OCT 27 1999 (20) ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 626183

2. To: (Receiving Organization) Waste Management	3. From: (Originating Organization) Fluor Daniel Northwest	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: W-178	6. Design Authority/Design Agent/Cog. Engr.: David S. McShane	7. Purchase Order No.: N/A
8. Originator Remarks: For Release		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 219-S
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No		12. Major Asm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

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	HNF-4621	ALL	0	DATA REPORT FOR THE INTEGRITY ASSESSMENT REPORT HNF-4589	E	2	1	6

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

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)														
(G) Req. sch	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Req. sch	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN			
1	1	Design Authority	L.D. Goodwin	8/4/99	T6-04	1	1	M.A. Cahill	M.A. Cahill	8/4/99	T6-03			
3	1	Design Agent	D.S. McShane		B4-09	3		G.S. Chinnery			N1-29			
		Cog. Eng.												
1	1	Cog. Mgr.	S.L. Brey	8/4/99	T6-04									
		QA												
		Safety				3		Central Files			B1-07			
1	1	Env.	K.M. Leonard	8/4/99	T6-12									

18. David McShane 8-4-99 D.S. McShane Signature of EDT Originator Date	19. M.A. Cahill 8/4/99 M.A. Cahill Authorized Representative for Receiving Organization Date	20. S.L. Brey 8/4/99 S.L. Brey Design Authority/Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl No. _____ ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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Data Report for the Integrity Assessment Report HNF-4589

David S. McShane
Fluor Daniel Northwest
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 626183 UC: 2000
Org Code: 08000 Charge Code: 101746/AJ60 HMWM0171
B&R Code: EW31300000 Total Pages: 76

Key Words: Integrity Assessment, W-178, W-087, 219-S, 222-S, Tanks
TK-101 and TK-102, System, Corrosion, Inspection

Abstract: Supporting data for the Integrity Assessment Report of Tanks
TK-101 and TK-102.

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Janis Aardal 10-27-99
Release Approval Date

Approved for Public Release

**DATA REPORT FOR THE
INTEGRITY ASSESSMENT REPORT
HNF-4589**

**PROJECT W-178
219-S SECONDARY CONTAINMENT UPGRADE**

Prepared for
Waste Management Hanford

Prepared by
David S. McShane P.E.
Fluor Daniel Northwest

August 1999

PURPOSE

The purpose of this document is to compile supporting documentation for the Integrity Assessment Report (HNF 4589) for Tanks 101 and 102 in the 219-S Facility. This approach minimizes the size of the Integrity Assessment Report (IAR) (HNF-4589) and still provide a path to detailed information. This IAR addresses the evaluation of Tanks 101 and 102 and other existing components located in the 219-S Waste Handling Facility. This document includes four appendices as follows:

Appendix A – This appendix contains the qualifications of the Quality Control Inspector.

Appendix B – This appendix lists the procedures used in the inspection. Due to the proprietary nature of the procedures, they are not contained in the appendix. A copy of each procedure is included in the Construction Work Package, CWP No. W-178-04, which is part of the Project W-178 Records.

Appendix C – This appendix includes the process used to perform the video taping of the inside of the Tanks.

Appendix D – This appendix provides the QC/Engineering evaluation of the Non-destructive examination of Tanks 101 and 102.

APPENDIX A
QUALIFICATIONS OF EXAMINATION PERSONNEL

TABLE OF CONTENTS

Quality Assurance Inspector's Resume A-3

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Quality Assurance Inspector's AWS Welding Certificate A-10

Quality Assurance Inspector's NDE Personnel Certification Records A-11

Quality Assurance Inspector's Inspector Certification Records. A-14

JERRY A. KIMBALL

EDUCATION

Columbia Basin College, Pasco, Washington
-Served 4 year Apprenticeship Program
-QA/QC, NDT, and Welding Inspection
Emery County High School, Huntington, Utah

CERTIFICATIONS

Level II RT, MT, PT, VT-1, VT-2 per SNT-TC-1A
CWI #93100551

EXPERIENCE

10/96 to Present Level II: RT PT MT VT
Fluor Daniel Northwest, Inc.

Position: Perform the above disciplines throughout the Hanford Site

2/91 to 10/96 Level II: RT PT MT VT
ICF-KH Hanford

Position: Perform the above disciplines throughout the Hanford site.

6/87 to 12/91 Level II: RT, PT
C.T.I. Inc. Prudhoe Bay, AK

Position: Supervisor over Real Time Radiography Inspection of Flowlines
and Common Lines at Prudhoe Bay. My job consisted of putting
all the data from the field into a computer and doing all the
analysis on the corrosion and turning all the information over
to ARCO.

1/87 to 6/87 Level II: VT-1, VT-2, RT, MT, PT
UNC Nuclear Industries, Richland, WA

Position: Performed Quality Assurance/Quality Control in-service
inspections of hangers, supports, restraints, snubbers,
structural bolting with weld inspection and hydraulic and
pneumatic testing of piping systems and pressure vessels per
ASME Section XI during the outage of the nuclear power plant.

Jerry A. Kimball
Resume/2

4/86 to 10/86 Level II: RT, PT, VT
Tri-Testing, Richland, WA

Position: Performed LEVEL II RT, PT and VT on-site at nuclear reactors in Idaho Falls, ID. Also consisted of pipelines and tank jobs. Work was performed to API and ASME Codes.

7/85 to 4/86 MT, PT, VT, RT, and UT Examinations
Morrison Knudsen Company, Inc.

Position: At Vermont Yankee Nuclear Power Plant, Brattleboro, VT. Performed NDE/QC examinations that included MT, PT, VT, RT, and UT thickness on reactor recirculation pipe replacement outage.

1/85 to 7/85 Level II: RT
Butler Service Group (For ITT Grinnell), Braintree, MA

Position: At Nine Mile Point, Lycoming, NY. Performed LEVEL II RT Pre-Service Inspection of nuclear pipe welds in accordance with ANSI.B31.1 and ASME codes.

4/84 to 11/84 LEVEL II: PT, MT, RT. Per SNT-TC-1A.
Bestco, 2939 Park Drive, Richland, WA

Position: At Union Carbide Silicon Plant, Moses Lake, WA. Performed Isotope Radiography and Liquid penetrant testing. Additional duties included Borescoping with photography, assisting in welder qualification testing, locating welds and determining Inspection Requirements, directed weld repair and coordinated off shift radiography. Assisted in preparing I/F Planner packages and installation for final systems turnover and testing.

2/84 to 3/84 LEVEL II: RT and UT TRAINEE
Anvil Corporation, Bellingham, WA

Position: At Alaskan Module Project, Anacortes, WA. Performed Isotope Radiography and assisted LEVEL II UT personnel in inspection of full penetration welds. ASME SEC III and SEC V.

12/81 to 9/83 NDE TECHNICIAN: LEVEL II PT, MT, & LEVEL I RT per SNT-TC--1A.
Bestco, 2939 Park Drive, Richland, WA

Position: Performed Inspection from on-site Lab at WPPSS No. 2 Nuclear Plant, Hanford WA. Assisted in weld repair, final system documentation and installation turnover. Work was performed to

ASME III, ASME V, ASME IX, ANSI b31.1, AWS D-1.1.

Jerry A. Kimball
Resume/3

12/80 to 7/81 WELDER:
 HUICO, Inc., Boise, ID

Position: Qualified and welded utilizing the following welding procedures
 up to 2" thickness, SMAW, GMAW, FCAW, SAW, GTAW.

3/79 to 5/80 NDE TECHNICIAN
 Nix Testing, Inc., Richland, WA

Position: From the on-site NDE Lab at WPPSS Plant No. 2, Hanford, WA.
 Performed NDE Inspection on installations of the primary
 structure and internal piping of the plant. Assisted in
 compiling records for final systems turnover. Work was
 performed to ASME III, ASME V, ASME IX, ANSI B31.1,
 AWS D-1.1.

The above Educational Background, Training Record and Employment History are true
to the best of my recollection and knowledge.

CERTIFICATION RESUME

Jerry A. Kimball
Fluor Daniel Northwest
17002

EDUCATION

- Emery County High School, Castledale, Utah
- Columbia Basin College, Pasco, Washington
- Plumbers & Steamfitters Local 598 Apprenticeship Program
- CWI #93100551

TECHNICAL COURSES

- Local 598 Apprenticeship Program
 - Radiography - 200 Hours
 - Liquid Penetrant - 12 Hours
 - MagParticle - 20 Hours
 - Ultrasonic - 80 Hours
 - EddyCurrent - 80 Hours
 - Visual Inspection - 40 Hours
 - Radiation Safety - 40 Hours

EXPERIENCE

- Fluor Daniel Northwest, Inc.
Richland, WA
October 1996 to
Present
 - Concrete Testing
 - Weld Inspection
 - Pressure Testing
 - Coatings
 - Hilti Bolts
- ICF Kaiser Engineers Hanford Co.
Richland, WA
December 1991 to
September 1996
 - Concrete Testing 6 months
 - Weld Inspection 12 months
 - Pressure Testing 12 months
 - Coatings 6 months
 - Hilti Bolts 6 months

Certification Resume
Jerry A. Kimball/2**- Kaiser Engineers Hanford Co. (Contd.)****NDE**

Fluorescent Penetrant Testing	1 month
RT Radiography	12 months
PT Liquid Penetrant	12 months
MT MagParticle	12 months
UT Ultrasonic (Thickness)	3 months

- C.T.I., Inc.

Anchorage, Alaska

June 1987 to
December 1991

Pressure Testing	6 months
Welding Visual	3 months
Coating	4 months
Structural Welding	6 months

NDE

RT Radiography	36 months
PT Liquid Penetrant	6 months
MT MagParticle	6 months
UT Ultrasonic (Thickness)	12 months

- UNC Nuclear Ind.

Richland, WA

January 1987 to
June 1987

Hilti Bolts	3 months
Pressure Testing	3 months
Mechanical (Piping and Vessels)	3 months
Welding Visual	3 months
Structural Welding	3 months

NDE

RT Radiography	3 months
----------------	----------

General

VT Visual Weld	3 months
----------------	----------

**Certification Resume
Jerry A. Kimball/3**

- Tri-Testing Richland, WA	April 1986 to October 1986
NDE RT Radiography MT MagParticle PT Liquid Penetrant	5 months 3 months 3 months
- Morrison Knudsen Cleveland, OH	July 1985 to April 1986
NDE RT Radiography PT Liquid Penetrant	8 months 2 months
General VT Visual Weld VT Structural	3 months 3 months
- Butler Services Group Braintree, MA	January 1985 to July 1985
NDE RT Radiography PT Liquid Penetrant MT MagParticle	6 months 2 months 2 months
- Anvil Corporation Bellingham, WA	February 1984 to March 1984
NDE RT Radiography	2 months
- Bestco Services Group Richland, WA	December 1981 to to September 1983
NDE RT Radiography PT Liquid Penetrant MT MagParticle UT Ultrasonic	10 months 6 months 8 months 2 months

Certification Resume
Jerry A. Kimball/4

- Huico, Inc.
Boise, ID

December 1980 to
July 1981

Other
Welder

8 months

- Nix Testing
Richland, WA

March 1979 to
May 1980

NDE

RT Radiography
PT Liquid Penetrant
MT MagParticle
UT Ultrasonic

6 months
3 months
3 months
3 months

American Welding Society

Certifies that Welding Inspector

Jerry A. Kimball

*has complied with the requirements of Section 6.1
of the AWS Standard for Qualification and
Certification of Welding Inspectors QCI-88*

93100551

CERTIFICATE NUMBER

October 1996

VALID DATE

October 1999

EXPIRATION DATE

James A. Key
PRESIDENT AWS

Alan C. Fisk
CHAIRMAN Q & C COMMITTEE

Fluor Daniel Northwest

NDE PERSONNEL CERTIFICATION RECORD

Name J. A. Kimball		Certification Period Effective Date 6/3/98 To 6/2/01	
Test Method RT		Level II	

Basis for Certification

I. Education

- A. Highest grade attained 12 . Diploma/GED earned? ☒ Yes ☐ No
- B. College level degree earned? ☐ Yes ☒ No Major _____
- C. Summary of additional education (when required) _____
598 NDE Apprenticeship Program completed.

II. Related Experience

SEE CERTIFICATE

- A. Employer _____ From _____ To _____ Month _____
Experience Summary _____
- B. Employer _____ From _____ To _____ Month _____
Experience Summary _____
- C. Employer _____ From _____ To _____ Month _____
Experience Summary _____
- D. Summary of additional experience (when required) _____

III. Indoctrination/Training

- A. General indoctrination complete? ☒ Yes
- B. Required training including that specified in Attachment TC-8-C complete? ☒ Yes
- C. Additional training complete when required? ☒ Yes ☐ N/A
- D. Summary of additional training (when required) _____

IV. Test Results:

A. Type	Grade
1. General	<u>90</u>
2. Specific	<u>90</u>
3. Practical	<u>98</u>
4. Composite	<u>93.2%</u>

V. Eye exam results acceptable for:

- ☒ ASME Sec. III ☒ SNT-TC-1A/ASME NQA-1

VI. Physically capable of performing assigned tasks:

- ☒ Acceptable

Remarks _____

Jon Elliott
NDE Level III or ESH&Q Manager

6-3-98
Date

NDE Assignment Date

Recertification

Basis for recertification _____

Recertified: ☐ Yes ☐ No

Certification Period: From _____ To _____

NDE Level III or ESH&Q Manager

Date

Fluor Daniel Northwest

NDE PERSONNEL CERTIFICATION RECORD

Name <u>J-A. Kim Ball</u>	Certification Period Effective Date <u>1/28/98</u> To <u>1/28/01</u>
Test Method <u>LIQUID PENETRANT</u>	Level <u>II</u>

Basis for Certification

I. Education

- A. Highest grade attained 12 . Diploma/GED earned? ☒ Yes ☐ No
- B. College level degree earned? ☐ Yes ☒ No Major _____
- C. Summary of additional education (when required) _____

II. Related Experience

- A. Employer FDNW From 10/96 To PRESENT Month 17
Experience Summary SEE RESUME
- B. Employer KEH From 1/95 To 9/96 Month 20
Experience Summary SEE RESUME
- C. Employer _____ From _____ To _____ Month _____
Experience Summary _____
- D. Summary of additional experience (when required) _____

III. Indoctrination/Training

- A. General indoctrination complete? ☒ Yes
- B. Required training, including that specified in Attachment TC 8-C, complete? ☒ Yes
- C. Additional training complete when required? ☐ Yes ☒ N/A
- D. Summary of additional training (when required) _____

IV. Test Results:

A. Type	Grade
1. General	<u>96.7</u>
2. Specific	<u>86.67</u>
3. Practical	<u>93</u>
4. Composite	<u>92.12</u>

V. Eye exam results acceptable for:

- ☒ ASME Sec. III ☒ SNT-TC-1A/ASME NQA-1

VI. Physically capable of performing assigned tasks:

- ☒ Acceptable

Remarks RE-CERTIFICATION BASED ON
CONTINUED SATISFACTORY PERFORMANCE

PREVIOUS LEVEL III

NDE Level III or ESH&Q Manager

Date

NDE Assignment Date

Recertification

Basis for recertification CONTINUED SATISFACTORY PERFORMANCE

Recertified: ☒ Yes ☐ No

Certification Period: From 1/28/98 To 1/28/01

Jon Elliott
NDE Level III or ESH&Q Manager

3-24-98
Date

Fluor Daniel Northwest		NDE PERSONNEL CERTIFICATION RECORD			
Name <u>Kimball JA</u>		Certification Period Effective Date <u>1/28/98</u> To <u>1/28/01</u>			
Test Method <u>MAGNETIC PARTICLE</u>		Level <u>II</u>			
Basis for Certification					
<p>I. Education</p> <p>A. Highest grade attained <u>12</u> . Diploma/GED earned? ☒ Yes ☐ No</p> <p>B. College level degree earned? ☐ Yes ☒ No Major _____</p> <p>C. Summary of additional education (when required) _____</p> <p>_____</p> <p>II. Related Experience</p> <p>A. Employer <u>FDNW</u> From <u>10/86</u> To <u>PRESENT</u> Month <u>17</u> Experience Summary <u>SEE RESUME</u></p> <p>B. Employer <u>KEH</u> From <u>1/95</u> To <u>2/96</u> Month <u>20</u> Experience Summary <u>SEE RESUME</u></p> <p>C. Employer _____ From _____ To _____ Month _____ Experience Summary _____</p> <p>D. Summary of additional experience (when required) _____</p> <p>_____</p> <p>III. Indoctrination/Training</p> <p>A. General indoctrination complete? ☒ Yes</p> <p>B. Required training, including that specified in Attachment TC-8 C, complete? ☒ Yes</p> <p>C. Additional training complete when required? ☐ Yes ☒ N/A</p> <p>D. Summary of additional training (when required) _____</p> <p>_____</p> <p>IV. Test Results:</p> <table style="width:100%;"> <tr> <td style="width:50%; vertical-align: top;"> <p>A. Type Grade</p> <p>1. General <u>93.3</u></p> <p>2. Specific <u>100</u></p> <p>3. Practical <u>100</u></p> <p>4. Composite <u>97.7?</u></p> </td> <td style="width:50%; vertical-align: top;"> <p>V. Eye exam results acceptable for:</p> <p>☒ ASME Sec. III ☒ SNT-TC-1A/ASME NOA-1</p> <p>VI. Physically capable of performing assigned tasks:</p> <p>☒ Acceptable</p> <p>Remarks <u>RE-CERTIFICATION BASED ON</u> <u>CONTINUED SATISFACTORY PERFORMANCE</u></p> </td> </tr> </table> <p><u>CERTIFIED BY PREVIOUS LEVEL III</u> <u>N/A</u> NDE Level III or ESH&Q Manager Date NDE Assignment Date</p>				<p>A. Type Grade</p> <p>1. General <u>93.3</u></p> <p>2. Specific <u>100</u></p> <p>3. Practical <u>100</u></p> <p>4. Composite <u>97.7?</u></p>	<p>V. Eye exam results acceptable for:</p> <p>☒ ASME Sec. III ☒ SNT-TC-1A/ASME NOA-1</p> <p>VI. Physically capable of performing assigned tasks:</p> <p>☒ Acceptable</p> <p>Remarks <u>RE-CERTIFICATION BASED ON</u> <u>CONTINUED SATISFACTORY PERFORMANCE</u></p>
<p>A. Type Grade</p> <p>1. General <u>93.3</u></p> <p>2. Specific <u>100</u></p> <p>3. Practical <u>100</u></p> <p>4. Composite <u>97.7?</u></p>	<p>V. Eye exam results acceptable for:</p> <p>☒ ASME Sec. III ☒ SNT-TC-1A/ASME NOA-1</p> <p>VI. Physically capable of performing assigned tasks:</p> <p>☒ Acceptable</p> <p>Remarks <u>RE-CERTIFICATION BASED ON</u> <u>CONTINUED SATISFACTORY PERFORMANCE</u></p>				
Recertification					
<p>Basis for recertification <u>CONTINUED SATISFACTORY PERFORMANCE.</u></p> <p>_____</p> <p>Recertified: ☒ Yes ☐ No Certification Period: From <u>1/28/98</u> To <u>1/28/01</u></p> <p><u>Jim Elliott</u> <u>3-29-98</u> NDE Level III or ESH&Q Manager Date</p>					

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

Kimball J.A.

Certification Period

Effective Date 3/1/98 To 3/1/01

Discipline Certified

Equip/Pipino/Vessels m1

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major _____

C. Summary of additional education (when required) _____

II. Related Experience

A. Employer FDNW From 10/96 To PRESENT Total Months 17Experience Summary SEE RESUMEB. Employer KEH From 3/95 To 2/96 Total Months 18Experience Summary SEE RESUME

C. Employer _____ From _____ To _____ Total Months _____

Experience Summary _____

D. Summary of additional experience (when required) _____

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☐ Yes☒ N/A

D. Summary of additional training (when required) _____

IV. Written Test,

Grade 76 %
or 80 %INITIAL

VI. Eye Exam Results:

☒ Acceptable

V. Capability Demonstration,

Grade N/A %

VII. Physically capable of performing assigned tasks:

☒ AcceptableRemarks RE-CERTIFICATION BASED ON
CONTINUED ACCEPTABLE PERFORMANCE3-1-98

Date

J. Thompson
Designated Level III or OIS Manager

Annual Evaluation

First Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

JEARY A. KIMBALL

Certification Period

Effective Date OCT 27 1997 To OCT 26 2000

Discipline Certified

C3 STRUCTURAL

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12

Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major

C. Summary of additional education (when required)

II. Related Experience

A. Employer CTI INC From 7-91 To 12-91 Total Months 6mo

Experience Summary SEE RESUME

B. Employer UNC NUCLEAR IND From 1-87 To 10-87 Total Months 3mo

Experience Summary SEE RESUME

C. Employer TEL-TESTING From 4-86 To 10-86 Total Months 3mo

Experience Summary SEE RESUME

D. Summary of additional experience (when required)

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☐ Yes☒ N/A

D. Summary of additional training (when required)

IV. Written Test,

Grade 15 %

or

V. Capability Demonstration,

Grade NA %

VI. Eye Exam Results:

☒ Acceptable

VII. Physically capable of performing assigned tasks:

☒ Acceptable

Remarks

Designated Level III or QIS Manager

Date

Annual Evaluation

First Evaluation

☒ Acceptable☐ Unacceptable

Basis: Structural Inspection Report

Designated Level III

Date 12/13/98

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

J. A. Kimball

Certification Period

Effective Date 3/7/97 To 3/6/00

Discipline Certified

GENERAL: G1 Visual Weld

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12

Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major _____

C. Summary of additional education (when required) _____

II. Related Experience

A. Employer ICF/KH/FDNW From 12/91 To Present Total Months 36+

Experience Summary See resume

B. Employer _____ From _____ To _____ Total Months _____

Experience Summary _____

C. Employer _____ From _____ To _____ Total Months _____

Experience Summary _____

D. Summary of additional experience (when required) current AWS certified welding inspector

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☐ Yes☒ N/A

D. Summary of additional training (when required) _____

IV. Written Test,

Grade 85 %

or

VI. Eye Exam Results:

☒ Acceptable

V. Capability Demonstration,

Grade N/A %

VII. Physically capable of performing assigned tasks:

☒ Acceptable

Remarks _____

CERTIFIED BY PREVIOUS LEVEL IV

Designated Level III or QIS Manager

Date

Annual Evaluation

First Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

J. A. Kimball

Certification Period

Effective Date 3/1/95 To 2/28/98

Discipline Certified

CIVIL: C7

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12 Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No Major

C. Summary of additional education (when required)

II. Related Experience

A. Employer ICF Kaiser Hanford From 12/91 To Present Total Months 3+

Experience Summary Performs inspections of anchor bolts installations

B. Employer UNC Nuclear From 1/87 To 6/87 Total Months 3

Experience Summary

C. Employer From To Total Months

Experience Summary

D. Summary of additional experience (when required)

III. Indoctrination/Training

A. General indoctrination complete? ☒ YesB. Required training complete? ☒ YesC. Additional training complete when required? ☐ Yes ☒ N/A

D. Summary of additional training (when required)

IV. Written Test,

Grade 85 %

or

VI. Eye Exam Results:

☒ Acceptable

V. Capability Demonstration,

Grade N/A %

VII. Physically capable of performing assigned tasks:

☒ Acceptable

Remarks

CERTIFIED BY PREVIOUS LEVEL III

Designated Level III or QIS Manager

Date

Annual Evaluation

First Evaluation

☐ Acceptable ☐ Unacceptable

Basis

Designated Level III

Date

Second Evaluation

☐ Acceptable ☐ Unacceptable

Basis

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

J.A. Kimball

Certification Period

Effective Date 6/9/97 To 6/8/00

Discipline Certified

G2-Ultrasonic Thickness Measurement

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12

Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major _____

C. Summary of additional education (when required) _____

II. Related Experience

A. Employer KEH/ICFKH/FDNW From 12/91 To present Total Months 3

Experience Summary see resume

B. Employer C.I.T. From 6/87 To 12/91 Total Months 12

Experience Summary see resume

C. Employer Bestco Services From 12/81 To 9/83 Total Months 2

Experience Summary see resume

D. Summary of additional experience (when required) 3 months - see resume

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☐ Yes☒ N/A

D. Summary of additional training (when required) _____

IV. Written Test,

Grade N/A %

or

V. Capability Demonstration,

Grade 98 %

VI. Eye Exam Results:

☒ Acceptable

VII. Physically capable of performing assigned tasks:

☒ Acceptable

Remarks _____

CERTIFIED BY PREVIOUS LEVEL III

Designated Level III or QIS Manager

7/28/97
Date

Annual Evaluation

First Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

Kim Ball J.A.

Certification Period

Effective Date 3/1/98 To 3/1/01

Discipline Certified

M3 PRESSURE TESTING

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major _____

C. Summary of additional education (when required) _____

II. Related Experience

A. Employer FDNIW From 10/1/96 To PRESENT Total Months 17

Experience Summary _____

B. Employer KEH From 12/91 To 2/96 Total Months 63

Experience Summary _____

C. Employer _____ From _____ To _____ Total Months _____

Experience Summary _____

D. Summary of additional experience (when required) _____

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☐ Yes☒ N/A

D. Summary of additional training (when required) _____

IV. Written Test,

Grade 90 % INITIAL
or

VI. Eye Exam Results:

☒ Acceptable

V. Capability Demonstration,

Grade N/A %

VII. Physically capable of performing assigned tasks:

☒ AcceptableRemarks RE-CERTIFICATION BASED
ON CONTINUED ACCEPTABLE PERFORMANCE3/1/98

Date

Designated Level III or QIS Manager

Annual Evaluation

First Evaluation

☒ Acceptable☐ UnacceptableBasis Continued Acceptable Performance
See Pressure Test Certification Summary (00059)

Designated Level III

Date

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis _____

Designated Level III

Date

Fluor Daniel Northwest

INSPECTOR CERTIFICATION RECORD

Name

Kimball JA

Certification Period

Effective Date 3/1/98 To 3-1-01

Discipline Certified

EXPANSION ANCHORS C5

Level

II

Basis for Certification

I. Education

A. Highest grade attained 12

Diploma/GED earned? ☒ Yes ☐ NoB. College level degree earned? ☐ Yes ☒ No

Major

C. Summary of additional education (when required)

II. Related Experience

A. Employer FDNW From 10/96 To PRESENT Total Months 17

Experience Summary SEE RESUME

B. Employer KEH From 3/95 To 9/96 Total Months 18

Experience Summary

C. Employer From To Total Months

Experience Summary

D. Summary of additional experience (when required)

III. Indoctrination/Training

A. General indoctrination complete?

☒ Yes

B. Required training complete?

☒ Yes

C. Additional training complete when required?

☒ Yes☒ N/A

D. Summary of additional training (when required)

IV. Written Test,

Grade 85 % INITIAL
or

VI. Eye Exam Results:

☒ Acceptable

V. Capability Demonstration,

Grade %

VII. Physically capable of performing assigned tasks.

☒ AcceptableRemarks RECERTIFICATION BASED ON
CONTINUED ACCEPTABLE PERFORMANCE.3/1/98
DateJ. L. Thompson
Designated Level III or QIS Manager

Annual Evaluation

First Evaluation

☐ Acceptable☐ Unacceptable

Basis

Designated Level III

Date

Second Evaluation

☐ Acceptable☐ Unacceptable

Basis

Designated Level III

Date

APPENDIX B

FLUOR DANIEL NORTHWEST PROCEDURES FOR NON-DESTRUCTIVE EXAMINATION

REFERENCE LIST

Practice 134 500 8104, Publication Date September 08, 1997
"FUNCTIONAL CHECKING OF MEASURING AND TEST EQUIPMENT"

Practice 134 500 8225, Publication Date September 08, 1997
"MATERIAL THICKNESS MEASUREMENTS"

Practice 134 500 8351, Publication Date July 15, 1998
"CONTROL OF MEASURING AND TEST EQUIPMENT"

Practice 134 511 1005, Publication Date January 12, 1998
"VISUAL EXAMINATION OF WELDMENTS"

The procedures listed here are proprietary. Copies are available in the Construction Work Package CWP No. W-178-04 which is included in the project files for Project W-178 "219-S Secondary Containment Upgrade"

APPENDIX C

PROCESS FOR PERFORMING INTERNAL VISUAL INSPECTION USING A VIDEO CAMERA

APPENDIX C

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1.0 SCOPE

The purpose of this Appendix is to describe the process used to perform the internal inspection of Tanks 101 and 102. A video system was used to inspect the inside of the tanks, since the radiation levels in the tanks were too high to allow a manned entry. The video inspection was taped and copies of those tapes are available in the 222-S facility regulatory file.

2.0 PROCESS

2.1 General Description

Each tank was video taped from two positions (Position 1 and Position 3 - See Figures C-1 and C-2). This was done to ensure that all positions on the inside of the tank have been video taped. In addition video taping from two positions can provide an additional view of any possible defects in the tank. These tapes are labeled as INDEX tapes and are the primary tapes used for additional inspections. Index tapes 1 and 2 are for Tank 101 and index tapes 3 and 4 are for Tank 102.

The camera was equipped with instrumentation that enabled an internal location to be determined on the outside of the tank. The data recorded, from the camera, were the pan (horizontal angle) and the tilt (vertical angle). This information could be converted to a distance from the longitudinal and top circumferential weld on the tank. The pan and tilt information was recorded on another set of tapes. These tapes are labeled as MONITOR tapes and have corresponding numbers to the index tapes (i.e. index tape 1 corresponds to monitor tape 1 and so forth).

2.2 Camera

The camera was installed in a containment that protected the camera from radiological contamination. This containment consisted of a metal cylinder and clear plastic dome. Figures C1 and C2 provide a graphical depiction of the viewing area. The containment was equipped with markings which allowed the orientation (pan and tilt) of the camera to be verified during operation. The camera was equipped with a manual 4 to 1 zoom lens. Due to the varying distance from the camera to the tank wall the field of view would change. The shortest distance of the field of view was approximately 4 inches square and the longest distance of the field of view was approximately 16 inches square. Image obtained by the camera was adequate to perform a visual examination.

2.3 Index Tapes

The Index tapes provide the primary inspection data. These tapes were made by as follows:

- a. The video equipment was on and functionally checked.
- b. The camera was rotated to the position shown as 0 degrees (east, see figures C1 and C2)
- c. The video index was reset and the video recorder set to record.
- d. The pan angle was recorded
- e. With out moving the pan the tilt was rotated one monitor frame from top to bottom. Pausing each frame to focus
- f. If the operator noticed an area of interest the camera would be centered on the area. If this step occurred the camera was reset to the previous pan and tilt angle prior to continuing.
- g. Once at the bottom the camera was move vertically back to the top position.
- h. The camera was rotated one monitor frame, the rotation (pan) angle and index number manually recorded.

- i. Steps e through h were repeated until the entire rotation (pan) of the tank was completed.

2.4 Monitor Tapes

Monitor Tapes were made to record the index number from the index tape and the pan and tilt angles all together. This information was necessary in the event that a location from inside the tank was needed to be located on the outside of the tank. Given the Pan and Tilt the position can be determined from formulas in Figures C-3 and C-4

FIGURE C-1
GRAPHIC DESCRIPTION FOR CAMERA AT POSITION 1

TOP VIEW

$$\begin{aligned} X &= 8 \frac{1}{2}'' \\ Y &= 3 \frac{7}{16}'' \\ Z &= 54'' \end{aligned}$$

CAMERA RANGE

$$\text{PAN} = 10^\circ - 350^\circ$$

$$\text{TILT} = 45^\circ - 180^\circ$$

CAMERA PRESENTS

$$\text{PAN} = 180^\circ$$

$$\text{TILT} = 90^\circ$$

TANK QUAD I & II:

0°-180°

TANK QUAD III & IV:

180°-360°

POSITION #1

APPENDIX C

FIGURE C-2
GRAPHIC DESCRIPTION FOR CAMERA AT POSITION 3

TOP VIEW

X = $8 \frac{1}{2}$ "
Y = $3 \frac{7}{16}$ "
Z = 54"

CAMERA RANGE

PAN = $10^{\circ} - 350^{\circ}$

TILT = $45^{\circ} - 180^{\circ}$

CAMERA PRESENTS

PAN = 180°

TILT = 90°

TANK QUAD I & II:

$180^{\circ} - 360^{\circ}$

TANK QUAD III & IV:

$0^{\circ} - 180^{\circ}$

POSITION #3

FIGURE C-3
FORMULAS FOR DETERMINING OUTSIDE POSITION FROM PAN AND TILT ANGLES

POSITION #1 & #3 – TANK QUADRANTS 1 & 2

PROBLEM:

FIND THE POSITION ON THE OUTSIDE OF THE TANK FROM THE VIDEOTAPE OF THE INSIDE OF THE TANK.

GIVEN:

FIND:

$$b = 180 - \text{PAN} \quad c = \sin^{-1} \left[\frac{X (\sin b)}{Z} \right] \quad a = 180 - b - c$$

POSITION #1: "A" = a

POSITION #3: "A" = $a + 180^\circ$

$$L = \frac{Z (\sin a)}{\sin b} \quad e = 180 - \text{TILT} \quad F = \frac{L (\sin 90)}{\sin e} \quad T = \sqrt{e^2 + L^2}$$

POSITION #1 & #3: "D" = $T + Y$

FIGURE C-4
FORMULAS FOR DETERMINING OUTSIDE POSITION FROM PAN AND TILT ANGLES

POSITION #1 & #3 – TANK QUADRANTS 3 & 4

PROBLEM:

FIND THE POSITION ON THE OUTSIDE OF THE TANK FROM THE VIDEOTAPE OF THE INSIDE OF THE TANK.

GIVEN:

Z=54.00" (RADIUS OF TANK)
X= 5.50" (DISTANCE FROM CENTER)

FIND:

$$b = \text{PAN} - 180 \quad c = \sin^{-1} \left[\frac{X (\sin b)}{Z} \right] \quad a = 180 - b - c$$

POSITION #1: $\boxed{"A" = 360 - a}$

POSITION #3: $\boxed{"A" = 180 - a}$

$$L = \frac{Z (\sin a)}{\sin b} \quad e = 180 - \text{TILT} \quad F = \frac{L (\sin 90)}{\sin e} \quad T = \sqrt{e^2 + L^2}$$

POSITION #1 & #3: $\boxed{"D" = T + Y}$

APPENDIX D

**EVALUATION OF THE RESULTS OF THE NONDESTRUCTIVE
EXAMINATION OF TANKS 101 AND 102**

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1.0 SCOPE

The purpose of this Appendix is to document the evaluations of the non-destructive examinations performed on Tanks 101 and 102. The information developed here is used as a basis for the conclusions presented in the "Integrity Assessment for Tanks 101 and 102" (Reference 1).

INSPECTION METHODS

The Department of Ecology's Publication No.94-114 "Guidance of Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste" (Reference 2) recommends that existing tanks be evaluated by a leak test were feasible. Where a leak test is not feasible tanks may be assessed by a external inspection combined with an internal inspection and a non destructive examination such as a Ultrasonic Testing. The internal visual examination may be performed remotely (i.e. with a video camera) if necessary. Tanks 101 and 102 were inspected by an external examination, an internal visual examination and ultrasonic testing (UT).

INSPECTION REPORTS

Inspection reports for the nondestructive examinations are included in Attachments 1 through 3. These reports are final reports and represent inspections made throughout the examination and construction phases. Attachment 1 is the inspection report, which summarizes the inspection of the exterior of tanks. Attachment 2 summarizes the inspection of the interior of the tanks. Also included in Attachment 2 is the method used to determine the location of points inside the tank from the different camera positions. Attachment 3 summarizes the Ultrasonic Testing. The order that the inspection reports are presented in this Appendix is base on the organization of the data presented and is not chronological.

2.0 VISUAL EXAMINATION

The interior and exterior of the tanks were inspected, looking for areas that were discolored, cracked, or pitted. A Quality Control (QC) inspector performed a visual inspection of the tanks. QC inspector qualification information and the inspection procedure used are located in Appendix A and B of this document.

Exterior Inspection:

When the exterior of the tanks were visually inspected, the QC inspector noted that the tanks were in good condition with some discoloration on the bottom of the tanks. The discoloration could be removed using a power brush (Attachment 1). The fact that the discoloration could be removed is an indication of surface stain and not a condition, which would deteriorate the stainless steel tank shell. The inspection report in Attachment 1 also documents inspection of the modification of the original tank legs. Carbon steel pads (feet) which were welded to the end of the leg were removed. The inspection report documents that the tank shell was not damaged during the removal process.

Interior Inspection:

Inspection of the tank interior was done using a video camera, since the radiation dose and contamination levels inside the tank were too high for manned entry. The method use to video the inside of the tank is presented in Appendix C of this document. The QC inspector reviewed the videotapes and the results of this review are contained in Attachment 2. As noted in the inspection

report for the tank interior, the inspector saw what appeared to be "anomalies" in the tank shell. Further review and evaluation of these anomalies was made by FDNW QC and Engineering. If necessary and where possible this re-evaluation was performed by looking at the anomaly with the camera at the second location. The method use to determine the second camera point is included in Attachment 2. The QC Inspector identified 17 anomalies or possible defects. Due to the volume of data, Table 1 was developed to summarize the results of this review. In Table 1 each anomaly location was given a letter. The table also includes information taken from the inspection report (Attachment 2), the location of the second camera data point, and the results of the QC/Engineering re-evaluation. To the extent possible still pictures of each point identified in Table 1 were made. These pictures are included in Figures 1 through 24.

Summary of the Re-evaluation of the Anomalies

Of the 17 anomalies identified 10 were noted as minor corrosion, pitting, or potential weld problems. The Re-evaluation of these anomalies shows that none of these areas were defects in the tank shell. The inspector also found six areas with marks that are possibly cracks (seven are identified in Table 1 however point C and N are the same point). There are five areas in Tank 101 (points C & N, H, J, K, M) and one area in Tank 102 (point R). When these points were viewed from a different camera angle, three of the marks in Tank 101 could be dismissed (point J, K, and M). For the remaining points (points C & N, H, and R) the pictures from the camera did not conclusively show that the anomalies are or are not cracks. The marks might also be from a grinder during the original fabrication, a surface imperfection in the plate during the manufacturing process, or something stuck to the surface. The worst case condition would be if the anomalies were cracks. If the anomalies are cracks they do not appear to be deep enough to cause the tanks to leak. This conclusion is also supported by the fact that the high pressure cleaning of the tanks used a water jet at 8000 psi. The pictures show that the water jet went over the area of the suspect crack. If the crack was through the tank wall the tank would have leaked during cleaning and no leak was found during cleaning. The operating pressure of the tank is largest at the bottom. The required thickness required to withstand operating pressure at the bottom tank is 0.062 inches. This leads to the conclusion that the tanks, even with the cracks will not leak for many years. The orientation of the marks are vertical, if the mark was actually a crack the tank would leak long before the crack would be large enough for the tank to structurally fail and collapse.

3.0 ULTRASONIC TESTING

Ultrasonic testing (UT) was used to determine the thickness of the top, bottom, and sides of the tank shell. A qualified QC inspector following an approved procedure and using calibrated equipment performed UT testing. The QC inspector qualification information and the inspection procedure use are located in Appendix A and B of this document. Areas were selected at random for the UT. The inspection reports for the UT testing are in Attachment 3. More than 150 measurements were taken on each tank with the minimum measurement being 0.48 inches (nominal 0.5 inches). The tank wall in the area under the cooling jacket was not measured since destructive removal of the cooling jacket would have been necessary to take the measurements. The decision not to remove the cooling jacket was made for the following reasons: first, the measurements taken demonstrate that the tank shell still has its original thickness; and second, the cooling jacket acts as an additional containment if the tank shell was to ever leak.

APPENDIX D

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4.0 REFERENCES

1. HNF-4589, Rev. 0, June 1999, David S McShane, Fluor Daniel Northwest
"Integrity Assessment Report of Tanks TK-101 and TK-102"
2. Publication No. 94-114, Washington State Department of Ecology, June 1994
"Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste"
3. WAC 173-303- 640, *"Tank Systems"*, January 1998
"Dangerous Waste Regulations"

TABLE 1,
SUMMARY OF EVALUATION OF INSPECTION DATA BY QUALITY CONTROL AND ENGINEERING

POINT NUMBER	1ST CAMERA LOC.		ANOMALY DESCRIPTION	2nd CAMERA LOC.		COMMENT AND CONCLUSION
	TAPE NUMBER	TAPE INDEX		TAPE NUMBER	TAPE INDEX*	
A	Tape # 1	14:30	Minor Corrosion	Tape # 2	1:14:10	No Corrosion Material Stuck to Side Wall
B	Tape # 1	20:30	Minor Pitting	Tape # 2	1:11:42	No Pitting Material Stuck to Side Wall
C	Tape # 1	47:00	Possible Crack	Tape # 2	55:42	Same as Point Number N. Possible Crack
D	Tape # 1	48:20	Minor Corrosion	Tape # 2	NA	No Corrosion Material Stuck on Side wall
E	Tape # 1	1:05:45	Minor Pitting	Tape # 2	NA	No Pitting Material Stuck to Side Wall
F	Tape # 1	1:09:20	Root Concavity (Weld)	Tape # 2	NA	No Root Concavity; Weld is fillet weld, what appears to be concavity is multiple pass on the fillet weld.
G	Tape # 1	1:22:20	Minor Pitting	Tape # 2	4:23	No Pitting Material Stuck to Side Wall
H	Tape # 1	1:28:00	Possible Crack	Tape # 2	13:02	Possible Crack
J	Tape # 1	1:34:00	Possible Crack	Tape # 2	23:56	No Crack Visible
K	Tape #2	5:20	Possible Crack	Tape # 1	NA	No Crack Marks on the Bottom from the Cleaning Process
L	Tape #2	17:15	Minor Corrosion	Tape # 1	1:29:14	No Corrosion Material Stuck on Side wall
M	Tape #2	48:00	Possible Crack	Tape # 1	NA	No Crack
N	Tape #2	55:42	Possible Crack	Tape # 1	47:06	Same as Point Number C. Possible Crack
P	Tape #3	26:30	Minor Corrosion	Tape # 4	NA	No Corrosion Material Stuck on Side wall
R	Tape #3	1:30:56	Possible Crack	Tape # 4	NA	Possible Crack
S	Tape # 4	32:00	Corrosion	Tape #3	29:20	No Corrosion Material Stuck on Side wall
T	Tape #4	1:15:50	Porosity in Weld	Tape #3	NA	No Porosity in weld the mark appears to be something stuck to the Weld

*See Attachment 2 for calculation of second tape index.

04/30/99 10:55 FAX

03

SP #68

[illegible]

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ATTACHMENT 2

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002

04/30/99 10:55 FAX

QC INSPECTION REPORT				Report No.
Work Order No. <i>Phase II</i> <i>Clp# W178-04</i>	Project No. <i>W-178</i>	Inspection Plan No. <i>N/A</i>	Open Item No. <i>N/A</i>	<i>W178-04-11</i>
Title of Work <i>Viewing tapes on Tanks (Tanks)</i>				CNR No. <i>N/A</i>
Reviewed By:				
Description of Inspection Activity and Results (Be explicit and comprehensive)	Acc.	Ref.	Other Documentation	
<i>Tape #1</i>				
<i>Time 14:30 Minor Corrosion</i>				
<i>20:30 Minor Pitting</i>				
<i>* 47:00 Possible Crack</i>				
<i>* 48:20 Minor Corrosion</i>				
<i>* 1:05:45 Minor Pitting</i>				
<i>1:09:20 Root Concavity.</i>				
<i>1:22:20 Minor Pitting</i>				
<i>1:28:00 Possible Crack</i>				
<i>1:34:00 Possible Crack</i>				
<i>Tape #2</i>				
<i>Time 5:20 Possible Crack</i>				
<i>17:15 Minor Corrosion</i>				
<i>5:42 - 48:00 Possible Crack</i>				
<i>Tape #3</i>				
<i>Time 26:30 Minor Corrosion</i>				
<i>1:30:56 Possible Crack</i>				
<i>Tape #4</i>				
<i>Time 32:00 Corrosion</i>				
<i>1:15:50 Porosity in Weld</i>				
<div> <div> Procedure Used: ☐ N/A ☐ Visual Weld Inspection ☐ Dye Penetrant Testing ☐ Leak Testing ☐ Concrete Testing ☐ Soil Testing ☒ Other </div> <div> Procedure No. <i>Information Only</i> </div> <div> M & TE Used: ☒ N/A Description _____ Number _____ Expiration Date _____ </div> </div>				
Inspector <i>[Signature]</i>		Employee No. <i>17002</i>	Date <i>4/20/99</i>	

A-6002-242 (03/97)

ATTACHMENT 2

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TOP VIEW OF TK-101
N #1

TOP VIEW OF TK-101
POSITION #3

TAPE #1 - POSITION #1					TAPE #2 - POSITION #3			
TAPE ID NO.	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE	TANK ANGLE GRAPHICALLY DETERMINED	CAMERA PAN ANGLE GRAPHICALLY DETERMINED	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE
A	14:30	212.40	98.64	351.58	46.49	1:14:10	45.36	97.56
B	20:30	224.40	96.12		62.42	1:11:42	59.04	94.68
C	47:08	296.64	88.51		134.61	NONE	NONE	NONE
D	48:20	296.64	126.00		134.61	NONE	NONE	NONE
E	1:05:45	349.56	128.52		172.95	NONE	NONE	NONE
F	1:09:20	356.04	UNKNOWN	163.76	177.33	NONE	NONE	NONE
G	1:22:20	158.76	UNKNOWN		339.32	4:23	338.04	95.04
H	1:28:00	142.96	UNKNOWN		307.34	13:02	312.84	123.84
J	1:34:00	115.20	UNKNOWN		273.88	23:56	281.16	139.68

TAPE #2 - POSITION #3					TAPE #1 - POSITION #1			
TAPE ID NO.	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE	TANK ANGLE GRAPHICALLY DETERMINED	CAMERA PAN ANGLE GRAPHICALLY DETERMINED	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE
K	5:20	338.04	149.76	161.79	165.08	NONE	NONE	NONE
L	17:15	298.80	96.48	128.61	136.33	1:29:14	136.44	UNKNOWN
M	48:00	NONE	NONE	343.26	339.32	NONE	NONE	NONE
N	55:42	131.40	87.48	303.01	292.68	47:06	296.64	85.68

ATTACHMENT 2

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TOP VIEW OF TK-102
POSITION #1

TOP VIEW OF TK-102
POSITION #3

TAPE #3 - POSITION #1					TAPE #4 - POSITION #3			
TAPE ID NO.	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE	TANK ANGLE GRAPHICALLY DETERMINED	CAMERA PAN ANGLE GRAPHICALLY DETERMINED	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE
P	26:30	271.44	128.52	282.65	112.96	NONE	NONE	NONE
R	1:30:56	7.20	132.12	5.34	185.06	NONE	NONE	NONE

TAPE #4 - POSITION #3					TAPE #3 - POSITION #1			
TAPE ID NO.	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE	TANK ANGLE GRAPHICALLY DETERMINED	CAMERA PAN ANGLE GRAPHICALLY DETERMINED	TAPE INDEX	CAMERA PAN ANGLE	CAMERA TILT ANGLE
S	32:00	96.12	149.04	264.97	254.90	29:22	258.12	147.24
T	1:15:45	286.92	94.68	117.64	126.62	NONE	NONE	NONE

ATTACHMENT 2

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CAMERA POSITION #1			
TAPE ID NO.	DISTANCE "D" GRAPHICALLY DETERMINED	CAMERA TILT ANGLE	DISTANCE "H" GRAPHICALLY DETERMINED
A, TAPE 1	62.57	98.64	12.95
A, TAPE 2	46.23	97.56	9.57
B, TAPE 1	60.97	96.12	9.97
B, TAPE 2	48.33	94.68	7.39
C, TAPE 1	48.47	88.51	0.00
D, TAPE 1	48.47	126.00	38.65
E, TAPE 1	43.64	128.52	38.18
F, TAPE 1	43.52	UNKNOWN	UNKNOWN
G, TAPE 1	63.65	UNKNOWN	UNKNOWN
G, TAPE 2	44.73	95.04	7.38
H, TAPE 1	62.01	UNKNOWN	UNKNOWN
H, TAPE 2	46.98	123.84	34.94
J, TAPE 1	57.63	UNKNOWN	UNKNOWN
J, TAPE 2	52.26	139.68	65.02
P, TAPE 3	52.71	128.52	45.40
R, TAPE 3	43.57	132.12	42.83

CAMERA POSITION #2			
TAPE ID NO.	DISTANCE "D" GRAPHICALLY DETERMINED	CAMERA TILT ANGLE	DISTANCE "H" GRAPHICALLY DETERMINED
K, TAPE 2	44.12	149.76	79.12
L, TAPE 2	48.15	96.48	8.91
M, TAPE 2	64.13	NONE	UNKNOWN
N, TAPE 2	60.37	87.48	0.00
N, TAPE 1	49.08	85.68	0.00
S, TAPE 4	54.10	149.04	93.62
S, TAPE 3	55.91	147.24	90.33
T, TAPE 4	50.00	94.68	7.53

ATTACHMENT 3

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04/30/99 10:55 FAX

001

SD #31

QC INSPECTION REPORT				Report No.
Work Order No.	Project No.	Inspection Plan No.	Open Item No.	CNCR No.
2195/SP/Plant	Phase II W178-04	N/A	N/A	N/A
Title of Work				Reviewed By:
UT Thickness Measurements on tanks 101 And 102				
Description of Inspection Activity and Results (Be explicit and comprehensive)		Acc.	Rej.	Other Documentation
Perform UT thickness measurements on several random locations on tank 101 and 102. Thickness Readings were taken on topside, bottomsides And 360° around the sides of both tanks all UT Readings were recorded on tank Drawings. Three area's were found on topside of both tanks and these area's were noted on drawings. These area's appeared to be really thin but After further Inspection And NDE the transducer was reading the thickness of the soil Cement used to decon the tanks. The soil Cement was removed And these Area's were UT tested again And the thickness was Approx 1/2".				
UT Machine was calibrated on step wedges listed below prior to And after Each use.

Procedure Used: ☐ N/A ☐ Visual Weld Inspection ☐ Dye Penetrant Testing ☐ Leak Testing ☐ Concrete Testing ☐ Soil Testing ☒ Other		Procedure No. <u>UT</u> M & TE Used: ☐ N/A Description <u>Cal-Blocks</u> Number <u>0995</u> <u>1035</u> Expiration Date <u>3/12/00</u> <u>12/2/99</u>		
Inspector <u>Jimmy Hunter</u>		Employee No. <u>17002</u>		Date <u>4/8/99</u>

A-6002-242 (03/97)

ATTACHMENT 3

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QC INSPECTION REPORT				Report No.
Work Order No.	Project No. <u>Phase II</u> <u>W-178</u>	Inspection Plan No.	Open Item No.	CNCR No.
Title of Work <u>UT Thickness Measurements on Tank 101 And Tank 102</u>				Reviewed By:
Description of Inspection Activity and Results (Be explicit and comprehensive)		Acc.	Rej.	Other Documentation
<u>Perform UT thickness on several random locations on tank 101 And tank 102. UT Readings were taken from topside, bottomside And 360° Around the Sides of tanks All UT Measurements were recorded on tank Drawings Three Areas were noted on topside (two on TK 101, one on TK-102) where UT Readings were between .06" And .13" All other Readings were Approx .5 (1/2")</u>				
		Procedure Used: ☐ N/A ☐ Visual Weld Inspection ☐ Dye Penetrant Testing ☐ Leak Testing ☐ Concrete Testing ☐ Soil Testing ☒ Other		Procedure No. <u>UT thickness</u>
Inspector <u>[Signature]</u>		Employee No. <u>17002</u>		Date

A-6002-242 (03/97)

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46-4231

101 TANK 101 (TOP)

I.D. NO.	
REF. DWG	
SYSTEM <i>TANK 101 (TOP)</i>	
PROJECT <i>W-178</i>	WORK/SHOP ORDER
DRAWN BY <i>[Signature]</i>	SKETCH NO. <i>7-101</i> REV <i>0</i>

ATTACHMENT 3

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ATTACHMENT 3

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ID NO.	
REF. DWG	
SYSTEM	TK-101 (Bottom)
PROJECT	6778
DRAWN BY	7/10/8
WORK/SHOP ORDER	
SKETCH NO.	8
REV	

NOT TO SCALE

IID NO.	
REF. DWG	
SYSTEM	TK-102 (Bottom)
PROJECT	WORKSHOP ORDER
DRAWN BY	SKETCH NO. REV
	13/02/00

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ID NO.	REF. DWG		
SYSTEM	Tank 102 (Top)		
PROJECT	W178	WORK/SHOP ORDER	
DRAWN BY	[Signature]	SKETCH NO.	REV 7-802

FIGURE 1
POINT A TAPE # 1

The dark spots could be possible corrosion. However further review of the video indicates that the dark spots are something stuck to the sidewall (shell) of the tank.

FIGURE 2
POINT A TAPE # 2

Comment: The dark spots are what is being viewed at possible Pitting. Upon further review the spots are something stuck to the side of the tank.

FIGURE 3
POINT B TAPE # 1

Comment: The dark spots are what is being viewed at possible Pitting. Upon further review the spots are something stuck to the side of the tank.

FIGURE 4
POINT B TAPE # 2

Comment: Upon further review the dark spots are something stuck to the side of the Tank.

FIGURE 5
POINT C TAPE # 1

Comments: The area noted as a possible crack is a stain. Upon further review of the video the stain continues down 18 to 24 inches.

FIGURE 6
POINT D TAPE # 1

The area that appears to be corroded, the possible corrosion is in reality something, which is adhered to the tank. The brightest spots in the picture are the cleaned surface of the stainless steel tank shell.

FIGURE 7

POINT E TAPE # 1

Comment: Upon further review of the area no pitting is noticed.

FIGURE 8
POINT F TAPE # 1

Comments: The weld shown above is a fillet weld. The area that is possible weld root concavity is not. The area shown is surface of the tank shell and the weld comes out not in.

FIGURE 9

POINT G TAPE # 1

Comment: Upon further review no pitting is visible.

FIGURE 10
POINT G TAPE # 2

Comment: Upon further review no pitting is visible. The light areas are the stainless steel where the high-pressure water has shined the metal. The darker areas are where the high-pressure water did not remove the scale.

FIGURE 11

POINT H TAPE # 1

Comment:

The possible crack is more likely a surface imperfection filled with dirt. However, the possibility of a crack does exist. If this is a crack it is minor and just at the surface. The crack is vertical, which means if the crack does enlarge the tank will leak long before the tank fail, structurally.

FIGURE 12
POINT H TAPE # 2

Comment: The possible crack is more likely a surface imperfection filled with dirt. However, the possibility of a crack does exist. If this is a crack it is minor and just at the surface. The crack is vertical, which means if the crack does enlarge the tank will leak long before the tank fails structurally.

FIGURE 13
POINT J TAPE # 1

Comment: Upon further review no crack is apparent.

FIGURE 14
POINT J TAPE # 2

Comment: Upon further review no crack is visible.

FIGURE 15
POINT K TAPE # 2

Comment: Upon further review no cracks are visible.

FIGURE 16
POINT L TAPE # 1

Comment: Upon further review no corrosion is visible. What is visible here is the tank with the scale that could not be removed by high-pressure water.

FIGURE 17

POINT L TAPE # 2

Comment: Upon further review no corrosion is visible.

FIGURE 18

POINT M TAPE # 2

Comment: The area of concern is probably a stain.

FIGURE 19
POINT N TAPE # 2

Comment: The area of concern, possible crack is just stain. There are several other stains that are all parallel. However, there is a possibility that this is a crack.

FIGURE 20
POINT P TAPE # 3

Comment: Upon further review no corrosion is present.

FIGURE 21
POINT R TAPE # 3

Comment: The area of concern is very faint and could be a crack. Picture from the other camera position is not available. If this is a crack the crack appears to stop at the weld. This could also be a mark or surface imperfection.

FIGURE 22
POINT S TAPE # 4

Comment: Upon further review no corrosion is visible.

FIGURE 23
POINT S TAPE # 3

Comment: Upon further review no corrosion is visible.

FIGURE 24
POINT T TAPE # 4

Comment: Upon further review no porosity is visible.