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2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Mechanical Equipment	4. Related EDT No.: NA
5. Proj./Prog./Dept./Div.: TWRS/Mechanical Equipment	6. Cog. Engr.: G. A. Barnes	7. Purchase Order No.: NA
8. Originator Remarks: Transmitted for release.		9. Equip./Component No.: NA
		10. System/Bldg./Facility: 241-S
11. Receiver Remarks:		12. Major Assm. Dwg. No.: NA
		13. Permit/Permit Application No.: NA
		14. Required Response Date: September 14, 1994

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-TP-267	A11	0	Test Plan for Enraf Series 854 Level Gauge Wire Testing	Q	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 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(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. GA Barnes	<i>[Signature]</i>	9-14-94	H5-09						
1	1	Cog. Mgr. TL Moore	<i>[Signature]</i>	9/14/94	H5-09						
1	1	QA DC Board	<i>[Signature]</i>	9-14-94	S1-57						
		Safety									
		Env.									
1	1	JR Biggs	<i>[Signature]</i>	9-14-94	T4-01						
1	1	SH Rifaey	<i>[Signature]</i>	9/14/94	62-45						

18. G. A. Barnes <i>[Signature]</i> Signature of EDT Originator Date: 9-14-94	19. J. R. Biggs <i>[Signature]</i> Authorized Representative for Receiving Organization Date: 9-14-94	20. T. L. Moore <i>[Signature]</i> Cognizant Manager Date: 9/14/94	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-TP-267, REV. 0

Document Title: Test Plan for Enraf Series 854 Level Gauge Wire Testing

Release Date: 9/15/94

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

APPROVED FOR PUBLIC RELEASE

* * * * *

WHC Information Release Administration Specialist:

N.L. Solis

N.L. SOLIS

(Signature)

9/15/94

(Date)

SUPPORTING DOCUMENT		1. Total Pages 89
2. Title Test Plan for Enraf Series 854 Level Gauge Wire Testing	3. Number WHC-SD-WM-TP-267	4. Rev No. 0
5. Key Words Enraf, level gauge, LIT <div style="text-align: center;"> APPROVED FOR PUBLIC RELEASE <i>9/15/94 D. N. [unclear]</i> </div>	6. Author Name: G. A. Barnes <i>[Signature]</i> Signature Organization/Charge Code 7EA30/N3064	
7. Abstract This document details a plan to test Enraf level gauges at Tank Farms.		
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9. Impact Level Q		

WHC-SD-WM-TP-267
Revision 0

Test Plan for
Enraf Series 854
Level Gauge Wire Testing

G.A. Barnes
Mechanical Equipment

September 14, 1994

Filename: TPLN_ALL.LG

ETN 94-0036

MASTER

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**TEST PLAN FOR ENRAF SERIES 854
LEVEL GAUGE WIRE TESTING**

1.0 INTRODUCTION

An Enraf¹ Series 854 level gauge was installed on tank 241-S-106 (S-106) during the first week of June 1994. On August 11, 1994, the gauge's stainless steel measuring wire broke. After examination and laboratory analysis, it was determined that the wire broke due to severe chloride ion corrosion. It is suspected that the chloride ion contamination came from the radiation induced breakdown of the polyvinyl chloride (PVC) riser liner. It is well documented that the breakdown of PVC due to radiation produces chloride containing compounds.

This document provides a qualification test plan to remove and have analyzed the wire in all of the Enraf Series 854 that have been installed to date (see Table 1 and 2). These tests will confirm the presence or absence of chloride ions in the PVC liners and/or on the Enraf measuring wires installed in the tanks. This work follows the guidance of the engineering task plan (see Section 9.0).

2.0 OBJECTIVE

This is a qualification test to determine the design adequacy of the Enraf 854's 316 stainless steel measuring wire in the waste tanks. This test will also provide evidence as to the location and extent of potential chloride ion sources in the tanks where Enraf gauges have been installed. The results from this testing will provide information for future material selections.

The Enraf gauges will be operated by previously approved procedures in an operational system; therefore, this test is not a process test as defined in WHC-IP-0842, Waste Tanks Administration, Section 8.10, and WHC-CM-6-1, Standard Engineering Practices, Section EP-4.2, because changes are not being made to any process operating parameters. Also, no design changes are being made to the Enraf gauges or facilities.

3.0 SCOPE

This test will involve removing the 316 stainless steel wire drums from all of the existing Enraf Series 854 level gauges that have been installed. New 316 stainless steel wire drums shall be installed into the gauges and the gauges will be placed back into service. The wire that is removed from the gauges shall be sent to the 222-S Lab or the Pacific Northwest Laboratory (PNL) for analysis. The sequence for wire drum removal will follow Table 1 and 2. Additional wire replacements will occur at intervals as determined necessary by the results of the laboratory analyses.

¹Enraf, Inc.

Note: The wire drum installed in the S-106 Enraf Series 854 gauge shall be replaced before October 7, 1994.

4.0 TEST PROCEDURE

This test plan shall be inserted into the appropriate Job Control System work package for test execution.

All work performed on the Enraf Series 854 level gauge during this testing shall be performed in accordance with Tank Farm Maintenance Procedure 6-TF-125.

4.1 Remove the wire drum and displacer from the Enraf Series 854 level gauge. Care should be taken when removing the wire drum so that wire handling is minimized as much as possible and so that cross contamination between the displacer and wire drum does not occur.

QC Hold #1 4.2 Package the old wire drum in a clean plastic bag for transporting to the laboratory.

Quality Control (QC) to verify that the drum is placed in a clean plastic bag after removal from the Enraf gauge and that the plastic bag is sealed. Record signature in Table 1 or 2.

QC Hold #2 4.3 Thoroughly clean the first 20 feet of measuring wire on a new 316 stainless steel wire drum with alcohol. This step can be performed prior to Steps 4.1 and 4.2.

QC to verify that the wire was cleaned. Record signature in Table 1 or 2.

4.4 Install the new wire drum and existing displacer into the Enraf gauge. Record drum serial number in Table 1 or 2.

4.5 Start the Enraf level gauge.

4.6 Deliver the old wire drum to the 222-S Lab or PNL for analysis.

5.0 SAFETY

There is no anticipated safety impact with this testing (see ETP, Section 9.0).

6.0 QUALITY ASSURANCE

See Section 4.0 for Quality Assurance hold points.

7.0 ORGANIZATION AND FUNCTIONAL RESPONSIBILITIES

Tank Farm Operations is responsible for providing a Person In Charge (PIC). The PIC will also be the Test Director. Operations shall be responsible for delivering the wire to the 222-S Lab or PNL.

Tank Farm Maintenance is responsible for operating the level gauges during the testing.

Plant Engineering is responsible for identifying a lab and providing guidance to the lab for the wire analysis. Plant Engineering shall also be responsible for collecting the lab analysis data and preparing the analysis report.

8.0 REPORTS

A test report shall be written that documents the results of the laboratory analysis. The test report shall be released as a supporting document.

9.0 REFERENCES

- 9.1 Moore, T. L., "Engineering Task Plan and Status of 241-S-106 Enraf Level Gauge Wire Break," WHC-SD-WM-ETP-119, Rev. 0, dated September 1994. Westinghouse Hanford Company, Richland, Washington.
- 9.2 Enraf Series 854 ATG Level Gauge, Instruction Manual, Part No. 4416.220, Version 2.1.
- 9.3 H-2-817634, INSTM ENRAF NONIUS ASSY INSTALLATION & RISER SCHED, SHEETS 1 and 2.
- 9.4 6-TF-125, Enraf Nonius Model 854 Level Gauge Preventive Maintenance and Calibration.

10.0 DATA SHEETS

Data (QC signatures, Drum Serial #'s and drum replacement dates) shall be recorded in Table 1 or 2. Table 1 and 2 shall be retained in the JCS work packages as a permanent record.

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Table 1 (West area drum replacement sequence)

SEQUENCE	TANK	Riser #	ENRAF INSTALLATION DATE	PVC LINER?	DRUM SERIAL #	DRUM REPLACEMENT DATE	QC HOLD #1
							QC HOLD #2
*	106-S	3	6/10/94	YES			
1	103-S	3	5/1/94	YES			
2	107-S	3	6/10/94	YES			
3	107-T	1	6/16/94	YES			
4	102-T	8	6/23/94	YES			
5	102-SY	2A	6/30/94	YES			
6	101-SY	1A	7/14/94	NO			
7	103-SY	2A	7/14/94	YES			
8	103-U	8	7/20/94	YES			
9	109-U	8	7/20/94	YES			
10	105-U	8	7/27/94	YES			
11	107-U	8	7/28/94	YES			
12	106-U	8	8/4/94	YES			
13	106-SX	3	8/10/94	YES			
14	111-S	3	8/10/94	YES			
15	109-T	1	9/8/94	YES			

* Drum shall be replaced before October 7, 1994

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Table 2 (East area Drum replacement sequence)

SEQUENCE	TANK	Riser #	ENRAF INSTALLATION DATE	PVC LINER?	DRUM SERIAL #	DRUM REPLACEMENT DATE	QC HOLD #1
							QC HOLD #2
1	103-C	8	7/29/94	YES			
2	106-BX	8	7/15/94	YES			
3	106-C	7	9/13/94	NO			
4	101-AW	2A	9/94	YES			