786 - The seal need to be turned around to minimize trapping of contaminants.		Reject, see previous dispositions.	
9	Drawing H-2-824706 sheet 3 -The plate view does not show the holes for the adjustment screws. These holes are shown on sheet 1. Include the holes on sheet 3.		Holes for adjustment screws have been eliminated.	

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5. Document Number(s)/Title(s) LLCE FRRA ADAPTER DESIGN PACKAGE L, TYPE 3	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Don Legare 6/6/95
Author/Originator

Date

Reviewer/Point of Contact

Don Legare 6/6/95
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-2-824754 - How will the platform/adapter be assembled and transported? Review the assembly for use.		Accept, Assembly, installation, and removal procedure will be developed. This will include design of additional hardware for that purpose.	Open
2	Drawing H-2-824754 - How will the 2 platform parts be held together? Review the components to see if the components need to be held together.		Existing design for W320, is OK	
3	Drawing H-2-824754 - Why are there not seismic restraints for the platform? Review the need for seismic restraints to secure the platform.		Seismic restraints are not required.	
4	Drawing H-2-824754 - The interface between the flexible receiver and the platform need to be reviewed for traps and lips that will hold contamination.		Accept, reviewed and changed where possible.	
5	Drawing H-2-820737 - The inside surfaces of the adapter need to be reviewed for a smooth surface free of trap points for contamination.		Accept, reviewed and changed where possible.	
6	Drawing H-2-820737 - Need to add a quick disconnect for the washer piping.		Accept, added on ECN 609840.	

REVIEW COMMENT RECORD (RCR)			1. Date February '16, 1995	2. Review No. na
			3. Project No. na	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
7	Drawing H-2-820737 - Why are lock washers used for temporary connections? Review the need for lock washers.		Reject, Lockwashers acceptable.	
8	Drawing H-2-820737 - Section A-A shows the bottom seal is RTV for sealant, this is not ALARA. The amount of work to clean up the seal will be great and therefore not economical to use.		Accept, RTV removed from design on ECN 609840.	
9	Drawing H-2-820737 - Part number 13 is not part of the package so therefore the drawing has not been reviewed.		Drawing was given out after first meeting	
10	Drawing H-2-820737 sheet 3 - Cannot tell if the angel for the washer support is 45 degrees or not so I am asking if it is?		Accept, it is 45%	
11	Drawing H-2-820737 sheet 4 - The nozzle orientation for the spray is not specified. Need to include the orientation of the nozzle spray.		Accept, This has previously been corrected with ECN W320-55.	
12	Drawing H-2-920729 - Part number 3 drawing was not part of the package so therefore the drawing was not reviewed.		Accept, reviewed	

REVIEW COMMENT RECORD (RCR)	1. Date February 16, 1995	2. Review No. na
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5. Document Number(s)/Title(s) LLCE FRRA FLEXIBLE RECEIVER ADAPTER DRAWING PACKAGE M, TYPE 11, 13, AND 27	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Reviewer/Point of Contact

Date

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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	Drawing H-2-820735 - The interface between the flexible receiver and the platform needs to be reviewed for trap points and lips that can hold contaminants.		Existing Design for W320, reviewed and changed where possible.	
2	Drawing H-2-820735 - The adapter needs to be reviewed for the inside to a smooth surface.		Existing Design for W320, reviewed and changed where possible.	
3	Drawing H-2-820735 - How will the assembly be transported and assembled? Review the platform/adaptor for assembly and transporting.		Accept, will be reviewed	Open
4	Drawing H-2-820735 - The washer connection needs quick disconnect added to the drawing.		Accept, previously corrected on ECN W320-40.	
5	Drawing H-2-820735 - The nozzle orientation of the spray needs to be shown.		Accept, previously corrected on ECN W320-55.	

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5. Document Number(s)/Title(s) FRRA LLCE ADAPTER ASSEMBLY PACKAGE N, TYPE 10	6. Program/Project/ Building Number LLCE/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

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	Drawing H-2-824819 - Part number 20 calls for a 9' spacer while drawing H-2-824804-03 has only 6'6".		Reject, This design has been eliminated by combining 48" and 50" components.	
2	Drawing H-2-824819 - Part number 28 drawing H-2-824787 was not included in package for the -01 adapter assembly.		Reject, This design has been eliminated by combining 48" and 50" components.	
3	Drawing H-2-824804 - There is not a listing for 106-C/6C/3.		Reject, This design has been eliminated by combining 48" and 50" components.	
4	Drawing H-2-824804 - What are the 144 DCRTs?		Reject, This design has been eliminated by combining 48" and 50" components.	

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5. Document Number(s)/Title(s) LLCE FRRA DRAWING PACKAGE P, TYPE 19 AND 28	6. Program/Project/ Building Number TWRS/FLEXIBLE RECEIVER	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Date

Al Halvorson 6/6/95
Reviewer/Point of Contact

Don Legare 6/6/95
Author/Originator

Don Legare 6/6/95
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-2-824816 - Part number 15 reference part drawing and the drawing itself do not agree. The fabrication drawing has the reverse of the lengths as this drawing. The reference fabrication drawing number does not agree with what was given in package.		Accept, corrected	
2	Drawing H-2-824788 - The dash part number and the table uses 2 different dash numbers. How do they correspond.		Accept, corrected, Dash part number changed to -010.	

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5. Document Number(s)/Title(s) LLCE FRRA FLEXIBLE RECEIVER ADAPTER PACKAGE R, TYPE 19, 20, AND 30	6. Program/Project/ Building Number LLCE/TECH SUPPORT	7. Reviewer HALVORSON	8. Organization/Group TWRS/TECH SUPPORT	9. Location/Phone MO-281/372-2179
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17. Comment Submittal Approval:

Organization Manager (Optional)

10. Agreement with indicated comment disposition(s)

Date

DA Halvorson 6/6/95
Reviewer/Point of Contact

Don Legare 6/6/95
Author/Originator

11. CLOSED

Date

DA Halvorson 6/6/95
Reviewer/Point of Contact

Don Legare 6/6/95
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-2-824810 - Part number 6 is threaded for attachment of the bellows, how are the bolts without nuts holding the wash ring and bellows to the plate?		Part 6 has 48 threaded holes. 24 bolts are installed for both washer and bellows.	
2	Drawing H-2-824769 - The bolts designated to be used to hold this ring to the wash ring appear to be too long.		It is ok. Flanges are 1" and 3/4". Bolt is 1 3/4"	

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5. Document Number(s)/Title(s) 90% Design Review for Flexible Receiver Adapters	6. Program/Project/ Building Number	7. Reviewer S. W. Shaw	8. Organization/Group Transportation Programs and Packaging	9. Location/Phone M) 404 Rm 9/372-1746
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17. Comment Submittal Approval:

Organization Manager (Optional)

10. Agreement with indicated comment disposition(s)

6/5/95
Date

Reviewer/Point of Contact

Author/Originator

11. CLOSED

6-6-95
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
GENERAL DESIGN REVIEW COMMENTS				
1.	Too many fasteners.		Accept, reviewed, minimized where possible.	
2.	Alignment of all these small fasteners for assembly will be difficult, if not impossible, if flanges are not match drilled, matchmarked, and/or taper pins are used for alignment.		Accept, assembly will be reviewed.	Open
3.	Offset between adapter and riser centerline will result in side pull and interference during equipment removal from riser.		Reject, this has been tested at the 305 building and is OK. It is also scheduled to be tested at the Cold Test Facility when equipment is fabricated.	
4.	Weights of assemblies and components should be identified on drawings and hardware.		Reject, Platform and adaptor weights not included to avoid confusion with allowable platform loading and the multiple assemblies where they are used.	
5.	All drawings must be reviewed, and tolerances for parallelism, perpendicularity, flatness, and surface finish identified.		Accept, corrected, true positioning used as required.	
6.	Installation torque requirements should be stated for all fasteners used in assembly.		Rejected, Turn of nut method will be used.	

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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.	Installation torque requirements for seismic restraints must be stated.		Seismic restraints eliminated.	
8.	Parts lists should indicate thread pitch and type.		Accept, corrected	
9.	Water supply to washring should be included in plan views so interface verification can be accomplished. It may be necessary to specify adapter/adapter plate relative orientations.		Accept, Wash ring supply reviewed for interface problems. Adaptor and adaptor plate orientation have been added to assembly drawings.	
10.	Review material references. ASTM-A36 does not cover all carbon steel.		ASTM A36 is okay for all but tubing.	
11.	Consideration needs to be given to assembly of the components. It appears that additional hardware will be required to assemble/disassemble adapters and platforms which is not shown.		Accept, assembly and installation sequences and procedures are being developed.	Open
12.	Consideration needs to be given as to where all these parts are going to be stored. While adapter sections may fit into a box, how about the platforms?		Accept, a temporary laydown area will be made for this material. Storage containers will be identified in the future.	
13.	There is no obvious method of shielding/capping of the riser until the flexible receiver has been removed. As such, it looks as though the guy undoing all the fasteners to get the flex receiver off the platform is going to be right in the shine of the riser.		A shield plug will be installed at the end of the bagging process.	
14.	Drawings for platform top plate weldment and layout too congested. Show separate top plate plan view for layout dimensions.		Reject, should be easier in full, E, size.	
15.	The maximum load on the platforms, including additional shielding which may be installed must be identified on the drawings.		Accept, Note added "Max Platform and Surface Load XXX lbs" to each platform surface.	

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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
16.	No method or hardware is shown for protecting Ops personnel from shine out of the riser after equipment has been removed, and during detachment of the flex receiver.		Same disposition as #13 above.	
17.	Resolution must be reached as how adapter plates will be handled. New adapter plates have bolt circles defined by True Position dimensioning. Old (KEH) plates make use of a template. There is a high probability that bolt circles established using true position will not match those established using the template.		Accept, New adaptor plates will use true position tolerancing. True position will allow parts to fit together.	
18.	For Receiver adapter 48" plates: Projected tolerance zones must be identified for the 1/2 X 13 UNC and 3/4 X 10 UNC bolt circles.		Accept, corrected, 48" adaptors have been eliminated.	
19.	Parts list on many drawings reference wrong drawings numbers.		Accept, corrected, Drawings will go through KEH checking prior to release.	
20.	Many of the adapter assembly drawings have balloons which identify components, which do not match up with the part list.		Accept, corrected, Drawings will go through KEH checking prior to release.	
	GENERAL NOTE: There are a significant number of errors throughout the drawings. Rather than review each package, general comments above, and specific comments below should be used as guidance for correction of the entire drawing set.			

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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
	GENERAL NOTE: I am not a drawing checker. I have identified a number of these type problems, but later on in this RCR, ceased making comments on packages (all) which contain these types of errors. Recommend that several packages be reviewed by KEH checking, and used as a basis to prepare all of the packages.			
	PACKAGE A			
	DRWG # 824722 & 824727			
1.	Requirements for assembly plumb/level and perpendicularity at installation need to be identified.		Accept, Assembly and installation procedure will be developed.	Open
2.	Identify Rigging attachment points.		Accept, corrected	
	DRWG # 824806			
1.	Specify torque requirements for fasteners.		Reject, turn of nut method will be used.	
2.	Specify perpendicularity requirement between adapter and base.		Accept, corrected, true position tolerances added.	
3.	Parts and material list needs to identify parts 20 & 21 as UNC thread pitch.		Accept, corrected	
	DRWG # 824802			
1.	Specify Large Hole Diameter in item 13.		Accept, corrected	
2.	An additional dimension must be added to the 5/8" holes through item 13 to properly establish their location for fabrication.		Accept, corrected	
3.	Need to add a tail with TYP for the weld symbols which show the attachment of the legs and gussets to item 13.		Accept, corrected, 3x used.	

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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.	Parts/Material list: Needs work. Identify thread pitches, and correct material/reference block. ASTM A-36 does not cover bar, plate, and tubing.		Accept, corrected	
5.	Correct general note 4 by placing space between prepare and "and".		Accept, corrected	
6.	Add note which identifies flatness and surface finish (ie do we paint mating surfaces) requirements for item 13.		Accept, corrected.	
7.	Somewhere, the purpose and installation of the channel should be identified.		Channel is shown on assembly drawing H-2-824807.	
	DRWG # 824777			
1.	Parts and Materials list is incomplete. Doesn't identify pipe, spray nozzles, or component drawings used for assembly.		Accept, corrected	
2.	Note 5, identifying die stamp area of washer assembly should be note 4.		Accept, corrected	
3.	Parallelism and flatness of/between "hard surfaces," and surface finish of assembly should be specified.		Accept, corrected	
4.	For the bolt circle, I bet you really don't want $\pm 1/16"$, $\pm 1^\circ$.		Accept, corrected, true position used.	
	DRWG # 824801			
1.	Show rigging attachment points.		Accept, use eyebolts in existing holes.	
2.	Specify perpendicularity requirements between flange and item # 13.		Accept, corrected.	
3.	Specify required roundness and straightness for rolled item #13.		Accept, corrected.	

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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.	Detail A: <i>There is no functional requirement that drives you to a design this expensive and difficult to fabricate.</i>		Design is based partially on decontamination requirements. Design reviewed for areas of improvement.	
	DRWG 79149			
1.	Reviewed for interface information only. Both 50 and 50.25" bolt circles are identified, but not bolt spacing requirements. Therefore, unable to verify washer/slide and support assembly interface.		Accept, corrected	

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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
	PACKAGE B			
	GENERAL			
1.	All drawings must be reviewed, and tolerances for parallelism, perpendicularity, flatness, and surface finish identified.		Accept, corrected, true position implemented, surface finish as milled. All drawings will be checked by KEH design services prior to release.	
2.	4" offset between riser adapter and riser centerlines will cause side pull on the hook used for removal, and will result in an interference as equipment is removed. Will current flexible receiver designs accommodate a 4" offset?		Yes, was tested at the 305 building and will be tested at the Cold Test Facility.	
3.	Too many fasteners. ALARA, alignment, and overall cost must be considered. This is not a one time effort.		Accept, reviewed, minimized where possible.	
4.	Review of package B assumes ECNs to H-2-820737 are made as indicated.		ECN's are incorporated.	
	DRWG # 824723			
1.	Identify that jumper connection has been rotated for clarity in elevation view.		Accept, corrected	
2.	Establish an installation torque setting for internal seismic restraints.		Seismic restraints have been eliminated.	
3.	Establish an installation torque, and interface requirements (do they need to touch pit) for external seismic adapters.		Seismic restraints have been eliminated.	
4.	Identify installation torque requirements for fasteners used to attach adapter assy to platform.		Reject, Use turn of nut method at assembly.	
5.	Item 8 in parts list need to have thread pitch identified.		Accept, corrected	

REVIEW COMMENT RECORD (RCR)	1. Date February 2, 1995	2. Review No.
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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
6.	There is appears to be an interference problem between the internal seismic restraints, and the top of the adapter base.		Seismic restraints have been eliminated.	
	DRWG # 824816			
1.	Specify thread lubricant for assembly of threaded pipe connections.		Rejected, sealant will be called out in a procedure if needed.	
2.	Specify thread pitch for fasteners identified in part list.		Accept, corrected	
3.	Specify torque requirements for fasteners.		Reject, Use turn of nut method.	
4.	Consider specifying lubrication between stainless threaded rod and nuts (items 50 & 54) to prevent galling.		Accept, will specify dry lubricant in procedure if needed.	
5.	Item 42: Indicate SWL or equivalent in parts list.		Accept, corrected	
6.	Indicate assembly weight.		Reject, Assembly weight not provided to avoid confusion where parts are used in multiple assemblies.	
	DRWG # 824717			
1.	Stated tolerances for bolt circles will not be acceptable.		Accept, corrected, true position added.	
2.	Painting over sealing surfaces may not be a good idea.		Not a dynamic seal. Should be OK for this application.	
3.	In General Notes: Second note 5 should be 6.		Accept, corrected	
4.	Flagged note 4 on drawing should be 5.		Accept, corrected	
5.	See general notes above for flatness, perpendicularity, etc requirements.		Accept, corrected, true position added.	

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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
	DRWG # 824805			
1.	See general note 1.		Accept, All drawings will go through KEH checking prior to release.	
2.	Specify lubrication for threaded pipe connections.		Accept, will put in procedure if needed.	
3.	Tolerances for bolt circle used to construct assemblies are excessive as stated. If bolted connection must be used, consider use of tapered dowel pins to facilitate alignment.		Accept, corrected, true position added.	
	DRWG # 824791			
1.	See general note 1.		Accept, All drawings will go through KEH checking prior to release.	
2.	Tolerances for bolt circle need to be specified tighter than that provided for within the general notes of this sheet.		Accept, corrected, true position added.	
3.	Detail A: Overhang dimension should be 1/2, not 4 X 1/2.		Accept, corrected, weld detail changed.	
4.	This (item 13) part should be round. There interferences which drive the design to this relatively complex shape.		Reject, complex shape required to miss in-pit nozzles.	
	DRWG # 824703			
1.	The SWL of Item 5 should be indicated in the Parts List.		Accept, corrected	
2.	Verify material references. W12 X 40 section is not A36.		Reject, ASTM A36 covers W12 X 40.	
3.	Indicate where details F & G come from.		See top view.	
4.	View B-B: State Exterior seismic restraint not shown for clarity.		Seismic restraints eliminated.	

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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.	Item 8 needs to be defined dimensionally. It is not at all clear what this 1" thick plate looks like, or how it will interface with the adapter assembly(s).		Dimensions are correct, drawing is easier to read in E-size.		

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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
	PACKAGE C			
	GENERAL COMMENTS			
1.	All drawings must be reviewed, and tolerances for parallelism, perpendicularity, flatness, and surface finish identified.		Accept, corrected, true position added. All drawings will go through KEH checking prior to release.	
2.	Parts lists should indicate thread pitch and type.		Accept, corrected	
3.	Too many fasteners. ALARA, alignment, and overall cost must be considered. This is not a one time effort.		Accept, reviewed, minimized where possible.	
4.	Installation torque requirements should be stated for all fasteners used in assembly.		Reject, Use turn of nut method at assembly.	
5.	Installation torque requirements for seismic restraints must be stated.		Seismic restraints eliminated.	
6.	Offset between riser adapter and riser centerlines will cause side pull on the hook used for removal, and will result in an interference as equipment is removed.		Will work, was tested at 305 Bldg and will be verified at cold test facility.	
	DRWG 824724			
1.	State installation torque requirements for seismic restraints.		Seismic restraints eliminated.	
	DRWG 824819			
1.	Remove item 16 from parts list as it is not used.		Accept, corrected	
2.	Show gasket (15) between items 17 & 18.		Accept, corrected	
3.	Identify thread lubricant for NPT fittings.		Accept, will be called out in assembly procedure.	
4.	State SWL requirements for item #42.		Accept, corrected	

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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
	DRWG # 824803			
1.	Second Flagged item in general notes #5 should be 6.		This design has been eliminated. Will use 50" adaptor plate.	
	DRWG # 824804			
1.	Identify an OD for the four "tabs" shown in the top view of the spacer assembly.		Accept, corrected	
	DRWG # 824787			
1.	Must specify the radii of the two bends used to reduce the cross section.		Accept, Radii shown as 10"	
	DRWG # 824704			
1.	On parts list, need to identify SWL of items 9 and 10.		Accept, corrected	
2.	Need to verify material references. ASTM A-36 is carbon steel plate, and not a W12 X 40 W section.		Reject, ASTM A36 covers W12 X 40.	
3.	Sheet 2, Section C-C: Need to change weld symbols for the flanges. Opposite sides will be a groove weld, not a fillet.		Accept, corrected	
4.	Need to identify plate dimensions, so that material missing to provide for access plate is clearly defined.		Accept, corrected	
5.	Sheet 3: The callout for 9 X 11/16" thru, there only appear to be four.		Accept, corrected	
	824701 and 824702 were review in previous packages.			

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		3. Project No.	4. Page 13 of 20
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

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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
	PACKAGE D			
	GENERAL COMMENTS			
1.	All drawings must be reviewed, and tolerances for parallelism, perpendicularity, flatness, and surface finish identified.		Accept, corrected, true position added.	
2.	Parts lists should indicate thread pitch and type.		Accept, corrected	
3.	Too many fasteners. ALARA, alignment, and overall cost must be considered. This is not a one time effort.		Fasteners follow other mating designs, existing parts.	
4.	Installation torque requirements should be stated for all fasteners used in assembly.		Reject, Use turn of nut method at assembly.	
5.	Installation torque requirements for seismic restraints must be stated.		Seismic restraints have been eliminated.	
6.	Offset between riser adapter and riser centerlines will cause side pull on the hook used for removal, and will result in an interference as equipment is removed.		Is OK, was tested at 305 building and will be tested at Cold Test Facility	
	All adapter drawings, and 824701 & 824702 were review in previous packages.			
	DRAWINGS 824725 & 824752			
1.	Item 5 in the general parts list should refer to 824416 instead of 415.		Accept, corrected	
	DRAWINGS 824705 & 824706			
1.	Need to verify material references. ASTM A-36 is carbon steel plate, and not a W12 X 40 W section.		Reject, ASTM A36 is correct.	
2.	On parts list, need to identify SWL of items 9 and 10.		Accept, corrected	

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		3. Project No.		4. Page 15 of 20	
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.	Sheet 2, both drawings: View A-A calls for a fillet weld on both sides of the arrow. This can't happen where the top and bottom flanges butt together. Is also in disagreement with a symbol on the assembly, which requires a bevel weld ground flush.		Accept, corrected		
4.	An additional view, or detail needs to be made of the "platform plates" for both drawings. Unable to determine dimensions of platform plate. Would recommend similar view for W section assembly.		Reject, details show on E size dwgs		
PACKAGE E					
GENERAL COMMENTS					
1.	Review material references. ASTM-A36 does not cover all carbon steel.		Accept, ASTM A36 covers plate and structural shapes.		
2.	Design of platforms (and/or criteria) should be changed to eliminate the need for the three legged installation platform.		Reject, Three legged stand required for stability during installation.		
3.	Assign torque values to all threaded fasteners.		Reject, Use turn of nut method at assembly.		
DRAWING 824729, 824800, 824799, 79328					
1.	No comments.				
DRAWING 824807					
1.	On the drawing, bubble 10, should be #12.		Accept, corrected, 10 is 12		
2.	There should be a bubble 11, which identifies what the component is between the two #12s at the top.		Accept, corrected		
3.	Lower bubble #12: This is not a gasket, but a 10" sched 40 pipe.		Accept, corrected		

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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.	In the parts list, nothing is listed for item 10. This probably makes sense based on comment 1 above.		Accept, corrected	
5.	Item 11: This is correct if comment #2 above is accepted.		Accept, corrected	
DRAWING 79337				
1.	Assemblies 1 and 2 have possibly crapped up "stuff" running out on the individuals hands who has to remove the lower fasteners.		Water from the high pressure washer will not allow the contamination to run out all over the person removing the equipment. Some contamination will exist but should be minimal and the person should get minimal dose.	
PACKAGE G				
GENERAL COMMENTS				
1.	Review assumes ECNs/Drawing changes to 79191, & 79193 are made as shown in the review package.		Changes have been made through ECN 609840.	
824738, 824739, 824741, 824743, 824745-50, 824754-57, 824776, 824779, 79191, 824803, 824786, 824709				
No comments beyond general comments page 1.				
79193, 79195, and 824709 are reviewed in previous packages.				
PACKAGE H				
1.	General design review comments apply.		Accept	
2.	824819 does not appear to define the adapter assembly required for this installation.		Accept, corrected, -06 added	

REVIEW COMMENT RECORD (RCR)			1. Date February 2, 1995	2. Review No.
			3. Project No.	4. Page 17 of 20
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

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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
	DRAWING 79198			
1.	This drawing does not apply to any other drawing in the package.		Accept	
	DRAWING 824707			
1.	Sheet 2: Drawing for platform top plate weldment and layout to congested. Show separate top plate plan view for layout dimensions.		Reject, details will show better on E size dwgs	
2.	Sheet 2, View B-B: For top weld of butt joint between W section, do not want a fillet weld. Main plan view shows groove weld, ground flush.		Accept, corrected	
	PACKAGE I			
1.	General Design Review Comments apply.		Accept	
2.	824797: In plan view of split spool, dimension of $2 \times 1/16 \pm 1/32$ appears to apply to nothing.		Part is offset to provide room for gasket.	
	PACKAGE O			
	See general comments at start of RCR. Includes incorrect parts callouts on Adapter Assy drawing 824819.		Accept	
	DRAWINGS 824730 & 824734			
1.	Need to swap adapter pieces and washring so that washring is closer to the top of the platform. This will allow equipment to be rewashed if GEA indicates component being withdrawn is not sufficiently decontaminated.		Accept, corrected.	

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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
	DRAWING 824819			
1.	In the design review meeting, we were told that Item 1 of sheet 2 was the plate to use for this package. However, this plate does not appear to mate to the platform.		Accept, item 2 is correct plate	
	DRAWING 824765			
1.	Projected tolerance zones must be identified for 1/2 X 13 UNC and 3/4 X 10 UNC threaded holes, equal to the thickness of the respective flange through which the fasteners will pass.		Accept, corrected, clearance hole opened 1/8	
	DRAWING 824804			
1.	Zone E-7, need to specify the diameter of the hole you specify the true position of.		Accept, corrected.	
2.	On the top view, the 8 X 33 ± 0.30' is incorrect for the four holes identified.		Accept, corrected, basic dimension added	
3.	You want to specify a roundness requirement for the ID of the ring and for the rolled plate.		1/8" roundness specified	
	DRAWING 824794			
1.	Need to specify roundness for large diameter holes.		1/8" roundness specified	
2.	Need to specify projected tolerance zones for threaded holes.		Accept, corrected, mating holes opened to 1/8" clearance	
3.	Lower section of base assembly needs definition. If lower 1/4" plate follows contour of top plate, drawing is incorrect.		Corner radii are called out	
4.	Section A-A: This is expensive to machine. Just fillet weld against flat plate.		Corner needed to hold mating contour during welding	

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			3. Project No.	4. Page 20 of 20
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.	Need to specify a perpendicularity requirement for the lower section of the base assembly to keep the "skirt" from flaring out during fabrication.		Accept, corrected, 0.13" called out	
	DRAWING 824716			
1.	Missing sheets 2 and 3 so could not review.		Accept, sheets supplied	

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	3. Project No.	4. Page 1 of 5

5. Document Number(s)/Title(s) LONG LENGTH CONTAMINATED EQUIPMENT	6. Program/Project/ Building Number	7. Reviewer J. VERDERBER	8. Organization/Group ESQ/TWRSPQA	9. Location/Phone 200E-M0234 373-3644
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

5/5/95
Date
Reviewer/Point of Contact
Author/Originator

6/5/95
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.	H-2-79149, SH. 1 (et al) - Delete "ANSI/" from note pertaining to testing. The B31.1 Power Piping Code is only referred to as ASME B31.1. This is typical on other drawings.	JJV	Accepted, corrected	CLOSED
2.	H-2-79149, SH. 1 - There is no note regarding Assembly Markings.	JJV	Accept, corrected with General Note #9.	CLOSED
3.	H-2-79149, SH. 1 - Items 26 & 27 are referenced to be on Sheet 3. Item 26 is on SH. 4 and item 27 is on SH. 2.	JJV	Accept, corrected	CLOSED
4.	H-2-79149, SH. 1 - Item 29 shows ASTM A53 GR B CS. Need to clarify if this is Type E or S.	JJV	Accept, material changed to "Any Grade SST"	CLOSED
5.	H-2-79195, SH. 1 - When referring to stainless steel pipe, an "S" is generally placed after the pipe schedule (ie - 10S, 40S, 80S). Also ASTM A312 does not recognize a pipe 2" SCH 160 for Stainless.	JJV	Accept, added the "S" after schedule with ECN 609840. Reject, ASTM 312 does cover 2" sched 160 pipe.	CLOSED

REVIEW COMMENT RECORD (RCR)	1. Date 2/16/95	2. Review No. 95-071
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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
6.	H-2-79337 - The bolts used to secure the flange from the underside are 2 3/4" long per H-2-824751. These may be too long. The hole is drilled 1" deep, 1/8" thick gasket and a 4" slip-on flange thickness of 0.94". This adds up to a max. bolt length of 2.065".	JJV	Accept, corrected	<i>Closed</i>
7.	H-2-824798 - Is the dowel welded in place? What is the dowel pin material? If there is only one dowel, then why have two 7/16" thru holes?	JJV	Accept, corrected, two dowel pins pressed in ANSI class FN 1 fit.	<i>Closed</i>
8.	H-2-824798 - For PN 9 (Hex Bolt), Why so long (3")?	JJV	Accepted, corrected, changed to 1 1/2	<i>Closed</i>
9.	H-2-824798 - For PN 11, the material is shown as ASTM 1-181, 304L. The number 1-181 is not the correct designation. When using stainless steel for this application, use ASTM A-182.	JJV	Accepted, corrected	<i>Closed</i>
10.	H-2-824701 - Note 6 says to harden the material to Rockwell 40-C. How much strength is added by hardening to 40-C? Is it cost effective?	JJV	This item has been eliminated from the design.	<i>Closed</i>
11.	H-2-824702 - For PN 5, also show PN 14 in a bubble pointing to the plate.	JJV	This item has been eliminated from the design.	
12.	H-2-824702 - For PN 9 (flat washer) it specifies ASTM A325. This is generally used for bolts. For washers use ASTM F436 or F959.	JJV	This item has been eliminated from the design.	
13.	H-2-824702 - In zone E8 & F8 the nuts are actually specified on the platform assembly drawings. This should be noted.	JJV	This item has been eliminated from the design.	
14.	H-2-824703 - For PN 11 (Hex Nut) it specifies ASTM A325. This is generally used for bolts. For nuts use ASTM A194 or A563. This has been identified on other drawings.	JJV	Accepted, corrected to A563	
15.	H-2-824704, SH. 2 - In Zone F2 change PN 11 to PN 14.	JJV	Accepted, corrected	<i>Closed</i>

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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
16.	H-2-824704, SH. 3 - In Zone F5 for the 6'-8" dimension why was the tolerance of $\pm 1/32$ " not carried over from SH. 2?	JJV	Accepted, corrected	closed
17.	H-2-824705, SH. 2 - In Zone A7 identify as Assembly 2, Platform Weldment.	JJV	Accepted, corrected	
18.	H-2-824706 - For PN 14 change quantity from 16 to 12 because only three EXT restraints are used.	JJV	Accepted, corrected	
19.	H-2-824807 - Are flag notes 6 and 7 marking the same piece?	JJV	Accepted, corrected	
20.	H-2-824807, SH. 2 - For views D and E, reference that they are found on SH. 3.	JJV	Accepted, corrected	
21.	H-2-824722 - In Zone A7, identify this piece as Assembly 1, FRRA/PLATFORM INSTALLATION. This comment is typical of other drawings.	JJV	Accepted, corrected, shown as INSTALLATION	
22.	H-2-824722 - In Zone A4, the title for H-2-79149 should be LLCE SLIDE & SUPPORT ASSEMBLY. This comment is typical on other drawings.	JJV	Accepted, corrected	
23.	H-2-824729, SH. 2 - In Zone C4, move the note to the left. It is overlapping other lines.	JJV	Accepted, corrected	
24.	H-2-824742 - In Zone F1, change 8' X 8' to 13' X 8'.	JJV	Accepted, corrected	
25.	H-2-824742, SH. 2 - In Zone A4/B4, delete one of the "SEE DETAIL A" statements.	JJV	Accepted, corrected	✓

REVIEW COMMENT RECORD (RCR)		1. Date 2/16/95	2. Review No. 95-071
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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
26.	H-2-824751, SH. 2 - In Zone A7, for Hex Nuts ASTM A307 is a bolt material. For nuts use ASTM A563. Also, show the appropriate weld symbol for tack welding the nuts. This comment is typical on other drawings.	JJV	Reject, This information came from the as-built drawings. Will leave as-is.	Closed
27.	H-2-824777 - What is the Duro hardness for the Neoprene gasket? Show part locations for PN 9, 13 and 14. In Zone D5 change flag note from 5 to 4.	JJV	Accept, corrected	closed
28.	H-2-824802 - How does PN 2 (Channel) fit into the main assembly? For DETAIL B it shows a 3 3/4" round bar fitting inside a 4" OD bar that is 1/4" thick (3 1/2" ID).	JJV	Accept, Channel is not used for the main assembly. Channel is used in specific installations only. See detail D for modifications to round bar.	closed
29.	H-2-824806 - Why is there overkill on the use of lockwashers?	JJV	Accept, Lockwashers eliminated.	closed
30.	H-2-824819 - Add 102-AP/2D/13 to the application used list. For PN 43 & 44 delete the information in the parts column. It is redundant with that shown in the description column.	JJV	This drawing (48" adaptor) has been eliminated by using 50" adaptor H-2-824818	closed
31.	GENERAL - For gasket material, if it is not critical, provide a tolerance for the hardness (example: Neoprene Duro 30 ±5). This will make acceptance of the part at shipping receipt easier.	JJV	Accepted, corrected, duro 30±5 adopted	closed
32.	GENERAL - For multiple sheet drawings, the total number of sheets appears only on sheet 1. This is per WHC-CM-6-3, DS-3.3, #9.	JJV	Accept, on drawings WHC will modify after received from SAIC. Due to cost can't change all the drawings.	closed

REVIEW COMMENT RECORD (RCR)				1. Date 2/16/95	2. Review No. 95-071
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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	
33.	GENERAL - Specify bolt torque values		Reject, will use turn of the nut method for tightening. Torque requirements are not needed.	closed	

REVIEW COMMENT RECORD (RCR)	1. Date 2/9/95	2. Review No. 1
	3. Project No. LLCE Disposal Program	4. Page 1 of 2

5. Document Number(s)/Title(s) 90% Review LLCE Flexible Receiver Adapters/Platforms	6. Program/Project/ Building Number LLCE Equipment Disposal	7. Reviewer H.L. Roach	8. Organization/Group ICF Kaiser / Analytical Services	9. Location/Phone 2920 GWW (ETC-2) 376-5595
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)
Reviewer/Point of Contact

5/31/95

Date

Reviewer/Point of

H.L. Roach

Author/Originator

6/6/95

Date

f Contact

H.L. Roach

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 all drawings: All lines that should be hidden in the drawing view (plan, elevation), should be phantom or hidden lines. Current drawings are not consistent in properly showing hidden lines.	N	Accept, All lines in pit are phantom	
2	McMaster Carr catalog part numbers are used for some of the parts in the parts list. The vender name and part number, that makes the item, should be substituted here. This was pointed out to SAIC several weeks ago in a regular status meeting.	N	Accepted, corrected	
3	Tap and Drill note is needed for nozzles on the wash rings.	N	Accepted, corrected	
4	Lead weight is not factored into the structural calculations.	!!	Accepted, corrected	
5	No wash ring should be more than approximately 8 ft from the centerline of the FRA gamma assay system. This is needed to assure that LLCE can be relowered and rinsed if necessary. Several adapter designs presented have the wash ring lower than 8 feet.	N	Accept, corrected	

REVIEW COMMENT RECORD (RCR)		1. Date 2/9/95	2. Review No. 1
		3. Project No. LLCE Disposal Program	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
6	At location 244-TX, riser 7: If trimming of stop plate or cut off of nozzle is absolutely necessary then a note must be made on the installation drawing clearly indicating (preferably with a blowup detail) what needs to be cut. Since it will be difficult to be precise in making this field cut, this cut should be conservative to make sure enough material is removed.	N	Accepted, corrected, note added to installation drawing. Equipment to cut off or unbolt the nozzle will be developed in FY 96, or later.	
7	Where the LLCE is close in diameter to the adapter tube, the LLCE equipment drawings (pump, thermocouple, etc) need to be double checked to make sure that allowable tolerances for fabrication of the equipment and tolerances for the fabrication of the adapter tube do not lead to interferences.	N	All equipment is dimensioned with nominal dimension except where as-built information is available. Several inches of clearance was used between equipment and adapters when possible. Generally part tolerances are fractional inch. However, it is recommended that because of the inconsistencies in existing tank farms drawings that physical surveys be done of the equipment in the pits before the adapter hardware is lowered into the pit so that adjustments can be made in hardware set-up if necessary.	

REVIEW COMMENT RECORD (RCR)	1. Date 02/10/95	2. Review No. RCR #01
	3. Project No.	4. Page 1 of 2

5. Document Number(s)/Title(s) 90% Design Review LLCE Platforms/Adapters	6. Program/Project/ Building Number	7. Reviewer Craig M. Keller	8. Organization/Group 5A620 Analytical Services	9. Location/Phone 376-2137
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

6/6/95
Date
Craig M. Keller
Reviewer/Point of Contact
Don Legare 6/6/95
Author/Originator

6-5-95
Date
Craig M. Keller
Reviewer/Point of Contact
Don Legare 6/6/95
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	All Installation Drawings: Consider showing seismic clips in their as-adjusted configuration.		Seismic restraints have been eliminated from the design.	
2	H-2-82477, Sht 2, Gr A: Flange Dowel pins should be relocated to the other side of the Horizontal flange center line. (see Dwg H-2-71643)		Appears to be correct according to H-2-71682.	
3	H-2-824802, Sht 1, Gr A: Dimension missing for the large center hole of the stabilizer assembly.		Accept, corrected	
4	H-2-824777 Gr A: General Note #4 is flagged as Note 5 on the drawing.		Accept, corrected	
5	H-2-824717 Gr B: Correct Numbering of flagged notes in General Notes and as shown on the part.		Accept, corrected	
6	H-2-824805 Gr B: Part 14 should be a socket weld elbow with weld callout.		Accept, corrected	

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REVIEW COMMENT RECORD (RCR)	1. Date 02/10/95	2. Review No. RCR #01
	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
7	All Drawings: Review the paint note to correct those drawings having incorrect paint specified. Should be Valspar Val-Chem epoxy mastic 75 series paint.		Accept, corrected, (Applies to 824701 and 702)	
8	H-2-824724, Sht 2, Gr C: There is a 2'x2' "seal plug" located on the pit floor just west of the pump that is missing from the pit drawing. The seal plug sticks up 3-4" above the pit floor and should be checked for interference with adaptor. (Ref H-2-70318) Zone C7 gives a dimension of "3X 4'-6"". The "3X" is incorrect. The maximum pump height I got from the drawing H-2-95322 is 3'-8". This differs from the 2'-8 5/16" on the drawing.		Accept, corrected, on seal plug. 3X is correct. Pump drawing is correct, dimension is being shown as 3'-8" max.	
9	H-2-824725, Gr D: The riser size is 24" not 12". (Ref H-2-68316)		Accept, corrected, LLCE equipment list is corrected.	
10	Spray ring drawings: Use 1/4 MEG-2502 spray nozzles. 30 Nozzles maximum due to our water supply limitation. Note on the drawing that the nozzles must be orientated correctly for their flat spray design.		Accept, corrected	

REVIEW COMMENT RECORD (RCR)	1. Date 01/10/95	2. Review No. RCR #02
	3. Project No.	4. Page 1 of 2

5. Document Number(s)/Title(s) LLCE 90% Design Review	6. Program/Project/ Building Number	7. Reviewer Craig M. Keller	8. Organization/Group	9. Location/Phone
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED
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Organization Manager (Optional)

Date

Reviewer/Point of Contact

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	H-2-824739 Sht 2, Gr. G: This drawing lists the 12" riser flange at elevation 662'-3 3/8". The As-Built information for 102-AN/2A/3A on H-2-71998 gives the flange elevation as 662.49'. There is a discrepancy of about 2.5". The bellows can adjust for the difference, but the drawings and equipment design should use the correct flange elevation.		Accept, corrected	
2	Above Ground Riser Installation Drawings: Sht 2 of the Installation drawings does not depict the additional equipment around the risers that is shown on Sht 1. The "Max Clearance" value given on Sht 2 is misleading because the additional equipment is not included. In most cases the additional equipment restricts the clearance around the riser.		This applies to above ground risers. The other equipment referred to is generally movable.	

REVIEW COMMENT RECORD (RCR)	1. Date 01/10/95	2. Review No. RCR #02
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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

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	3. Project No.	4. Page 1 of 5

5. Document Number(s)/Title(s) LLCE FRRA Drawing Package	6. Program/Project/ Building Number TWRS	7. Reviewer W. R. Jaquish	8. Organization/Group ICF KH Mech. Engr.	9. Location/Phone ETC2/46
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17. Comment Submittal Approval: 10. Agreement with indicated comment disposition(s) 11. CLOSED

Organization Manager (Optional)

6/5/95
Date

William R. Jaquish
Reviewer/Point of Contact

6/5/95
Date

William R. Jaquish
Reviewer/Point of Contact

Don Legare 6/6/95
Author/Originator

Don Legare 6/6/95
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	Recommend including note to mark weight of platform on all platforms.		Reject, Platform weight excluded to avoid confusion with platform allowable load.	
2	Recommend including note to mark (paint or stamp) centerline indicators on perimeter of holes to facilitate installation of platforms over the riser centers.		Reject at this time. May include later when installation procedure is finalized.	
3	Recommend including note to mark weight of adapters on all adaptor plates.		Reject, Adaptor plates are re-used with different adaptors.	
4	Recommend including note to mark weight of platform access doors on all platform access doors.		Reject, Platform access doors are not a relatively heavy item.	
5	Review use of "X" and "PL" to indicate multiple fasteners and hardware.		Reject, X has been accepted by KEH drafting in this case.	
6	In general review need for quantity of fasteners on all flanges. Reduce number of fasteners to minimum to reduce labor time required to construct adaptor		Some design driven by matching existing design or parts, also code requirements	
7	Review need for 3-1/2 inch diameter holes in platform access plates (and hole cover plates for platforms with multiple risers) to reach bolts to tighten seismic restraints. Covers may be off when restraints are tightened.		Accept, Seismic restraints and holes have been eliminated.	

REVIEW COMMENT RECORD (RCR)			1. Date 2/14/95	2. Review No.
			3. Project No.	4. Page 2 of 5
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
8	Installation of the platforms relative to the riser centerlines require that the existing in-riser equipment have markings to indicate the riser center. Do these markings exist. If not, what other reference marks will be used to align the platforms?		Accept, installation methods will be developed.	Open
9	For equipment located in the deep pits, the bail extensions will be long resulting in very long packages for the transport/burial containers. It is recommended that nylon rigging on in-riser equipment be used to reduce total length of bagged equipment. This may require some additional effort during installation of the adapters, and should be carefully considered.		Reject, tilt trailer would have to be redesigned and part of the Flexible Receiver would have to be redesigned.	
10	The section and detail views of the detail drawings include a description to rotate the views and sections. This is redundant and incorrect. Delete.		Existing practice, information correct	
11	Consider eliminating 3 three legged platform. It may create more problems than it solves (e.g. storage, assembly with 42" diameter adapters, installation, decon, etc.)		Reject, Needed for stability of adaptor during installation	
12	Installation drawings. It is not clear in several of the drawings if the elevation dimension given near the bottom of the pit is for the flange, the floor drain, or the highest point on the floor. Also the reference dimension from the top of the concrete pit wall to riser flange is confusing. If this reference dimension is used to determine the extension of the bellows, then the dimension should include the distance from the pit floor to the top of the flange. The problem is the distance between the pit floor and the flange may not be included in the calculations.		Accept, corrected, Some elevation dimensions have been clarified. Nominal bellows compression has been added to the installation drawings.	

REVIEW COMMENT RECORD (RCR)			1. Date 2/14/95	2. Review No.
			3. Project No.	4. Page 3 of 5
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	For all adaptor assemble drawings. Identify dash numbers for each assembly shown or bubble in dash numbers for unique items.		Accepted, corrected	
14	The riser adapters will require a lot of field work to assemble, install, decontaminate, and store. I recommend that the use of a flexible adaptor made of hurculite, or similar material, that is used once and then disposed be further investigated. It may be most cost effective to switch to a flexible adaptor for the 50" adaptor which has no existing equipment. If the 50" design is successful, then the 48" adapters could be similarly designed.		Accept, a flexible adaptor has been considered for the 50" design.	
15	(H-2-824722, H-2-824727 and others). The 6' octagon shown in the pit top view is confusing. If information is not required for installation of adaptor then delete.		Octagon is underground part of interface definition. Will not remove due to cost.	
16	(H-2-824816) Zone D-7 shows bellows attached to plate (item 13) using 22 fasteners. Drawing H-2-824805, H-2-824717, and H-2-824723 indicate 36 fasteners. All fastener quantities must be the same for these mating parts.		Accepted, corrected, 36	
17	(H-2-824805) Review angle of spray jets. Angle shown is 20 degrees. Should this be 15 degrees?		Rejected, 20 degrees ok	
18	(H-2-824701) Revise paint note to delete paint from sliding and contact surfaces of the restraint and wedge.		Reject , This item has been eliminated from the designs.	
19	(H-2-824702) Revise paint note to delete paint from contact surfaces of the restraint angle iron members item 13.		Reject , This item has been eliminated from the designs.	
20	(H-2-824725) Change item 5 from "H-2-824815-01" to "H-2-824816-02".		Accepted, corrected	

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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
21	(H-2-824752) Change item 5 from "H-2-824815-01" to "H-2-824815-03".		Accepted, corrected	
22	(H-2-824807) Item 10 not identified in part list.		Accepted, corrected,	
23	(H-2-824802) Diameter of large center hole not indicated.		Accepted, corrected	
24	(H-2-824707 and others) View C-C. Horizontal placement of 1-1/8" holes does not require 1/32" accuracy. Recommend leaving at default tolerance of + - 1/8". This comment applies to all platform assemblies.		Mounting holes for seismic restraints have been eliminated.	
25	(H-2-824797) Relocate detail A.		Accepted, corrected	
26	(H-2-824797) Zone C-7. Add the hole diameter dimension for pin (item 6).		Accepted, corrected, ANSI class FN1 press fit.	
27	(H-2-824798) Zone C-4. Add the hole diameter dimension for pin (item 6).		Accepted, corrected, ANSI class FN1 press fit.	
28	(H-2-824712) Revise note 6 to correctly describe modification to existing part.		Accept, see note 8 on drawing.	
29	(H-2-824712) Recommend that this platform be a new design rather than a modification to an existing platform. These modifications may be difficult and expensive once the original platform is contaminated.		Reject, Modification will be made prior to use in field.	
30	(H-2-824765) Verify that the 1' diameter hole is large enough to allow the equipment to pass through. Rework of this hole during installation will be expensive.		Accepted, corrected, hole removed	
31	(H-2-824794) Verify that the 2'-6" diameter hole is large enough to allow the equipment to pass through. Rework of this hole during installation will be expensive.		Accepted, corrected, hole removed	

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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
32	(H-2-824775) Item 5 should be "H-2-824819-04".		Accepted, corrected to H-2-824819-05	
33	(H-2-824818) Sheet 2, View A-A. Rotate bottom right hoist ring 90 1/2 CW.		Reject, hoist rings swivel.	
34	(H-2-824704) Sheet 2. Opening of square hole in plate, item 11, is not fully dimensioned.		Accepted, corrected	
35	(H-2-824704) Sheet 2, View A. Item 11 should be item 14.		Accepted, corrected	
36	If seismic requirement is eliminated, I recommend that the W12 x 40 I-beams on the platforms be replaced with rectangular structural tubing. All tube ends should then be covered with plate.		Reject due to cost of re-design and tubing.	

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	3. Project No. LLCE FRRA	4. Page 1 of 2

5. Document Number(s)/Title(s) 90% Design Review Flexible Receiver/Riser Adaptor	6. Program/Project/ Building Number Long Length Contaminated Equipment Removal	7. Reviewer V.R. Enderlin	8. Organization/Group ICF KH Mechanisms Engineering	9. Location/Phone ETC2/376-9259
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17. Comment Submittal Approval: 10. Agreement with indicated comment disposition(s) 11. CLOSED

Organization Manager (Optional)

6/5/95
Date

VR Enderlin
Reviewer/Point of Contact

6/5/95
Date

VR Enderlin
Reviewer/Point of Contact

Don Leason 6/6/95
Author/Originator

Don Leason 6/6/95
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	PKG A DWG H-2-824777 Incomplete. No part or weld callouts, etc.		Accept, Corrected	A
2	PKG A DWG H-2-824802: a) Detail A PN7 should be welded to PN6 to allow in-position leveling. b) Detail B Interference of 1/4 inch between PN12 (3-3/4 inch OD) and PN14 (4 inch OD with 1/4 inch thick wall) should be changed.		Accepted, corrected	A
3	PKG B DWG H-2-824805: a) Insufficient information on spray nozzles attachment (weld? thread? torque?). b) Unclear that bottom flange requires bolt holes. Add "2 PLACES" or "TOP AND BOTTOM FLANGE" to statement in quadrant 5F.		Accepted, corrected	A
4	PKG E DWG H-2-79337 a) No threading detail on spray nozzle installation. b) Area above and below threadolet can trap material. Direct installation of nozzle into spray ring would reduce trapping; or changing the diameter of the top plate or spray ring to allow the ID of the top plate to match up directly to the top of the spray ring would eliminate the recess.		Threading detail is part of the threadolet. Area above and below the threadolet has high pressure water impacting the area. Minimal contamination will accumulate at that location. Welding will fill in some of the area by weld material.	A
5	PKG P DWG H-2-824719 Incomplete drawing. Insufficient information on spray nozzle attachment (weld? thread? torque?). No weld callout for wash ring assembly shown in Detail A and the vertical wall of the wash ring assembly (which has no PN callout) in view 1. No PN 16 shown in top view on page 2 or sections E-E or F-F. Etc. . .		Accepted, corrected	A
6	PKG P DWG H-2-824788 a) Flange slope is unclear. Is the slope cut then cut to match up with PN 13's odd shape? Or is the odd shape cut out of the plate then the odd shape cut to slope? What does the slope do as the odd shape approaches the edge of the flange plate? b) The 1 inch bevel on the bottom of the flange plate has no obvious purpose other than to waste money machining it. (H-2-824787 also)		Flange is first cut in part and then the shape is welded in. Bevel is for plate lightening.	A

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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	DWG H-2-824701 Suggest a mockup of the internal seismic restraints to test the operation of the design. Jamming is a potential because of the different angles between the wedge travel and the slide bar, and the rotation of the wedge from being pulled up at the bottom.		Seismic restraints have been eliminated.	A
8	PKG C DWG H-2-824704 The seismic restraints on the south edge are on the beam joints. Can this be avoided?		Seismic restraints have been eliminated.	A
9	PKG S DWG H-2-70105 Area above and below threadolet can trap material. Direct installation of nozzle into spray ring would reduce trapping.		Area above and below the threadolet has high pressure water impacting the area. Minimal contamination will accumulate at that location. Welding will fill in some of the area by weld material.	A
10	PKG H DWG H-2-79198 To obtain overall height, a separate drawing must be referenced. Not an acceptable practice.		Accept, corrected	A
11	DWG H-2-79149 So many nut, bolt and washer sizes. Can't these be reduced?		Reject, is needed	A

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5. Document Number(s)/Title(s) LONG LENGTH CONTAMINATED EQUIPMENT	6. Program/Project/ Building Number	7. Reviewer CL UHLMAN	8. Organization/Group TWRS DESIGN SERVICES	9. Location/Phone ETC-1/2940 GWW 376-5193
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Date

6/6/95

Reviewer/Point of Contact

Author/Originator

Don Legare 6/6/95

Date

6/6/95

Reviewer/Point of Contact

Author/Originator

CL Uhlman
Don Legare 6/6/95

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.	ASSEMBLY IDENTIFICATION DASH NUMBERS BY (TEN) 10 i.e. -010, -020, -030, ETC AND DETAILED PART NUMBERS -001, -002 IN PARTS LIST. TYPICAL ALL DRAWINGS WHERE APPLIES.		Accept, corrected	
2.	ITEM NUMBER AND TITLE/NAME OF PART UNDER EACH INSTALLATION, ASSEMBLY, ARRANGEMENT, OR DETAILED PART. TYPICAL ALL DRAWINGS WHERE APPLIES.		Accept, corrected	
3.	NEED MORE DESCRIPTIONS ON BOUGHT ITEMS SO GENERIC PARTS COULD BE PURCHASED, TYPICAL ALL PARTS LISTS.		Accept, corrected, McMaster-Carr callouts changed with guidance from WHC.	
4.	i.e. H-2-824804 NEEDS 5 (FIVE) ASSEMBLIES INSTEAD OF THE TABULATED CHART. TYPICAL ALL DRAWINGS WHERE APPLIES.		Accept, corrected	
5.	i.e. H-2-824803 NEEDS PARTS LIST FOR THE SINGLE PART SHOWN. TYPICAL DRAWINGS WHERE APPLIES		Accept, corrected	
6.	INSTALLATION DRAWINGS NEED ITEM NUMBER AND TITLE UNDER THE ELEVATION AND A VIEW TAKEN OFF FOR THE PLAN AND IDENTIFIED AS VIEW A-A. TYPICAL ALL INSTALLATION DRAWINGS.		Accept, corrected	
7.	NEED NEXT USED ON BLOCK FILLED IN ON ALL DRAWINGS AND END ITEM ON TOP SHEET.		Accept, corrected, installation drawings to be filled in later.	

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	3. Project No. LLCE	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
8.	INFORMATION ONLY REMOVED FROM ALL FABRICATION DRAWINGS.		Accept, corrected	

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	3. Project No.	4. Page 1 of 3

5. Document Number(s)/Title(s) FLEXIBLE RECEIVER ADAPTER-GENERAL	6. Program/Project/ Building Number	7. Reviewer S A Krieg/committee	8. Organization/Group	9. Location/Phone ETC2.68/376-0931
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

6/6/95
Date

Reviewer/Point of Contact

6/6/95
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.	A cost analysis should be prepared on the assembly, staging, installation, decontamination, disassembly and storage of the platforms and adapter system. This should include all of the labor, materials, and special equipment required to conduct the equipment removal operation with the current system. This analysis would identify areas of high cost that could be evaluated for cost reduction activities.		Assembly, installation, staging, decontamination, disassembly and storage will be reviewed for ways to simplify the equipment.	Open
2.	The imposition of seismic requirements onto this task has resulted in complex designs for the adaptor platforms. This greatly increases the manufacturing, assembly, installation, decontamination, and storage costs of the platforms. The need for the seismic restraints on the platforms should be reviewed with the intent to eliminate them. The seismic restraints offer no added value or increased safety margin to the platform design or use. In complying with the intent of Secretary Grumley's objective to eliminate unnecessary rules and regulations, the design of the platforms can be greatly simplified and overall costs reduced by elimination of the seismic requirements and simplifying the platform design.		The seismic restraints have been eliminated from the designs.	
3.	The stainless steel nuts, bolts, and washers should be replaced with carbon steel equivalents for the adaptor assemblies assuming that stainless bolts and nuts will be discarded after a single use. The thread class and type should be specified on the drawings for all threaded fasteners.		Stainless steel hardware was used for anti-rust protection and for decontamination. Part 2 Accepted, corrected	
4.	The capability of the flexible receiver to extract a component that is off-set up to 6 inches should be verified. In particular, there is concern that the flexible bag will pull away from the rings.		Tested in off-set mode at the 305 building with approximately 15 ft long components. Testing showed it could handle the off-set. Additional testing will be done at the Cold Test Facility.	

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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 method(s) of assembling the large adapters in the field should be defined. This includes aligning of mating pieces, alignment of bolt patterns, and definition of the fixtures required for assembling the segments. The use of guide pins or other alignment devices should be considered in the evaluation.		An assembly procedure is being prepared. Guide pins and alignment marks will be added as needed.	Open
6.	A procedure for lifting and upending the large adapters from horizontal to vertical should be developed. The major issues are bending the adapters and damage to the p-seal during upending..		Accept, An adaptor assembly procedure is being prepared. Upending the adaptors will be reviewed.	Open
7.	The number of fasteners used to bolt the adapter assemblies together appear excessive. The number of fasteners should be reduced to the minimum practical. The use of barrel type clamps to attach the adaptor assemblies should also be evaluated from the standpoint of reducing field assembly work.		Accept, reviewed for minimization of parts.	
8.	The adaptor pieces should be keyed or marked to aid in aligning with the platform.		Accept, corrected, adaptor top plates and bases are marked to align with the platform.	
9.	The hole patterns on mating parts should be toleranced using true position dimensioning.		Accepted, corrected	
10.	The safe or rated working load of lifting devices should be identified in the parts list.		Accepted, corrected	
11.	The weights of the major assemblies should be included on the assembly drawings and marked on the components.		Reject, weight not provided on components to avoid confusion with platform allowable loading and components being used in multiple assemblies. Assembly weights not added to drawings due to cost.	

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			3. Project No.	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.	The steps required to attach the in-bag hoist hook to the equipment should be reviewed. This does not appear to be a trivial matter.		This has been reviewed and tested at the Cold Test Facility, is OK.	
13.	The adaptor internal welds should have a "grind smooth" callout added.		Accept, A 125 surface finish has been specified for internal welds.	
14.	The method of attaching the lower p-seal to adapters should be reviewed. Several adaptor bases have concave shapes that the band will not tighten against. The band will also interfere with adjacent components in the concave areas.		Adaptor bases do not have concave surfaces. P-seal band attachment is acceptable. Assemblies will be tested prior to use.	

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5. Document Number(s)/Title(s) 90% design review	6. Program/Project/ Building Number FRRA	7. Reviewer GD Thompson	8. Organization/Group	9. Location/Phone ETC-2/ 376-2067
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17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. CLOSED *ORIGINAL REVIEWER NO LONGER AVAILABLE
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Organization Manager (Optional)

6/6/95
Date
Reviewer/Point of Contact

6/6/95
Date
Author/Originator

6/6/95
Date
Reviewer/Point of Contact

6/6/95
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-2-824709 Should we make the other hole in the platform larger or move it over the center of the pump to allow more clearance if the second piece of equipment is ever going to be removed?		The platform is optimized for the small riser. It is difficult to know how to change the design until the other equipment being removed from the 42" riser is known. No action planned at this time. Redesign is not justified due to cost.	
2	H-2-824709 sht 3 Zone E6 revise dimension from 2" to 5 x 2" $\pm 1/32$		Accept, corrected	
3	H-2-824709 sht 3 change drill hole size from 11/16" to 3/4". The tolerance ($\pm 1/32$) given will not work with the 11/16" hole size. This is a general problem where plates are to be attached to the platform.		Accept, corrected	
4	H-2-824739 Revise dimensions: Is EL 662'-3 3/8" EL 667'-0 15/16" 6'-1 1/16" 4'-5 1/16" Should Be EL 662'-6" EL 668'-0 15/16" 6'-0 15/16" 4'-4 15/16"		Accept, corrected, first two dimensions corrected. Reject second two dimensional changes.	

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		3. Project No.	4. Page 2 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
5	H-2-824701 Seismic Restraints 1 What does the 30", 24", and 20" depth mean for the 3 kits? 2 For part 12 should the holes be 5/8" instead of 9/16"? 3 For part 13 should the holes be 11/32" instead of 5/16"?		Seismic restraints have been eliminated from the designs.	
6	Where pump H-2-91943 is to be removed the min clearance should be R 1'-9 3/4". This is due to the tolerance build up in the pump drawing.		Dimensions are set based on nominal dimensions or as built, in the case that the tolerances are at max., min. clearance is 2".	
7	H-2-824787 DETAIL A What is the use of the 1" x 45° bevel? I think it would be less costly not to have this feature.		Bevel for weight reduction.	
8	H-2-824816 VIEW A-A Can the lifting ring be positioned like the upper right hand corner one?		Reject, rings will swivel	
9	H-2-824777 Need more detail. For example the angle on PN 14, spray angles, nozzle inserts, et al.		Accept, corrected	
10	It would be useful to have the estimated weight on all of the drawings of adapters, platforms, assemblies, seismic restraints, etc.		Reject, Weights will not be marked to avoid confusion amongst the different assemblies.	
11	H-2-824802 How large is the opening in the plate (Diameter)?		Accept, corrected	
12	H-2-824801 BASE ASSEMBLY Needs guide pins for the wash ring that sits on top of it.		Accept, corrected, scribe marks added.	
13	H-2-824806 No gasket is called out between the adapter and the 3 leg stand. This gasket may need to have a special drawing showing its size and features.		No gaskets required, outside adapter.	
14	H-2-824802 Needs lifting rings.		Accept, corrected	

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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
15	How hot are Catch/U-301B/12 and Catch/UX-302/12 and DCRT/244-U/15 pits? The whole pit is not covered by the adapter in both cases. Is more shielding needed?		Pits are not "hot", shielding is not required	
16	H-2-79149 1 Enlarge SECTION A-A to completely fill the drawing sheet. The detail is hard to see. 2 The scale is missing on several parts.		Accept, scale is already on dwg	
17	H-2-824799 Why is the base of the split spool require so much detail? I think it should just be flat with tapped holes and a split gasket extending to the edge of the opening in the center. Also, PN 2 (gasket) will need to be refit so a gap is not left between it and the flange gasket.		Base indexes on riser flange. Gasket seating redesigned flat.	
18	H-2-824799/H-2-824807 Gasket is missing between the split spool and the riser flange.		Accept, corrected	
19	H-2-824807 On the drawing the call out for PN 10 should be PN 11 and PN 12 in zone B5 should be PN 15.		Accept, corrected	
20	H-2-824800 Should we use a 1/4" weld in zone C7 instead of the 3/16" weld to "smooth" out the transition between parts 13 and 14?		Reject, weld is okay.	
21	H-2-824799 PN 2 is mislabelled in the parts list. It should be GASKET not SPLIT SPOOL.		Accept, corrected	
22	H-2-824799 and H-2-824797 Review tolerancing. Should we use true position? 799-Tolerancing of holes will not fit.		Accept, corrected, true position tolerancing implemented.	
23	Where gaskets are used, what are the max and min torque requirements for the bolts in the flanges?		Reject, torque requirements not needed	

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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
24	H-2-824744 PN 7 needs to be a split gasket, or a note on the drawing to indicate that the gasket needs to be cut through one side for installation. This comment can be applied to almost all of the locations where a split spool adapter is used (package J).		Accept, corrected, gasket to be split and rebonded.	
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26				
27				
28				
29				

APPENDIX E
OPEN ITEM LIST

RCR OPEN ITEM LIST
FLEXIBLE RECEIVER ADAPTER
90% DESIGN REVIEW

- 1) Alignment of all these small fasteners for assembly will be difficult if not impossible, if flanges are not match drilled, match marked, and/or taper pins are used for alignment. (S.W. Shaw)
- 2) Consideration needs to be given to assembly of the components. It appears that additional hardware will be required to assemble/disassemble adapters and platforms which is not shown. (S.W. Shaw)
- 3) Requirements for assembly, plumb/level and perpendicularity at installation need to be identified. (S.W. Shaw)
- 4) General - The installation and removal for the total package needs to be reviewed as it is very labor intensive and will be expensive to use the system as designed. (O.A. Halvorson)
- 5) GENERAL - A review of the design objectives need to be accomplished to see if a more cost effective design could be developed. A bridge design with removal sections that could shorten or lengthen the unit appears to be able to eliminate the need for earthquake restraints and the design could have minimal effect on the pits themselves. (O.A. Halvorson)
- 6) Drawing H-2-824816 - How will the parts be assembled? No lifting lugs or guide pins shown to allow the units to effectively assembled. Include lifting lugs and guide pins on components. (O.A. Halvorson)
- 7) General - A review of the cost effectiveness of the design needs to be done for installation, assembly, storage, and removal. The design does not appear to be very operational/maintenance friendly. (O.A. Halvorson)
- 8) General - There are no hoisting or lifting rings to handle the flex receiver adapter while it is on its side. Add a lifting mechanism to allow movement of the unit on its side. (O.A. Halvorson)
- 9) Drawing H-2-824754 - How will the platform/adapter be assembled and transported? Review the assembly for use. (O.A. Halvorson)
- 10) Drawing H-2-820735 - How will the assembly be transported and assembled? Review the platform/adapter for assembly and transporting. (O.A. Halvorson)

APPENDIX F
DESIGN REQUIREMENTS

CONTENTS

APPENDIX F DESIGN REQUIREMENTS

- 1.0 LLCE Seismic Support Requirements, March 21, 1995, C. M. Keller.
- 2.0 BOA task order number N3K560301, 9/32/94.
- 3.0 SOW, Phase 2 Flexible Receiver Riser Adapter, 1/10/95.
- 4.0 Letter H. L. Roach to SAIC dated 11/16/94, Platform Clip Loads Input.
- 5.0 CC mail message H. L. Roach to Joe Cruz, 10/26/95, Lead Shielding Requirements on Adapter Platform.

Additional design requirements are found in:

- 1) Hanford Plant Standards, SDC 4.1.
- 2) Functional Design Criteria: Auxiliary Equipment To support Removal of Tank Farm Long Reach Equipment, WHC-SD-WM-FDC-029.

Westinghouse
Hanford Company

Internal
Memo

From: Analytical Services
Phone: 376-2137 H5-70
Date: March 21, 1995
Subject: LLCE SEISMIC SUPPORT REQUIREMENTS

To: P. A. Titzler H5-68

cc: See Distribution List
CMK-File/LB

- References:
- 1) Evaluation of the Effects on Concrete Pits Due to Long Length Contaminated Equipment Platform, WHC-SD-WM-DA-187
 - 2) Double Shell Tank Safety Equipment List, WHC-SD-WM-026
 - 3) Single Shell Tank OSR, WHC-SD-WM-OSR-005
Double Shell Tank OSR, WHC-SD-WM-OSR-016
Aging Waste Tank OSR, WHC-SD-WM-OSR-004
 - 4) USQ Safety Evaluation, TF-94-0295

The Long Length Contaminated Equipment (LLCE) removal project is requesting concurrence on the elimination of seismic supports for the pump pit side walls during equipment removal operations. The affected LLCE which are to be removed consist of a variety of waste tank transfer pumps located in pump pits in the 200 E and 200 W tank farms. Concurrence that seismic supports are not required will be achieved by approval of this letter.

BACKGROUND

The LLCE removal process will require that the pit cover blocks be removed where the equipment is located. A platform will then be installed on top of the pit walls with a tubular adaptor extending from the platform to the pit floor. The adaptor maintains containment during the removal process. A flexible receiver is installed above the platform to also maintain containment of the removed equipment.

An analysis was performed (Reference 1) to evaluate the effects of the removal equipment on the concrete pits. Seismic loading on some pit walls due to the exterior soil loads were found to exceed the criteria established in American Concrete Institute 349-85 (ACI 349). The seismic analysis was based on SC 1 criteria since the majority of the affected pits are SC 1 based on Reference 2. The analysis also assumed that the installed platform would have seismic supports extending down and contacting the inside of the pit walls.

P. A. Titzler
Page 2
March 21, 1995

DISCUSSION

It is desired to remove the seismic supports from all of the platform designs based on the following reasons. The platforms are classified as safety class items based on a spray leak scenario (Reference 2) which could only occur during a waste transfer operation. Requirements in Reference 3 prevent waste transfers from occurring while the cover blocks are removed. Since the pits are not performing a safety function when their cover blocks are removed, they should not be expected to meet seismic requirements. Incidentally, some pits do not meet ACI concrete construction requirements making it difficult for them to meet any current seismic requirements.

The consequence of removing the seismic supports would be potential damage to the pit walls should a seismic event occur during the LLCE removal operation (expected duration <4 days per location). Damage could include cracking and limited failure of the pit walls. Depending on the extent of damage, repairs could be required prior to making additional waste transfers with the effected pit. The consequences were found to be acceptable in Reference 4.

The additional pit wall seismic supports will be removed from the platform designs if concurrence is provided with this letter. Adequate support will be provided to maintain the platform in position, but additional seismic supports for the pit walls will not be provided.

Craig Keller

C. M. Keller
Analytical Services

\kph

CONCURRENCE:

L. E. Thomas

TWRS Nuclear Safety
L. E. Thomas

3-23-95

Date

Jashin Bajwa

TWRS Technical Safety Support
J. K. Bajwa

Date

D. E. Legare

LLCE Project Engineer
D. E. Legare

3/30/95

Date

R. K. Brown

TWRS Special Projects Mgr.
R. K. Brown

Date

3-23-95

M. N. Islam

M. N. Islam

3/23/95

Date

K. D. Gibson

K. D. Gibson

3/27/95

Date

TWRS BOA
TASK ORDER COVERSHEETTask Order Number: N3K560301 Date: 9/23/94Task Title: DEFINITIVE DESIGN FOR RISER ADAPTER DESIGNSAuthor: Don Legare Telephone: 376-3489Charge Code: N343DEstimated Hours: (3.000 man-hours) Estimated Cost: \$ \$109,816 Original
Contract Cost (\$250,000)

(Start date: 10/1/94; End Date: 2/28/95)

Brief Description of Work Scope: Provide definitive designs for the Flexible Receiver Adapter Assemblies.Task Order Attachment ChecklistScope of Work XSchedule XDeliverables/Required Documents XSpecial Contractual Requirements XClassified Information or Special Nuclear Material N/A *

* If checked, provide a full expansion of all possible required involvement with classified information and/or special nuclear material.

Approval Designator (per Sect 12.7, WHC-CM-3-5): S OApproved By:Author: DE Legare *Don Legare*Date: 9/23/94Financial Rep.: RS Schubert *RS Schubert*Date: 9/26/94Author's Manager: RK Brown *RK Brown*Date: 9-23-94Buyer's Tech. Rep.: RE Russell *RE Russell*Date: 9-23-94~~W-320~~ QA: MA Richman *MA Richman*Date: 9-26-94~~W-320~~ Safety: M.C. JAKA *M.C. JAKA*Date: 9/27/94

9/23/94

90%

WHC-SD-WM-DRR-049

Revision 0

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STATEMENT OF WORK

Phase 2 Flexible Receiver Riser Adapter Designs

Provide definitive design drawings for the Flexible Receiver Adapter Assemblies (FRAA). The FRAA's shall provide containment between the riser flange, where equipment is being removed, and the lower flange of the Flexible receiver assembly. The LLCE Adapter Design Data Sheet for Equipment Removals through FY 1998 provides design information necessary to produce the required FRAA designs. The Seller shall provide FRAA's that will be used to remove the equipment from all locations shown in the data sheet with the exception of locations where H-2 drawings are shown under the "Type # / Adapt DWG" column. The FRAA shall also include a high pressure rinse system.

The FRAA designs shall minimize, as much as practical, the number of different parts and subassemblies that make up all of the required FRAA's. Interchangability of parts, between different FRAA's, shall be used as much as possible to reduce the total number of required parts. Existing WHC FRAA's designs shall be used, if practical, to promote part interchangability between new and existing FRAA adapter designs. The number of required FRAA assemblies shall be minimize as much as practical.

The adapters shall be designed for ease of assembly and decontamination in a radiation control zone. A WHC designed standard template shall be used to fabricate the FRAA main flanges. The FRAA's shall be designed to interface with two WHC designed flexible Receiver Assemblies as required in the LLCE Adapter Design Data sheet. The customer shall provide complete drawing sets for the two Flexible Receiver Assemblies.

For pit locations, the FRAA, Flexible Receiver Assembly (FRA), and any required shield material shall be supported uniformly by the top of the pit wall. The FRAA shall completely cover the pit opening and shall have a top plate with a minimum 1" thickness of steel. The top plate must be capable of supporting the weight of 4" of lead in all areas except for the area where the FRA is installed. The Combined weight of all parts shall not exceed the weight of the cover blocks that are used to cover the pit location. Where it is not possible to support the weight of the FRAA, FRA, and shield material, the weight of all parts must be supported outside the pit. Load transferred to the riser must be minimized as much as practical. Rinse water leakage from the adapter shall be minimized as much as practical.

For Above ground risers, the FRAA shall be designed to attach to the riser flange and shall be designed to direct all rinse water into the riser. The FRAA must be leak tight.

The seller shall field verify the locations and configuration of the equipment that would interfere with the FRAA and Flexible Receiver Equipment around the pits and risers on the tanks the FRAA's will be provided for. A sufficient number of color photos and dimensions will be taken to show all details around pits and riser locations sufficient to do the detailed design. A 35 mm camera shall be used to take these pictures.

Installation drawings shall be provided for each riser or pit location which includes assemblies and outside riser and pit interferences.

DELIVERABLES

The seller deliverables for this task are as follows:

- o Set of Field verification notes, and color photos taken at each location identified in the design data sheet. Prints and negatives for the photographs shall be provided to the buyer.
- o Conduct a 30% design review for all concepts. This review shall be held by November 1, 1994.
- o Conduct a 50% design review of all new FRAA designs. This review shall be held by December 1, 1994.
- o Conduct a 90% design review of all new FRAA designs. The ± briefing/package submittal shall be held by January 15, 1995 with the design review of the comments and design held by February 2, 1995.
- o Complete set of H-2-XXXXXX drawings for the FRAA's drawn to WHC drafting standards. AutoCAD release 11 or 12 shall be used for all drawings. Electronic copies all drawings shall be submitted on disks to buyer with full sized signed off vellum drawings. All of this must be completed and submitted to the customer by February 14, 1995.
- o Copy of design calcs vendor information and any other related information that support the designs.

6-0279

1/10/95

STATEMENT OF WORK

Phase 2 Flexible Receiver Riser Adapter Designs, REV. 1

[Note: changes underlined]

[This revision covers the addition of riser 244-TX-7 and the design of new platforms and lateral earthquake restraints, for the platforms. The schedule has also been adjusted by an additional two weeks to accommodate the new drawings required.]

Provide definitive design drawings for the Flexible Receiver Adapter Assemblies (FRAA). The FRAA's shall provide containment between the riser flange, where equipment is being removed, and the lower flange of the Flexible receiver assembly. The LLCE Adapter Design Data Sheet for Equipment Removals through FY 1998 provides design information necessary to produce the required FRAA designs. The Seller shall provide FRAA's that will be used to remove the equipment from all locations shown in the data sheet with the exception of locations where H-2 drawings are shown under the "Type # / Adapt DWG" column. The FRAA shall also include a high pressure rinse system.

The FRAA designs shall minimize, as much as practical, the number of different parts and subassemblies that make up all of the required FRAA's. Interchangability of parts, between different FRAA's, shall be used as much as possible to reduce the total number of required parts. Existing WHC FRAA's designs shall be used, if practical, to promote part interchangability between new and existing FRAA adapter designs. The number of required FRAA assemblies shall be minimize as much as practical, but new components will be designed when modifications to existing components becomes too complicated or costly. New platform design for all pits will be provided to properly fit the pits, avoid interference problems with equipment adjacent to the pits and to provide distributed lateral loadings during earthquakes.

The adapters shall be designed for ease of assembly and decontamination in a radiation control zone. A WHC designed standard template shall be used to fabricate the FRAA main flanges. The FRAA's shall be designed to interface with two WHC designed flexible Receiver Assemblies as required in the LLCE Adapter Design Data sheet. The customer shall

-1-

provide complete drawing sets for the two Flexible Receiver Assemblies and 42" 4-legged platform.

For pit locations, the FRAA, Flexible Receiver Assembly (FRA), and any required shield material shall be supported uniformly by the top of the pit wall. The FRAA shall completely cover the pit opening and shall have a top plate with a minimum 1" thickness of steel. The top plate must be capable of supporting the weight of 1" of lead in all areas except for the area where the FRA is installed. The Combined weight of all parts shall not exceed the weight of the cover blocks that are used to cover the pit location. Where it is not possible to support the weight of the FRAA, FRA, and shield material, the weight of all parts must be supported outside the pit. Load transferred to the riser must be minimized as much as practical. Rinse water leakage from the adapter shall be minimized as much as practical. The Platform and FRA assemblies must be able to support earthquake loadings as well as snow and ash loadings.

For Above ground risers and pits without drains, the FRAA shall be designed to attach to the riser flange and shall be designed to direct all rinse water into the riser. The FRAA must be leak tight.

The seller shall field verify the locations and configuration of the equipment that would interfere with the FRAA and Flexible Receiver Equipment around the pits and risers on the tanks the FRAA's will be provided for. A sufficient number of color photos and dimensions will be taken to show all details around pits and riser locations sufficient to do the detailed design. A 35 mm camera shall be used to take these pictures. The field configuration of all pits will be documented through a WHC report.

Installation drawings shall be provided for each riser or pit location which includes assemblies and outside riser and pit interferences. The installation drawing shall consist of an updated SK-2 interface drawing and an assembly drawing consisting of platform, FRAA and pit/riser details.

DELIVERABLES

The seller deliverables for this task are as follows:

- o A Field verification report, and color photos taken at each location identified in the design data sheet. Prints and negatives for the photographs shall be provided to the buyer.

-2 -

- o Conduct a 30% design review for all concepts. This review shall be held by November 1, 1994.
- o Conduct a 50% design review of all new FRAA designs. This review shall be held by December 2, 1994.
- o Conduct a 90% design review of all new FRAA designs. The briefing/package submittal shall be held by February 2, 1995 with the design review of the comments and design held by February 20, 1995.
- o Complete set of H-2-XXXXXX drawings for the FRAA's drawn to WHC drafting standards. AutoCAD release 11 or 12 shall be used for all drawings. Electronic copies all drawings shall be submitted on disks to buyer with full sized signed off vellum drawings. All of this must be completed and submitted to the customer by March 2, 1995.
- o Copy of design calcs vendor information and any other related information that support the designs.

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FRAA REQUIREMENTS FROM STATEMENT OF WORK PHASE 2

Provide containment between the riser flange and the lower flange of the FRA

High pressure rinse

minimize the number of parts

promote interchangeability

existing designs used if practical

minimize total number of FRAAs

ease of assembly

ease of decontamination

supported by top of pit, or where not possible, all outside the pit

completely cover pit

not exceed cover block weight

minimize load transfer to riser

minimize rinse water leakage

above ground rinse directed into riser

leaktight

Hank's Corey

November 16, 1994
H.L. Roach

Platform Clip loads Input

1. This is to provide input as to how loads and stresses are to be determined for the platform clips that prevent horizontal motion of the platforms on top of pits. Have your analyst talk to Leo Rodgers, WHC stress analyst, (509)376-0728, with any questions that you have after reviewing this material.

2. The following is my notes after talking with Leo Rodgers:

- a. SDC-4.1 (attached), Standard ARCH-CIVIL Design Criteria will be used.

Equipment is safety class 3. Tank is safety class 1. use safety class one load requirements.

Section 3.1.1 Wind loads - 90 mph
disregard missile(horizontal) - We do not care if equipment is inoperable after missile impact.

Normally structures are required to support snow and ashfall load. Not sure it applies for our equipment. Not used for seismic evaluation. This is found in section 3.1.3.3.

Section 3.1.2 Earthquake loads (see yellow highlight)

Section 7.2.2.1 Seismic Input and Section 7.2.2.2 Damping
(see yellow highlight)

Use Response spectra, Figure 3, for 7% damping. Refer to table 2 for 7% damping, peak g calculated at .38g. Note: damping comes from UCRL-15910 (also attached).

- b. ASCE standard ASCE 4-86, Seismic Analysis of Safety-Related Nuclear Structures and Commentary on Standard for Seismic Analysis of Safety Related Nuclear Structures (part attached).

3.2.1 General Requirements - Equivalent static method may be used. Seismic analysis shall be performed for the three orthogonal (two horizontal, one vertical) directions.

3.2.5.3 Simple Multi-Degree of Freedom Models - applies. 1.5x peak acceleration (.38g).

3.2.7.1.2 Combination of Components - (SRSS) can be used in summing of forces for seismic events. (also UCRL-15910 ref)

- c. AISC, Steel construction manual can be used to determine allowable stresses.

Also AISC N690-1984, American National Standard Nuclear Facilities-- Steel Safety-Related Structures for -- Design Fabrication and Erection, is applicable (also part attached). Here you are allowed 1.7x tensile and 1.4 x shear. See table Q1.5.7.1.

[136] From: Henry L (Hank) Roach at ~WHC208 10/26/94 9:22AM (814 bytes: 12 ln)
To: Joe Cruz at ~SAIC-RICHLAND-749, Fred Johansen at ~SAIC-RICHLAND-749
cc: Henry L (Hank) Roach, Peter A (Pete) Titzler, Donald E Legare,
Herbert G Barrus at ~WHC131
Subject: Lead Shielding Requirement on Adapter Platform

----- Message Contents -----

Joe, Fred,

Currently we call out in your management plan that the Flexible Receiver Adapter Assembly (FRAA) must be able to support 4" of lead in all areas except for the area where the Flexible Receiver Assembly (FRA) is installed.

The 4" of lead should be changed to 1" of lead.

Hank Roach
Don Legare

APPENDIX G
30% AND 50% DESIGN REVIEW DATA

CONTENTS

APPENDIX G 30% & 50% DESIGN REVIEW DATA

- 1.0 FRAA 50% Design Review Attendance Table.
- 2.0 FRAA 50% Design Review Meeting Minutes.
- 3.0 Phase 2 Flexible Receiver Riser Adapter 50% Design Review Action Items.
- 4.0 Flexible Receiver Adapter 50% design Review Package.
- 5.0 Phase 2 30% Design Review Attendance list.
- 6.0 Phase 2 Flexible Receiver Adapter 30% Design Review Action Items.
- 7.0 Flexible Receiver Riser Adapters 30% Design Review Package.

FRRA Design Project 50% Design Review
Attendance Table

NAME	COMPANY	PHONE
Barrus, Herb	WHC	376-2646
Brown, Richard	WHC	372-0288
Clem, Dave	WHC	376-0528
Conn, Bill (W. G.)	SAIC	943-2235
Crowley, Bill	WHC	376-5922
Cruz, Joe	SAIC	943-2235
Halvorson, Hal (O.A.)	WHC/OPS	372-2179
Johansen, Fred	SAIC-San Diego	(619)458-3721
Kemp, Billy	WHC	373-4258
Legare, Don	WHC	376-3489
Nguyen, Van	SAIC-San Diego	(619)458-3792
Peter, Jack	SAIC-San Diego	(619)792-2157
Rendine, Tommy	SAIC-San Diego	(619)458-3879
Richman, Mitch	WHC	373-3070
Riesenweber, Steve	WHC	373-5001
Roach, Hank	WHC	376-5595
Robles, Marc	WHC	376-0431
Rust, Glenn	WHC/OPS	373-5568
Titzler, Pete	WHC	376-9662
Uhlman, Carol	ICFKEH	376-5193
Wong, Jimmy	SAIC-San Diego	(619)458-5003

FRRA Design Project 50% Design Review Meeting Minutes

NOTE: Any corrections/additions should be sent to Joe Cruz at SAIC (943-2235)

Definitions

Platform - A frame constructed of I-Beam rails to fit on a pit

Stand - A platform supported by four hydraulic jacks to fit on aboveground risers

Adapter - Tubular pieces that mate the pit/riser to the FRS. These include a spray ring, bellows, and a seal.

Pit Sealing

A discussion on whether or not the rail platforms should form a "seal" around the pit wall resulted in a decision that a seal is not necessary.

Pit Leveling

It was asked if the platforms would require any sort of leveling to compensate for the uneven nature of landing surface. SAIC has assumed that some shims may be required to prevent the platform from "wiggling".

Adapter Diameter

Some question as to why the largest adapter piece has a 47" i.d. when the FRS has an i.d. of 50" and that it would limit the size of the equipment that could be retrieved. SAIC said that the existing pieces were used as much as possible and that 47" was the largest i.d. that was needed to retrieve the equipment assigned for this phase of the project. A set of 50" i.d. spools could be fabricated if necessary.

Discussion of 107-AN Pump

The individuals responsible for the pump are being notified that the pump must have a maximum diameter compatible with the adapter designs in order to be used with the FRRA.

Cutting/Trimming

It was decided that cutting/trimming is the least desirable option for the retrieval scenarios. Water leakage (in pits) is preferable to cutting. Cutting is exceptionally difficult and the first choice in all situations is not to cut.

Decontamination

The adapters should have no cracks, pits, holes, or any other locations where

contamination could get stuck or become difficult to remove. Some existing SAIC designs require modification to eliminate "shelves" where material may collect.

Type 12

Using the designed adapter piece would require the removal of the nozzle assembly. Further discussion of this location is required to resolve this issue - Action Item.

Access Holes

"Personnel" sized access holes in the pit platforms is not required. The access holes should be as large as is convenient and should not be the focus of a "special" design effort.

Ancillary Equipment

An assumption was made that equipment around the pits could be removed if it was an interference with the FRRA equipment. Most locations for this phase of the project will remain in-service after the removal of the equipment in question. The locations where it is o.k. to assume that ancillary equipment may be removed will be evaluated on a case-by-case basis. 244-CR Vault equipment can be assumed removable.

Platform Designs

SAIC's current platform design, attempting to minimize pieces, extensively modifies an existing platform to fit many pit locations. The platform has a several add-on pieces and parts that will have to be trimmed. The operational feasibility of the platform, storage, and configuration control were questioned. The question was raised as to what was the most important driver: minimization of parts, storage, ease of use, or fabrication cost - Action Item.

Seismic Consideration

The platforms adhere to seismic considerations not applied to the jack stand. The platforms are essentially fixed to the pits and tanks which are safety class II and I items, respectively. The designs to protect the tanks/pits/risers. The stand is designed so that there is some slip between the equipment and the chance that it will damage the tank is much lower. Lateral (seismic) loading is being applied to the corners of the pit walls to prevent breakage.

Type 17

The pump has not been started, but it is sitting in a hot tank. The pit is clean and there is some possibility that the cover blocks may be removed for access. The designs assumed high tolerances. The installed pump (H-2-91943) has a gusset fixing

the nozzle to the pump adapter flange.

Stands vs. Platforms

Theoretically, the jack stand could be used on some smaller pits and save the fabrication cost of the platforms. When considering worker safety requirements, the seismic issues, and shielding requirements the use of the stand on pits was not advantageous.

Type 9

SAIC's design uses a split collar piece that mates to another adapter piece. The collar piece is designed to remain on the riser. 244-TX, BX and U are almost identical.
Action Item

Names

Some further discussion of the names associated with the equipment and locations needs to be held to eliminate inconsistency and errors.

Type 19

There is a certified lifting device on the lower piece of the MIT. If the upper (large coffee can) piece can be removed the equipment may be retrieved with the 4-6" FRS.

Type 20

There is a second agitator pump in these pits and the platforms should be designed to accommodate retrieval of either pump.

FRRA Design Project 50% Design Review
Meeting Minutes

NOTE: Any corrections/additions should be sent to Joe Cruz at SAIC (943-2235)

Definitions

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the nozzle to the pump adapter flange.

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Action Item

Names

Some further discussion of the names associated with the equipment and locations needs to be held to eliminate inconsistency and errors.

Type 19

There is a certified lifting device on the lower piece of the MIT. If the upper (large coffee can) piece can be removed the equipment may be retrieved with the 4-6" FRS.

Type 20

There is a second agitator pump in these pits and the platforms should be designed to accommodate retrieval of either pump.

Phase II - Flexible Receiver Adapter Designs 50% Design Review Action Item

Submitted By: Rust, Glenn

Number: 1

Action Item: SK-2-300231 at 244 TX, a second agitator pump is installed in the east most 24" riser in this pit, Don't know which will fail first. Design should accomodate removing an agitator pump for either 24" riser and present sketch shows a frame rail directly across this 24" riser and pump location.

Assigned To: SAIC

Need By:

Resolution: A removable rail section may accomodate this unit or framed designed with and insert.

244TX, Riser 7, agitator pump was added to the list.

Completed By: Rust/Roach

Date: 12/21/94

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Rust, Glenn

Number: 2

Action Item: Suggestion: Design the pit clips to hilti onto pit wall and leave in place. Bolt to frame when using the system.

Assigned To: SAIC

Need By:

Resolution: Decision has been made to use dip design that does not make or require modifications to pits.

Completed By: Roach, Hank

Date: 12/21/94

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Rust, Glenn

Number: 3

Action Item: Any removal that requires a nozzle removal on an H-2-91943 pump requires that a vertical gusset below the discharge pipe be also cut besides unbolting or cutting off the nozzle. Should look at all pump drawings for supports on discharge nozzle.

Assigned To: SAIC

Need By:

Resolution: Noted

Completed By: Roach, Hank

Date: 12/21/94

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Rust, Glenn

Number: 4

Action Item: Pump prints - check all locations for more than one pump design as some are now Hanford discharge heads and the next generation of replacements are commercial head pumps: i.e. 244
-A

Assigned To: SAIC

Need By:

Resolution: Pumps in list are specified in the Pump Report.

Completed By: Roach, Hank

Date: 12/21/94

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By:

Number: 5

Action Item: Check type 17, 102AP/2D/13 - SAIC and WHC has designs.

Determine if bracket on wall can be removed before pump is used.

Determine if nozzle assembly can be changed before pump is used.

Assigned To: Lagare, Don

Need By:

Resolution: Wall bracket and pump nozzle will both be removed.

not there

Completed By: Keller, Craig

Date: 1/03/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Titzler, Pete

Number: 6

Action Item: Review adapter design on 102AP/2D/13. Need to determine if adapter should land on floor or riser flange.

Assigned To: SAIC/WHC

Need By:

Resolution: Type 17 adapter design should rest on the floor. We will not be removing the nozzle from the pump unless the diameter needs to be reduced to 48.5 " or less for equipment removal.

Completed By: Keller/Thompson

Date: 1/23/95

Phase II - Flexible Receiver Adapter Designs

50% Design Review Action Item

Submitted By: Titzler, Pete

Number: 7

Action Item: Determine if 4/6" FR system can be used on mit (type 29).

Assigned To: Barrus/Titzler

Need By:

Resolution: The 6" FR system can be used.

4" & 6" Flexible Receiver Adapted to MIT

1. Unbolt the flange at the riser.
2. Lift the MIT with a crane.
3. Install a spool piece.
4. Install a pipe clamp about 6 inches below the flange on the MIT.
5. Lower MIT onto the clamp.
6. Cut off the portion of the MIT above the flange.
7. Install a flanged lifting bail onto the MIT (WHC design).
8. Lift the MIT.
9. Remove the clamp.
10. Install the Split adapter (reducer from 6" to 4").
11. Lower the MIT until it rests on the Split adapter.
12. Remove the MIT from the crane.
13. Install the wash ring assembly.
14. Use the Flexible Receiver to remove and bag the MIT.

Completed By: Thompson, Gary

Date: 1/19/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By:

Number: 8

Action Item: review design on type 12 to include nozzle assembly inside of adapter.

Assigned To: SAIC

Need By:

Resolution: Adapter base redesigned to accomodate nozzle.

Completed By: Johanson, Fred

Date: 12/15/95

Phase II - Flexible Receiver Adapter Designs 50% Design Review Action Item

Submitted By: Cruz, Joe

Number: 9

Action Item: Need to decide on what kinds of identification (descriptions) need to be tagged on to the field pictures.

Considering volume (56 locations x 36 pictures each), time (Feb. deadlin), and future value.

Assigned To: Cruz, Joe

Need By: 12/09/94

Resolution: Database format was finalized with Legare, Thompson and Keller.

Completed By: Cruz, Joe

Date: 1/31/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 10

Action Item: Why isn't the installed flush ring on 107-AN removed when the pump is installed? It appears it will not be needed. If it is wanted, why don't we modify it (pumpstand) before the pump is installed.

Assigned To: Barrus/Roach

Need By:

Resolution: 107-AN was deleted from the scope of work on 1/10/95.

Completed By: Thompson, Gary

Date: 1/17/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Cruz, Joe

Number: 11

Action Item: I need to get a document number for my Field Verification package. Is there a special format that I need to apply to the document (other than the WHC format)?

Assigned To: Legare, Don

Need By:

Resolution: Document number has been provided by Gary Thompson.

Completed By: Keller, Craig

Date: 1/03/95

Phase II - Flexible Receiver Adapter Designs 50% Design Review Action Item

Submitted By: Titzler, Pete

Number: 12

Action Item: Interface with TF COG Engineer and set up method to review removal drawing when the will be affected by changes in TF. Also, present all LLCE information to COG Engineers and Operations

Assigned To: Titzler, Pete

Need By:

Resolution: Paul Kison attended WRSTIP where LLCE information was presented (1/11, 1/12/95)

Paul Kison will attend scheduled bi-weekly meeting where TF changes will be discussed.

Completed By: Thompson/Titzler

Date: 1/19/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Titzler, Pete

Number: 13

Action Item: Interface Adapter/Platform design with other
Projects/Programs.

Assigned To: Titzler, Pete

Need By:

Resolution: Doing on a regular basis.

Completed By: Thompson/Titzler

Date: 1/19/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Kemp, Billy

Number: 14

Action Item: Establish consistency in terminology.

1. Agitator pump vs. Mixer pump (244- TX) - Use MIXER PUMP
2. 244 CR-3 pump, agitator - Delete pump. It is a paddle wheel agitator, not a pump.
3. Catch Tanks
 - All locations that use the H-2-93099 drawing, should be referred as Catch Tank Pumps.
 - Look at the other drawings. Some are submersible flush type pumps, others are vertical turbines, 151 AZ & 154 AZ are examples.
4. In all situations, establish consistent terminology - check the H-2 drawing, but don't live by the wording on it. If it's wrong, we will correct it in our program. We don't need to continue a bad practice. correct it. Get a good understanding of the equipment before changes.

Assigned To: SAIC

Need By:

Resolution:

Completed By:

Date:

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Cruz, Joe

Number: 15

Action Item: We would like CAD files on the new 42" FRS stand configuration.

Assigned To: Uhlman, C.L.

Need By: 12/16/94

Resolution: CAD files have been provided by Carol Uhlman.

Completed By: Keller, Craig

Date: 1/03/95

Phase II -- Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 16

Action Item: Has Radiation Protection looked at the design for moving platforms from farm to farm? (deconing, etc)
n

Assigned To: Legare/Cruz

Need By:

Resolution: The adapters are made for ease of decontamination. They are made from stainless steel. They do not have any cracks, crevasses, or ledges for contamination to build up on. All of the adapters have gaskets and seals that are replaceable.

By design the platforms should have very little if any contamination on them.

*Requirement to Release to movement to farm
HPT Review of platform*

Completed By: Thompson, Gary

Date: 1/10/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Kemp, Billy

Number: 17

Action Item: Design using 47 1/2" Max. OD. Can that be increased to 48 1/2" or what ever is the ABSOLUTE MAXIMUM possible, regardless of what we believe our expected equipment OD.

Check to make sure that 47 1/2" ID adapter tube fits all locations (over equipment).

Assigned To: Roach, Hank

Need By:

Resolution: Current design is to use a maximum I.D. (50") tube where needed.

Check was made of 47 1/2" I.D. adaptor tube.

In several locations 47 1/2" I.D. was not large enough.

Completed By: Roach, Hank

Date: 12/21/94

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item:

Submitted By: Barrus, Herb

Number: 18

Action Item: Would it be less trouble to put the 4 leg 42" flexible
reciever stand over small pits instead of ridgid frame on top
of pit.

Assigned To: SAIC/WHC

Need By:

Resolution: Rigid frame instead of the stand will be used on smaller pits
based on safety requirements, seismic issues, and shielding.
Reference 50% design review minutes.

Completed By: Keller, Craig

Date: 1/03/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 19

Action Item: Riser loading allowance for the pit risers, Pump plus FRRA.
If FRRA is adjusted how will it be determined on the platform
if there is a seal.

Assigned To: Legare, Don

Need By:

Resolution: Loading on the risers above ground is only enough to form a seal between gaskets. Pit risers will not see any load because the platform is supported by the pit walls and the adapters rest on the floor. The seal between the adapter and the pit floor may have some leakage.

Completed By: Thompson, Gary

Date: 1/20/95

Phase II - Flexible Receiver Adapter Designs
50% Design Review Action Item

Submitted By: Kemp, Billy

Number: 20

Action Item: New Transfer Pump Fabrication Drawings.

1. 244-A - Ready for release - adding flush line to new design I think.

2. 244-S - in design.

Contact Dirk Wiggins for drawing numbers and status.

Assigned To: SAIC

Need By:

Resolution: Checked against LLCE list and pump report. We have the correct drawing numbers.

Completed By: Cruz, Joe

Date: 1/31/95

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

**50% DESIGN REVIEW -
RISER ADAPTER DESIGNS
FOR THE FLEXIBLE RECEIVER SYSTEM**

DECEMBER 2, 1994

ETC 2, ROOM 24

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

AGENDA

- **REQUIREMENTS FOR 50 % REVIEW**
- **SUMMARY OF WORK TO DATE**
- **REVIEW OF EXISTING FLEXIBLE RECEIVER RISER ADAPTER [FRRA] DESIGNS**
- **NEW FRRA DESIGNS**
- **PLATFORM DESIGNS**
- **INSTALLATION DRAWINGS**
- **STRUCTURAL ANALYSIS**
- **PROGRAM SCHEDULE**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

1. DESIGN REVIEW REQUIREMENTS [50%]

- **INSTALLATION DRAWINGS WITH FIELD VERIFICATION MODS**
- **LAYOUTS OF FRRA AND PLATFORM DESIGNS**
- **STRUCTURAL CALCULATIONS OF PIT BEARING LOADS/
STRUCTURAL COMPONENTS**
- **RE-ESTIMATE OF TOTAL DRAWINGS REQUIRED**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

2. SUMMARY OF DESIGN EFFORT

- **SK-2 DRAWINGS UPDATED TO AS-BUILT STATUS
WITH REDLINE AND OTHER PIT INFORMATION [56 DRWGS.]**
- **54 SITE SPECIFIC INSTALLATION DRAWINGS**
- **FRRA ASSEMBLIES FOR EACH SPECIFIC SPOOL DIAMETER
[3-4 ASSEMBLIES FOR PITS, 2-3 ASSEMBLIES FOR ABOVE GRND.]**
- **NEW AND MODIFIED PLATFORM ASSEMBLIES FOR EACH PIT
CONFIGURATION [4-5 ASSEMBLIES]**
- **COMPLETE DESIGN PACKAGES WILL BE SUBMITTED FOR 90%
DESIGN REVIEW BY MID JANUARY '95.**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

3. FRRA & INSTALLATION DRAWINGS

- **LLCE FRRA DESIGN DATA SHEET LISTS EQUIPMENT TO BE REMOVED THROUGH FY'98**
- **AS-BUILT INFORMATION BEING GATHERED FOR ALL OTHER PIT EQUIPMENT AND ELECTRICAL AND OTHER EQUIPMENT ADJACENT TO PITS AND ABOVE GROUND RISERS.**
- **UNIQUE RISER CONFIGURATIONS NOT COVERED BY EXISTING DESIGNS HAVE BEEN LAYED OUT AND SPECIFIC ADAPTER COMPONENT DESIGNS DEVELOPED.**
- **INSTALLATION DRWGS. ARE BEING DEVELOPED INCORPORATING ALL AS-BUILT PIT/SITE/RISER INFORMATION. A SEPARATE INSTALLATION DRAWING WILL BE DONE FOR EACH EQUIPMENT REMOVAL OPERATION.**

WHC/SAIC

LLCE EQUIPMENT SUMMARY SHEET

TANK #	FARM	PIT	RISER	RISER SIZE	RISER DRAWINGS	FY DATE	EQUIPMENT TYPE	EQUIPMENT DRAWING NUMBER	RISER ADAPTER ASSEMBLY #	RETRIEVE EQUIP SIZE
101	AZ	1E	1C	42"	H-2-68305, H-2	1996	PUMP, MIXER	VENDOR	H-2-79222	42" RISER
101	AZ	1D	1A	42"	H-2-68305, H-2	1996	PUMP, MIXER	VENDOR	H-2-79222	42" RISER
103	AP	---	4	12"	SK-2-300244	1998	THERMOCOUPLE TRE	H-2-90492	TYPE 1	42" RISER
101	SY	---	11B	4"	SK-2-300269	1998	DIP LEG	H-2-37766	N/A - NOT LLCE	N/A
106	C	6B	13	26"	SK-2-300264	1996	PUMP, HEEL	NEW	TYPE 3 - H-2-79220	42" RISER
CATCH		U301B	12"	12"	SK-2-300222	1996	PUMP, TRANSFER, S	H-2-93099	TYPE 4	42" RISER
CATCH		UX-302	12"	12"	SK-2-300227	1996	PUMP, CATCH TANK	H-2-93099	TYPE 4	42" RISER
101	AN	1A	3A	12"	SK-2-300238	1997	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
102	AN	2A	3A	12"	SK-2-300239	1998	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
101	AP	1A	3A	12"	SK-2-300241	1994	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
103	AP	3A	3A	12"	SK-2-300243	1998	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
104	AP	4A	3A	12"	SK-2-300245	1997	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
105	AP	5A	3A	12"	SK-2-300246	1997	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
106	AP	6A	3A	12"	SK-2-300247	1997	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
107	AP	7A	3A	12"	SK-2-300248	1994	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
108	AP	8A	3A	12"	SK-2-300249	1995	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
101	AW	1A	3A	12"	SK-2-300250	1997	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
103	AW	3A	3A	12"	SK-2-300254	1998	PUMP, FLEX FLOAT	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
104	AW	4A	3A	12"	SK-2-300255	1996	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
105	AW	5A	3A	12"	SK-2-300256	1997	PUMP, FLEX FLOAT	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
106	AW	6A	3A	12"	SK-2-300257	1994	PUMP, TRANSFER	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER
102	SY	2A	3A	12"	SK-2-300276	1997	PUMP, FLEX FLOAT	H-2-75352	TYPE 5 - H-2-79199, H-2-79191	42" RISER
103	SY	3A	3A	12"	SK-2-300279	1997	PUMP, TRANSFER	H-2-75352	TYPE 5 - H-2-79199, H-2-79191	42" RISER
107	AN	7A	11A	42"	SK-2-300240	1997	PUMP, EJECT MIXER,	H-2-85264	TYPE 6 - H-2-79199, H-2-79191	42" RISER
101	SY	1A	12A	42"	SK-2-300272	1998	PUMP, MIXER	VENDOR	TYPE 6 - H-2-79199, H-2-79191	SPECIAL
CATCH		311-ER	12"	12"	SK-2-300223	1997	PUMP, CATCH TANK,	H-2-93099	TYPE 7	42" RISER
CATCH		A302	12"	12"	SK-2-300226	1996	PUMP, TRANSFER	H-2-93099	TYPE 7	42" RISER
106	C	6A	9	42"	SK-2-300262	1996	PUMP, SLURRY	NEW	TYPE 8 - H-2-79191	42" RISER
DCRT		244-U	15	4"	SK-2-300229	1998	DIP TUBES	H-2-73867, DETAIL AM	TYPE 9	4-6" RISER
106	C	6C	3	12"	SK-2-300263	1996	SLUICER	NEW	TYPE 10	42" RISER
101	AY	1B	1C	34"	SK-2-300258	1997	PUMP, TRANSFER	H-2-93179	TYPE 11 - H-2-79219	42" RISER

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LLCE EQUIPMENT SUMMARY SHEET

TANK #	FARM	PIT	RISER	RISER SIZE	RISER DRAWINGS	FY DATE	EQUIPMENT TYPE	EQUIPMENT DRAWING NUMBER	RISER ADAPTER ASSEMBLY #	RETRIEVE EQUIP SIZE
102	AW	2E	24A	12"	SK-2-300252	1994	PUMP, 242A FEED	H-2-91943	TYPE 12	42" RISER
101	AZ	1C	1D	42"	SK-2-300281	1996	EMPTY	NONE	TYPE 13 - H-2-79199	42" RISER
102	SY	2E	24A	12"	SK-2-300275	1994	PUMP, X-SITE, FLEX	H-2-75352	TYPE 14	42" RISER
CATCH		151AZ	12"	12"	SK-2-300225	1997	PUMP, CATCH TANK	H-2-68371, H-9-1105 (0	TYPE 15	42" RISER
CATCH		A-350	12"	12"	SK-2-300224	1997	PUMP, TRANSFER	H-2-95322	TYPE 16	42" RISER
102	AP	2D	13	12"	SK-2-300242	1996	PUMP, GROUT FEED	H-2-91943	TYPE 17 - H-2-820737	42" RISER
DCRT		244-A	F	12"	SK-2-300232	1994	PUMP, TRANSFER	H-2-38232	TYPE 18	42" RISER
DCRT		244-TX	2	12"	SK-2-300236	1994	PUMP, TRANSFER	H-2-73935	TYPE 19	42" RISER
DCRT		244-U	2	12"	SK-2-300237	1998	PUMP, TRANSFER	H-2-73935	TYPE 19	42" RISER
DCRT		244-TX	3	12"	SK-2-300231	1994	PUMP, AGITATOR	H-2-95279	TYPE 20	42" RISER
DCRT		244-CR-3	---	24"	SK-2-300234	1996	PUMP, TRANSFER	H-2-99161	TYPE 21	42" RISER
DCRT		244-CR-3	---	36"	SK-2-300230	1996	PUMP, AGITATOR	H-2-36021	TYPE 22	42" RISER
DCRT		244-S	H	12"	SK-2-300235	1994	PUMP, TRANSFER	H-2-71056	TYPE 23	42" RISER
101	AW	---	4	4"	SK-2-300251	1997	THERMOCOUPLE TRE	H-2-34304	TYPE 24 - H-2-79337	42" RISER
106	C	---	8	4"	SK-2-300266	1997	THERMOCOUPLE TRE	H-2-90342-20	TYPE 24 - H-2-79337, H-2-79203	42" RISER
106	C	---	14	4"	SK-2-300267	1997	THERMOCOUPLE TRE	H-2-90342	TYPE 24 - H-2-79337	42" RISER
101	SY	---	17C	4"	SK-2-300270	1996	MIT	H-2-85123	TYPE 24 - H-2-79337	42" RISER
101	SY	---	1B	4"	SK-2-300273	1996	VDTT TREE	H-2-815016	TYPE 24 - H-2-79337	4-6" RISER
101	SY	---	14A	4"	SK-2-300274	1996	VDTT TREE	H-2-815016	TYPE 24 - H-2-79337	4-6" RISER
102	SY	---	4A	4"	SK-2-300278	1998	THERMOCOUPLE TRE	H-2-34304	TYPE 24 - H-2-79337	42" RISER
103	SY	---	4A	4"	SK-2-300280	1997	THERMOCOUPLE TRE	H-2-34304	TYPE 24 - H-2-79337	42" RISER
102	SY	---	7A	12"	SK-2-300277	1995	SPECIFIC GRAVITY	H-2-37766	N/A - NOT LLCE	N/A
101	SY	---	5B	42"	SK-2-300268	1996	CAMERA	H-2-131617	N/A - NOT LLCE	N/A
102	AY	2D	1C	34"	SK-2-300259	1997	PUMP, TRANSFER	H-2-93179	TYPE 27 - H-2-79219	42" RISER
101	AY	1D	1A	34"	SK-2-300282	1997	PUMP, TRANSFER	H-2-93179	TYPE 27 - H-2-79219	42" RISER
DCRT		244BX	2	12"	SK-2-300233	1994	PUMP, TRANSFER	H-2-73935	TYPE 28	42" RISER
101	SY	---	17B	4"	SK-2-300271	1996	MIT	H-2-85123	TYPE 29	42" RISER

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**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

4. RESULTS OF SITE AS-BUILT STUDIES TO DATE

- **SITES COMPLETE [32/56]**
 - **AN, AP, AW, AY, AZ FARMS COMPLETE**
- **FIELD VERIFICATION TO BE COMPLETE BY DEC. 9**
- **106 C WILL BE DONE IF ACCESS CAN BE OBTAINED, OTHERWISE EXISTING DOCUMENTATION TO BE USED.**
- **REPORTS TO BE COMPLETED BY DEC. 23**

WHC/SAIC

Field Verification Tracking Sheet

LOCATIONS						ITEMS						PERCENT COMPLETE
TANK #	FARM	PIT	RISER #	SK# SK-300	FILE #	SK	BLANK FORM	FILM	PICS	RAW DATA	FINAL DATA	
CATCH		U301B	12"	222	1	1						17%
CATCH		311-ER	12"	223	1	1						17%
CATCH		A350	12"	224	1	1						100%
CATCH		151AZ	12"	225	1	1						17%
CATCH		A302	12"	226	1	1						17%
CATCH		UX-302	12"	227	1	1						17%
DCRT		244-U	15"	229	1	1						100%
DCRT		244-CR-3	15"	230	1	1						100%
DCRT		244-TX	13"	231	1	1						100%
DCRT		244-A	15"	232	1	1						100%
DCRT		244-BX	2	233	1	1						17%
DCRT		244-CR-3	2	234	1	1						100%
DCRT		244-S	H	235	1	1						17%
DCRT		244-TX	2	236	1	1						100%
DCRT		244-U	2	237	1	1						100%
101	AN	1A	3A	238	1	1	1	1	1	1		83%
102	AN	2A	3A	239	1	1	1	1	1	1		83%
107	AN	7A	11A	240	1	1	1	1	1	1		100%
101	AP	1A	3A	241	1	1	1	1	1	1		83%
102	AP	2D	13	242	1	1	1	1	1	1		100%
103	AP	3A	3A	243	1	1	1	1	1	1		83%
103	AP	4A	4A	244	2	1	1	1	1	1		100%
104	AP	4A	3A	245	2	1	1	1	1	1		83%

Field Verification Tracking Sheet

LOCATIONS						ITEMS						PERCENT COMPLETE
TANK #	FARM	RISER PIT	#	SK# SK-300	FILE #	SK	BLANK FORM	FILM	PICS	RAW DATA	FINAL DATA	
105	AP	5A	3A	246	2	1	1	1	1	1		83%
106	AP	6A	3A	247	2	1	1	1	1	1		83%
107	AP	7A	3A	248	2	1	1	1	1	1		83%
108	AP	8A	3A	249	2	1	1	1	1	1		83%
101	AW	1A	3A	250	2	1	1	1	1	1		83%
101	AW	---	4	251	2	1	1	1	1	1		83%
102	AW	2E	24A	252	2	1	1	1	1	1		100%
103	AW	3A	3A	254	2	1	1	1	1	1		83%
104	AW	4A	3A	255	2	1	1	1	1	1		83%
105	AW	5A	3A	256	2	1	1	1	1	1		83%
106	AW	6A	3A	257	2	1	1	1	1	1		83%
101	AY	1B	1C	258	2	1	1	1	1	1		83%
101	AY	1D	1A	282	2	1	1	1	1	1		83%
102	AY	2D	2D	259	2	1	1	1	1	1		83%
101	AZ	1C	1D	281	2	1	1	1	1	1		83%
106	C	6A	9	262	2	1	1					33%
106	C	6C	3	263	2	1	1					33%
106	C	6B	13	264	2	1	1					33%
106	C	----	8	266	2	1	1					33%
106	C	----	14	267	3	1	1					33%
101	SY	----	5B	268	3	1						17%
101	SY	----	17C	270	3	1						17%
101	SY	----	17B	271	3	1						100%

11/30/94

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Field Verification Tracking Sheet

LOCATIONS						ITEMS						PERCENT COMPLETE
TANK #	FARM	RISER PIT	#	SK# SK-300	FILE #	SK	BLANK FORM	FILM	PICS	RAW DATA	FINAL DATA	
101	SY	1A	12A	272	3	1						17%
101	SY	----	1B	273	3	1						17%
101	SY	----	14A	274	3	1						17%
102	SY	2E	24A	275	3	1						17%
102	SY	2A	3A	276	3	1						17%
102	SY	----	4A	278	3	1						17%
103	SY	3A	3A	279	3	1						17%
103	SY	---	4A	280	3	1						17%
TOTALS						54	37	32	32	32	13	61.7%
PERCENTAGE						100%	69%	59%	59%	59%	24%	61.7%

50% Design Review Action Items

TOTALS	13	13	13	13	13	13	100.0%
PERCENTAGE	100%	100%	100%	100%	100%	100%	100.0%

11/30/94

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5. RESULTS OF SITE PIT EQUIPMENT STUDIES

- 28 SK-2 DRWGS. STUDIED
- SUMMARY OF RESULTS
 - CR PIT HAS INTERFERENCE PROBLEM
 - BALANCE OF PITS HAVE REMOVABLE JUMPERS OR OTHER PIT EQUIPMENT IS NON-INTERFERING

WHC/SAIC

FRAA Design Project 50% Design Review

Arrangement Drawings for Pit Equipment

LOCATION		SKETCH	ARRANGMENT DRAWINGS		
FARM	PIT/RISER	SK-2-300#	A LIST	B LIST	C LIST
CATCH					
	A-350	224	H-2-70538		
DCRT					
	244-U	229	H-2-73921	H-2-73919	H-2-73793, H-2-71653
	244-CR	230	H-2-41497		
	244-TX	231	H-2-73909		
	244-A	232	H-2-38233		
	244-BX	233	H-2-73871		
	244-CR	234	H-2-41497		
	244-S	235	H-2-71057	H-2-71052	
	244-TX	236	H-2-73909		
	244-U	237	H-2-73921		
AN					
	101-1A-3A	238	H-2-71998	H-2-71991	H-2-72010
	102-2A-3A	239	H-2-71998	H-2-71991	H-2-72010
	107-7A-3A	240	H-2-71998	H-2-71991	H-2-72010
AP					
	101-1A-3A	241	H-2-90599		
	103-3A-3A	243	H-2-90599		
	104-4A-3A	245	H-2-90599		
	105-5A-3A	246	H-2-90599		
	107-7A-3A	248	H-2-90599		
	108-8A-3A	249	H-2-90599		
AW					
	101-1A-3A	250	H-2-70411	H-2-70429	
	103-3A-3A	254	H-2-70411	H-2-70429	
	104-4A-3A	255	H-2-70411	H-2-70429	
	105-5A-3A	256	H-2-70411	H-2-70429	
	106-6A-3A	257	H-2-70411	H-2-70429	
SY					
	101-1A-12A	272	H-2-37783	H-2-37782	H-2-79556
	102-2A-3A	276	H-2-37783	H-2-37782	H-2-37802
	103-3A-3A	279	H-2-37783	H-2-37782	H-2-37803
C					
	106-6A-9	262	H-2-41190	H-2-73346	H-2-37006
	106-6C-3	263	H-2-41194	H-2-73346	H-2-37006

A List is the best drawing, B is second best, etc..

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

6. REUSE OF EXISTING FRRA/PLATFORM DESIGNS

- **5 SPECIFIC FRRA/PLATFORM DESIGNS HAVE BEEN PREVIOUSLY DEVELOPED AND ARE SUITABLE FOR OTHER PIT CONFIGURATIONS.**
- **THE FRRA DESIGNS FOR 101 AZ-01C [PUMP PIT], 102 AY-02B [SLUICE PIT], CR 106-06C [HEEL PIT], & 101 AZ-01D WILL BE USED WITH LENGTH MODIFICATIONS FOR THE TYPE 3, 5, 11, 13, 17, 24 & 27 PIT CONFIGURATIONS.**
- **ADDITIONAL MODIFICATIONS WILL BE MADE TO THE EXISTING SPOOL DESIGNS TO ACCOMODATE THE TYPE 1, 4, 6, 7, 8, 9, 10, 12, 14, 15, 16, 18, 19, 20, 21, 22, 23, 28 & 29 PIT AND RISER CONFIGURATIONS. THESE CHANGES ARE PRIMARILY TO THE LOWER END OF THE ADAPTER SPOOL (IN-PIT) AND TO THE RISER INTERFACE PIECE (ABOVE GROUND).**
- **THE PLATFORM DESIGNS ARE BEING RE-USED AS MUCH AS POSSIBLE. THERE ARE 12 UNIQUE PIT PLAN DIMENSIONS. ALL BUT 3 OF THESE ARE COVERED BY THE EXISTING PLATFORMS DESIGNS.**

WHC/SAIC

FRRA/PLATFORM DESIGN SUMMARY

TYPE (Riser Dia.) (Style)	STATUS	FRS DESIGN	PLATFORM/REQUIRED MODS	FRRA	END PIECE DESIGN CONSIDERATIONS
1 (12") (RAISED)	DESIGN REQUIRED	42" FRS	MODIFICATION TO 4-JACK STAND TO ACCOMMODATE 42" FRS CARTRIDGE.	NEW SPLIT SPOOL FROM END PIECE TO 42" FRS SPOOL PD=3'	EQUIPMENT VERY CLOSE TO WALL. NEED TO LIFT AND INSTALL UNIQUE SPLIT CONICAL END PIECE DESIGN TO SEAL TO RISER FLANGE. NO PIT DRAIN.
2	NA - REMOVED FROM LLCE				
3 (26") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, EXISTING H-2- 820729	PD=4'+, H-2-79220 MOD LENGTH	PIT DRAIN.
4 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	MODIFICATION TO 4-JACK STAND TO ACCOMMODATE 42" FRS CARTRIDGE.	PD=5'+, H-2-820737 MODIFIED	PIT DRAIN.
5 (5") (FLUSH)	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM, H-2-79199	PD=6'+, H-2-79191	
6 (42") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79199	PD=6'+, H-2-79191 MODIFIED	UNIQUE END PIECE, SEAL ON FLANGE, PIT DRAIN.
7 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, NEW DESIGN	SEE END PIECE DESIGN PD=6', H-2-820737 MODIFIED	SIMILAR END PIECE DESIGN AS TYPE 4.
8 (42") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-820729	PD=7'+, H-2-79191 MODIFIED	PIT DRAIN

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RAISED = RISER FLANGE ABOVE PIT FLOOR

FLUSH = RISER FLANGE FLUSH W/PIT FLOOR

C:\EJCE\OR\50%DR\FRAA\PLAT.SUM

FRRA/PLATFORM DESIGN SUMMARY

TYPE (Riser Dia.) (Style)	STATUS	FRS DESIGN	PLATFORM/REQUIRED MODS	FRRA	END PIECE DESIGN CONSIDERATIONS
9 (4") (RAISED)	DESIGN REQUIRED	4"/6" FRS	4 JACK STAND	SMALL DIAMETER SPOOL REQUIRED & SPLIT END PIECE RISER ADAPTER PD=10'+	END PIECE WOULD USE SPLIT COLLAR & LONG SPOOL, PIT DRAIN
10 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=9, H-2-79191	PIT DRAIN
11 (34") (FLUSH)	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM, H-2-79223	PD=9, H-2-79191	PIT DRAIN
12 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=9+, H-2-820737 MOD	UNIQUE END PIECE WITH MOD. FOR 11" SQUARE NOZZLE KICK PLATE IN UPPER LEFT HAND CORNER. PIT DRAIN
13 (42") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-73-9223	PD=9+, H-2-79191 MOD	END PIECE TO ADAPT TO TRUNNIONS. PIT DRAIN
14 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=10'+, H-2-79219 MOD	PIT DRAIN
15 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=10+, H-2-79219 MOD	PIT DRAIN

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RAISED = RISER FLANGE ABOVE PIT FLOOR

FLUSH = RISER FLANGE FLUSH W/PIT FLOOR

C:\EJCEIOR\50%DR\FRAA\PLAT.SUM

FRRRA/PLATFORM DESIGN SUMMARY

TYPE (Riser Dia.) (Style)	STATUS	FRS DESIGN	PLATFORM/REQUIRED MODS	FRRRA	END PIECE DESIGN CONSIDERATIONS
16 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=11', H-2-820737 MOD	UNIQUE END PIECE TO CLEAR NOZZLE INTERFERENCES. PIT DRAIN
17 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	SMALL SPOOL PD=11'+, H-2-820737 MOD	BRACKET REMOVAL REQUIRED, UNIQUE END PIECE REQUIRED TO SEAL TO FLANGE. PIT DRAIN
18 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79199	PD=12'+, H-2-820737 MOD	UNIQUE END PIECE DESIGN WITH SEALS TO RISER FLANGE. PIT DRAIN
19 (2") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, NEW DESIGN	PD=16'+, H-2-79191 MOD	UNIQUE LONG END PIECE TO CLEAR NOZZLE INTERFERENCES. PIT DRAIN
20 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, NEW DESIGN	PD=16'+, H-2-79191 MOD	UNIQUE END PIECE TO CLEAR INTERFERENCE W/ADJACENT RISERS. PIT DRAIN
21 (24") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=21'+, H-2-79191 MOD	UNIQUE SQUARE END PIECE. INTERFERENCE W/ADJACENT RISER. PIT DRAIN
22 (36") (FLUSH)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, H-2-79223	PD=21'+, H-2-79191 MOD	UNIQUE END PIECE. INTERFERENCE W/ADJACENT RISER. SAME PIT AS TYPE 21. PIT DRAIN
23 (12") (RAISED)	USE EXISTING	42" FRS	NEW DESIGN	PD=23'+, H-2-79191 MOD	LONG SPOOL. PIT DRAIN

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RAISED = RISER FLANGE ABOVE PIT FLOOR

FLUSH = RISER FLANGE FLUSH W/PIT FLOOR

C:\EJCEIOR\50%DR\FRAA\PLAT.SUM

FRRAP/PLATFORM DESIGN SUMMARY

TYPE (Riser Dia.) (Style)	STATUS	FRS DESIGN	PLATFORM/REQUIRED MODS	FRRAP	END PIECE DESIGN CONSIDERATIONS
24 (4") (RAISED)	DESIGN REQUIRED	4"-6" FRS 42" FRS	4-JACK STAND NEW 42" DESIGN REQUIRED	RH=0-9', NEW 42" SPLIT RISER ADAPTER REQUIRED	EXISTING 4-6" FRS DESIGN SHOULD WORK WITH 42". FRP REQUIRED FOR 6 OF 8.
25 (12") (FLUSH)	NA - NOT LLCE	NA			
26 (42") (RAISED)	NA - NOT LLCE	NA			
27 (34") (FLUSH)	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM, H-2-79223	PP=9', H-2-79219 MOD	PIT DRAIN
28 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, NEW DESIGN	PD=11+, H-2-79191 MOD	UNIQUE END PIECE TO CLEAR RISER INTERFERENCE. PIECE MATCHES TYPE 19.
29 (4") (RAISED)	DESIGN REQUIRED	42" FRS	4-JACK STAND, NEW DESIGN REQUIRED	RH=9', NEW SPLIT SPOOL DESIGN	RISER BELOW GRADE, LIMITED CLEARANCE. USE SPLIT ADAPTER TO BRING RISER FACE ABOVE GRADE AND MATE TO RISER FLANGE.

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RAISED = RISER FLANGE ABOVE PIT FLOOR

FLUSH = RISER FLANGE FLUSH W/PIT FLOOR

C:\EJCE\IOR50\DR\FRAAPLAT.SUM

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7. 42" FRS IN-PIT ADAPTER DESIGN

**ADAPTER SPOOL SEATS ON PIT FLOOR,
FRS SITS ON SOLID PLATFORM RESTING ON TOP OF PIT**

**TYPE 6, 12, 16, 17, 18, 19, 20, 21, 22 WILL BE COVERED IN DETAIL
IN THIS REVIEW**

- **VARIABLE LENGTH WITH 32-48" DIAMETER SPOOL**
- **SPRAY RING**
- **PIT FLOOR SEAL FOR IN-PIT**
- **EXCESS WATER TO PIT DRAIN**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7a. OPERATIONAL SCENARIO - TYPE 6

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. CUT OFF OUTSIDE OF BAIL HANDLES
5. DECON PIT AND UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP SEAT ON 52" ADAPTER RING
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 6
107-AN/7A/1A
SHEET 1

TYPE 6
107-AN/7A/1A
SHEET 2

DETAIL A
MATERIAL: ASTM A-240, 304 SST

EXTRUSIONS

Natural and Synthetic Rubber

WHC-SD-WM-DRR-049
 Revi STAIRS
 ZX-10,000 Series
 23/32 to 3/4 Bulb O.D.

SM-2175
 ZX-10132

ZX-10210

ZX-10089

ZX-10226

ZX-10078

SM-1627
 ZX-10131

ZX-10376

ZX-10295

SM-4361
 ZX-10054

ZX-10331

ZX-10251

ZX-10276

All standard items normally available from stock are indicated with an arrow

Minor Rubber Company Inc.

40 ACKERMAN STREET
 BLONFELT, N.J. 07003-4219
 FAX 201-993-1364
 PHONE 201-338-6800

2425 MCIVERT LANE, SUITE 100
 CARROLLTON, TX 75006-8517
 FAX 214-247-3703
 PHONE 214-484-6477

SALES &
 ORDER DEPARTMENT
 800-433-6886

7b. OPERATIONAL SCENARIO - TYPE I2

- 1. MAKE UP FRRA ASSEMBLY**
- 2. BACKFLUSH PUMP**
- 3. REMOVE JUMPERS AND ELECTRICAL CABLES**
- 4. UNBOLT PUMP NOZZLE**
- 5. DECON PIT AND UNBOLT PUMP**
- 6. PUT PLATFORM IN PLACE**
- 7. ATTACH RIGGING TO PUMP**
- 8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE**
- 9. LIFT AND ROTATE PUMP, LOWER FRRA OVER PUMP,
ORIENT INDENT ON LOWER ADAPTER SPOOL TO
ADJACENT NOZZLE, SEAT ON FLANGE.**
- 10. LOWER FRS ON PLATFORM**
- 11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM**
- 12. ATTACH PUMP RIGGING TO CRANE**
- 13. REMOVE PUMP**

WHC/SAIC

TU2-AN/2E/24A
SHEET 1

SEE 'DETAIL A'

TYPE 12
102-AN/2E/24A
SHEET 2

EXTRUSIONS

Natural and Synthetic Rubber

WHC-SD-WM-DRR-049
 ANGLE EXTRUSIONS
 ZX-1000 Series
 1-1/4 to 1-3/8 Base Width

All standard items normally available from stock are indicated with an arrow

Minor Rubber Company Inc.

44 ACKERMAN STREET
 BLOOMFIELD, N.J. 07003-4294
 FAX 201-893-1399
 PHONE 201-338-6800

2425 MCIVER LANE, SUITE 100
 CARROLLTON, TX. 75006-6517
 FAX 214-247-3703
 PHONE 214-484-6477

SALES &
 ORDER DEPARTMENT
 800-433-6886

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7c. OPERATIONAL SCENARIO - TYPE I6

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. CUT OFF PUMP NOZZLE
5. DECON PIT AND UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP SEAT ON FLANGE
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 16
CATCH/A-350/12
SHEET 1

NOZZLE TO BE REMOVED

SEE DETAIL A

TYPE 16
CATCH/A-350/12
SHEET 2

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7d. OPERATIONAL SCENARIO - TYPE I7

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. REMOVE WALL BRACKET AND UNBOLT PUMP NOZZLE
5. DECON PIT AND UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP SEAT ON FLANGE
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 17
102-AP/2D/13
SHEET 1

TYPE 17
102-AP/2D/13
SHEET 2

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7e. OPERATIONAL SCENARIO - TYPE I8

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. CUT-OFF PUMP NOZZLE
5. DECON PIT AND UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP SEAT ON FLOOR
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 18

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7f. OPERATIONAL SCENARIO - TYPE I9-1&2

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. DECON PIT
5. UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP, ORIENT ADAPTER OVER
FLOOR NOZZLE, SEAT ON FLOOR
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 19-1
DCRT/244-TX/2
SHEET 1

WHC-SD-WM-DRR-049
Revision 0
Page G-69

TYPE 19-1
DCRT/244-TX/2
SHEET 2

MATERIAL: ASTM A-240, 304 SST

DETAIL B
SCALE: 4/1

TYPE 19-2
DCRT/244-U/2
SHEET 2

TYPE 19-2
DCRT/244-U/2
SHEET 2

NEOPRENE RUBBER EXTRUSION SEAL
ZX-10251, MINOR RUBBER COMPANY

DETAIL B
SCALE: 4/1

SEE DETAIL A
DETAIL A
MATERIAL: ASTM A-240, 304 SST

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7g. OPERATIONAL SCENARIO - TYPE 20

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. UNBOLT PUMP NOZZLE
5. DECON PIT AND UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP, ORIENT ADAPTER OVER
SQUARE RISER FLANGE, SEAT ON FLOOR
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 20
DCRT/244-TX/3
SHEET 1

TYPE 20
DCRT/244-TX/3
SHEET 2

1/4" THK

NEOPRENE RUBBER EXTRUSION SEAL
ZX-10251, MINOR RUBBER COMPANY

DETAIL B

SCALE: 4/1

NOZZLE ASSY TO BE REMOVED

22X Ø9/16 THRU
EQUALLY SPACED
ON Ø50 1/2" BC

Ø4'-4 1/4"

4'-6 1/2"

1"

1/2"

SEE DETAIL B

DETAIL A

MATERIAL: ASTM A-240, 304 SST

7h. OPERATIONAL SCENARIO - TYPE 21

- 1. MAKE UP FRRA ASSEMBLY**
- 2. BACKFLUSH PUMP**
- 3. REMOVE JUMPERS AND ELECTRICAL CABLES**
- 4. DECON PIT AND UNBOLT PUMP**
- 5. LIFT PUMP AND ROTATE, DISPLACE 2" AWAY FROM
ADJACENT RISER**
- 6. PUT PLATFORM IN PLACE**
- 7. ATTACH RIGGING TO PUMP**
- 8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE**
- 9. LOWER FRRA OVER PUMP, ORIENT ADAPTER WITH
FLAT SIDE TOWARDS ADJACENT RISER, SEAT ON FLOOR**
- 10. LOWER FRS ON PLATFORM**
- 11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM**
- 12. ATTACH PUMP RIGGING TO CRANE**
- 13. REMOVE PUMP**

WHC/SAIC

TYPE 21
DCRT/244-CR/24
SHEET 1

TYPE 21
DCRT/244-CR/24
SHEET 2

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

7i. OPERATIONAL SCENARIO - TYPE 22

1. MAKE UP FRRA ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. UNBOLT AND LIFT ADJACENT PUMP AND ROTATE 15 DEGREES, OFFSET 2" FROM AGITATOR PUMP AND SECURE LIFTING RIG,
5. DECON PIT AND UNBOLT AGITATOR PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO AGITATOR PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER FRRA OVER PUMP, ORIENT ADAPTER WITH RISER FLANGE, SEAT ON FLOOR
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO FRRA, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE AGITATOR PUMP

WHC/SAIC

TYPE 22
DCRT/244-CR/36
SHEET 1

TYPE 22

DCRT/244-CR/36

SHEET 2

22X 1/2-13 UNC-2B THRU
EQUALLY SPACED
ON $\phi 50$ 1/2" BC

DETAIL B

SCALE: 4/1

SEE DETAIL B

DETAIL A

MATERIAL: ASTM A-240, 304 SST

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

8. 4/6 & 42" FRS ABOVE GROUND ADAPTER DESIGN

**FOR ABOVE GROUND RISERS AND PITS WITH NO DRAINS
USING 4 LEG PLATFORM DESIGN**

TYPES 1,9 & 29 WILL BE COVERED IN DETAIL IN THIS REVIEW

- **SPLIT CONICAL DESIGN 4 & 12" DIAMETER RISERS**
- **SPRAY RING**
- **MOUNTS DIRECTLY TO RISER**
- **WATER TIGHT SEALS**
- **ROUTE ALL WATER THROUGH RISER WITH OVERFLOW TO
ADJACENT RISER**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

8a. OPERATIONAL SCENARIO - TYPE 1

1. REMOVE ELECTRICAL CABLES
2. UNBOLT AND LIFT THERMOCOUPLE TREE
3. PLACE SPLIT ADAPTER AROUND TC TREE AND BOLT TOGETHER, LOWER ONTO RISER AND ATTACH WITH BOLTS
4. ATTACH SPLIT ADAPTER TO WASH RING
5. LOWER TC TREE TO TOP OF SPLIT RING, REMOVE RIGGING
6. PUT 4 LEG PLATFORM IN PLACE
7. LOWER PLATFORM/FRS ONTO FRRA
8. ATTACH FRS TO FRRA
9. ATTACH OVERFLOW HOSE TO SPLIT ADAPTER
10. ATTACH RIGGING TO TC TREE
11. REMOVE TC TREE

WHC/SAIC

TYPE 1 103-AP/14

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

8b. OPERATIONAL SCENARIO - TYPE 9

1. REMOVE ELECTRICAL CABLES
2. UNBOLT AND LIFT DIP TUBES
3. PLACE SPLIT ADAPTER AROUND RISER AND BOLT TOGETHER, ATTACH TO RISER WITH BOLTS
4. LOWER DIP TUBE, BRING RIGGING THROUGH EXTENSION SPOOL, LOWER SPOOL ONTO SPLIT ADAPTER AND SECURE
5. ATTACH SPOOL TO WASH RING
6. PUT 4 LEG PLATFORM IN PLACE
7. LOWER PLATFORM/FRS ONTO FRRA
8. ATTACH FRS TO FRRA
9. ATTACH OVERFLOW HOSE TO SPLIT ADAPTER
10. ATTACH DIP TUBE RIGGING TO FRS
11. REMOVE DIP TUBE

WHC/SAIC

TYPE 9
DCRT/244-U/15
ELEVATION VIEW
SHEET 1

TYPE 9
DCRT/244-U/15
PLAN VIEW
SHEET 2

VIEW A-A

VIEW B-B
ROTATED: 180° CW

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

8d. OPERATIONAL SCENARIO - TYPE 29

1. REMOVE ELECTRICAL CABLES
2. UNBOLT AND LIFT MIT
3. PLACE SPLIT ADAPTER AROUND MIT AND BOLT
TOGETHER, LOWER ONTO RISER AND ATTACH WITH BOLTS
4. ATTACH SPLIT ADAPTER TO WASH RING
5. LOWER MIT, REMOVE RIGGING
6. PUT 4 LEG PLATFORM IN PLACE
7. LOWER PLATFORM/FRS ONTO FRRA
8. ATTACH FRS TO FRRA
9. ATTACH OVERFLOW HOSE TO SPLIT ADAPTER
10. ATTACH RIGGING TO MIT
11. REMOVE MIT

WHC/SAIC

101-SY/17B

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

9. STRUCTURAL ANALYSIS SUMMARY-1

- **PIT WALL STATIC VERTICAL LOADS VARY FROM 6,000 TO 30,000 POUNDS LOADING. THESE LOADS WILL BE DISTRIBUTED BY THE PLATFORMS SO THAT BEARING STRESSES ON THE PITS WILL BE WITHIN ESTABLISHED LIMITS [3000 PSI CONCRETE]**
- **LATERAL SEISMIC LOADINGS FROM THE PLATFORM ON THE PIT VARY FROM 4,000 TO 20,000 POUNDS. THESE LOADS WILL BE DISTRIBUTED TO THE CORNERS OF THE PIT WHERE POSSIBLE TO MINIMIZE THE BENDING LOADS ON THE SIDES OF THE PIT.**
- **PRELIMINARY BEAM STRUCTURAL CALCULATIONS INDICATE BENDING STRESSES LESS THAN 10 KSI . THIS INCLUDES THE EFFECT OF SNOW AND ASH.**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

9. STRUCTURAL ANALYSIS SUMMARY-2

- **ALL FRAA DESIGNS HAVE A LARGE SAFETY FACTOR IN STRENGTH AND STABILITY AS THEY ARE FREE STANDING STRUCTURES DECOUPLED FROM THE PLATFORM BY A BELLOWS ASSEMBLY.**
- **THE SAFETY FACTOR UNDER SEISMIC LOADINGS ON THE ADAPTERS VARY FROM 4 TO OVER 1,000. THE HIGHEST STRESSES ARE DUE TO BENDING ON THE LONG SPOOLS.**
- **SEISMIC LOADING ON THE RISERS FROM THE ADAPTERS DO NOT PRODUCE SIGNIFICANT STRESS IN THE RISERS.**
- **THE PIT/TANK LOADINGS FROM THE FRRA/PLATFORM/FRS ASSEMBLIES ARE LESS THAN THE PIT COVER LOADS.**

WHC/SAIC

TO#12 adapter structural

ADAPTER STRUCTURAL ANALYSIS FRAA TO#12 FOR WHC

A. ADAPTER STABILITY ANALYSIS

ASSUME THE LONGEST SECTION OF THE ADAPTER IS A SIMPLY SUPPORTED COLUMN

[ROARKE, TABLE 34, CASE 3A, UNIFORMLY LOADED COLUMN] $k=1.88$

CRITICAL LOAD

$$p_a' = k \pi^2 EI/L^2 \quad l = \pi R^3 t \quad p = 2\pi R t (.3)$$

TYPE	radius R inches	tkness. t inches	length L inches	mom. of inter I inches**4	length a inches	p' pounds/inch	weight p pounds/inch	safety factor
IN-PIT								
6	24	0.25	66	10,852	66	13,369,351	11	1,182,710
12	20	0.25	96	5,821	96	2,330,229	9	253,713
16	20	0.25	96	5,821	96	2,330,229	9	253,713
17	20	0.25	96	5,821	96	2,330,229	9	253,713
18	20	0.25	96	5,821	96	2,330,229	9	253,713
19-1	24	0.25	72	10,852	72	10,297,804	11	910,988
19-2	24	0.25	85	10,852	85	6,258,718	11	553,673
20	24	0.25	104	10,852	104	3,416,977	11	302,280
21	24	0.25	180	10,852	180	659,059	11	58,303
22	24	0.25	180	10,852	180	659,059	11	58,303
ABOVE GROUND								
1	6	0.25	36	170	36	1,287,226	3	455,494
9	5	0.25	77	98	77	76,128	2	32,326
25	6	0.25	22	170	22	5,640,195	3	1,995,823
29	3	0.25	22	21	22	705,024	1	498,956

CONCLUSION: ALL DESIGNS SELF SUPPORTING

TO#12 adapter structural

B. COMBINED TENSILE AND BENDING FROM SEISMIC INPUT

WORST CASE SCENARIO

ASSUME SIMPLY SUPPORTED BEAM, UNIFORMLY LOADED, MAX STRESS AT CENTER SPAN

TENSILE $S1 = F/A$ $F = \text{SEISMIC MULTIPLIER} \times \text{WEIGHT} = (1 + k1 \times 0.66) w \times L$

$A = \text{SPOOL AREA}$

BENDING $S2 = Mc/I$ $M = k1 w a L^{**2}/8$ $k1 = .38g$
 [ROARKE, TABLE 3, CASE 2E] $w = 2\pi r t \times .3$

$Su = 85,000$ PSI
 304 SST [MARKS HNDK, 5TH ED., PG. 563]

TYPE	radius R inches	tkness. t inches	length L=a inches	l inches**4	S2 psi	S1 psi	S1+S2 psi	safety factor Su/(S1+S2)
IN-PIT								
6	24	0.25	72	10,852	443	27	470	181
12	20	0.25	108	5,821	1,841	41	1,882	45
16	20	0.25	132	5,821	3,361	50	3,411	25
17	20	0.25	132	5,821	3,361	50	3,411	25
18	20	0.25	144	5,821	4,364	54	4,418	19
19-1	24	0.25	156	10,852	4,508	59	4,567	19
19-2	24	0.25	192	10,852	8,405	72	8,477	10
20	24	0.25	192	10,852	8,405	72	8,477	10
21	24	0.25	252	10,852	19,004	95	19,098	4
22	24	0.25	252	10,852	19,004	95	19,098	4

ABOVE GROUND

1	6	0.25	36	170	222	14	235	362
9	2	0.25	120	8	22,385	45	22,430	4
25	6	0.25	15	170	16	6	22	3,924
29	3	0.25	22	21	101	8	109	777

CONCLUSION: ALL STRESSES WITHIN LIMITS OF MATERIAL

TO#12 adapter structural

PIT COVER WEIGHTS VS. PLATFORM/FRRA WEIGHT
FOR PITS WITH PLATFORMS RESTING ON PIT LIP

DESIGN CRITERIA - PLATFORM/FRRA WEIGHT TO BE LESS THAN THE PIT COVER

BASE WEIGHT ON INSIDE DIMENSION PIT LIP AND PIT DEPTH, NEGLECT REBAR WEIGHT & TAPER SEAL
[CONSERVATIVE WEIGHT CALC]

ASSUME THAT SNOW, ASH LOADINGS DO NOT APPLY.

WT.=LXWDXDEN. DEN.= DENSITY OF CONCRETE 0.09
148 LBS/CU FT LBS/CU. IN.

TYPE	LENGTH L INCHES	WIDTH W INCHES	DEPTH D INCHES	WT. LBS.	FRRA/PLATFORM/FRS ESTIMATED WEIGHT LBS	SAFETY FACTOR
3	117	80	24	19,240	12,000	1.60
5	174	102	18	27,362	20,000	1.37
6	174	102	18	27,362	20,000	1.37
7	66	66	20	7,462	6,000	1.24
8	180	138	24	51,060	20,000	2.55
10	116	110	24	26,229	12,000	2.19
11	102	78	24	16,354	12,000	1.36
12	90	90	18	12,488	12,000	1.04
13	102	94	24	19,709	12,000	1.64
14	90	90	20	13,875	12,000	1.16
15	77	77	30	15,234	12,000	1.27
16	114	114	18	20,036	12,000	1.67
17	138	78	24	22,126	12,000	1.84
18	186	126	24	48,174	20,000	2.41
19-1	210	108	24	46,620	22,000	2.12
19-2	210	108	24	46,620	22,000	2.12

TO#12 adapter structural

TYPE	LENGTH L INCHES	WIDTH W INCHES	DEPTH D INCHES	WT. LBS.	FRRA/PLATFORM/FRS ESTIMATED WEIGHT LBS	SAFETY FACTOR
20	210	108	24	46,620	22,000	2.12
21	103	96	24	20,325	12,000	1.69
22	103	96	24	20,325	12,000	1.69
23	246	108	23	52,337	25,000	2.09
27	102	78	24	16,354	12,000	1.36
28	210	108	24	46,620	22,000	2.12

CONCLUSION: ALL SITES MEET CRITERIA

**FLEXIBLE RECEIVER RISER ADAPTERS
50% DESIGN REVIEW**

10. PROGRAM SCHEDULE

- **THE BRIEFING PRIOR TO THE 90% REVIEW WILL BE HELD IN MID JANUARY.**
- **THE 90% REVIEW WILL BE HELD AT THE BEGINNING OF FEBRUARY.**
- **DESIGN PACKAGE WILL BE COMPLETED IN ACCORDANCE WITH THE PROGRAM SCHEDULE - 2/14/94 DELIVERY.**

WHC/SAIC

Flexible Receiver Adapter Design - 30% Design Review

Attendance:

Name	Company	Function	Phone
Fred Johansen	SAIC-San Diego	Project Manager	(619)458-3721 946-0702 local
Bill Conn	SAIC-Richland	Project Manager	943-2235
Joe Cruz	SAIC-Richland	Field Verification	943-2235
Tom Rendine	SAIC-San Diego	CAD	(619)458-3879
Jimmy Wong	SAIC-San Diego	CAD	(619)458-5003
Jeff Williamson	SAIC-Richland	Pit Equip. Identification	946-0702
Pete Titzler	WHC	Special Projects	376-9662
Hank Roach	WHC	Engineering Support	376-5595
Herb Barrus	WHC	TWRS Support	376-2646
Carol Uhlman	ICF Kaiser	CAD	376-5193
Bill Crowley	ICF Kaiser	CAD	376-5922
O.A. (Hal) Halvorson	WHC	TWRS Tech. Support	372-2179
Jasbir Bajwa	WHC	Safety	372-1478
Dave Clem	WHC	Independent Review	376-0528
Kip McDowell	WHC	Tank Farms	373-5619
Mitch Richman	WHC	TWRS-QA	373-3070
Billy Kemp	WHC	TWRS-Program	373-4258

Assorted Meeting Notes:

244-U DCRT Station: Cognizant Engineer - Mike Koch

- Apparently there has been some activity with 244-U. They have removed the cover blocks and are planning to put it into service.

All catch/dcrt's were installed under one project: B103. The shift managers should have files/pictures.

The field verification activity should try to note or photograph any drawing numbers marked on equipment.

Rick (Richard) Raymond is the contact for the list of cognizant engineers for TF facilities. Ryan Dodd is the head cog. for East TF and Steve Shafiek (?) is the head cog. for West TF.

W151 - AZ Equipment Removal Program

- Removes equipment that would be damaged by the AZ mixer pump.
- 2 sets of Flexible Receiver Systems (FRS)
 - 42" riser (50" I.D.), 4-6" (12" I.D.)
- In several locations, the if equipment to be removed were trimmed it could be retrieved with the 4-6" rather than the 42". This could save container, retrieval, and storage. This is a long term savings.
- Equipment is lifted into the FRS and sealed in a bag. The bagged equipment is lowered into a cylindrical storage container and hauled to storage.
- H-2-78870 is the W151 Project Drawing Index

The FRS adds approximately 2500-3000 gallons (25-30 GPM) of water to the tank during a typical equipment removal. More or less may be added depending on how much material needs to be cleaned from the equipment.

Hank Roach, Herb Barrus, and Bill Crowley are going to design a 42" FRS Jack Platform.

The water that is expected to leak around the seal of the pit adapter pieces (ex: Type 18) is acceptable to operations. The adapter should facilitate decon activities.

Some concern was raised about locations where the flange face may not be parallel to the FRS. The bellows just above the adapter pieces has approximately 5" of travel and should be able to compensate for irregularities.

The 244-TX DCRT station may have some problems with equipment clearance. Some equipment may have to be removed to remove the desired equipment.

It is assumed that all electrical and jumper equipment in the area around the equipment to be pulled will be removed.

In pits, facility personnel should be able to look down over the edge of most pits while the pump is in place. Nobody will be able to look down the risers. Most pumps have shield plugs and 1" steel flanges.

The FRS platforms for pits (I-beams with a 1" steel plate cover) should have provisions for access. Some small square ports and a manhole-sized emergency access hole is a desired feature. Any proposed solutions need to be checked by safety.

Any work to be performed under the jack platform is to be avoided (i.e. bolting split flange pieces together).

A green house will probably be constructed around most of the above ground equipment removals.

During field verification activities the elevation of potential interferences should be noted.

Dennis Larson is the contact for viewing the 4-6" system in the lab.

New dome loading requirements were recently released.

The pump report is a good source for additional arrangement drawing numbers.

ACTION ITEM SUMMARY:

1. O.A. Halvorson raised the issue of the concentrated loads on the tanks. The new limits need to be checked and determine the effect on the FRS. Assigned to Hank Roach.
2. Kip McDowell provided the contacts Steven Hines and/or Mel Lakes of TF Environmental Engineering to discuss the abandoned equipment inventory program. They have been taking a lot of recent pictures and have an agreement w/TF operations to be notified if any cover blocks are lifted. They are located in 2750 Building and have a copy of the pictures there. Assigned to Jeff Williamson and Joe Cruz to be complete by 11/18.
3. O.A. Halvorson mentioned that 244-U has just finished ORR and is clean. This is an ideal time to take pictures. The TMAC's, SHMS and other ongoing programs are adding boxes, etc.. The 244-TX pictures are in the 272WA book. Assigned to Jeff Williamson to be complete by 11/18.
4. O.A. Halvorson identified a need to verify for the DCRT's which pumps are really used for transfer and are there cases where other installed LLCE must be removed to remove the pump that we want to pull. Check with Billy Ash. Assigned to Herb Barrus, Don Legare, Hank Roach. Resolution: Billy Kemp said that 244-TX is only location where the transfer pump is not used for transfer. For 244-TX the pump we have listed as agitator pump is pump actually used for transfer.

5. O.A. Halvorson: Location 244-TX, Riser 2 (12") Riser, Pump that needs to be removed is mixer pump which is in different location. Need to check riser and equipment type at this location. Resolution: 244-TX, Riser 3 (12") TYPE 20 is pump actually used for transfer operations. We are O.K. 244-TX Riser 2 transfer pump may also have to be removed in future.
6. O.A. Halvorson remarked that access through the pit platforms is necessary. Need personnel access and access holes for cameras & rinse wands. Assigned to Herb Barrus and Fred Johansen.
7. Need to get Cog. Engineer list for Tank Farms Facilities. The cogs need to be informed of our activities and may be able to provide information. Assigned to J. Cruz. Resolution: J. Cruz will get a copy of the list by 11/18.

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 3

Action Item: 1. 244 U has just finished ORR and is clean presently.

Suggest and pictures and alike being done now.

2. The TMACs, SHMS and other on going projects are adding boxes and other components.

3. 244 TX pictures are in 272 WA book.

Assigned To: Williamson, Jeff

Need By:

Resolution: Noted. TX, U pictures in or project database.

Completed By: Cruz, Joe

Date: 1/31/95

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 1

Action Item: Concentrated load on tanks?

Check for new limits to what the units will cause.

Assigned To: Roach, Hank

Need By:

Resolution: Dome loading is not an issue because the FRRA equipment weighs less than the cover blocks.

Later, the overall project will have to look at the entire weight of all the machinery involved in this effort.

*new rules -
pressure of each pad on dome.*

Completed By: Thompson/Roach

Date: 1/17/95

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By: Halverson, G.O.A.

Number: 3

Action Item: 1. 244 U has just finished ORR and is clean presently.

Suggest ~~and~~ pictures and alike being done now.

2. The TMACs, SHMS and other on going projects are adding boxes and other components.

3. 244 TX pictures are in 272 WA book.

Assigned To: Williamson, Jeff

Need By:

Resolution: Noted. TX, U pictures in or project database.

Completed By: Cruz, Joe

Date: 1/31/95

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 4

Action Item: Need to verify for DCRT's which pumps are really used for transfer and are there cases where other installed LLCE must be removed to remove the pump that we want to pull. Check with Billy Ash.

Assigned To: Barnes/Legare/Roach

Need By:

Resolution: Billy Kemp says that 242 TX is only location where the transfer pump is not used for transfer. For 244 TX the pump we have listed as agitator pump is actually used for transfer. We're covered.

Completed By: Roach, Hank

Date: 11/03/94

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By: McDowell, Kip

Number: 2

Action Item: Contact Steven Hines and/or Mel Lakes of Tank Farms Envir. Eng to discuss what they are working on in the abandoned equipment inventory. Steve and Mel have been taking a large number of pictures of the farms and may have some recent pictures taken in pits. I know they have an arrangement with operations that they will be contacted everytime the cover blocks on pits are removed in the farms.

Assigned To: Cruz, Joe

Need By:

Resolution: Can see the pictures for yourself in their office.

Purpose: View pit features.

Completed By:

Date:

Phase II - Flexible Receiver Adapter Designs 30% Design Review Action Item

Submitted By: Halverson, O.A.

Number: 5

Action Item: Location 244 TX Riser 2, 12" riser, pump that needs to be removed is mixer pump which is in different location.

Need to check riser and equipment type at this location.

Assigned To:

Need By:

Resolution: 244 TX, Riser 3, 12", type 20 is pump actually used for transfer operations. We're Covered

244 TX, Riser 2, transfer pump may also have to be removed in the future.

Completed By: Roach, Hank

Date: 11/03/94

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item:

Submitted By:

Number: 6

Action Item: Need man access through platform.

Need (two) or more 4" riser openings on platform for camera or
rinse wand access.

Assigned To: Barrus/Johansen

Need By:

Resolution: Man access through the platform is needed. SAIC has been asked
to provide as many access "hatches" as is feasible. Some of
these will be used for camera's (1'X several feet) and some for
manned access.

Completed By: Thompson, Gary

Date: 1/09/95

Phase II - Flexible Receiver Adapter Designs
30% Design Review Action Item

Submitted By:

Number: 7

Action Item: Need to get COG Engineer list for Tank Facilities. As we go along we need to keep these COG's informed. Also need to know when looking for information.

Assigned To: Cruz, Joe

Need By:

Resolution: Have a copy of cog. list. A few initial contacts were made.

Completed By: Cruz, Joe

Date: 1/31/95

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

**30% DESIGN REVIEW -
RISER ADAPTER DESIGNS
FOR THE FLEXIBLE RECEIVER SYSTEM**

NOVEMBER 3, 1994

ETC1 ROOM 278

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

AGENDA

- **RISER INTERFACE DRAWINGS - INSTALLATION DRAWINGS**
- **REVIEW OF EXISTING RISER ADAPTER DESIGNS**
- **ADAPTER DESIGN REQUIREMENTS**
- **ADAPTER DESIGN CONCEPTS**
- **STRUCTURAL DESIGN CONSIDERATIONS**
- **PROGRAM SCHEDULE**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

1. SUMMARY OF DESIGN EFFORT

- IDENTIFIED ALL DETAILS OF RISER/PIT INTERFACE FOR FLEXIBLE RECEIVER ADAPTER DESIGNS.
- 56 PIT/RISERS STUDIED.
- EXISTING HARDWARE DESIGNS ACCOMMODATE 35 SITES.
- OTHER SITES WILL REQUIRE VARIATIONS OF THE EXISTING DESIGNS TO FIT SPECIAL PIT/RISER CONFIGURATIONS.
- COMPLETE DESIGN PACKAGES WILL BE SUBMITTED BY FIRST OF FEB. '95.

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

2. RISER INTERFACE DRAWINGS

- **PIT/RISER DRAWINGS FOR EQUIPMENT REMOVAL THROUGH FY'98**
 - **LLCE ADAPTER DESIGN DATA SHEET**
 - **PHASE 1 DRAWINGS - SK-2 & H-2**
- **AS-BUILT INFORMATION BEING GATHERED FOR OTHER PIT EQUIPMENT AND ELECTRICAL AND OTHER EQUIPMENT ADJACENT TO PITS AND ABOVE GROUND RISERS.**
- **INTERFACE TYPES BEING RECOMBINED INTO COMMON DESIGN FAMILIES TO MINIMIZE REQD. ADAPTER PARTS.**
- **SK-2 DRAWING TO BE BASIS OF INSTALLATION DRWGS. FOR EACH OPERATION.**

WHC/SAIC

TANK				RISER	RISER	FY	EQUIPMENT	TANK	EQUIPMENT	RISER ADAPTER	RETRIEVE	
#	FARM	PIT	RISER	SIZE	DRAWINGS	DATE	TYPE	TYPE	DRAWING NUMBER	ASSEMBLY #	EQUIP SIZE	DATE
101	AZ	1E	1C	42"	H-2-68305, H-2-68306,	1996	PUMP, MIXER	DST	VENDOR	H-2-79222	42" RISER	NA
101	AZ	1D	1A	42"	H-2-68305, H-2-68306,	1996	PUMP, MIXER	DST	VENDOR	H-2-79222	42" RISER	NA
103	AP	---	4	12"	SK-2-300244	1998	THERMOCOUPLE TREE	DST	H-2-90492	TYPE 1	42" RISER	09/22/94
101	SY	---	11B	4"	SK-2-300269	1998	DIP LEG	DST	H-2-37766	TYPE 2	42" RISER	09/22/94
106	C	6B	13	26"	SK-2-300264	1996	PUMP, HEEL	SST	NEW	TYPE 3 - H-2-79220	TBD	09/22/94
CATCH		U301B	12"	12"	SK-2-300222	1996	PUMP, TRANSFER, SUB	OTHER	H-2-93099	TYPE 4	42" RISER	09/21/94
CATCH		UX-302	12"	12"	SK-2-300227	1996	PUMP, CATCH TANK	OTHER	H-2-93099	TYPE 4	42" RISER	09/22/94
101	AN	1A	3A	12"	SK-2-300238	1997	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
102	AN	2A	3A	12"	SK-2-300239	1998	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
101	AP	1A	3A	12"	SK-2-300241	1994	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
103	AP	3A	3A	12"	SK-2-300243	1998	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
104	AP	4A	3A	12"	SK-2-300245	1997	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
105	AP	5A	3A	12"	SK-2-300246	1997	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
106	AP	6A	3A	12"	SK-2-300247	1997	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
107	AP	7A	3A	12"	SK-2-300248	1994	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
108	AP	8A	3A	12"	SK-2-300249	1995	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
101	AW	1A	3A	12"	SK-2-300250	1997	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
103	AW	3A	3A	12"	SK-2-300254	1998	PUMP, FLEX FLOAT	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
104	AW	4A	3A	12"	SK-2-300255	1996	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
105	AW	5A	3A	12"	SK-2-300256	1997	PUMP, FLEX FLOAT	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
106	AW	6A	3A	12"	SK-2-300257	1994	PUMP, TRANSFER	DST	H-2-91943	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
102	SY	2A	3A	12"	SK-2-300276	1997	PUMP, FLEX FLOAT,	DST	H-2-75352	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/21/94
103	SY	3A	3A	12"	SK-2-300279	1997	PUMP, TRANSFER	DST	H-2-75352	TYPE 5 - H-2-79199, H-2-79191	42" RISER	09/22/94
107	AN	7A	11A	42"	SK-2-300240	1997	PUMP, EJECT MIXER,	DST	H-2-85264	TYPE 6	NEW LARGER	09/21/94
101	SY	1A	12A	42"	SK-2-300272	1998	PUMP, MIXER	DST	VENDOR	TYPE 6 - H-2-821385	NEW LARGER	09/21/94
CATCH		311-ER	12"	12"	SK-2-300223	1997	PUMP, CATCH TANK, SU	OTHER	H-2-93099	TYPE 7	42" RISER	09/22/94
CATCH		A302	12"	12"	SK-2-300226	1996	PUMP, TRANSFER	OTHER	H-2-93099	TYPE 7	42" RISER	09/21/94
106	C	6A	9	42"	SK-2-300262	1996	PUMP, SLURRY	SST	NEW	TYPE 8 - H-2-79221	TBD	09/22/94
DCRT		244-U	15	4"	SK-2-300229	1998	DIP TUBES	OTHER	H-2-73867, DETAIL AM	TYPE 9	4-6" RISER	09/21/94
106	C	6C	3	12"	SK-2-300263	1996	SLUICER	SST	NEW	TYPE 10	TBD	09/21/94
101	AY	1B	1C	34"	SK-2-300258	1997	PUMP, TRANSFER	DST	H-2-93179	TYPE 11 - H-2-79219	42" RISER	09/21/94
102	AW	2E	24A	12"	SK-2-300252	1994	PUMP, 242A FEED	DST	H-2-91943	TYPE 12	42" RISER	09/21/94

TANK				RISER	RISER	FY	EQUIPMENT	TANK	EQUIPMENT	RISER ADAPTER	RETRIEVE	
#	FARM	PIT	RISER	SIZE	DRAWINGS	DATE	TYPE	TYPE	DRAWING NUMBER	ASSEMBLY #	EQUIP SIZE	DATE
101	AZ	1C	1D	42"	SK-2-300281	1996	EMPTY	DST	NONE	TYPE 13 - H-2-79348	42" RISER	09/21/94
102	SY	2E	24A	12"	SK-2-300275	1994	PUMP, X-SITE, FLEX FL	DST	H-2-75352	TYPE 14	42" RISER	09/21/94
CATCH		151AZ	12"	12"	SK-2-300225	1997	PUMP, CATCH TANK	OTHER	H-2-68371, H-9-1105 (02	TYPE 15	42" RISER	09/21/94
CATCH		A-350	12"	12"	SK-2-300224	1997	PUMP, TRANSFER	OTHER	H-2-95322	TYPE 16	42" RISER	09/21/94
102	AP	2D	13	12"	SK-2-300242	1996	PUMP, GROUT FEED	DST	H-2-91943	TYPE 17 - H-2-79200	42" RISER	09/21/94
DCRT		244-A	F	12"	SK-2-300232	1994	PUMP, TRANSFER	OTHER	H-2-38232	TYPE 18	42" RISER	09/22/94
DCRT		244-TX	2	12"	SK-2-300236	1994	PUMP, TRANSFER	OTHER	H-2-73935	TYPE 19	42" RISER	09/21/94
DCRT		244-U	2	12"	SK-2-300237	1998	PUMP, TRANSFER	OTHER	H-2-73935	TYPE 19	42" RISER	09/21/94
DCRT		244-TX	3	12"	SK-2-300231	1994	PUMP, AGITATOR	OTHER	H-2-95279	TYPE 20	NEW LARGER	09/21/94
DCRT		244-CR-	---	24"	SK-2-300234	1996	PUMP, TRANSFER	OTHER	H-2-99161	TYPE 21	42" RISER	09/22/94
DCRT		244-CR-	---	36"	SK-2-300230	1996	PUMP, AGITATOR	OTHER	H-2-36021	TYPE 22	42" RISER	09/22/94
DCRT		244-S	H	12"	SK-2-300235	1994	PUMP, TRANSFER	OTHER	H-2-71056	TYPE 23	42" RISER	09/22/94
101	AW	---	4	4"	SK-2-300251	1997	THERMOCOUPLE TREE	DST	H-2-34304	TYPE 24 - H-2-79337	42" RISER	09/22/94
106	C	---	8	4"	SK-2-300266	1997	THERMOCOUPLE TREE	SST	H-2-90342-20	TYPE 24 - H-2-79337, H-2-7920	42" RISER	09/22/94
106	C	---	14	4"	SK-2-300267	1997	THERMOCOUPLE TREE	SST	H-2-90342	TYPE 24 - H-2-79337	42" RISER	09/21/94
101	SY	---	17C	4"	SK-2-300270	1996	MIT	DST	H-2-85123	TYPE 24 - H-2-79337	42" RISER	09/22/94
101	SY	---	1B	4"	SK-2-300273	1996	VDTT TREE	DST	H-2-815016	TYPE 24 - H-2-79337	4-6" RISER	09/22/94
101	SY	---	14A	4"	SK-2-300274	1996	VDTT TREE	DST	H-2-815016	TYPE 24 - H-2-79337	4-6" RISER	09/22/94
102	SY	---	4A	4"	SK-2-300278	1998	THERMOCOUPLE TREE	DST	H-2-34304	TYPE 24 - H-2-79337	42" RISER	09/22/94
103	SY	---	4A	4"	SK-2-300280	1997	THERMOCOUPLE TREE	DST	H-2-34304	TYPE 24 - H-2-79337	42" RISER	09/22/94
102	SY	---	7A	12"	SK-2-300277	1995	SPECIFIC GRAVITY	DST	H-2-37766	TYPE 25	42" RISER	09/22/94
101	SY	---	5B	42"	SK-2-300268	1996	CAMERA	DST	H-2-131617	TYPE 26 - HOLD -	NEW LARGER	09/22/94
102	AY	2D	1C	34"	SK-2-300259	1997	PUMP, TRANSFER	DST	H-2-93179	TYPE 27 - H-2-79219	42" RISER	09/21/94
101	AY	1D	1A	34"	SK-2-300282	1997	PUMP, TRANSFER	DST	H-2-93179	TYPE 27 - H-2-79219	42" RISER	09/21/94
DCRT		244BX	2	12"	SK-2-300233	1994	PUMP, TRANSFER	OTHER	H-2-73935	TYPE 28	42" RISER	09/21/94
101	SY	---	17B	4"	SK-2-300271	1996	MIT	DST	H-2-85123	TYPE 29	42" RISER	09/22/94
												OK

TANK #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"
101-ST	118	4"	84-2-300218	DTP LEC	H-2-37718	RS 1/2"	RS 1/2"

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

ELEVATION VIEW

PLAN VIEW

DETAIL A

INFORMATION ONLY

U.S. DEPARTMENT OF ENERGY
Nuclear Energy Research & Development
Office of Health, Safety & Environment

RISER INTERFACE
TYPE 2

101-ST 4750 H-2-79151 0

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "X"	DIM "Y"
CATCH-U	U0018	12	12"	SK-3-300122	PUMP/ITE/SUBMERSIBLE	W-2-30018	R1'-4 3/16"	R1'-8"

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

INFORMATION ONLY

U.S. DEPARTMENT OF ENERGY
WATER RESOURCES DIVISION
WATER RESOURCES DIVISION

LLCE
RISER INTERFACE
TYPE 4

FIG. 12-1
H-2-79153

DATE	BY	CHKD	APP'D	REVISION
12/1/81	J. J. J.	J. J. J.	J. J. J.	1
12/1/81	J. J. J.	J. J. J.	J. J. J.	2
12/1/81	J. J. J.	J. J. J.	J. J. J.	3
12/1/81	J. J. J.	J. J. J.	J. J. J.	4
12/1/81	J. J. J.	J. J. J.	J. J. J.	5
12/1/81	J. J. J.	J. J. J.	J. J. J.	6
12/1/81	J. J. J.	J. J. J.	J. J. J.	7
12/1/81	J. J. J.	J. J. J.	J. J. J.	8
12/1/81	J. J. J.	J. J. J.	J. J. J.	9
12/1/81	J. J. J.	J. J. J.	J. J. J.	10

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DNV "A"	DNV "B"	DNV "C"	DNV "D"	DNV "E"	DNV "F"	DNV "G"	DNV "H"	DNV "I"	DNV "J"	DNV "K"	DNV "L"	DNV "M"	DNV "N"	DNV "O"	DNV "P"	DNV "Q"	DNV "R"	DNV "S"	DNV "T"	DNV "U"	DNV "V"	DNV "W"	DNV "X"	DNV "Y"	DNV "Z"	DNV "AA"	DNV "AB"	DNV "AC"	DNV "AD"	DNV "AE"	DNV "AF"	DNV "AG"	DNV "AH"	DNV "AI"	DNV "AJ"	DNV "AK"	DNV "AL"	DNV "AM"	DNV "AN"	DNV "AO"	DNV "AP"	DNV "AQ"	DNV "AR"	DNV "AS"	DNV "AT"	DNV "AU"	DNV "AV"	DNV "AW"	DNV "AX"	DNV "AY"	DNV "AZ"	DNV "BA"	DNV "BB"	DNV "BC"	DNV "BD"	DNV "BE"	DNV "BF"	DNV "BG"	DNV "BH"	DNV "BI"	DNV "BJ"	DNV "BK"	DNV "BL"	DNV "BM"	DNV "BN"	DNV "BO"	DNV "BP"	DNV "BQ"	DNV "BR"	DNV "BS"	DNV "BT"	DNV "BU"	DNV "BV"	DNV "BW"	DNV "BX"	DNV "BY"	DNV "BZ"	DNV "CA"	DNV "CB"	DNV "CC"	DNV "CD"	DNV "CE"	DNV "CF"	DNV "CG"	DNV "CH"	DNV "CI"	DNV "CJ"	DNV "CK"	DNV "CL"	DNV "CM"	DNV "CN"	DNV "CO"	DNV "CP"	DNV "CQ"	DNV "CR"	DNV "CS"	DNV "CT"	DNV "CU"	DNV "CV"	DNV "CW"	DNV "CX"	DNV "CY"	DNV "CZ"	DNV "DA"	DNV "DB"	DNV "DC"	DNV "DD"	DNV "DE"	DNV "DF"	DNV "DG"	DNV "DH"	DNV "DI"	DNV "DJ"	DNV "DK"	DNV "DL"	DNV "DM"	DNV "DN"	DNV "DO"	DNV "DP"	DNV "DQ"	DNV "DR"	DNV "DS"	DNV "DT"	DNV "DU"	DNV "DV"	DNV "DW"	DNV "DX"	DNV "DY"	DNV "DZ"	DNV "EA"	DNV "EB"	DNV "EC"	DNV "ED"	DNV "EE"	DNV "EF"	DNV "EG"	DNV "EH"	DNV "EI"	DNV "EJ"	DNV "EK"	DNV "EL"	DNV "EM"	DNV "EN"	DNV "EO"	DNV "EP"	DNV "EQ"	DNV "ER"	DNV "ES"	DNV "ET"	DNV "EU"	DNV "EV"	DNV "EW"	DNV "EX"	DNV "EY"	DNV "EZ"	DNV "FA"	DNV "FB"	DNV "FC"	DNV "FD"	DNV "FE"	DNV "FF"	DNV "FG"	DNV "FH"	DNV "FI"	DNV "FJ"	DNV "FK"	DNV "FL"	DNV "FM"	DNV "FN"	DNV "FO"	DNV "FP"	DNV "FQ"	DNV "FR"	DNV "FS"	DNV "FT"	DNV "FU"	DNV "FV"	DNV "FW"	DNV "FX"	DNV "FY"	DNV "FZ"	DNV "GA"	DNV "GB"	DNV "GC"	DNV "GD"	DNV "GE"	DNV "GF"	DNV "GG"	DNV "GH"	DNV "GI"	DNV "GJ"	DNV "GK"	DNV "GL"	DNV "GM"	DNV "GN"	DNV "GO"	DNV "GP"	DNV "GQ"	DNV "GR"	DNV "GS"	DNV "GT"	DNV "GU"	DNV "GV"	DNV "GW"	DNV "GX"	DNV "GY"	DNV "GZ"	DNV "HA"	DNV "HB"	DNV "HC"	DNV "HD"	DNV "HE"	DNV "HF"	DNV "HG"	DNV "HH"	DNV "HI"	DNV "HJ"	DNV "HK"	DNV "HL"	DNV "HM"	DNV "HN"	DNV "HO"	DNV "HP"	DNV "HQ"	DNV "HR"	DNV "HS"	DNV "HT"	DNV "HU"	DNV "HV"	DNV "HW"	DNV "HX"	DNV "HY"	DNV "HZ"	DNV "IA"	DNV "IB"	DNV "IC"	DNV "ID"	DNV "IE"	DNV "IF"	DNV "IG"	DNV "IH"	DNV "II"	DNV "IJ"	DNV "IK"	DNV "IL"	DNV "IM"	DNV "IN"	DNV "IO"	DNV "IP"	DNV "IQ"	DNV "IR"	DNV "IS"	DNV "IT"	DNV "IU"	DNV "IV"	DNV "IW"	DNV "IX"	DNV "IY"	DNV "IZ"	DNV "JA"	DNV "JB"	DNV "JC"	DNV "JD"	DNV "JE"	DNV "JF"	DNV "JG"	DNV "JH"	DNV "JI"	DNV "JJ"	DNV "JK"	DNV "JL"	DNV "JM"	DNV "JN"	DNV "JO"	DNV "JP"	DNV "JQ"	DNV "JR"	DNV "JS"	DNV "JT"	DNV "JU"	DNV "JV"	DNV "JW"	DNV "JX"	DNV "JY"	DNV "JZ"	DNV "KA"	DNV "KB"	DNV "KC"	DNV "KD"	DNV "KE"	DNV "KF"	DNV "KG"	DNV "KH"	DNV "KI"	DNV "KJ"	DNV "KK"	DNV "KL"	DNV "KM"	DNV "KN"	DNV "KO"	DNV "KP"	DNV "KQ"	DNV "KR"	DNV "KS"	DNV "KT"	DNV "KU"	DNV "KV"	DNV "KW"	DNV "KX"	DNV "KY"	DNV "KZ"	DNV "LA"	DNV "LB"	DNV "LC"	DNV "LD"	DNV "LE"	DNV "LF"	DNV "LG"	DNV "LH"	DNV "LI"	DNV "LJ"	DNV "LK"	DNV "LM"	DNV "LN"	DNV "LO"	DNV "LP"	DNV "LQ"	DNV "LR"	DNV "LS"	DNV "LT"	DNV "LU"	DNV "LV"	DNV "LW"	DNV "LX"	DNV "LY"	DNV "LZ"	DNV "MA"	DNV "MB"	DNV "MC"	DNV "MD"	DNV "ME"	DNV "MF"	DNV "MG"	DNV "MH"	DNV "MI"	DNV "MJ"	DNV "MK"	DNV "ML"	DNV "MM"	DNV "MN"	DNV "MO"	DNV "MP"	DNV "MQ"	DNV "MR"	DNV "MS"	DNV "MT"	DNV "MU"	DNV "MV"	DNV "MW"	DNV "MX"	DNV "MY"	DNV "MZ"	DNV "NA"	DNV "NB"	DNV "NC"	DNV "ND"	DNV "NE"	DNV "NF"	DNV "NG"	DNV "NH"	DNV "NI"	DNV "NJ"	DNV "NK"	DNV "NL"	DNV "NM"	DNV "NN"	DNV "NO"	DNV "NP"	DNV "NQ"	DNV "NR"	DNV "NS"	DNV "NT"	DNV "NU"	DNV "NV"	DNV "NW"	DNV "NX"	DNV "NY"	DNV "NZ"	DNV "OA"	DNV "OB"	DNV "OC"	DNV "OD"	DNV "OE"	DNV "OF"	DNV "OG"	DNV "OH"	DNV "OI"	DNV "OJ"	DNV "OK"	DNV "OL"	DNV "OM"	DNV "ON"	DNV "OO"	DNV "OP"	DNV "OQ"	DNV "OR"	DNV "OS"	DNV "OT"	DNV "OU"	DNV "OV"	DNV "OW"	DNV "OX"	DNV "OY"	DNV "OZ"	DNV "PA"	DNV "PB"	DNV "PC"	DNV "PD"	DNV "PE"	DNV "PF"	DNV "PG"	DNV "PH"	DNV "PI"	DNV "PJ"	DNV "PK"	DNV "PL"	DNV "PM"	DNV "PN"	DNV "PO"	DNV "PP"	DNV "PQ"	DNV "PR"	DNV "PS"	DNV "PT"	DNV "PU"	DNV "PV"	DNV "PW"	DNV "PX"	DNV "PY"	DNV "PZ"	DNV "QA"	DNV "QB"	DNV "QC"	DNV "QD"	DNV "QE"	DNV "QF"	DNV "QG"	DNV "QH"	DNV "QI"	DNV "QJ"	DNV "QK"	DNV "QL"	DNV "QM"	DNV "QN"	DNV "QO"	DNV "QP"	DNV "QQ"	DNV "QR"	DNV "QS"	DNV "QT"	DNV "QU"	DNV "QV"	DNV "QW"	DNV "QX"	DNV "QY"	DNV "QZ"	DNV "RA"	DNV "RB"	DNV "RC"	DNV "RD"	DNV "RE"	DNV "RF"	DNV "RG"	DNV "RH"	DNV "RI"	DNV "RJ"	DNV "RK"	DNV "RL"	DNV "RM"	DNV "RN"	DNV "RO"	DNV "RP"	DNV "RQ"	DNV "RR"	DNV "RS"	DNV "RT"	DNV "RU"	DNV "RV"	DNV "RW"	DNV "RX"	DNV "RY"	DNV "RZ"	DNV "SA"	DNV "SB"	DNV "SC"	DNV "SD"	DNV "SE"	DNV "SF"	DNV "SG"	DNV "SH"	DNV "SI"	DNV "SJ"	DNV "SK"	DNV "SL"	DNV "SM"	DNV "SN"	DNV "SO"	DNV "SP"	DNV "SQ"	DNV "SR"	DNV "SS"	DNV "ST"	DNV "SU"	DNV "SV"	DNV "SW"	DNV "SX"	DNV "SY"	DNV "SZ"	DNV "TA"	DNV "TB"	DNV "TC"	DNV "TD"	DNV "TE"	DNV "TF"	DNV "TG"	DNV "TH"	DNV "TI"	DNV "TJ"	DNV "TK"	DNV "TL"	DNV "TM"	DNV "TN"	DNV "TO"	DNV "TP"	DNV "TQ"	DNV "TR"	DNV "TS"	DNV "TT"	DNV "TU"	DNV "TV"	DNV "TW"	DNV "TX"	DNV "TY"	DNV "TZ"	DNV "UA"	DNV "UB"	DNV "UC"	DNV "UD"	DNV "UE"	DNV "UF"	DNV "UG"	DNV "UH"	DNV "UI"	DNV "UJ"	DNV "UK"	DNV "UL"	DNV "UM"	DNV "UN"	DNV "UO"	DNV "UP"	DNV "UQ"	DNV "UR"	DNV "US"	DNV "UT"	DNV "UU"	DNV "UV"	DNV "UW"	DNV "UX"	DNV "UY"	DNV "UZ"	DNV "VA"	DNV "VB"	DNV "VC"	DNV "VD"	DNV "VE"	DNV "VF"	DNV "VG"	DNV "VH"	DNV "VI"	DNV "VJ"	DNV "VK"	DNV "VL"	DNV "VM"	DNV "VN"	DNV "VO"	DNV "VP"	DNV "VQ"	DNV "VR"	DNV "VS"	DNV "VT"	DNV "VU"	DNV "VV"	DNV "VW"	DNV "VX"	DNV "VY"	DNV "VZ"	DNV "WA"	DNV "WB"	DNV "WC"	DNV "WD"	DNV "WE"	DNV "WF"	DNV "WG"	DNV "WH"	DNV "WI"	DNV "WJ"	DNV "WK"	DNV "WL"	DNV "WM"	DNV "WN"	DNV "WO"	DNV "WP"	DNV "WQ"	DNV "WR"	DNV "WS"	DNV "WT"	DNV "WU"	DNV "WV"	DNV "WW"	DNV "WX"	DNV "WY"	DNV "WZ"	DNV "XA"	DNV "XB"	DNV "XC"	DNV "XD"	DNV "XE"	DNV "XF"	DNV "XG"	DNV "XH"	DNV "XI"	DNV "XJ"	DNV "XK"	DNV "XL"	DNV "XM"	DNV "XN"	DNV "XO"	DNV "XP"	DNV "XQ"	DNV "XR"	DNV "XS"	DNV "XT"	DNV "XU"	DNV "XV"	DNV "XW"	DNV "XX"	DNV "XY"	DNV "XZ"	DNV "YA"	DNV "YB"	DNV "YC"	DNV "YD"	DNV "YE"	DNV "YF"	DNV "YG"	DNV "YH"	DNV "YI"	DNV "YJ"	DNV "YK"	DNV "YL"	DNV "YM"	DNV "YN"	DNV "YO"	DNV "YP"	DNV "YQ"	DNV "YR"	DNV "YS"	DNV "YT"	DNV "YU"	DNV "YV"	DNV "YW"	DNV "YX"	DNV "YY"	DNV "YZ"	DNV "ZA"	DNV "ZB"	DNV "ZC"	DNV "ZD"	DNV "ZE"	DNV "ZF"	DNV "ZG"	DNV "ZH"	DNV "ZI"	DNV "ZJ"	DNV "ZK"	DNV "ZL"	DNV "ZM"	DNV "ZN"	DNV "ZO"	DNV "ZP"	DNV "ZQ"	DNV "ZR"	DNV "ZS"	DNV "ZT"	DNV "ZU"	DNV "ZV"	DNV "ZW"	DNV "ZX"	DNV "ZY"	DNV "ZZ"
101-A	1A	3A	1"	SK-2-00236	PUMP, TRANSFER	M-2-01815	M1-8 1/8"	M2-8 7/8"	648"	647-8 1/4"	6-3 3/4"	6-3 3/4"	8 1/4"	1 1/2"	1 1/2"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"</

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

[illegible]

INFORMATION ONLY					
U.S. DEPARTMENT OF ENERGY Nuclear Energy Research & Development Administration					
RISER INTERFACE TYPE 5					
F 281-d	4750	H-2-79154	Q		
Part 1C1	See R2021	Item 1	2

UNIT	GROUP NO.	ISSUED NO.	ISSUED DATE
F	241-0	4750	H-2-79154
LIFE 3			

[illegible]

Technical drawing of a floor drain assembly. The drawing includes a plan view and a detail view. The plan view shows a rectangular drain cover with a central circular opening, surrounded by a concrete slab. Dimensions include 1'-0" x 3'-0" for the overall area, 1'-0" x 1'-0" for the drain cover, and 1'-0" x 1'-0" for the central opening. A 48" R11222 is indicated. The detail view shows a cross-section of the drain cover, showing the internal structure and the connection to the floor drain. Dimensions include 1'-0" x 1'-0" for the cover, 1'-0" x 1'-0" for the opening, and 1'-0" x 1'-0" for the internal structure. A 48" R11222 is indicated. The drawing is labeled "SEE DETAIL A" and "SEE DETAIL B".

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER, TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER, CENTERING ^{THE}
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER, CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL

USE: 1967

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"
CATCH--	311-4R	12	12"	SK-2-300323	PUMP/CATCH TANK, S&B	H-2-83099	R1'-4 5/16"	R1'-9"
CATCH-A	AS07	12	12"	SK-2-300324	PUMP, TRANSFER	H-2-83099	R1'-4 5/16"	R1'-9"

SEE DETAIL A

SECTION B-B
RISER, S&B
SCALE: 3/4"
MATERIAL: ASTM A-36

DETAIL A

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

INFORMATION ONLY

U.S. DEPARTMENT OF ENERGY
Nuclear Energy Research & Development
Office of Environmental Management
Environmental Sciences Division

LLCE
RISER INTERFACE
TYPE 7

WHC-SD-WM-DRR-049
Revision 0
Page G-125

SECTION A-A
NOTED: 80' CCM

- GENERAL NOTES:
1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
 2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

U.S. DEPARTMENT OF ENERGY	
LLCE	
RISER INTERFACE	
TYPE 8	
PROJECT NO.	WHC-SD-WM-DRR-049
DATE	11-2-79
BY	11-2-79
CHECKED BY	11-2-79
APPROVED BY	11-2-79
DESIGNED BY	11-2-79
CONSTRUCTED BY	11-2-79
TESTED BY	11-2-79
MAINTAINED BY	11-2-79
REMOVED BY	11-2-79
REPLACED BY	11-2-79
REPAIRED BY	11-2-79
REWORKED BY	11-2-79
REMOVED BY	11-2-79
REPLACED BY	11-2-79
REPAIRED BY	11-2-79
REWORKED BY	11-2-79

U.S. DEPARTMENT OF ENERGY	
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U.S. DEPARTMENT OF ENERGY	
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REMOVED BY	11-2-79
REPLACED BY	11-2-79
REPAIRED BY	11-2-79
REWORKED BY	11-2-79

TANK #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"
104 - C	6A	42"	SK-2-200182				82'-0 1/2"

SECTION A-A
NOTED: 80' CCM

- GENERAL NOTES:
1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
 2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

U.S. DEPARTMENT OF ENERGY	
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RISER INTERFACE	
TYPE 8	
PROJECT NO.	WHC-SD-WM-DRR-049
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U.S. DEPARTMENT OF ENERGY	
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U.S. DEPARTMENT OF ENERGY	
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REPAIRED BY	11-2-79
REWORKED BY	11-2-79

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

[illegible]

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↑ NORTH

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISE TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISE CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISE CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

[illegible]

NAME	PII #	SECTOR	SECTOR SIZE	RISER BEARING	EQUIPMENT TYPE	EQUIPMENT DRAWING	SDI "A"	SDI "B"
101-A7	10	IC	34"	SW-2-30234	PUMP, TRANSFER	H-2-31179	61" 0 1/2"	85"

DETAIL A

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISE TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISE CONTAINING.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISE CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

[illegible][illegible]

[illegible]

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RADIUS TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CONTAINING.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

WHC-SD-WM-DRR-049
Revision 0

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

		EX-2-300238	CATCH BANK 181AZ PTT/RTSCN 012
		REF NUMBER	TITLE
DATE IN	TYPE	REFERENCES	
DRAWING TRACEABILITY LIST		NEXT PAGE ON	

INFORMATION ONLY			
NAME	P. SCHMIDT	U.S. DEPARTMENT OF ENERGY	
ADDRESS	P. SCHMIDT	800 Third Street, NW	
CITY	ALBANY	Washington, D.C.	
STATE	P. SCHMIDT	Energy Research Corporation	
ZIP		LLCE	
		RISER INTERFACE	
		TYPE 15	
DATE	12/13	TIME	4750
TIME	12/13	TIME	H-2-79164

 
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1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

INFORMATION ONLY

U.S. DEPARTMENT OF ENERGY
105 FIVE CORNER, BOSTON

LLCE
Ludwig's Patent Company

RISER INTERFACE

41-AP	4750	H-2-79166
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2

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"
DCRT - A	244 A	F	12"	SH-2-300232	PUMP, TRANSFER	H-2-38232	R2'	R1'-6 1/2'

PLAN VIEW

ELEVATION VIEW

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL

DETAIL A

		BK-3-300232		DOCT NAME 244-A PRT/INTER W																ELCE RISER INTERFACE TYPE 18	
		REF NUMBER		TITLE																	
DATE REC		TITLE		DESCRIPTIONS																	
REVISION		TRACE/QUALITY		NEXT STEP		CAPTION		NOTES		CAPTION		NOTES		CAPTION		NOTES		CAPTION		NOTES	
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TANK 0	P10	0	MISER 8	MISER 912Z	MISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIA "A"	DIA "B"
DCMT - 12	244-11	3	12"	54-2-300231	PUMP, ACTIVATION	M-2-952279	M2, 4 10/16"	M1, 5 1/2"	

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF MISCION TO POINT ON EQUIPMENT AT MAX DISTANCE FROM MISCION CENTERPOINT.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM MISCION CENTERPOINT TO FIRST OBSTACUTION ABOVE FLOOR LEVEL.

TANK #	PIT #	RISER #	RISER SIZE	RISER DRUM	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"
0001-01		244-01	24"	34-2-300234	PUMP, ACTUATOR	H-2-79170	11'-8 13/16"	8'-1'-7"

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT OF EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

ELEVATION VIEW

PLAN VIEW

INFORMATION ONLY	
U.S. DEPARTMENT OF ENERGY	LLCE
U.S. NUCLEAR REGULATORY COMMISSION	RISER INTERFACE
U.S. NUCLEAR REGULATORY COMMISSION	TYPE 21
U.S. NUCLEAR REGULATORY COMMISSION	FE44-CR 4750
U.S. NUCLEAR REGULATORY COMMISSION	H-2-79170.10

DATE	BY	CHKD	APPD	REVISION
02/10/82	02/10/82	02/10/82	02/10/82	02/10/82
02/10/82	02/10/82	02/10/82	02/10/82	02/10/82
02/10/82	02/10/82	02/10/82	02/10/82	02/10/82
02/10/82	02/10/82	02/10/82	02/10/82	02/10/82

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PLAN VIEW

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"
101-AW	-	6	6"	SK-2-300231	THERMOCOUPLE TREE	H-2-34304	R11 11/16"	R6'-8 11/16"	1'-8 3/8"	647'-9"	647'
104-C	-	8	4"	SK-2-300266	THERMOCOUPLE TREE	H-2-80342-20	R4 13/16"	R7'	1'-8 15/16"	645'-7 15/16"	645'
104-C	-	14	4"	SK-2-300267	THERMOCOUPLE TREE	H-2-80342	R4 13/16"	R7'-3 13/16"	1'-8 15/16"	645'-8"	645'
101-SY	-	17C	4"	SK-2-300270	MIT	H-2-85123	R1'-4 3/8"	R7'-2 1/2"	3'-6 1/2"	672'-4 7/16"	672'-3"
101-SY	-	18	4"	SK-2-300273	YDTT TREE	H-2-815018	R1'-9 3/8"	R6'-3 1/4"	5'-6 1/2"	672'-5 5/8"	672'-3"
101-SY	-	14A	4"	SK-2-300274	YDTT TREE	H-2-815018	R1'-9 3/8"	R7'-7 1/2"	5'-6 1/2"	672'-3"	672'-3"
102-SY	-	4A	4"	SK-2-300278	THERMOCOUPLE TREE	H-2-34304	R11 11/16"	R7'-7"	1'-8 3/8"	672'-6"	672'-3"
103-SY	-	4A	4"	SK-2-300280	THERMOCOUPLE TREE	H-2-34304	R11 11/16"	R7'-7"	1'-8 3/8"	672'-4 9/16"	672'-3"

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE GROUND LEVEL.
3. SK-2-300267 HAS A 2' SQUARE CONCRETE PAD CENTERED ON RISER WITH AN ELEVATION OF 645'-1"

SK-2-300280	103-SY TANK
SK-2-300278	RISER 04A
SK-2-300274	101-SY TANK
SK-2-300273	RISER 01B
SK-2-300270	101-SY TANK
SK-2-300267	104-C TANK
SK-2-300266	104-C TANK
SK-2-300261	101-AW TANK
SK-2-300251	RISER 04

INFORMATION ONLY			
U.S. DEPARTMENT OF ENERGY			
Nuclear Energy Research and Development Administration			
LLCE			
RISER INTERFACE			
TYPE 24			
Form No.	4750	Rev.	10-79
Project No.	H-2-79173	Sheet No.	10

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U.S. DEPARTMENT OF ENERGY GENERAL ATOMIC CORPORATION SAFETY DIVISION		PROJECT NO. H-2-79176 TYPE 27 RISER INTERFACE LLCE	
DATE: 12-1-79	BY: J. H. H.	DATE: 12-1-79	BY: J. H. H.
REVISION: 0	REVISION: 0	REVISION: 0	REVISION: 0

ITEM NO.	DESCRIPTION	DATE	BY
101-AV	101-AV TANK	12-1-79	J. H. H.
102-AV	102-AV TANK	12-1-79	J. H. H.
103-AV	103-AV TANK	12-1-79	J. H. H.
104-AV	104-AV TANK	12-1-79	J. H. H.
105-AV	105-AV TANK	12-1-79	J. H. H.
106-AV	106-AV TANK	12-1-79	J. H. H.
107-AV	107-AV TANK	12-1-79	J. H. H.
108-AV	108-AV TANK	12-1-79	J. H. H.
109-AV	109-AV TANK	12-1-79	J. H. H.
110-AV	110-AV TANK	12-1-79	J. H. H.

- GENERAL NOTES:**
1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER.
 2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER.
 3. CONTINUE TO FIRST OBSTRUCTION ABOVE RISER LEVEL.
 4. CONTOUR AND ASSOCIATED DIMENSIONS SPECIFIED ON SH-2-300228 ONLY.

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIA "A"	DIA "B"
101-AV	10	1A	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
102-AV	20	1C	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
103-AV	30	1D	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
104-AV	40	1E	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
105-AV	50	1F	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
106-AV	60	1G	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
107-AV	70	1H	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
108-AV	80	1I	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
109-AV	90	1J	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179
110-AV	100	1K	24"	SH-2-300228	PUMP, TRANSFER	W-2-8-1179	W-2-8-1179	W-2-8-1179

TANK #	PIT #	RISER #	RISER SIZE	RISER DRAWING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DDM "B"
DCRT - BK	241EX	2	12"	BK-2-300133	PUMP, TRANSFER	H-2-79033	R2'	R1'-2"

PLAN VIEW

ELEVATION VIEW

GENERAL NOTES:

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE.
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE FLOOR LEVEL.

INFORMATION ONLY	
NAME: J. ROSEN TITLE: J. ROSEN DATE: 1/11/11 BY: J. ROSEN	U.S. DEPARTMENT OF ENERGY DOE Field Office, Research Technology Development Group LLCE RISER INTERFACE TYPE 28 F246-BX 4750 H-2-79177 0 REV: 1/11/11

BK-2-300133	DCRT TANK	241EX PIT/RISER 67	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11
DCRT TANK	241EX PIT/RISER 67	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11	REV: 1/11/11

TANK #	PIT #	RISER Ø	RISER SIZE	RISER ORATING	EQUIPMENT TYPE	EQUIPMENT DRAWING	DIM "A"	DTM "B"
101 - ST	-	178	6"	96-2-300271	MTT	M-2-83123	A1'-4 3/8"	R3'-9"

1. MAX EQUIP RADIUS IS DISTANCE FROM CENTER OF RISER TO POINT ON EQUIPMENT AT MAX DISTANCE FROM RISER CENTERLINE
2. MAX CLEARANCE IS RADIAL CLEARANCE FROM RISER CENTERLINE TO FIRST OBSTRUCTION ABOVE GROUND LEVEL
3. DIMENSIONS FOR THIS LOCATION TO BE FIELD VERIFIED.

[illegible][illegible]

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

3. RESULTS OF SITE AS-BUILT STUDIES TO DATE

- **DESCRIPTION OF ACTIVITY**
- **EXAMPLE SITE 101-AY, PIT 1D**
 - **SK-300282**
 - **PHOTOS**
 - **DATA SHEET**
- **SCHEDULE**
 - **SITE WORK COMPLETE BY DEC. 2**
 - **3/56 LOCATIONS COMPLETE**

WHC/SAIC

Work Description for Riser Interface Verification Project

Each of the riser locations, see Table 1, will be visited by an SAIC employee who will take a set of photographs, measure pertinent distances, and write some brief notes. Each riser location will have its own package. Approximately an hour will be spent at each riser location. Some risers are enclosed in vaults or pits. For these locations, the effort will focus on examining the areas that are visible (the pit configuration, etc.). All activities will operate under the assumption that nothing may be moved ("do not touch") for gathering data. The information gathered for each farm will be packaged into a set of notes.

A minimum of twelve photographs will be taken at each location. Of these twelve, four will be 'elevation' views from the N, S, E, & W directions. The remainder will be focused on other areas of interest. Whenever possible, all photographs will have a placard showing the tank number, farm, date, and riser/pit number in the lower right-hand corner of the picture. Equipment and dimensions that may represent a conflict with the flexible receiver equipment will be both measured and/or photographed. Site data will focus on the area 3' around the location and include discussion of major items 10' around the location. These dimensions will eventually be detailed in the notes and recorded on the SK-2-300XXX drawings (riser configuration sketches) for the pits/risers in question. The notes will consist of a general description of the location, any markings observed, a simple inventory of equipment in the vicinity, descriptions of photographs taken, and a description of the dimensions measured. All photographs will be marked with a description. The final deliverable will be a report summarizing these activities.

Example Case - 241-AY-101 Pit 1D/Riser 1A

This pit is one of two sluice pits on AY-101, pit 1B being the other. Pit 1D is located on the southern side of tank AY-101 and contains a single pump on a 34" riser. The pictures show the tank in elevation views from N-S-E-W directions. The data sheet shows the arrangement of the pictures and a sketch that provides dimensional (on the grid) data on the various equipment near the pit. Several J-Boxes are located around and attached to the pit walls. Two (approximately 24") risers are close by (one above grade on the west side and one flush with grade on the south). The west side of the pit is occupied by the above mentioned large riser, some instrumentation equipment and the transfer pump control box. Some of the instrumentation equipment is on a cart and is not reported on the data sheet. Several small, circular, ventilation control pit covers are located around the pit. These covers are flush with grade. The AY-101 central pit, and some above ground risers, is approximately 10' to the north of Pit 1D and some ventilation equipment is approximately 6' from the west edge of the pit. There are no overhead interferences around the pit.

Table 1: Riser Locations

Site	Area	Building	Tank	Pit	Riser
1	200W	U-301-B			12
2	200E	311-ER			12
3	200E	A-350			12
4	200E	151AZ			12
5	200E	A302			12
6	200W	UX-302			12
7	200W	244-U			15
8	200E	244-CR			3
9	200W	244-TX			3
10	200E	244-A			F
11	200E	244-BX			2
12	200E	244-CR			3
13	200W	244-S			H
14	200W	244-TX			2
15	200W	244-U			2
16	200E	241-AN	101	1A	3A
17	200E	241-AN	102	2A	3A
18	200E	241-AN	107	7A	11A
19	200E	241-AP	101	1A	3A
20	200E	241-AP	102	2D	13
21	200E	241-AP	103	3A	3A
22	200E	241-AP	103		4
23	200E	241-AP	104	4A	3A
24	200E	241-AP	105	5A	3A
25	200E	241-AP	106	6A	3A
26	200E	241-AP	107	7A	3A
27	200E	241-AP	108	8A	3A
28	200E	241-AW	101	1A	3A

Table 1: Riser Locations

Site	Area	Building	Tank	Pit	Riser
29	200E	241-AW	101		4
30	200E	241-AW	102	2E	24A
31	200E	241-AW	103	3A	3A
32	200E	241-AW	104	4A	3A
33	200E	241-AW	105	5A	3A
34	200E	241-AW	106	6A	3A
35	200E	241-AY	101	1B	1C
36	200E	241-AY	101	2D	1C
37	200E	241-AY	101	1D	1A
38	200E	241-AZ	101	1C	1D
39	200E	241-C	106	6A	9
40	200E	241-C	106	6C	3
41	200E	241-C	106	6B	13
42	200E	241-C	106		8
43	200W	241-C	106		14
44	200W	241-SY	101		5B
45	200W	241-SY	101		11B
46	200W	241-SY	101		17C
47	200W	241-SY	101		17B
48	200W	241-SY	101	1A	12A
49	200W	241-SY	101		1B
50	200W	241-SY	101		14A
51	200W	241-SY	102	2E	24A
52	200W	241-SY	102	2A	3A
53	200W	241-SY	102		7A
54	200W	241-SY	102		4A
55	200W	241-SY	103	3A	3A
56	200W	241-SY	103		4A

SECTION B-B
ROTATED, 90DEG

[illegible]

SEC. 1	NAME	U.S. DEPARTMENT OF ENERGY
SEC. 2	ADDRESS	101-AY TANK
SEC. 3	CITY	WASHINGTON, D.C.
SEC. 4	STATE	
SEC. 5	ZIP	
SEC. 6	PHONE	
SEC. 7	TELETYPE	
SEC. 8	TELEFAX	
SEC. 9	TELEVISION	
SEC. 10	TELEPHONE	
SEC. 11	TELETYPE	
SEC. 12	TELEFAX	
SEC. 13	TELEVISION	
SEC. 14	TELEPHONE	
SEC. 15	TELETYPE	
SEC. 16	TELEFAX	
SEC. 17	TELEVISION	
SEC. 18	TELEPHONE	
SEC. 19	TELETYPE	
SEC. 20	TELEFAX	
SEC. 21	TELEVISION	
SEC. 22	TELEPHONE	
SEC. 23	TELETYPE	
 

Tank N-101, Pit Old Photographs

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

4. PIT EQUIPMENT REVIEW

- **OBTAINED RISER ARRANGEMENT DRAWINGS TO BE USED FOR ADAPTER ANALYSIS**
- **34 SK-2 DRWGS. BEING STUDIED**
- **SUMMARY OF RESULTS**
 - **~3/4 OF RISERS HAVE PUMPS**
 - **~1/4 HAVE MISCL. INSTRUMENTATION**
 - **A FEW HAVE BLIND FLANGES**
- **INFO TO BE INTEGRATED INTO SK-2 [INSTALLATION] DRWGS.**
- **MAJORITY OF DCRT ARRANGEMENT DRAWINGS HAVE NOT BEEN LOCATED**

WHC/SAIC

RISER VERIFICATION - MEASUREMENT DATA SHEET

DATE: 10/26/94	BY: E.J. Cruz
BLDG: 241-AY-101 PIT/RISER: 1D/1A	SUPPORT: A. Eagen

MARK ALL NEARBY OBSTRUCTIONS WITH A DISTANCE AND ANGLE FROM NORTH.
MARK ALL ON-PIT OBSTRUCTIONS WITH A DISTANCE FROM A KNOWN POINT.
ALL DIMENSIONS APPROXIMATE

ARRANGEMENT DRAWINGS

Riser Number	Arrangement Drawings		
ATCH			
U301B	H - 2 - 71682	H - 2 - 71653	
311ER	H - 2 - 71682	H - 2 - 71670	
A350	H - 2 - 70538		
151AZ			
A302	H - 2 - 71682	H - 2 - 71644	
UX302	H - 2 - 71682	H - 2 - 71665	
CRT			
244S-L	H - 2 - 71057	H - 2 - 71052	
244U-15			
244CR3- 36"			
244TX-3			
244A-F			
244BX-2			
244CR3			
244S-H	H - 2 - 71057	H - 2 - 71052	
244TX-2			
244U-2			
IN			
101 - 1A - 3A - 12"	H - 2 - 71998	H - 2 - 71991	H - 2 - 72010
102 - 2A - 3A - 12"	H - 2 - 71998	H - 2 - 71991	H - 2 - 72010
107 - 7A - 3A - 12"	H - 2 - 71998	H - 2 - 71991	H - 2 - 72010
AP			
101 - 1A - 3A - 12"	H - 2 - 90599 2 SHTS		
102 - 2D - 13 - 12"	H - 2 - 76473		
103 - 3A - 3A - 12"	H - 2 - 90599 2 SHTS		
103 - - 4 - 4"	H - 2 - 90490		
104 - 4A - 3A - 12"	H - 2 - 90599 2 SHTS		
105 - 5A - 3A - 12"	H - 2 - 90599 2 SHTS		
106 - 6A - 3A - 12"	H - 2 - 90599 2 SHTS		
107 - 7A - 3A - 12"	H - 2 - 90599 2 SHTS		
108 - 8A - 3A - 12"	H - 2 - 90599 2 SHTS		

Riser Number	Arrangement Drawings		
AW			
101 - 1A - 3A - 12"	H - 2 - 70411 2 SHTS	H - 2 - 70429	
101 - - 4 - 4"			
102 - 2E - 24A - 12"	H - 2 - 70432		
103 - 3A - 3A - 12"	H - 2 - 70411 2 SHTS	H - 2 - 70429	
104 - 4A - 3A - 12"	H - 2 - 70411 2 SHTS	H - 2 - 70429	
105 - 5A - 3A - 12"	H - 2 - 70411 2 SHTS	H - 2 - 70429	
106 - 6A - 3A - 12"	H - 2 - 70411 2 SHTS	H - 2 - 70429	
AY			
101 - 1B/1D - 34"	H - 2 - 64423		
102 - 2D - 2D - 34"	H - 2 - 64423		
AZ			
101 - 1B - 1B - 42"	H - 2 - 68422		
101 - 1C - 1C - 42"	H - 2 - 68422		
SY			
101 - 5B - 42"		H - 2 - 79556	
101 - 11B - 4"	H - 2 - 37766	H - 2 - 79556	
101 - 17C - 4"	H - 2 - 85123	H - 2 - 79556	
101 - 17B - 4"	H - 2 - 85123	H - 2 - 79556	
101 - 1A - 12A - 42"	H - 2 - 37783/37782	H - 2 - 79556	
101 - 1B - 4"		H - 2 - 79556	
101 - 14A - 4"		H - 2 - 79556	
102 - 2E - 24A - 12"	H - 2 - 37811	H - 2 - 37802	H - 2 - 37812
102 - 2A - 3A - 12"	H - 2 - 37783/37782	H - 2 - 37802	
102 - 7A - 12"		H - 2 - 37802	
102 - 4A - 4"		H - 2 - 37802	
103 - 3A - 3A - 12"	H - 2 - 37783/37782	H - 2 - 37803	
103 - 4A - 4"		H - 2 - 37803	
C			
106 - 6A - 5 - 4"	H - 2 - 41190	H - 2 - 73346	H - 2 - 37006
106 - 6C - 4 - 4"	H - 2 - 41194	H - 2 - 73346	H - 2 - 37006
106 - 1E		H - 2 - 73346	H - 2 - 37006
106 - 8 - 4"	H - 2 - 73051	H - 2 - 73346	H - 2 - 37006
106 - 14 - 4"		H - 2 - 73346	H - 2 - 37006

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

5a. REVIEW OF EXISTING RISER ADAPTER DESIGNS

- **APPLICABILITY OF EXISTING DESIGNS**
 - **5 SPECIFIC DESIGNS HAVE BEEN DEVELOPED FOR 101 AZ-01C [PUMP PIT], 102 AY-02B [SLUICE PIT], CR 106 -06A & 06C [PUMP AND HEEL PITS], & 101 AZ-01D & 01 E [SUB SURFACE RISERS].**
 - **THESE DESIGNS WORK FOR THE TYPE 3, 5, 11, 13, 17, 24 & 27 PIT CONFIGURATIONS IDENTIFIED IN THE PHASE 1 STUDY.**
- **THE PRIMARY VARIABLES IN THE ADAPTER DESIGNS ARE EQUIPMENT CLEARANCE DIAMETER AND PIT DEPTH.**
 - **EXISTING DESIGNS MATCH THE MAJORITY OF THE DIAMETER REQUIREMENTS AND WILL BE ADJUSTED IN HEIGHT BY THE USE OF ADDITIONAL/ADJUSTABLE SPOOL SECTIONS.**
 - **SPECIAL CONFIGURATION PROBLEMS WILL BE ADDRESSED WITH CUSTOM SPOOL END SECTIONS.**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

5b. 42" FRS IN-PIT ADAPTER DESIGN

- **VARIABLE LENGTH 34-48" DIAMETER SPOOL**
- **SPRAY RING**
- **PIT FLOOR SEAL FOR IN-PIT**
- **RISER FLANGE IS FLUSH WITH FLOOR**
- **NO INTERFERENCE PROBLEMS EXIST.**
- **EXCESS WATER TO PIT DRAIN**
- **PLATFORM RESTS ON TOP OF PIT WALL**

WHC/SAIC

GENERAL NOTES UNLESS SPECIFIED OTHERWISE

1. RECOMMENDED CONFIGURATION FOR 104-OR MIXER PUMP REMOVAL IS USE OF ITEM NO 8, ITEM NO 15 AND ITEM NO 5 OR 6
2. RECOMMENDED CONFIGURATION FOR 104-OR HEEL JET PUMP REMOVAL IS USE OF ITEM NO 8, ITEM NO 15 OR 11 AND ITEM NO 5 OR 6.
3. RECOMMENDED CONFIGURATION FOR 102-AT TRANSFER PUMP REMOVAL IS USE OF ITEM NO 7, ITEM NO 15 OR 11 AND ITEM NO 5 OR 6.
4. FOR FUTURE EQUIPMENT REMOVALS, FIELD TO DETERMINE CONFIGURATIONS REQUIRED.

PARTS/MATERIAL LIST				
QTY	FILE NO	PART/ROOM NUMBER	DESCRIPTION	DATE
1	010	ARRANGEMENT		1
1	H-2-78835-010	ASSEMBLY, W151-TWRS TRAILER	SEE NOTE 1, 2, & 3	5
1	H-2-79230-010	ASSEMBLY, CROUT TRAILER MOUNT	SEE NOTE 1, 2, & 3	6
AR	H-2-79218-010	ASSEMBLY, 42" FLEX ROVR ASSY AY-102-02B SLITICE P11	SEE NOTE 3	7
AR	H-2-78220-010	ASSEMBLY, 42" FLEX ROVR ASSY OR-104-06A HEEL P11	SEE NOTE 2	8
AR	H-2-79221-010	ASSEMBLY, 42" FLEX ROVR ASSY OR-104-06A PUMP P11	SEE NOTE 1	9
AR	H-2-78248-010	ASSEMBLY, HYDRAULIC HOSE		10
1	H-2-78342-1	ASSEMBLY, FLEX ROVR LEAK CONT BAD/ STAND 42"	SEE NOTE 2 & 3	11
1	H-2-78882-010	ASSEMBLY, NUCLEAR INSTRUMENT HOUSING STAND		12
AR	H-2-78958	TWRS, OPT RETRIEVAL SYSTEM TEST CABLE INTCOM DIAGRAM		13
1	H-2-78880-10	NUCLEAR INSTRUMENTATION HOUSING		14
1	H-2-78287-1	ASSEMBLY, FLEX ROVR LEAK CONT BAD/ STAND	SEE NOTE 1, 2, & 3	15

1 ARRANGEMENT

W151 PROJECT

U.S. DEPARTMENT OF ENERGY 505 Ford Office Building Washington, D.C. 20545	
TWRS 42" FLEXIBLE RECEIVER ARRANGEMENT II	
F 311-1 311-1 4750 H-2-79218 0	004487 1

GENERAL NOTES

(UNLESS SPECIFIED OTHERWISE)

1. RECOMMENDED CONFIGURATION FOR 101-AZ MIXER PUMP REMOVAL IS USE OF ITEM NO 7.
2. RECOMMENDED CONFIGURATION FOR 101-AZ TRANSFER PUMP REMOVAL IS USE OF ITEM NO 8, ITEM NO 14 AND ITEM NO 5 OR 6.
3. FOR FUTURE EQUIPMENT REMOVALS, FIELD TO DETERMINE CONFIGURATIONS REQUIRED.

PARTS/MATERIAL LIST			
ITEM NO.	PART NAME	QUANTITY	REMARKS
1	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
2	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
3	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
4	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
5	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
6	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
7	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
8	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
9	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
10	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
11	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
12	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
13	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2
14	ASSEMBLY, 42" FLEX RECEIVER	1	SEE NOTE 1 & 2

ARRANGEMENT

W151 PROJECT

U.S. DEPARTMENT OF ENERGY

W151 PROJECT

W151 PROJECT

 

RISER VERIFICATION - MEASUREMENT DATA SHEET

DATE: 10/26/94	BY: E.J. Cruz
BLDG: 241-AY-101 PIT/RISER: 1D/1A	SUPPORT: A. Eagen

MARK ALL NEARBY OBSTRUCTIONS WITH A DISTANCE AND ANGLE FROM NORTH.
 MARK ALL ON-PIT OBSTRUCTIONS WITH A DISTANCE FROM A KNOWN POINT.
 ALL DIMENSIONS APPROXIMATE

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

4. PIT EQUIPMENT REVIEW

- **OBTAINED RISER ARRANGEMENT DRAWINGS TO BE USED FOR ADAPTER ANALYSIS**
- **34 SK-2 DRWGS. BEING STUDIED**
- **SUMMARY OF RESULTS**
 - **~3/4 OF RISERS HAVE PUMPS**
 - **~1/4 HAVE MISCL. INSTRUMENTATION**
 - **A FEW HAVE BLIND FLANGES**
- **INFO TO BE INTEGRATED INTO SK-2 [INSTALLATION] DRWGS.**
- **MAJORITY OF DCRT ARRANGEMENT DRAWINGS HAVE NOT BEEN LOCATED**

SCALE $1/2'' = 1'-0''$

 $(1/12)$

PARTS/MATERIAL LIST					
QTY	REV	PART/DAWG NUMBER	DESCRIPTION	REMARKS/NOTES	QTY REQ
1	1	-010	APPENDIX		1
1		H-2-78935-010	W151-TWRS TRAILER ASSEMBLY	SEE NOTE 1	8
1		H-2-79320-010	TWRS CROUT TRAILER MOOR	SEE NOTE 1	3
1		H-2-79328-010	TWRS 4" & 6" FLEX ROVR ASSY		7
AR		H-2-79248-010	TWRS HYDRAULIC HOSE ASSEMBLY		8
1		H-2-78297-1	TWRS FLEX ROVR LEAK CONT BAG/ STAND ASSEMBLY		9
1		H-2-78992-010	TWRS NUCLEAR INSTRUMENT HOUSING STAND ASSEMBLY		10
AR		H-2-78958	TWRS OPT RETRIEVAL SYSTEM TEST CABLE IN/COM DIAGRAM		10
1		H-2-78960-10	NUCLEAR INSTRUMENTATION HOUSING		12

GENERAL NOTES UNLESS SPECIFIED OTHERWISE

1. CUSTOMER TO DETERMINE WHETHER ITEM 5 OR ITEM 6 IS TO BE USED

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[illegible]

		H-2-78870	SWRS WIS1 QMG INDEX
		REF NUMBER	TITLE
DWG NO	TITLE	REFERENCES	
DRAWING TRACEABILITY TEXT		NEXT WORK ON MO ITEM	

SCALE 1/8

GENERAL NOTES UNLESS SPECIFIED OTHERWISE

1. USE BAG ASSEMBLIES FROM H-2-79390 AND H-2-79253 AS REQUIRED FOR REMOVAL OF DIFFERENT LENGTHS OF EQUIPMENT.
USE ITEMS 10, 24, 31, AND 38 FOR 4" RISER.
USE ITEMS 9, 25, 32, AND 37 FOR 6" RISER.
SEE BAG INSTALLATION DETAIL.
2. THREAD THE CABLES (ITEMS 13 AND 14) THROUGH THE CABLE LOOPS ON THE BAG ASSEMBLY (ITEM 11) 12) PLACE THE CABLE SLEEVE (ITEM 27) ON THE CABLE, THREADING BOTH ENDS OF THE CABLE THROUGH THE SLEEVE
THREAD BOTH CABLE ENDS THROUGH THE CABLE BUTTON (H-2-79319-7) AND THE LOWER D-1-79320-11 OR UPPER D-1-79319-21 CABLE OIE
HYDRAULIC CLAMP DEPENDING IF INSTALLING THE LOWER OR UPPER CABLE ON THE TOP ASSEMBLY (ITEM 8)
ROUTE THE CABLES OVER THE SHEAVES AND ATTACH THE CABLE ENDS TO THE WINCHES D-1-79320-251 USING EXISTING SET SCREWS
3. ALL DIMENSIONS ARE IN INCHES.
TOLERANCES: FRACTIONS 1/16
INCHES 1/16

REV. NO.		PARTS/MATERIAL LIST			DATE
REV.	NO.	PART/ASSEMBLY NAME	QUANTITY	DESCRIPTION	DATE
1	1	-010		ASSEMBLY	1
					2
					3
					4
					5
1	1	H-2-78320-1		ASSEMBLY, TOP	6
1	1	H-2-78310-1		ASSEMBLY, RADIATION MONITOR	7
1	1	H-2-78327-1		ASSEMBLY, SLIDER AND SUPPORT	8
1	1	H-2-78337-1		ASSEMBLY, WASHER 6"	9
1	1	H-2-78337-2		ASSEMBLY, WASHER 4"	10
AR	1	H-2-78340		ASSEMBLIES, FLEXIBLE HCVR BAG	11
AR	1	H-2-78253		ASSEMBLIES, FLEXIBLE HCVR BAG	12
1	1	H-2-78346-003		ASSEMBLY, CABLE LOWER	13
1	1	H-2-78346-004		ASSEMBLY, CABLE UPPER	14
1	1	H-2-79262-010		ASSEMBLY, HYDR CYL TUBING	15
1	1	H-2-79281-010		ARR, HYDR SUPPORT JACK CYL 100	16
					17
					18
1	1	-001		GASKET, 23 1/2 OD X 14 1/8 ID X 1/8 THK WITH 5/8 DIA HOLES, 18 PLACES ON 23 1/4 DIA DC TEMPLATE FROM ITEM 7	20
					21
					22
1	1	BLUECARD 3000		GASKET, FLO, 4" X 1/8 THK	24
1	1	BLUECARD 3000		GASKET, FLO, 6" X 1/8 THK	26
1	1	BLUECARD 3000		GASKET, FLO, 14" X 1/8 THK	27
2	1	148-6-VP		SLEEVE, OVAL CABLE, 3/16	28
					29
					30
8	1	BOLT, HEX HD, 5/8-11UNC-2A X 1 1/2		ANY GRADE SST	31
12	1	BOLT, HEX HD, 3/4-16UNC-2A X 2 1/2		ANY GRADE SST	32
8	1	BOLT, HEX HD, 1/2-13UNC-2A X 1 1/2		ANY GRADE SST	33
8	1	BOLT, HEX HD, 1/2-13UNC-2A X 1 1/2		ANY GRADE SST	34
8	1	BOLT, HEX HD, 1/2-13UNC-2A X 1 1/2		ANY GRADE SST	35
8	1	WASHER, LOCK, 5/8, HELICAL SPR		ANY GRADE SST	36
8	1	WASHER, LOCK, 3/4, HELICAL SPR		ANY GRADE SST	37
12	1	WASHER, LOCK, 1", HELICAL SPR		ANY GRADE SST	38
12	1	WASHER, 1", PLAIN		ANY GRADE SST	39
18	1	WASHER, 1/2, PLAIN		ANY GRADE SST	40
18	1	NUT, HD, 1/2-13UNC-2B		ANY GRADE SST	41

BAG INSTALLATION DETAIL

SCALE NONE
SEE NOTE 1

① ASSEMBLY
HANDRAILS REMOVED FROM
NEAR SIDE

		M-2-79216	TOWNS & B FLEM MCVJR APR	NO	RE	SEARCHED	SERIALIZED	INDEXED	FILED	FBI - MEMPHIS
PAGE NO.	TITLE	REFERENCES			REVIEWS					
008	MISSING TRACEABILITY LIST	NEXT USED ON M-2-79216			CAMBER	BUTTS78A	GARCONE	VOL 5	AUG 12	1980

W151 PROJECT

[illegible]

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WHC-SD-WM-DRR-049

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

6c. ADAPTER DESIGN PARAMETERS

- **CONTAINMENT OF ALL WASTE**
- **PIT DEPTH**
- **EQUIPMENT SIZE**
- **PIT WALL/ ADJACENT RISER INTERFACE**
- **NOZZLE/ BRACKET INTERFERENCES**
- **FLOOR SLOPE**
- **WATER RETURN**
- **ADAPTER DECONTAMINATION**
- **PIT WALL LOADING**
- **MINIMIZE WATER SPRAY UP TO FRS**
- **REUSE OF EXISTING ADAPTER COMPONENTS**
- **ALARA**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

6d. ADAPTER FAMILIES

- **I - FOR RISERS IN PITS WITH DRAINS**
 - 4, 12, 24, 26, 34, 36 & 42 INCH RISERS IN 4-20' DEEP PITS
TYPES 3-23, 27 & 28
- **II - FOR ABOVE GROUND RISERS**
 - 4, 12 & 42 INCH RISERS PROTRUDING 0-9" ABOVE GRADE
TYPE 24, 25 & 26
- **III - FOR RISERS IN PITS WITHOUT DRAINS**
 - 4 & 12 INCH RISERS IN 1-3' DEEP PITS
TYPE 1, 2 & 29

***NOTE: EQUIPMENT MOUNTED ON RISERS REQUIRES CLEARANCE
DIAMETERS FROM 11 TO 59".***

WHC/SAIC

1 - RISERS IN PITS WITH DRAINS																
INTERFACE TYPE	SKETCH #	SK-30 TANK	FARM PIT	RISER	RISER SIZE	R EQUIPMENT TYPE	DR MAX DIA NO	MIN DIA	BAIL HGHT.	HEIGHT FROM FLOOR	ABOVE GRADE OR PIT FLOOR					
3	264	106 C	6B	13	26"	W PUMP, HEEL	H- NA	NA	NA	50	NA	NA				
4	222	CATCH	U	U301B	12"	H PUMP, TRANSFER, S	H- 40	37.2	23.8	66	26	2 FLOOR SLOPE				
4	227	CATCH TAN	UX	UX-302	12"	H PUMP, CATCH TANK	H- 40	37.2	23.8	66	32	2 FLOOR SLOPE				
5	279	103 SY	3A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.3	34.9	71	44-45	1.5 FLOOR SLOPE				
5	241	101 AP	1A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	243	103 AP	3A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	245	104 AP	4A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	246	105 AP	5A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	247	106 AP	6A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	248	107 AP	7A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	249	108 AP	8A	3A	12"	H PUMP, TRANSFER	H- 61	40.3	34.9	72	44-45	1.0 FLOOR SLOPE				
5	276	102 SY	2A	3A	12"	H PUMP, FLEX FLOAT	H- 65.8	42.1	22.9	74	54-55	1.5 FLOOR SLOPE				
5	250	101 AW	1A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	254	103 AW	3A	3A	12"	H PUMP, FLEX FLOAT	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	255	104 AW	4A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	256	105 AW	5A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	257	106 AW	6A	3A	12"	H PUMP, FLEX FLOAT	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	236	101 AN	1A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.3	34.9	76	44-45	1.5 FLOOR SLOPE				
5	239	102 AN	2A	3A	12"	H PUMP, TRANSFER	H- 65.8	40.6	34.9	76	44-45	1.5 FLOOR SLOPE				
6	272	101 SY	1A	12A	42"	H PUMP, MIXER	VE NA	NA	NA	74	NA	NA				
6	240	107 AN	7A	11A	42"	H PUMP, EJECT MIXER	H- 72	59.2	7.75	76	40-41	1.5 FLOOR SLOPE				
7	226	CATCH TAN	A	A302	12"	H PUMP, TRANSFER	H- 39.4	36.6	23.8	72	26-27	1.25 FLOOR SLOPE				
7	223	CATCH		311-ER	12"	H PUMP, CATCH TANK	H- 42	36.6	23.8	74	25.5-26	1.25 FLOOR TAPER				
8	262	106 C	6A	9	42"	H PUMP SLURRY	H- NA	NA	NA	93	NA	NA				
9	229	DCRT	U	244-U	15	4"	H DIP TUBES	H- 11.4	9	16.5	100	48-50	1.25 FLOOR SLOPE			
10	263	106 C	6C	3	12"	H SLUICER	H- NA	NA	NA	107	NA	NA				
11	258	101 AY	1B	1C	34"	H PUMP, TRANSFER	H- 72	43	36	108	58-59	1 5/16" FLOOR SLOPE				
27	258	102 AY	2D	1D	34"	H PUMP, TRANSFER	H- 72	43	36	108	58-59	1 5/16" FLOOR SLOPE				
27	282	101 AY	1D	1A	34"	H PUMP, TRANSFER	H- 72	43	36	108	58-59	1 5/16" FLOOR SLOPE				
12	252	102 AW	2E	24A	12"	H PUMP, 242A FEED	H- INTERF.	40.3	34.9	109	44-45	1.5 FLOOR SLOPE, REQUIRES REMOVAL OF NOZZLE OR MOD SPOOL				
13	281	101 AZ	1C	1D	42"	H PUMP, MIXER	VE NA	NA	NA	112	NA	NA				
14	275	102 SY	2E	24A	12"	H PUMP, X-SITE, FLEX	H- 64.5	42.1	22.9	121	54-55	1.5 FLOOR SLOPE				
15	225	CATCH	AZ	151AZ	12"	H PUMP, CATCH TANK	H- INTERF.	36.3	41	130	43	1. FLOOR SLOPE, INTERF. FIT ON FLANGE				
16	224	CATCH	A	A-350	12"	H PUMP, TRANSFER	H- INTERF.	36	23.8	132	31-32	1.5 FLOOR TAPER, 3 NOZZLES INTERFERRING				
17	242	102 AP	2D	13	12"	H PUMP, GROUT FEED	H- INTERF.	45.4	34.9	143	49-50	1.0 FLOOR SLOPE				
18	232	DCRT	A	244-A	F	12"	H PUMP, TRANSFER	H- INTERFER.	54	26	150	46	2 FLOOR SLOPE, NOZZLE INTERFERENCE			
28	233	DCRT	BX	244BX	2	12"	H PUMP, TRANSFER	H- INTERF.	48	25.2	193	53-54	2.5 FLOOR SLOPE, INTERFERENCE W/ NOZZLE, RISER, REQUIRES IRREGULAR DESIGN			
19	236	DCRT	TX	244-TX	2	12"	H PUMP, TRANSFER	H- INTERF.	48	25.2	193	53-54	2.5 FLOOR SLOPE, INTERFERENCE W/ NOZZLE, RISER, REQUIRES IRREGULAR DESIGN			
19	237	DCRT	U	244-U	2	12"	H PUMP, TRANSFER	H- INTERF.	48	25.2	193	53-54	2.5 FLOOR SLOPE, INTERFERENCE W/ NOZZLE, RISER, REQUIRES IRREGULAR DESIGN			
20	231	DCRT	TX	244-TX	3	12"	H PUMP, AGITATOR	H- INTERF.	58	64.25	193	75	2.5 FLOOR SLOPE, INTERF. WITH 2 RISERS, WILL REQ. NOZZ. REMOVAL OR RECT. SPOOL			
21	234	DCRT	CR	244-CR-3	24"	H PUMP, TRANSFER	H- INTERF.	44	32	244	34	INTERFERENCE W/ 230				
22	230	DCRT	CR	244-CR-3	---	36"	H PUMP, AGITATOR	H- 48	46	82	244	64	INTERFERENCE W/ 234			
23	235	DCRT	S	244-S	H	12"	H PUMP, TRANSFER	H- 54	46	23.8	284	31-32	2 FLOOR SLOPE			
NA- DENOTES NO EQUIPMENT PRESENTLY KNOWN																

1 - RISERS ABOVE GROUND																			
INTERFACE	SKETCH #					RISER R	EQUIPMENT	EQUIP. DR MAX DIA	INCHES MIN DIA	BAIL	PIT HEIGHT	EQUIP HGT ABOVE GRADE	REMARKS						
TYPE	SK-30	TANK	FARM	PIT	RISER	SIZE	D TYPE	NO CLEAR		HGHT.	FROM FLOOR	OR PIT FLOOR							
24	267	106	C		14	4"	H THERMOCOUPLE TREE	H-	224	9.6	8.2	ABOVE GRADE	0						
24	266	106	C		8	4"	H THERMOCOUPLE TREE	H-	48	9.6	8.2	ABOVE GRADE	30						
24	251	101	AW	---	4	4"	H THERMOCOUPLE TREE	H-	162	23.4	26	ABOVE GRADE							
24	278	102	SY	----	4A	4"	H THERMOCOUPLE TREE	H-	182	23.4	26	ABOVE GRADE							
24	280	103	SY	---	4A	4"	H THERMOCOUPLE TREE	H-	182	23.4	26	ABOVE GRADE	29						
24	270	101	SY	----	17C	4"	H MIT	H-	173	32.8	43.8	ABOVE GRADE	47						
24	273	101	SY	----	1B	4"	H VDTT TREE	H-	196	42.8	2.2	ABOVE GRADE	73						
24	274	101	SY	----	14A	4"	H VDTT TREE	H-	183	42.8	2.2	ABOVE GRADE	70						
25	277	102	SY	----	7A	12"	H SPECIFIC GRAVITY	H-	183	38	11.8	ABOVE GRADE	13						
26	268	101	SY	----	5B	42"	H CAMERA	H-	230	50	9.5	ABOVE GRADE	41						

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**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

6e. SPECIAL DESIGN CONSIDERATIONS

- **SMALL DIAMETER SPOOLS WILL BE REQUIRED ON TYPES 1, 2 & 9 WHICH ARE CLOSE TO PIT WALLS.**
- **CUSTOM DESIGNED SPOOLS END SECTIONS WILL BE REQUIRED ON TYPES 12, 15, 16, 17, 18, 19, 20, 21, & 28 WHICH HAVE INTERFERENCE PROBLEMS WITH NOZZLES OR BRACKETS OR ADJACENT RISERS.**
- **WATER CONTAINMENT HARDWARE MAY BE REQUIRED FOR TYPES 9, 18, 19, 20, 23, & 28 WHICH HAVE RISER FLANGES PROTRUDING ABOVE THE PIT FLOOR.**
 - **INFLATABLE SEALS**
 - **DEFLECTOR CONES**
 - **ALLOW SMALL LEAK**

WHC/SAIC

ADAPTER DESIGN CONSIDERATIONS

RISER DIA	STATUS	FRS DESIGN	PLATFORM/REQ'D MODS	EXTENSION SPOOL	END PIECE DESIGN CONSIDERATIONS
1 (12") (RAISED)	DESIGN REQUIRED	42" FRS	MODIFICATION TO 4-JACK PLATFORM TO ACCOMMODATE 42" FRS CARTRIDGE.	≈30" DIAMETER SPOOL FROM END PIECE TO 42" FRS SPOOL PD=3'	EQUIPMENT VERY CLOSE TO WALL. NEED TO LIFT AND ROTATE EQUIPMENT 90° FOR BAIL CLEARANCE. UNIQUE SPLIT CONICAL END PIECE DESIGN TO SEAL TO RISER FLANGE. NO PIT DRAIN.
2 (4") (RAISED)	DESIGN REQUIRED	4"/6" FRS	EXISTING 4-JACK PLATFORM	NONE. VISCOMETER SPOOL, 36" W/ORIGINAL CONFIGURATION PD=3'	SPLIT SPOOL TO RAISE FLANGE FACE TO ABOVE GRADE. USE EXISTING SPLIT CONICAL END PIECE TO SEAL TO RISER FLANGE AND EXTEND TO ABOVE SURFACE. WORK WITH TYPE 29 FOR COMMON PIECES. NO PIT DRAIN. EQUIPMENT CLOSE TO WALL.
3 (26") (FLUSH)	ON HOLD FOR EQUIPMENT INFORMATION	42" FRS (PROBABLE)	RAIL PLATFORM	PD=4'+	PIT DRAIN. PROBABLY USES EXISTING ADAPTER.
4 (12") (FLUSH)	DESIGN REQUIRED	42" FRS	MODIFICATION TO 4-JACK PLATFORM TO ACCOMMODATE 42" FRS CARTRIDGE.	SEE END PIECE DESIGN PD=5'+	UNIQUE 40" DIA END PIECE TO EFFECT SEAL AT RISER FLANGE AND TO EXTEND FROM FLOOR SEAL TO ABOVE SURFACE. WORK DESIGN LENGTH WITH TYPE 7 END PIECE. HAS PIT DRAIN.
5 (5") (FLUSH)	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM	PD=6'+	USE EXISTING ADAPTER DESIGN
6 (42") (RAISED)	ON HOLD. EQUIPMENT LARGER THAN 42" FRS DESIGN	TBD	CAN USE 42" FRS IF LIFTING BAILS ARE MODIFIED	PD=6'+	PIT DRAIN, NEED TO CLEAR SPRAY RING
7 (12") (RAISED)	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=6'	SIMILAR END PIECE DESIGN AS TYPE 4.

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RISER DIA	STATUS	FRS DESIGN	PLATFORM/REQ'D MODS	EXTENSION SPOOL	END PIECE DESIGN CONSIDERATIONS
8 (42") (FLUSH)	ON HOLD FOR EQUIPMENT INFORMATION	42" FRS (PROBABLE)	RAIL PLATFORM	PD=7'+	PIT DRAIN, PROBABLY USES EXISTING DESIGN
9 (RAISED) (4")	DESIGN REQUIRED	4"/6" FRS	4 JACK PLATFORMS NEED SITE INFO. FOR LANDING AREA.	SPOOL REQUIRED. MAY BE INCORPORATED TO END PIECE DESIGN. PD=10'+	END PIECE WOULD USE SPLIT COLLAR OR LONG SPOOL, WATER RETURN CONSIDERATIONS
10 (FLUSH) (12")	ON HOLD FOR EQUIPMENT INFORMATION	42" FRS (PROBABLE)	RAIL PLATFORM	PD=9'	PIT DRAIN, PROBABLY USES EXISTING DESIGN
11 (FLUSH) (34")	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM	PD=9'	PIT DRAIN
12 (FLUSH) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=9'+	UNIQUE END PIECE WITH MOD. FOR 11" SQUARE NOZZLE KICK PLATE IN UPPER LEFT HAND CORNER. MAY REQUIRE UNIQUE BOTTOM SEAL. PIT DRAIN
13 (FLUSH) (42")	ON HOLD FOR EQUIP.	42" IRS (PROBABLE)	RAIL PLATFORM	PD=9'+	MAY REQUIRE UNIQUE END PIECE TO ACCOMMODATE TURNOVER PIT DRAIN
14 (FLUSH) (12")	DESIGN MAY BE REQUIRED	42" FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=10'+	EXISTING PIECE EQUIPMENT WILL WORK. MAY REQUIRE UNIQUE BOTTOM SEAL. LEVELING MAY BE REQUIRED. PIT DRAIN.
15 (FLUSH) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	MAY REQUIRE EXTENSION PD=10'+	UNIQUE END PIECE DESIGN. MAY REQUIRE LEVELING AND NEW SEAL. PIT DRAIN. CLEARANCES DIAMETER BAILS/TRUNNION MAY REQUIRE SPECIAL END PIECES.

PD = PIT DEPTH
RH = RISER HEIGHT ABOVE GRADE

RISER DIA	STATUS	FRS DESIGN	PLATFORM/REQ'D MODS	EXTENSION SPOOL	END PIECE DESIGN CONSIDERATIONS
16 (FLUSH) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=11'	UNIQUE END PIECE W/MOD TO CLEAR NOZZLE INTERFERENCES, SMALLER DIAMETER. UNIQUE LOWER SEAL MAY BE REQUIRED. PIT DRAIN.
17 (RAISED) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	SMALL SPOOL PD=11'+	BRACKET REMOVAL REQ'D, UNIQUE END PIECE REQ'D TO SEAL WASH RING, WATER RETURN CONSIDERATIONS. PIT DRAIN
18 (RAISED) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM, CLEAR RISER INPUT WALL, ACCOMMODATE ADJACENT PIT.	PD=12'+	UNIQUE END PIECE DESIGN WITH MOD TO CLEAR NOZZLE INTERFERENCES, SMALLER DIAMETER. MAY REQUIRE UNIQUE BOTTOM SEAL. PIT DRAIN. WATER RETURN CONSIDERATIONS.
19 (RAISED) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=16'+	UNIQUE LONG END PIECE. MOD TO CLEAR NOZZLE INTERFERENCES, SMALLER DIAMETER. MAY NEED LEVELING. PIT DRAIN
20 (RAISED) (12")	DESIGN REQUIRED	42' FRS	RAIL PLATFORM	SEE END PIECE DESIGN PD=16+	UNIQUE END PIECE. MAY REQUIRE UNIQUE BOTTOM SEAL. INTERFERENCE W/NOZZLE & ADJACENT RISERS. EQUIPMENT SIZE WOULD REQUIRE OFF-CENTER PULL TO CLEAR PINS. PIT DRAIN WATER RETURN CONSIDERATIONS.
21 (FLUSH) (24")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	LONG EXTENSION SPOOL PD=21'+	UNIQUE 44"0 END PIECE. MAY HAVE TO SEAL ON NEIGHBORING FLANGE OR BULGE AROUND IT. INTERF W/ADJAC RISER. SAME PIT AS TYPE 22 PIT DRAIN
22 (FLUSH) (36")	DESIGN REQUIRED	42' FRS	RAIL PLATFORM	LONG EXTENSION SPOOL PD=21'+	UNIQUE END PIECE. MAY HAVE TO SEAL ON NEIGHBORING FLANGE OR BULGE AROUND IT. INTERF W/ADJAC RISER. SAME PIT AS TYPE 21 PIT DRAIN.

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

RISER DIA	STATUS	FRS DESIGN	PLATFORM/REQ'D MODS	EXTENSION SPOOL	END PIECE DESIGN CONSIDERATIONS
23 (RAISED) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	VERY LONG EXTENSION SPOOL PD=23'+	EXISTING 42" END PIECE MAY WORK. MIGHT REQUIRE LEVELING/EXTENSION AND NEW SEAL. PIT DRAIN
24 (RAISED) (4")	DESIGN REQUIRED (ABOVE GRID)	4"-6" FRS 42" FRS	JACK PLATFORM (SEE 1)	RH=0-9"	EXISTING 4-6" FRS DESIGN SHOULD WORK WITH 42" EXTENSION
25 (FLUSH) (12")	DESIGN REQUIRED (ABOVE GRID)	42" FRS? 4/6	JACK PLATFORM (SEE 1)	RH=0"	RISER FACE IS FLUSH WITH GRADE. MAY REQUIRE A UNIQUE END PIECE FOR SEAL, 12" INTERFACE.
26 (RAISED) (42")	ON HOLD DIAMETER 50"	NEW LARGER	42" FRS MARGINALLY LARGE	RH=3"	UNIQUE END PIECE REQD, 50"DIA
27 (FLUSH) (34")	EXISTING DESIGN ADEQUATE	42" FRS	RAIL PLATFORM	PP=9'	
28 (RAISED) (12")	DESIGN REQUIRED	42" FRS	RAIL PLATFORM	MAY REQUIRE EXTENSION PD=11+	UNIQUE LONG END PIECE. MOD TO CLEAR NOZZLE, RISER INTERF SMALLER DIA. MAY REQUIRE LEVELING. PIECE MAY MATCH TYPE 19.
29 (RAISED) (4")	DESIGN REQUIRED (IN SHALLOW PIT)	42" FRS	JACK PLATFORM	RH=(9")	RISER BELOW GRADE, LIMITED CLEARANCE. COULD USE SPLIT SPOOL (18") TO BRING RISER FACE ABOVE GRADE AND USE SPLIT FLANGE PIECE.

PD = PIT DEPTH

RH = RISER HEIGHT ABOVE GRADE

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

7a. OPERATIONAL SCENARIO - TYPE I8

1. MAKE UP ADAPTER ASSEMBLY
2. BACKFLUSH PUMP
3. REMOVE JUMPERS AND ELECTRICAL CABLES
4. DECON PIT
5. UNBOLT PUMP
6. PUT PLATFORM IN PLACE
7. ATTACH RIGGING TO PUMP
8. ATTACH INTERNAL FLUSH LINE TO PUMP DISCHARGE
9. LOWER ADAPTER OVER PUMP, ORIENT, SEAT ON FLOOR
10. LOWER FRS ON PLATFORM
11. ATTACH FRS TO ADAPTER, HOOK-UP WASH SYSTEM
12. ATTACH PUMP RIGGING TO CRANE
13. REMOVE PUMP

WHC/SAIC

TYPE 18 ADAPTER FOR 42" FRS ASSEMBLY
DCRT TANK/244-A PIT/RISER #F INSTALLATION

TYPE 18 ADAPTER FOR 42" FRS ASSEMBLY
DCRT TANK/244-A PIT/RISER #F INSTALLATION

PLAN VIEW

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

7b. OPERATIONAL SCENARIO - TYPE 29

1. REMOVE ELECTRICAL CABLES
4. UNBOLT AND LIFT MIT
5. ATTACH CONICAL ADAPTER & WASH RING
4. LOWER MIT, REMOVE RIGGING
2. PUT 4 LEG PLATFORM IN PLACE
6. LOWER PLATFORM/FRS ONTO WASHER/ADAPTER
7. ATTACH FRS TO ADAPTER
7. ATTACH RIGGING TO MIT
8. REMOVE MIT

WHC/SAIC

TYPE 29 ADAPTER FOR 42" FRS ASSEMBLY
101-SY TANK/RISER #17B INSTALLATION

ELEVATION VIEW

TYPE 29 ADAPTER FOR 42" FRS ASSEMBLY
101-SY TANK/RISER #17B INSTALLATION

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

8. STRUCTURAL DESIGN CONSIDERATIONS

- **PIT WALL LOAD CALCULATIONS WILL BE DONE FOR ALL PLATFORMS.**
- **BEAM AND PLATE STRUCTURAL CALCULATIONS WILL BE DONE FOR ALL PLATFORM DESIGNS ASSUMING 1" OF LEAD SHIELDING OVER STEEL TOP PLATE OF PLATFORM.**
- **ALL ADAPTER DESIGNS WILL BE ANALYZED FOR STRESS AND BUCKLING LOADS ASSUMING NO LOADING ON ADAPTER FROM FRS.**

WHC/SAIC

**FLEXIBLE RECEIVER RISER ADAPTERS
30% DESIGN REVIEW**

9. PROGRAM SCHEDULE

- **ALL ACTIVITIES ON SCHEDULE EXCEPT:**
 - **ANALYSIS OF EXISTING ADAPTER DESIGNS - 1 WEEK LATE**
 - **SITE INSPECTIONS - 2 WEEKS LATE**
 - **PIT EQUIPMENT IDENTIFICATION - 1 WEEK LATE**
- **PLAN TO CATCH-UP**
 - **ADDITIONAL ENGINEER ASSIGNED TO ADAPTER DESIGN TASK**
 - **ADDITIONAL ENGINEER ASSIGNED TO SITE INSPECTIONS/PIT ID**
- **DESIGN PACKAGE WILL BE COMPLETED IN ACCORDANCE WITH THE PROGRAM SCHEDULE - 2/14/94 DELIVERY.**

WHC/SAIC