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Final Results of Double-Shell Tank 241-AY-102 Ultrasonic Inspection

C. E. Jensen

Lockheed Martin Hanford Corporation, Richland, WA 99352 U.S. Department of Energy Contract DE-AC06-87RL10930

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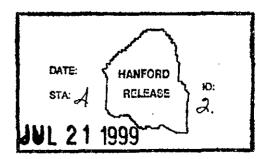
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Abstract: This document presents the results and documentation of the nondestructive ultrasonic examination of tank 241-AY-102. A tank inspection supplier was retained to provide and use an ultrasonic examination system (equipment, procedures, and inspectors) to scan a limited area of double-shell tank 241-AY-102 primary tank wall and welds. The inspection found some indication of insignificant general and local wall thinning with no cracks detected.

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FINAL RESULTS OF DOUBLE-SHELL TANK 241-AY-102 ULTRASONIC INSPECTION

Prepared By: _	R. W. Lysher, COGEMA Engineering Corporation	Date <u>7/19/99</u>
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Approved By:	X. V. Scott, Manager COGEMA Engineering Corporation	Date <u>7//9/99</u>

Final Results of Double-Shell Tank 241-AY-102 Ultrasonic Inspection

July 13, 1999

Prepared by
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for

Lockheed Martin Hanford Corporation Richland, Washington

Final Results of Double-Shell Tank 241-AY-102 Ultrasonic Inspection

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Double-Shell Tank System Integrity Assessment: FINAL RESULTS OF DOUBLE-SHELL TANK 241-AY-102 ULTRASONIC INSPECTION

1.0 INTRODUCTION

In May 1996, the Tank Waste Remediation System (TWRS) Decision Board recommended, and the U.S. Department of Energy-Richland Operations Office (DOE-RL) agreed, that the condition of the double-shell tanks (DST) should be determined by ultrasonic (UT) inspection of a limited area in six of the 28 DSTs. The Washington State Department of Ecology (WDOE) has agreed with the strategy of limited UT inspection of six DSTs. Data collected during the UT inspections will be used to assess the condition of the tanks, judge the effects of past corrosion control practices, and satisfy a regulatory requirement to periodically assess the integrity of waste tanks.

In November 1996, the primary and secondary walls of DST 241-AW-103 were remotely examined to determine if Hanford DST walls could be inspected without removing the existing surface rust and scale. The successful completion of this inspection represented the first UT inspection of a Hanford DST (Leshikar 1997).

Based on the results of the initial inspection, a statement of work (SOW)(Pfluger 1999) was prepared for the remaining DST inspections scheduled for Fiscal Year (FY) 1999. The service of COGEMA Engineering Corporation (COGEMA Engineering) was retained to provide an UT examination system (equipment, procedures, and inspectors) and perform the inspection.

Tank 241-AY-102 was selected as one of the six sample tanks that represent the complete 28-tank population. The tank began receiving waste in 1976 and is currently classified as a dilute waste tank (DN). The current tank level is approximately 185 inches (Hanlon 1999). From 1976 to present, the waste temperature in the tank has not exceeded 123°F with the average temperature holding at approximately 68°F. Although the tanks are expected to have similar performance, the selection of tanks is purposely biased towards tanks whose primary walls may be more likely to be degraded by corrosion. The tank selection criteria (Schwenk and Scott 1996) considered variables that may influence corrosion, such as waste physical characteristics, waste chemistry, temperature, and age. Tank 241-AY-102 was chosen because it is older, had significant waste height fluctuations, and the material of construction is more conducive to cracking in the knuckle region.

2.0 OBJECTIVE / SCOPE

This report presents the results of the UT examination of DST 241-AY-102 with attention focused on the primary tank wall base metal and welds. Issuance of this report meets FY 1999 Performance Agreement TWR 6.3.1. The criteria, deliverables, and responsibilities for the UT examination are described in Pfluger 1999.

3.0 EXAMINATION EQUIPMENT DESCRIPTION

P-scan – P-scan is the name of the computerized pulse-echo UT inspection system used by the examination vendor. The P-scan system is manufactured by Force Institute in Denmark. It acquires data from zero and angle beam transducers mounted on the crawler, allows real-time analysis, and records the data in electronic memory for post inspection analysis. Force Institute has designated "P-scan mode" to represent the angle beam (flaw length) view and "T-scan mode" to represent the zero beam (thickness) view. T-scan mode is used for normal operation and, if crack-like indications are detected, the P-scan mode is employed. More information on the procedure for the P-scan system is found in Jensen 1999.

<u>Crawler (UT Scanner)</u> – The crawler is a remotely-controlled device that delivers the ultrasonic sensors to the tank walls (Figure 2). It weighs approximately 30 pounds and has dimensions of approximately 21" wide x 18" long x 6" high. The crawler attaches to the tank wall with two pairs of magnetic wheels. A traveling bridge on the crawler is outfitted with ultrasonic sensors. As the crawler moves slowly forward, the sensors glide from side-to-side over the tank wall surface. Water couplant is continuously fed to each transducer at a rate needed to maintain an acceptable signal.

Overview Camera – This camera was deployed to observe the area immediately around the inspection area and to aid crawler deployment in the annulus.

<u>Sideview Camera</u> – This camera and light system were installed in a riser adjacent to the inspection riser to provide an overall view of the inspection process.

<u>Data Acquisition Control Center</u> – A pull-type trailer was used to house the crawler controls, video monitors, and the data collection and evaluation hardware. The trailer was located outside the AY tank farm boundary fence (Figure 2).

<u>Deployment Tool</u> – This device was specifically designed to insert and retrieve the scanner from the DST annular space. The scanner sits on a platform that is manually lowered to the appropriate elevation. That platform has cables attached that can be controlled to move the scanner platform into contact with the examination surface. The scanner is then driven onto the surface. The deployment tool is retracted until scanner removal is required.

4.0 PERFORMANCE DEMONSTRATION TESTS

Prior to field use, COGEMA Engineering's UT examination system satisfactorily completed a performance demonstration test (PDT). The test was performed prior to examination of tank 241-AN-107 in FY 1998 (Pfluger 1998). The test was conducted to qualify personnel, test procedures, and ensure the equipment's ability to detect and size wall thinning, pits, and cracks in a series of test plates with artificial and natural defects. The PDT was performed on an actual tank mockup located in the 306E facility located in the Hanford site 300 area. This mockup also demonstrated the successful deployment and retrieval of the equipment. Pacific Northwest National Laboratory report (Attachment 1) PNNL-12233 *Ultrasonic Examination of Double-Shell Tank 241-AY-102* provides details of the complete examination and brief evaluation of the PDT.

5.0 ULTRASONIC EXAMINATION DESCRIPTION

5.1 Primary Wall and Weld Inspection

The tank inspection was performed under Job Control System (JCS) work package 2E-98-02406/W during early calendar year 1999. All work steps, guidelines, procedures, personnel responsibilities, and protocol for the inspection (Pfluger 1999) were included in the subject work package.

An updated version of the remotely-controlled, steerable crawler was used to deliver the UT sensors to the tank wall. The crawler was deployed through a 24-inch annulus inspection riser number 18B. The crawler attached to the tank wall with two pairs of magnetic wheels. A traveling bridge on the crawler was outfitted with UT sensors. As the crawler moved slowly forward, the sensors glided from side-to-side over the inspection surface. Water couplant was continuously fed to each transducer at a rate needed to attain an acceptable signal. For examination of the wall, one dual element 0° transducer and two 45° shear wave transducers were used. To detect cracks perpendicular to welds, two opposing 45° shear wave transducers were directed parallel to the weld. To detect cracks parallel to the weld, a 60° shear-wave transducer was directed toward the weld and a dual element 0° transducer was also included. Welds were examined from both sides of the weld crown.

Data and images from both systems were returned to a control center located just outside the AY tank farm fence (Figure 2). The control center housed the crawler controls, video monitors, and data collection and evaluation software/hardware. The UT inspector continuously monitored the signal for reportable indications. The inspection was viewed by a camera and lighting system deployed in an adjacent riser.

6.0 GENERAL REQUIREMENTS AND INSPECTION CRITERIA

The FY 1999 Performance Agreement TWR 6.3.1 is stated below:

"The contractor shall perform ultrasonic examination of four double-shell tanks (primary walls straight portion) to the extent described in HNF-2820, "Engineering Task Plan for the Ultrasonic Inspection of Hanford Double-Shell Tanks". Completion is met when ultrasonic examination on four double-shell tanks is performed, a report of examinations/observations is reviewed and approved by FDH, and the report is submitted to RL by July 31, 1999. The report shall include the extent of the examination, discussion of observations, findings, and conclusions."

Areas to be examined on the primary tank were identified in the SOW (Pfluger 1999) as:

Primary Tank Wall:

- A vertical strip, approximately 30 inches wide by 35 feet long. The vertical strip may be comprised of one or more strips whose total width is approximately 30 inches. (The distance from the tank upper haunch transition to the lower knuckle is approximately 35 feet).
- 20 feet of the cylinder-to-lower knuckle weld.
- One vertical weld joining the lowest shell course plates (approximately 10 feet).
- One vertical weld joining the next to the lowest shell course plates (approximately 10 feet).

7.0 INDICATION REPORTING CRITERIA

COGEMA Engineering was required to report to the customer the following anomalies (Pfluger 1999):

- Wall thinning that exceeded 10% of the nominal plate thickness
- Pit depths that exceeded 25% of the nominal wall thickness
- Cracks that exceeded 0.18 inches in depth.

8.0 EQUIPMENT SET-UP AT AY TANK FARM

Prior to performing the actual examination, the riser shield plug was removed and replaced with a sheetmetal cover.

A temporary structure, constructed of scaffolding, was erected around the riser to provide the means for deploying the UT equipment (Figure 2). A central I-Beam was secured to the top of the scaffolding and supported a single-line sheave. A manual cable winch was secured to the base with the cable running up to the sheave in a single-line hoisting method for maneuvering the equipment into position. The weather during the examination was cool to moderate so a second temporary structure was erected near the inspection riser. This "tent" was constructed of round tubing and covered with weather resistant material and housed the inspection overview video equipment, deployment tool and video monitor (Figure 2). The tent provided adverse weather protection for the equipment and crew. The control cables leading from the trailer were run along the ground to the equipment located at the riser. The cable was sleeved with plastic to prevent possible contamination

9.0 EXAMINATION RESULTS

The Inspection Data Sheets and an interpretation of the data by a COGEMA Engineering Level III qualified inspector are included in Attachment 2. Tank 241-AY-102 (typical of all double-shell tanks) was fabricated from carbon steel plate. The location of plates as identified in the PNNL report is as follows (See Attachment 1):

Primary knuckle (top) - Connects dome of tank to side-wall.

<u>Primary wall</u> – Consists of (from top to bottom):

Top Transition Plate – approximately 3 feet, 3 inches tall, 3/8" nominal thickness

Plate #1 – approximately 9 feet, 10 inches tall, 1/2" nominal thickness

Plate #2 – approximately 9 feet, 10 inches tall, 1/2" nominal thickness

Plate #3 – approximately 9 feet tall, 3/4" nominal thickness

<u>Primary knuckle (bottom)</u> – Connects side-wall of tank to primary tank bottom.

All tank welds are in the "as-welded" condition. The primary tanks exterior surface varies from mill scale to a coating of rust caused by the normal weathering of carbon steel. The tank surface also contains chalk marks from hydrostatic test and miscellaneous material identifier markings from construction. In some places, streaks from concrete pouring can be found.

The following pages contain tables that present the data as a percent (%) of nominal wall thickness, which was derived from the "241-AY-102 Double-Shell Tank Ultrasonic Examination Data Reports With Data Sheets" (Attachment 2) and Pacific Northwest National Laboratory report PNNL-12233 (Attachment 1) "Ultrasonic Examination of Double-Shell Tank 241-AY-102".

Table 1
Tank 241-AY-102 Ultrasonic Examination
Primary Tank Wall, Scan 1 (Attachment 2)

Plate	Design Nominal Thickness (inches)	Measured Minimum Thickness (inches)	% Wall Thinning
Plate #1	0.375	0.395	N/A
Plate #2	0.50	0.495	1.0% of nominal thickness
Plate #3	0.50	0.495	1.0% of nominal thickness
Plate #4	0.75	0.735	2.0% of nominal thickness

Table 2
Tank 241-AY-102 Ultrasonic Examination
Primary Tank Wall, Scan 2 (Attachment 2)

	Primary Ta	nk Wall, Scan 2 (Attach	ment 2)	
Plate	Design Nominal Thickness (inches)	Measured Minimum Thickness (inches)	% Wall Thinning	
Plate #1	0.375	0.383	N/A	
Plate #2	0.50	0.485	3.0% of nominal thickness	
Plate #3	0.50	0.485	3.0% of nominal thickness	
Plate #4	0.75	0.734	2.1% of nominal thickness	

Table 3 Tank 241-AY-102 Ultrasonic Examination Horizontal and Vertical Primary Tank Weld Scans (Attachment 2)							
Weld Design Measured % Wall Nominal Thickness (inches) (inches)							
Vertical Plate #3	0.50	0.465	7% of nominal thickness				
Vertical Plate #4	0.750	0.722	3.7% of nominal thickness				
Horizontal Between Plate #2and #3	0.50	0.485	3.0% of nominal thickness				

Note 1: PNNL evaluated the data and concluded that no wall thinning, pitting, or cracking is present. Refer to PNNL-12233 *Ultrasonic Examination of Double Shell Tank 241-AY-102* (see Attachment 1).

Note 2: Although the data is reported to three decimal places, the accuracy of the data, based on the results of the performance demonstration test is ± 0.020 inch for wall thickness.

10.0 EVALUATION OF EXAMINATION RESULTS

The results of the Tank 241-AY-102 UT examination indicated no reportable wall thinning, pitting, or cracks. Attachment 1 contains the report prepared by PNNL that analyzes the data gathered from Tank 241-AY-102 UT examination. Figure 1 shows the history of waste level matched with the "as-found" measurements of the primary tank wall generated from the inspection data sheets (Attachment 2). Each wall thickness measurement plotted on the figure is the average of all data collected over a 1-foot long by 15-inch wide scan area. No apparent wall thinning, pitting, and cracking.

PNNL UT examination experts independently evaluated (Attachment 1) the hard copy scans and inspection data sheets and concurred with the COGEMA Engineering interpretation (see Attachment 2). The following is a summary of the results associated with the areas examined. The data have been reviewed and approved by W. H. Nelson, COGEMA Engineering Level III qualified inspector (Attachment 2):

Primary Tank Wall Thinning/Pitting/Cracking:

• No reportable thinning, pitting, or cracking was detected.

Primary Tank Horizontal and Vertical Welds:

- No reportable thinning, pitting, or cracking was detected.
- Scans of the heat affected zones (HAZ) between Plate #2 and #3 revealed no pitting, or crack-like indications.
- Welds between Plate #3 and #4 and the lower knuckle weld could not be examined because of surface roughness and contamination (weld and concrete splatter)

11.0 FINDINGS AND CONCLUSIONS

- The absence of cracks in the plate and HAZ indicates that the pre-service material quality control, weld stress relief treatment, and waste chemistry controls have been effective in preventing cracks.
- Since there were no significant changes in the wall thickness and no cracks were
 detected at any location, corrosion due to suspected mechanisms is probably not
 occurring to any significant degree. However, uncertainty on conditions that lead to
 corrosion degradation, particularly stress corrosion cracking, suggest additional data
 on other tanks are needed to gain confidence that this result can be applied to the
 general tank population.

12.0 REFERENCES

Hanlon, B.M., 1999, Waste Tank Summary Report for Month Ending April 30, 1999, HNF-EP-0182-121, Fluor Daniel Hanford, Inc., Richland, Washington.

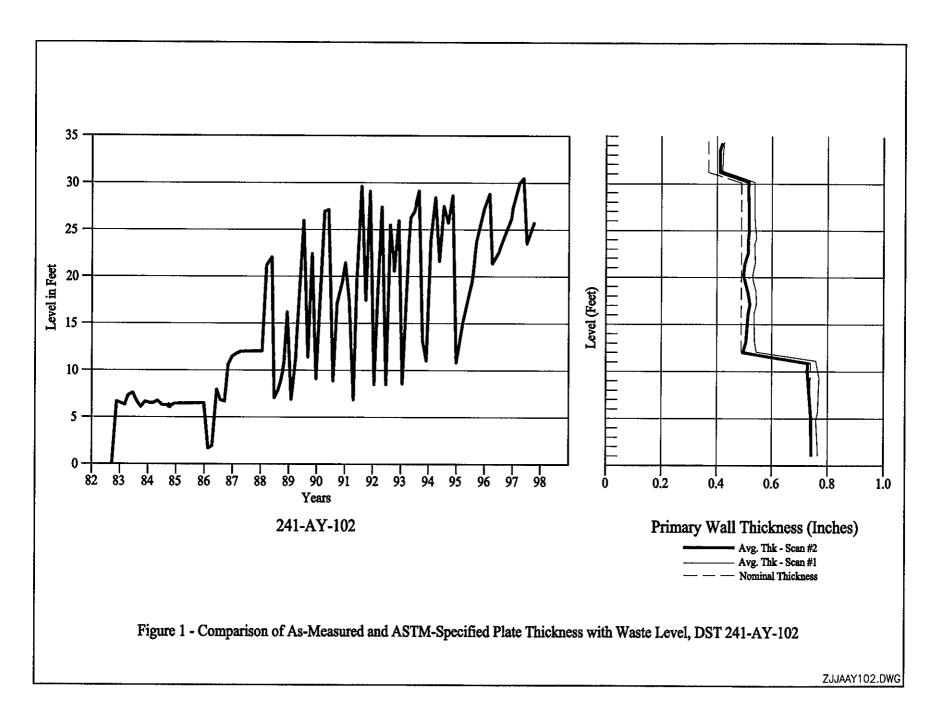
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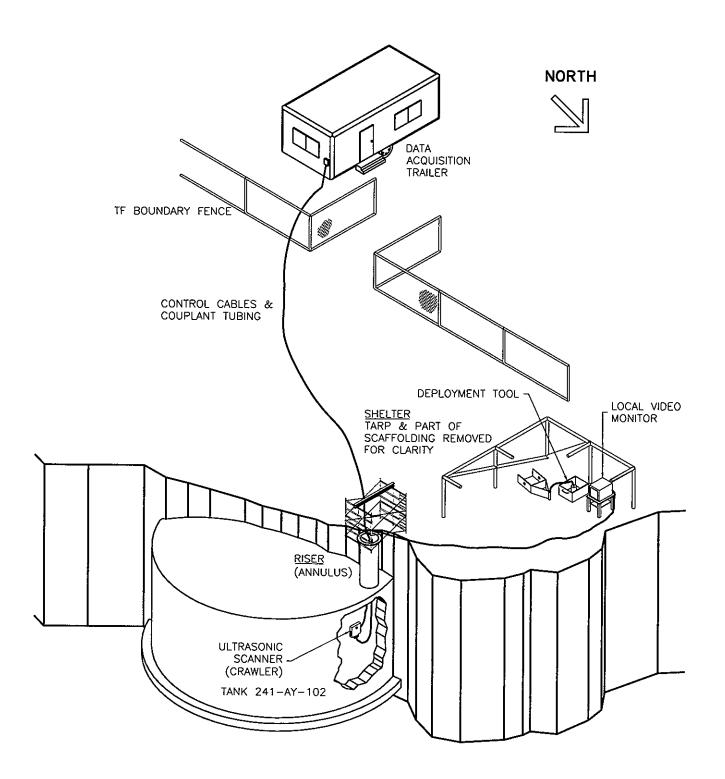


Figure 2 - Schematic of Inspection Set-up 241-AY-102

ATTACHMENT 1

<u>Ultrasonic Examination of Double Shell Tank 241-AY-102</u>

PNNL-12233

Ultrasonic Examination of Double Shell Tank 241-AY-102

G. J. Posakony A. F. Pardini

June 1999

Prepared for Lockheed Martin Hanford Corporation Richland, Washington 99352

Pacific Northwest National Laboratory Richland, Washington 99352

Summary

COGEMA Engineering Corporation (COGEMA), under a contract from Lockheed Martin Hanford Corporation (LMHC), performed an ultrasonic examination of selected portions of Tank 241-AY-102. The purpose of this examination was to provide information that could be used to evaluate the integrity of the wall of the primary tank. To implement the examination, COGEMA contracted with Swain Distribution, Inc. (Swain) of Searcy, Arkansas for the qualified personnel, ultrasonic instrumentation, and remote-controlled mechanical crawler that were to be used in performing this examination. The equipment provided by Swain included the Force Industries, Inc. P-Scan Model PSP-3 ultrasonic flaw detector system and the Force Industries AWS-5D remote, digitally controlled, magnetic-wheel mechanical crawler. The P-Scan Model PSP-3 is the same ultrasonic system used in the inspections of Tanks 241-AW-103, AN-105, and AN-107, but the magnetic wheel crawler was upgraded to Model AWS-5D. The ultrasonic procedure for the examination of the double-shell tanks at Hanford was developed by Swain personnel and approved by Mr. Wesley Nelson. Mr. Nelson is COGEMA's American Society for Nondestructive Testing (ASNT) Certified Level III in ultrasonic testing (UT) and was the UT Level III authority for this project.

Reports PNNL-11971 and PNNL-12198 provide details on the examination requirements, ultrasonic inspection procedure, personnel qualification requirements, and the results from AN-107 and AN-105. For details and information on the performance demonstration test (PDT), please refer to the referenced PNNL reports.

The ultrasonic examination of Tank 241-AY-102 was designed to inspect the wall of the primary tank to detect wall thinning, pit corrosion, and cracks in the tank wall as well as cracks, wall thinning, and other anomalies in the heat-affected zone (HAZ) of vertical, horizontal, and knuckle welds. In Tank 241-AY-102 selected portions of the primary tank wall were examined and these results were used as a representative sampling of conditions in the remainder of the primary tank.

Figure S.1 is a sketch of the portions of Tank 241-AY-102 that were ultrasonically examined. The wall of the primary tank is 32-ft high and is made up of four rings of plates that have been welded together. The ultrasonic examination consisted of inspecting two 15-in.-wide vertical strips the full 32-ft height of the tank to detect wall thinning and any cracking or other anomalies that might be in the wall of the primary tank. In addition, the weld zones of selected vertical and horizontal welds were inspected to detect and characterize any cracks that might lie parallel or perpendicular to the welds. The sketch shows the vertical scan paths for the two ultrasonic plate thickness and plate crack examinations. These scans were separated by approximately 6-in. The sketch also shows the top weld (primary tank to dome weld), vertical and horizontal welds, and knuckle weld. In performing the examinations, the remote-controlled, magnetic wheel crawler was installed in the annulus of the double-shell tank through the 24-in, riser.

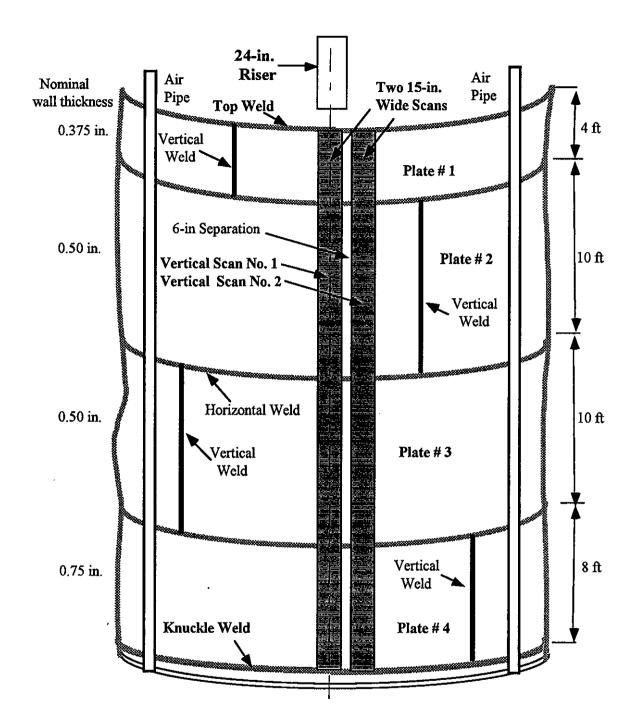


Figure S.1. Sketch of Vertical Scan Paths No. 1 and No. 2 Used for the Ultrasonic Examination of the Primary Tank Wall of 241-AY-102

The shell of Tank 241-AY-102 consists of four cylindrical rings. The top ring (Plate #1) is 4-ft high and has a nominal wall thickness of 0.375 in. The second and third rings (Plate #2 and Plate #3) are 10-ft high and have a nominal wall thickness of 0.500 in. Plate #4 is 8-ft high and has a nominal wall thickness of 0.75 in. (a)

Two separate ultrasonic examinations were made for each of the scan paths of the tank wall shown in Figure S.1. The first examination (0-degree, straight-beam transducer) was designed to detect wall thinning and the presence of cracks. The second examination (±45-degree, angle-beam transducers) was designed to characterize any cracking that might be present in the wall of the primary tank.

A summary of the results is given below. More details are found in the body of the report.

- Plate #1—Scan Paths No. 1 and No. 2—the first examination of this plate recorded wall thickness (nominal 0.375 in.) ranging from a minimum of 0.383 in. to a maximum of 0.405 in. In the second examination, neither scan detected crack-like indications were in the wall of the primary tank.
- Plate #2—Scan Paths No. 1 and No. 2—the first examination of this plate recorded wall thickness (nominal 0.500 in.) ranging from a minimum of 0.485 in. to a maximum of 0.514 in. In the second examination, neither scan detected crack-like indications were in the wall of the primary tank.
- Plate #3—Scan Paths No. 1 and No. 2—the first examination of this plate recorded wall thickness (nominal 0.500 in.) ranging from a minimum of 0.485 in. to a maximum of 0.518 in. In the second examination, neither scan detected crack-like indications were in the wall of the primary tank.
- Plate #4—Scan Paths No. 1 and No. 2—the first examination of this plate recorded wall thickness (nominal 0.75 in.) ranging from a minimum of 0.735 in. to a maximum of 0.748 in. In the second examination, neither scan detected crack-like indications were in the wall of the primary tank.
- Several feet of vertical welds in Plates #3 and #4 were examined with 0-degree, ±45-degree and 60-degree transducers. No crack-like indications, wall thinning or pitting was detected in the HAZ of the welds in these examinations.
- Twenty feet of horizontal weld between Plates #2 and #3 were examined using the same technique used for the vertical welds. No crack-like indications, wall thinning or other indications were found in the HAZ of this weld.
- Welds between Plate #3 and #4 and the lower knuckle weld could not be examined because of surface roughness and contamination (weld and concrete splatter).

⁽a) Note: All historical dimensioning for the design, development, and construction of this tank are in English units; consequently, English units are the primary units used in this report. For conversion to metric, use 1.0 in. equals 25.4 mm.

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1.0 General Information

The requirements for the ultrasonic examination of the wall of Tank 241-AY-102 were to detect, characterize (identify, size, and locate) and record measurements made of wall thickness, pitting or cracking in the wall or in the heat-affected zone (HAZ) of the welds in the primary tank. Any conditions that exceeded the requirements set forth below were to be reported for further examination.

1.1 Specific Requirements

Measurements that are to be specifically recorded include the following:

- Wall thinning that exceeds 10% of the nominal thickness of the plate
- Pits with depths that exceed 25% of the plate thickness
- Stress-corrosion cracks located on the inner wall of the primary tank or in the HAZ of welds that exceed a depth of 0.18 in.

The accuracy requirements for depth measurements for the different types of defects includes:

- Wall thinning—measure thickness within ±0.02 in.
- Pits—size depths within ±0.05 in.
- Cracks—size the depth of cracks on the inner wall surfaces within ±0.100 in.
- Location—locate all reportable indications within ±1.0 in.

Data to be recorded on disk and hard copies of all measurements are to be provided to PNNL and LMHC.

2.0 Results of the Examinations of the Vertical Wall of the Primary Tank 241-AY-102

Figure S.1 shows the two vertical scan paths taken on the full height of the tank. Each of the paths was 15-in. wide, providing a total of 30-in. coverage of the cylindrical section of the tank for the full height (32-ft) from the top weld to the knuckle weld. Two separate 15-in. wide scans (traverse direction on the scanning bridge of the mechanical crawler) were made. The first examination provided a measurement of wall thinning and/or pit corrosion using a straight beam (0-degree) transducer. The

second examination used two 45-degree opposing transducers and provided information on any cracks in the plates of the wall of the primary tank. Tables 1 through 4 describe the results of the two vertical examinations of the primary tank wall.

To initiate the examination, the remote mechanical crawler was inserted through the 24-in. riser and lowered until the magnetic wheels attached to the wall of the primary tank. The examination was then initiated by maneuvering the remote crawler until the transducer(s) were positioned at the top weld between the tank shell and the dome. The mechanical scanner was programmed to traverse a 15-in. scan, index down the tank wall and repeat the sequence until the entire height of the tank was examined. Pressurized water was used as a couplant between the transducer and the tank wall. The scan index (down the vertical wall) was 0.10 in. There were 120 traverse scans were taken for every foot of the height of the tank. The encoder on the scanner divided the 15-in. length of the traverse scan into pixels estimated to be 0.125-in. wide or 120 pixels. The ultrasonic data acquisition system recorded 14400 pixels for every foot of vertical scan path. Hard copy information was provided on an ultrasonic C-scan plot for each 12 by 15-in, area scanned. The analyst used this information in conjunction with the software program to determine and record the minimum value in each 12 by 15-in, area. The values in Tables 1 through 4 are the minimum values recorded in each area for the two scan paths. These values are part of the data recorded by the analyst on the "Automated Thickness Data Report." While only the minimum thickness is recorded on these reports, data are available to measure any individual pixel or point in the area scanned. In addition to the minimum thickness value reported, the tables also provide information regarding the results of the angle-beam examination that was designed to detect any cracking that might have been present in the tank wall. In the angle beam examination, two 45-degree angle-beam transducers were used. These angle-beam transducers were separated by approximately 5 in. and their beams were directed toward one another to obtain a volumetric inspection of the tank wall.

The tables provide information on the distance down from the top weld and the results obtained from the ultrasonic examination at each level. Interpreting the data in Table 1 from Plate #1, in the 1-ft section below the top weld (between the shell and the dome) the minimum thickness recorded was 0.398 in. in Scan Path No. 1 and 0.405 in Scan Path No. 2. The minimum wall thickness recorded in this 4-ft transition plate in Scan Path No. 2 between 2 and 3 ft. from the top weld where a value of 0.383 was measured. The nominal wall thickness was reported to be 0.375 in. and all thicknesses measured were above this value. The results of the 45-degree angle-beam examination recorded in the table showed no crack-like indications in either scan. Similar data interpretation can be made in the Tables 2, 3, and 4.

A review of the information in the tables shows that no anomalous conditions were detected by the ultrasonic examination. It is believed that these results are a representative sampling of the condition in the wall of the primary tank. No examination was performed on other portions of the primary or secondary tanks.

Table 1. Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #1

	Results from the Examination o Vertical Scan l	f Plate #1.	Results from the Ultrasonic Examination of Plate #1. Vertical Scan Path No. 2		
Distance from the Top Weld (ft)	Minimum Thickness Recorded in Area Scanned (in.)	45-Degree Angle Beam Examination	Minimum Thickness Recorded in Area Scanned (in.)	45-Degree Angle Beam Examination	
0 to 1	0.398	No crack-like	0.405	No crack-like	
1 to 2	0.398	indications	0.395	indications	
2 to 3	0.395	were detected	0.383	were detected	
3 to 4	0.398	in this plate	0.390	in this plate	

Table 2. Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #2

	Results from the	Ultrasonic	Results from the Ultrasonic		
Examination of		f Plate #2.	Examination of Plate #2.		
1	Vertical Scan 1	Path No. 1	Vertical Scan	Path No. 2	
Distance	Minimum		Minimum		
from the	Thickness	45-Degree	Thickness	45-Degree	
Top Weld	Recorded in Area	Angle Beam	Recorded in Area	Angle Beam	
(ft)	Scanned (in.)	Examination	Scanned (in.)	Examination	
4 to 5	0.495	No crack-like	0.493	No crack-like	
5 to 6	0.500	indications	0.493	indications	
6 to 7	0.510	were detected	0.495	were detected	
7 to 8	0.510	during the	0.498	during the	
8 to 9	0.503	examination	0.498	examination	
9 to 10	0.503	of this plate	0.498	of this plate	
10 to 11	0.508		0.493		
11 to 12	0.518		0.490		
12 to 13	0.514		0.485		
13 to 14	0.514		0.493		

Table 3. Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #3

	Results from the Examination o Vertical Scan	f Plate #3.	Results from the Ultrasonic Examination of Plate #3. Vertical Scan Path No. 2		
Distance from the Top Weld (ft)	Minimum Thickness Recorded in Area Scanned (in.)	45-Degree Angle Beam Examination	Minimum Thickness Recorded in Area Scanned (in.)	45-Degree Angle Beam Examination	
14 to 15	0.500	No crack-like	0.490	No crack-like	
15 to 16	0.518	indications	0.485	indications	
16 to 17	0.510	were detected	0.490	were detected	
17 to 18	0.508	during the	0.488	during the	
18 to 19	0.508	examination	0.490	examination	
19 to 20	0.508	of this plate	0.490	of this plate	
20 to 21	0.503	_	0.490		
21 to 22	0.498		0.490		
22 to 23	0.495		0.493		
23 to 24	0.510		0.498		

Table 4. Data from the Vertical UT Scan Paths on the Primary Tank Wall, Plate #4

	Results from the Examination o Vertical Scan l	f Plate #4.	Results from the Ultrasonic Examination of Plate #4. Vertical Scan Path No. 2					
Distance from the Top Weld	Minimum Thickness Recorded in Area	45-Degree Angle Beam	Minimum Thickness Recorded in Area	45-Degree Angle Beam				
(ft)	Scanned (in.)	Examination	Scanned (in.)	Examination				
24 to 25	0.735	No crack-like	0.739	No crack-like				
25 to 26	0.748	indications	0.739	indications				
26 to 27	0.757	were detected	0.743	were detected				
27 to 28	0.739	during the	0.743	during the				
28 to 29	0.744	examination	0.743	examination				
29 to 30	0.748	of this plate	0.734	of this plate				
30 to 31	0.744		0.739					
31 to 32	0.739		0.743					

3.0 Results Recorded in the Examination of Selected Vertical and Horizontal Welds

An ultrasonic examination was performed to detect stress corrosion cracks, wall thinning and pitting in the HAZ of a selected number of welds. Since stress corrosion cracks could lie perpendicular or parallel to the weld line, two separate examinations were performed. The first examination used a pair of 45-degree opposing transducers to detect and characterize cracks that might lie perpendicular to the weld line. In the second examination a straight beam (0-degree) transducer was used to detect wall thinning and corrosion, and a 60-degree transducer was used to detect and characterize cracks that might lie parallel to the weld line. The HAZ was defined as that area that lies on the inner 3/4 T (thickness) of the plate and extending 1.0 in. from the edge of the weld bead. The following lists the welds that were examined. Because of interference between the transducer housing and the weld bead, a blind zone existed from the edge of the weld bead to 1/2 in. into the base metal.

- Vertical weld in Plate #3—10 ft of the HAZ of this plate was examined with the 0-degree, 45-degree
 and 60-degree transducers. No crack-like indications, wall thinning or pitting was detected in any of
 the examinations.
- Vertical weld in Plate #4—9 ft of the HAZ of this plate was examined with the 0-degree, 45-degree and 60-degree transducers. No crack-like indications, wall thinning or pitting was detected in any of the examinations.
- Horizontal weld between Plates #2 and #3—24 ft of the horizontal weld between Plates #2 and #3
 were examined with the 0-degree, 45-degree and 60-degree transducers. No crack-like indications,
 wall thinning or pitting was detected in any of these examinations.

Comment #1: The horizontal weld between Plates #3 and #4 could not be examined ultrasonically because of surface roughness, weld spatter, and other conditions on the surface of the plate in the HAZ that prevented the transducers from maintaining ultrasonic contact with the plate.

Comment #2: The knuckle weld could not be examined ultrasonically because of the concrete spatter on the surface of the tank in the weld area that caused the transducer to lift off the surface and prevented consistent ultrasonic coupling of the acoustic energy.

4.0 Concluding Comments

The two 15-in. wide ultrasonic examinations were made on the full height of the primary tank wall of Tank 241-AY-102 to detect wall thinning, pitting and cracks. These examinations in the vertical tank wall were intended to sample the condition of the tank and to provide information that could be used to

establish the tank's integrity. The results of the examinations in the selected areas showed very little or no corrosion in the four plates that go to make up the shell of the primary tank. Further, no crack-like indications were detected in the wall of the primary tank.

The HAZ of the vertical welds in Plates #3 and #4 and the horizontal weld between Plates #2 and #3 were examined to detect stress-corrosion cracks, pitting, and wall thinning. The ultrasonic examination did not detect wall thinning in excess of 4% of the nominal wall thickness in the HAZ and found no crack-like indications from cracks that might lie in either parallel or perpendicular to the weld line. No abnormal indications were found in the heat-affected zone of the welds examined.

Based on the results of the ultrasonic examinations in the areas examined, Tank 241-AY-102 has no apparent wall thinning greater than the nominal wall thickness that might be expected from manufacturing variations and has no detectable cracks in the wall of the primary tank.

ATTACHMENT 2

241-AY-102 Double-Shell Tank Ultrasonic Examination Data Reports With Data Sheets

COGEMA-99-1017



June 30, 1999

COGEMA-99-1017

Mr. Chris E. Jensen Lockheed Martin Hanford Corporation Post Office Box 1500, MSIN R1-56 Richland, Washington 99352-1505

Dear Mr. Jensen:

AY-102 DOUBLE SHELL TANK ULTRASONIC EXAMINATION DATA REPORTS

Ultrasonic examination of double shell tank (DST) AY-102 was completed on June 4,1999. The primary tank data showed no reportable indications. Primary tank wall areas ultrasonically inspected were two vertical wall scans approximately 15 inches wide by 30 feet long, and 19 feet of the vertical weld and 25 feet of horizontal welds.

The project specification required an ultrasonic inspection of the horizontal weld between the bottom transition plate and the knuckle. However due to concrete material adhered to the inspection surface examination of the weld was not possible. With LMHC concurrence the horizontal weld between plates 1 and 2 was substituted for the weld between the bottom transition plate and the knuckle.

COGEMA Engineering is pleased to provide the enclosed AY-102 DST Ultrasonic Examination Calibration Sheets and Ultrasonic Data Reports. This completes our nondestructive examination of DST AY-102. The original ultrasonic report was transferred to Mr. Jerry Posakony at PNNL for final evaluation.

If you have any questions, please feel free to contact me at (509) 376-5403.

Sincerely,

W. H. Nelson
COGEMA NDE Ultrasonic Level III

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Enclosure

P.O. Box 840 Richland, Washington 99352-0840 Phone (509) 372-3572 • Fax (509) 372-3169

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LOCATIO	N HANFORD		SYSTE	DS	Τ		Ţ	CALIBRATION BLOCK							
PROCEDI		<u></u>	D2	.v. 3			1	THICKNESS			<u> </u>		MATERIAL CS	,	
UT SYST		'\	SERI					REFERENCE BLOCK							
	RE VERSION	/ T-56	A . 1	REV.	6,04		1	THICKNESS		"			MATERIAL	=	
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SCANNE	R TYPE	<u> </u>	SERI	AL# 105			1	COUPLANT					BATCH#		
SCANNE	W5-5D R CABLE	 15 <u>-</u> 5					-	CABLE LEN			CABI	E#	NA		
SIGNAL (CARLE				··- <u>-</u> .		1	CABLE LEN	100		CABI	E#	N/A		
CHANNE	CHANNEL TRANSDUCER MAKE			DEL	FREQ.	SIZE	-	SERIAL#	GATE EV METHOD		ANGLE NOM./AC		WEDGE TYPE	IMAGE	
1	KBA			B60-4E		8x9m	w	. 1855	N	4	0/5	90	<u>IUT.</u>	1 3 2	
2	KBA	·	Mu	1B60-4E	14 Mhz	8 X9 a	<u>M</u>	1854	A	(66/59°		INT.	3 \$ 4	
4												-1		1	
11	VITIAL CALIBRA	ATION			·			CALIBRAT	ION CHE	CKS					
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CH. 1	NTATION AMPLITUDE	NOT	TAB	WOTH B											
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CH. 3	AMPLITUDE	ļ —				$\neg \vdash$									
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FILE :		AY2C	[Aپا_	AY2CLLA2				_	- M	ļ.—					
DISK		P60	A - 1	P60A-5	·				A	<u> </u>		} —			
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LOCATION			SYSTEM		.		EXAM S		EXAM	END	JOB#	
COMPONENT ID	OFORD		D57	TANK I	44102	0	EXAM	YS NATION SURF	ACE	NOM THICKNESS		
CONFIGURATION	AMHA WI	96 <u>6</u>	70178	ANSITION) (UATE ()	/ ^0	CALIBF	OD ☐ ID [RATED RANGE			0	1375" TEMP AMSIENTOF
CIRCUMFERENC	CHOING LENGIN	<i>1124</i> 4 H EXA	MINED	PCATE SCAN LEN	GIMPARI	O	REF. LEVEL CORRECTION (TRANS. CORR)					
PROCEDURE	36.6" SD1 2.	,		RE	<u>3</u> 3		MATER	MAL TYPE	TUED			CONDITION DB
FILE NAME/ITEM	#	\	DATA DIS	K#			TRANS	DÚCER DUAL □SG	THER	<u>-</u>	ANGLE	fair
Xo REF. POINT (L	(a) (1) (1)	n e	Yo REF. PO	OINT (Wo) 24" (Lis	a.r		SCAN V		511	<u>. в</u>	ANGLE	
PART#/ INDICATION	L START	L S1	TOP	W START	W STOP	AV TH		MIN. THK, R. LIG.	AREA REPORTA	BLE	COMM	ENTS
1			1		.418 .398 No							
2 3				1			416 412	.398 .395	NO		-/	
4				1-1			413	,378	NO			
· ·					-	L						
										•••	<u> </u>	
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	Date \$/11/99	_			Date <u>5/13</u>	199		evel 77.5	Date 6	- <i>4.4</i>	29 0	€ of <u>30</u>

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	,			A REPO			50	į	REF.	N/A . CAL. #
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LOCATION HANFOR	D		SYSTEM	A4/02		1 113	START	EXAM!		JOB#
COMPONENT ID	PRIMARY	_ا A	u PLAT	E Scan	ol 0°	EXAM	INATION SURF	ACE		NOM. THICKNESS
CONFIGURATIO	N DP TRAUS.		7111	CATE 1	Z	CALIB	RATED RANGE	<u> </u>	***	TEMP AMBIENT OF
CIRCUMFERENC	E/TOTAL LENGT	H EXA	MINED	SCAN LEN	GTH/PART	REF. L	EVEL CORRE	CTION (TRA	NS. CO	RR)
PROCEDURE	1141121			RE	2" 3		RIAL TYPE			CONDITION
FILE NAME/ITEM# DATA DISK# TRANSDUCER										tair
A 12 PW 110 XO REF, POINT (LO) -1" from for of well 7" cw of Riser & (24") SCAN WIDTH 15"									ANGLE	
PART#1	L START	LSI	<u>-7" a</u>	يد ک ار آرا يو W START	x £ (24" W STOP	AVE.	MIN. THK,	AREA		COMMENTS
INDICATION THK. R. LIG. REPORTABLE									COMMENTS	
2						.233 .233	.495	NO		 /
3			1 1			. <u>531</u>	.500	NO	,,,	 /-
Ч			7)			٠٤33	.510	NO		11/
5						.538	.503	NO		1-///
7			/ / /			,536 ,538	1.508	<i>NO</i>		
3			1-1			· 537	1218	NO		
9						,535	.514	20		
ID						<u>1235</u>	1,514	<i>N</i> O		
<u> </u>								_ ,		
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SUMMARY MERGED RESULTS									·	
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2/99	AUTOMATED ULTRASONIC THICKNESS									
				A REPO				F	REF. CAL. #	
LOCATION // AN	folk		SYSTEM 7	TANK A	V107	EXAM	START_ /445	EXAMENI 1700	D JOB#	
	ry wall			5cAU 1	_	EXAM	INATION SURF	ACE	NOM. THICKNESS	
CONFIGURATIO	N 1		TO.	47E 2	·	CALIB	RATED RANGE	•	TEMP	
CIRCUMFERENC	E/TOTAL LENGT	H EXAN	MINED	SCAN LEN	GTH/PART	REF. L	EVEL CORRE) CTION (TRANS.	CORR 3 DB	
PROCEDURE	5D1		1	R	EV 3	MATE	RIAL TYPE	THER	CONDITION	
FILE NAME/ITEM	# ! <i>(</i>)		DATA DIS	K#		TRANS	SDUCER DUAL S	1.4	☐ ANGLE	
XOREF. POINT (Lg) YOREF. POINT (Wo) 7" cos from toe of weld 7" cos from 24" riser &							SCAN WIDTH			
PART#/ INDICATION	L START	L ST		W START	W STOP	AVE. THK.	MIN. THK, R. LIG.	AREA REPORTABLE	COMMENTS	
1						.535	.500	PO	/	
2 3						,526	.518	NO	· /	
<u> </u>						.232_	.210	NO		
5			A			.23.	'20g '208	NO NO		
6				:/1		.534	802.	<i>NO</i>	10	
7				H		. 533	.503	NO	1 / 11	
8				1		.534	498	NO		
9						.536	.૫૧૬ ૅ	NO		
10						.540	219	NO	/	
							<u> </u>			
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			<i>\</i>							
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SUMMARY MERGED										
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		DA	TA REPO	ORT			į	REF. CAL. #
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LOCATION HAA)FORI)	SYSTE	N T TAUK	ΑΥΙδο	EXAM	START	EXAME 2050	ND JOB#
Primari	V WALL	PLATE 3	SCAN 1		EXAM	NATION SURF	ACE	NOM. THICKNESS
CONFIGURATIO	Ň	то	PLATE 3		CALIB	RATED RANGI	1.0"	TEMP AMBIENT OF
CIRCUMFERENC	E/TOTAL LENGT	H EXAMINED	SCAN LEN	IGTH/PART	REF. L	EVEL CORRE	CTION (TRAN	IS. CORR) 3 DB
PROCEDURE	501	2.1	R	EV 3	MATER	RIAL TYPE (ZICS C	TUED	CONDITION Faic
FILE NAME/ITEM# DATA DISK# TRANSDUCER AY2 (W310								
Xo REF. POINT (Lo) Yo REF. POINT (Wo) T'' below weld for 7" aw of 24" riser & SCAN WIDTH 7" 1" below weld for 7" aw of 24" riser &							-11	3 ANGLE
PART # / INDICATION	PART#/ L START L STOP W START W STOP AVE. MIN. THK, AREA						AREA REPORTAB	COMMENTS
1	1 774 .735 NO							/
2					779	.748	20	
3		-A			.779	757	NO	
4		/ /	4	-	.773	1739	100	10/
6			<u> </u>		<u>.77%</u> .783	.744 .748	NO	
7			4		. 103 .773	.748	NO	- / //
8					773	.739	20	
			1	<u> </u>				
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				/ 				
					10			· ·
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		_		<i>'</i>	, <u>.</u>		-	
SUMMARY MERGED								
RESULTS REMARKS				<u> </u>		<u> </u>		
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Kevel III D) Date 5/3/9	 ¾	Analyst Level <u>III</u>	Date_ <i>5/1</i> 7			Date 6	
	-					CO	GEMP	

AUTOMATED ULTRASONIC THICKNESS DATA REPORT COMPONENT COMPONE	2/99	AUTON	ЛΔТ	FD UL	TRASO	NIC TH	C	(NES		•	REPO	ORT# NA
COMPONENT D COMPONENT D COMPONENT D PRIMADY WALL TOP TRANSPLAN PLATE SCAN 2.0° CONFIGURATION DIRECTORY LEGITHERAMINED CONFIGURATION PLATE SCAN 2.0° CONFIGURATION DIRECTORY LEGITHERAMINED CONFIGURATION PLATE SCAN 2.0° CONFIGURATION PLATE SCAN 2.0° CONFIGURATION PLATE SCAN 2.0° CONFIGURATION PLATE SCAN 2.0° CONFIGURATION SURFACE CON	i	70101	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				OI.	///LO				
LOCATION PROVIDED SISTEM DST TANK AY 1/2 EXAMISTANT EXAMISTO JOB # A A COMPONENT ID DST TANK AY 1/2 EXAMISTANT SCAN Z D EXAMINATION SURPACE COMPONENT ID DST TANK AY 1/2 EXAMISTON SURPACE COMPONENT DST TANK AY 1/2 EXAMISTON SURPACE COMPONENT COM				DAI	ANER	JKI					KEr.	j j
PRIMALY WALL TOF TRANSPIRED PLATE SCAN Z.O. MO D PAINTED D.3.75"	LOCATION HAM	FORD		SYSTEM DS7	TANK A	Y 102		EXAM:	START			JOB#
CONTINUED TO TRANSMICH PLATE SCAN DO CRECTION (TRANS. CORR.) CIRCUMFRENCETON, I PINGTH EXAMINED SCAN LENGTH FART REF. LEVEL CORRECTION (TRANS. CORR.) PROCEDURE SD/ 2, 1 REV 3 MATERIAL TYPE TRANSSICIER TRA	PRIMARY	WALL TOP	TRA	NSIT, ON	-		0	EXAMI	NATION SURF	ACE		NOM, THICKNESS
SCANLINGTHERANCE (CORRECTION (TRANS. CORR.) PROCEDURE PROCEDURE SD/1 2,1 REV 3 MATERIAL TYPE FILE NAME/THER AY 2 PLUT 2,0 VOREF, POINT (Lo) If YELD A TRANSCOCER YORE FONT (Lo) If YELD A TRANSCOCER YORE FONT (Mo) If YELD A TRANSCOCER SCAN WIDTH SCAN WIDTH SCAN WIDTH SCAN WIDTH SCAN WIDTH SCAN WIDTH TRANSCOCER COMMENTS REV 3 MATERIAL TRANSCOCER COMMENTS REV 12 MATERIAL TRANSCOCER TRAN	CONFIGURATION	OP TRANS	מנוו-וו	PLATE.	SCAN :	2. 0°		CALIBR	RATED RANGE			TEMP
PROCEDURE SD 2, REV 3	CIRCUMFERENC	E/TOTAL LENGT	H EXA	MINED	SCAN LEN	GTH/PART		REF. LI	EVEL CORREC	CTION (TRA	NS. COR	RR)
FILE NAMERITEM AY 2 PUJ T 2 O VA REF. FOINT (No) YOUR SCAN WIDTH SCI. STODE ANGLE VA REF. FOINT (L) YOUR YOUR SCAN WIDTH SCAN	PROCEDURE	SD1 2		·	RI			MATER	IAL TYPE	THER		CONDITION
X SEP POINT (L.) YE BELON HAUCH WELD YE CON From Rate WELD PART # L. START L. STOP W. START W. STOP AVE. MIN. THK. R. ELS. REPORTABLE COMMENTS 1	FILE NAME/ITEM# DATA DISK# TRANSDUCER AY2 PWT20 DATA DISK# TRANSDUCER TRANSDUCER TRANSDUCER TRANSDUCER											
PART # NOICATION L START L STOP W START W STOP AVE RIUS. REPORTABLE COMMENTS REVIEWED RESULTS REWIEWED RESULTS REMARKS REVIEWED RESULTS REVIEWED REVI	XO REF. POINT (LO) YO REF. POINT (WO) YO REF. POINT (WO) YO REF. POINT (WO) YOUR FORM PLATE I WELD. SCAN WIDTH 15"											
1	PART#/	L START	L S1		WSTART		A۷		MIN. THK,	AREA	.BLE	COMMENTS
SUMMARY RESULTS REMARKS Facility Page Level Level Date S/13/27 Level Le		0.413 0.405 NO									. /	
SUMMARY MERGED RESULTS REMARKS Examiner Light Date 5/11/97 Level 111 Date 5/11/97 Level 112 Date 5/11/97 Level 113 Date 6.14.69 Level 113 Date 6.14.69 Level 114 Date 6.14.69 Level 115 Date 6.14.69 Level 116 Date 6.14.69 Level 117 Date 6.14.69 Level 118 Date 6.14.69			<u> </u>				_					N
SUMMARY MERGED RESULTS REMARKS Analyst Level u Date 5/11/29 Level u Date 5/13/27 Level u Date 6.44.69												A
RESULTS REMARKS Examiner Analyst Analyst Level III Date 5/11/99 Level III Date 5/13/99 Level III Date 6.4.99	4		├─		7		0	1405	0.398	NO	···	
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			DAT	A REPO	ORT			,	REF. CA	
LOCATION ,			SYSTEM			FXAM	START	EXAME	ND TIC	N/A
HAA	ufold		DST	TANK A	14102	/.	210	1510		<u>A</u>)4
COMPONENT ID	PRIMALY W	ALL	PLAT	E 1.5c	tr.) D	EXAM	NATION SURF	FACE TI PAINTED		NOM, THICKNESS
CONFIGURATION	N	-	TO PLAT	1-	00		RATED RANGE	E .		TEMP AMBIENT OF
CIRCUMFERENC	E/TOTAL LENGT	H EXAM	MINED	SCAN LEN	1	REF. L	EVEL CORRE	CTION (TRAN	NS. CORR)	O DB
PROCEDURE	5.	^ /	'	RI	11 2 3	MATE	RIAL TYPE DICS C	THER		CONDITION
FILE NAME/ITEM# A 1/2 PW 20 DATA DISK# TRANSDUCER X ORFE POINT (I.a)										
Xo REF. POINT (Lo) Yo REF. POINT (Wo) Yo REF. POINT (Wo) SCAN WIDTH SCAN WIDTH SCAN WIDTH										<u> </u>
PART#/ L START L STOP W START W STOP AVE. MIN. THK, AREA COMMENTS INDICATION THK. R. LIG. REPORTABLE									COMMENTS	
						,509	493	NO		
ر						(20)	.493	700		
3		<u> </u>				.508	.482	NO		
<u> </u>	 		1			.509	.498	NO		N
J		-//				7211	.498	CO		
<u>6</u> 7	<u> </u>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-/			-215	.498	<u> </u>	}_	/H
8			<u> </u>			.513	.493	NO NO		/ 1
4		-	-/-/			<u>,509</u>	.490	100		/
10		_				.507 -510	.485	20		
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2/99	AUTOMATED ULTRASONIC THICKNESS									NA NA
		l	DAT	A REPO	ORT				REF.	CAL.#,
LOCATION,	<u></u>	Lsys	STEM		···	FYAM	START	EXAM E	IND I	JOB#
COMPONENT ID	FORD 200E		DST	TANK		16	NATION SURF	1/729		NIA
AY(02 CONFIGURATION	PRIMARY W	ALL PI			200	l 🛛	OD □ ID [PAINTED		NOM. THICKNESS
				PLATE =	ζ	CALIBI	RATED RANGE	0.61		TEMP AMBIENT OF
	E/TOTAL LENGTI	H EXAMINE	.D	SCAN LEN	GIHIPARI	I	EVEL CORREC	CTION (TRAN	IS. COR	DB
PROCEDURE SD1 2.1 REV MATERIAL TYPE CONDITION Fair SS DICS OTHER Fair										
AY2 VW220 INTO DATA DISK# IRANSDUCER										
Xo REF. POINT (Lo) Yo REF. POINT (Wo) Tom Yor of weld You REF. POINT (Wo) SCAN WIDTH Tom Yor of weld You reform hise of weld You reform hise of weld You reform his well (2x con form his well)										
PART #/ L START L STOP W START W STOP AVE. MIN. THK, AREA COMMENTS INDICATION THK. R. LIG. REPORTABLE										COMMENTS
1						.500	0.490	NO		
2 500 .485 NO										
3 Y		A	} 	/		.505 .510	.490 .488	20 20		
- 5						5(3	,490	NO		//
6			1			.508	.490	NO		14
7			-#			1202	,490	<i>NO</i>		/ '
8			- '-			, 213 '208	.490 .493	20		
10						.510	,498	NO		/
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2/99	ALITON	/ATE	D III .	TRASO	NIC THI	CKNES			REPO	RT# NIA
	AUTUN	''''		A REPO		OMITE			REF. (
				A 1141 C	21(1				KCF, (.AL. # NA
LOCATION	ford	S	YSTEM	TANK A	4105	EXAM	START 900	EXAM E		JOB# NA
COMPONENT ID		ATE 3.	Sca		00	EXAMI	NATION SURF	ACE		NOM. THICKNESS
CONFIGURATIO	N	<u>.ا.د ک</u>	70 4	FTE 3		CALIBR	RATED RANGE	•		TEMP Ambien 7 of
CIRCUMFERENC	E/TOTAL LENGT	H EXAMI		SCAN LEN	П	REF. L	EVEL CORREC	CTION (TRAN	IS. COR	(1) O DB
PROCEDURE	SDI 2	. 1		RE	v ک	MATER	RIAL TYPE IXI CS O	THER		CONDITION
FILE NAME/ITEM	#	·	DATA DIS			TRANS	DÜCER DUAL □ SC		3 🗆	
Xo REF. POINT (Lo) 1" from weld toe 12" can of 24" Riser & SCAN WIDTH 15"							<u>، ر</u>	11000		
PART#/ INDICATION	L START	L STO	P	W START	W STOP	AVE. THK.	MIN. THK, R. LIG.	AREA REPORTAE	BLE	COMMENTS
					/	748	.739	NO		/
2.						1748	.739	NO		
3			1			.752	.743	NO		17/_
<u> </u>		/	\checkmark			1756	,743	NO		10/
5	ļ			//		.756	.743	NO		_//
6			/	9		.761	.734	NO		<u> </u>
7 8					 .	<u>· 76/</u>	.739	NO		-/
<u></u>						.769	.743	\sim		
							 			
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2/99		NIC P-SCAN REPORT			REPORT#		
LOCATION HAUGORD	SYSTEM	A+4+5	EXAM START	EXAM END	108#		
i oomi orichi ib	DST TANK		IZIO EXAMINATION:	SURFACE	1 1		
CONFIGURATION	TO		[Ø □	ID PAINTED	NOM. THICKNESS		
$T_{\mathcal{O}}$	TRANS. PLAYE	S SCAN2-45° N LENGTH/PART	CALIBRATED R	ORRECTION (TRANS. (AMBIENT OF		
CIRCUMFERENCE/TOTAL LENGTH E		12"	MATERIAL TYP	•	CONDITION DB		
SDI 2.(DATA DISK#	1 3	SS DICS	OTHER	FAIR		
AY2 PWT24	SS (X) CS TRANSDÚCER DUAL SCAN WIDTH	Xsgl □odeg /5"	MANGLE 45				
XOREF. POINT (LO) I" FROM HAYNCH WELD							
SIZING METHOD	T-UP						
1 45 DEGREE SHEAR 2 60 DEGREE SHEAR	45		N				
3 AATT	1						
4 DUAL 0 DEGREE INDICATION INFORMATION							
	EPTH MAX L R. LIG. AMP	2 W1	WIDTH W2	INDICATION TYPE			
No Carlo	/O TAIL						
110 Crackli	Ke II ndic	ations		-			
				 			
	<u> </u>			-			
DEMARKS.							
REMARKS							
Examiner 000	Analyst O	<i>(</i> 0)	Reviewer		Page		
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2/99		NIC P-SCAN REPORT			REF	PORT#		
LOCATION	SYSTEM DST TANK	AYIAZ	EXAM STA		MEND J	08# N/A		
L COMBONENT ID	ATE SCAN		EXAMINAT	ION SURFACE		NOM. THICKNESS		
CONFIGURATION	TO .		CALIBRATE	☐ ID ☐ PAINT	ED	0.5"		
CIRCUMFERENCE/TOTAL LENGTH E	ATÉ 1,5can XAMINED SCA	N LENGTH/PART	REF. LEVE	O 2.56" L CORRECTION (T	RANS. CORR	AMBIENT OF DB		
PROCEDURE SDI 2.1 REV MATERIAL TYPE CONDITION SDI 2.1 GS DICS OTHER FAIR								
FILE NAME/ITEM# DATA DISK# TRANSDUCER / TRAN								
I Xo REF, POINT (Lo) Yo REF, POINT (Wo) I SCAN WIDTH ' -//								
I" from toe of weld 17'CCW of Z4'Riser & /S' SIZING METHOD ANGLE REFERENCE CAL SHEET SET-UP								
1 45 DEGREE SHEAR (5								
2 60 DEGREE SHEAR			_/_					
3 AATT 4 DUAL 0 DEGREE				-				
7 DONG O DEGINEE	IND	ICATION INFO	RMATION	I/				
		.1 LENGTH	L2 W1	WIDTH	W2	INDICATION TYPE		
No Cracklike Indications								
100 Crackli	KE TNGC	ations				 		
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REMARKS					.1	1		
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evel III Date 5/6/99 Level III Date 5/13/99 Level III Date 6-4-99 15 of 30								

CIRCUMFERENCE/TOTAL LENGTH EXI // 5.2" PROCEDURE 5D/ 2.1 FILE NAME/ITEM#	SYSTEM DST TANK TE 2, SCAN 2 TO PLATE 2, S		REPORT # NOM. THICKNESS O.J. REPORT # NOM. THICKNESS O.						
AY2 PW224 Xo REF. POINT (Lo) 1" From weld SIZING METHOD 1 45 DEGREE SHEAR 2 60 DEGREE SHEAR 3 AATT 4 DUAL O DEGREE	YOREF. POINT (W	SCAN WIDT	SGL ODEG ANGLE						
Examiner Analyst Analyst Reviewer Page Analyst Analyst Reviewer Level III Date 5/13/99 Level III Date 6-4-99 14 of 30									

2/99	ULTRASONIC P-SCAN DATA REPORT									
LOCATION, HANGERED	SYSTEM DST TANK	4V/20	EXAM START	EXAM EI	ا ملنا ا					
COMPONENT ID			EXAMINATION	SURFACE	NOM. THICKNESS					
CONFICURATION	PLATE 3 SCAN	- 43	CALIBRATED F	ID PAINTED RANGE	0,25 TEMP					
CIRCUMFERENCE/TOTAL LENGTH E	TO 3, SCAP	NA PENOLITICANE	REF. LEVEL CO	ORRECTION (TRAN						
PROCEDURE		12 REV 3	MATERIAL TYP	PE	DB					
SD/ 2.	DATA DISK#		TRANSDUCER	S OTHER	tair 1/1					
AY2PW 324 XOREF POINT(LO) 11/2" from to	ANGLE 45									
SIZING METHOD	SET-UP									
1 45 DEGREE SHEAR	ANGLE 45	REFERENCE CA	L. SHEET		SE I-UP					
2 60 DEGREE SHEAR			a							
3 AATT				A						
4 DUAL 0 DEGREE	INF	ICATION INFOR	MATION	//	····					
SIDE R. LIG. AMP										
NO Crackle	le Ludic	attions								
										
										
										
DEMARKS										
REMARKS										
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		NIC P-SCAN			REPO	ORT#
	DAIA	REPORT				ala
LOCATION HAWFORD	SYSTEM DST TANK	- A4100	EXAM START	EXAN		N/h
COMPONENT ID			EXAMINATION	SURFACE		NOM. THICKNESS
PRIMARY WALL TOP TO CONFIGURATION			CALIBRATED R	ID PAINTEI	D	3/8" TEMP _
Top -	TRANSITION PU	ATE SCAN I,	1 (1)-2,56	· · · · · · · · · · · · · · · · · · ·		AMBIENT OF
CIRCUMFERENCE/TOTAL LENGTH EX	AMINED SCA	N LENGTH/PART	REF. LEVEL CO	PRRECTION (TR	ANS. CORR)	O DB
PROCEDURE SDT 2.		REV 2	MATERIAL TYPI ☐ SS	E		CONDITION
FILE NAME/ITEM#	DATA DISK#	1, -	TRANSDUCER		· · · · · · · · · · · · · · · · · · ·	fatr
AYZ PWT 14 Xo REF. POINT (Lo)	V. PEE POINT (Wa)	SCAN WIDTH	X[SGL □00	EG XAN	GLE <u> </u>
I" from HANNEL WELD	YOREF POINT (V	Riser	<u> </u>			
SIZING METHOD	ANGLE	REFERENCE CA	L. SHEET		SET-UP	
1 45 DEGREE SHEAR	75					
2 60 DEGREE SHEAR 3 AATT			-/4			
4 DUAL O DEGREE				-#-		:
	IND	ICATION INFOR	RMATION			
	PTH MAX L LIG. AMP	.1 LENGTH	L2 W1	WIDTH	W2	INDICATION TYPE
No Cracklik	7.1					
NO Vacklik	e + nanc	ations		<u> </u>		
						·
<u> </u>						
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DEMARKS.						
REMARKS						ļ
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Level III Date 5/5/59	Level III D	ate <u>7/13/99</u>	12000	Date 6	4.99	<u>18</u> of <u>30</u>

2/99	DA'		IIC P-SCAN EPORT						REPORT#
LOCATION HAWFORD	SYSTEM DST 7	T1.04	AY 107	EXAMS	TART		EXAM		JOB# NA
L COMPONENT ID	<u>ו וגעו</u>	PACK	450	EXAMIN	ATIO	N SURFACE			NOM. THICKNESS
PRIMARY WALL PLATE	1. SCAN	<i>-l</i> }	42 -	(X) C		DID DP	PAINTED) 	0.5" TEMP
	TO PLA	7E J	<u></u>		٠2	56" 51	P		ANBIENT OF
CIRCUMFERENCE/TOTAL LENGTH E)	KAMINED	SCAN	LENGTH/PART	REF. LE	VEL (CORRECTIO	ON (TRA	NS. CO	RR) ODB
PROCEDURE SDJ 2.1	PROCEDURE 5DI 2.1 REV 3 MATERIAL TYPE SS IX CS OTHER_							CONDITION FAIr	
FILE NAME/ITEM# DATA DISK# TRANSDUCER AY2PW 114 □ DUAL 🛱 SGL □ 0DEG						-c η	ANGLEYS		
Xo REF, POINT (Lo)	Yo REF. PC	OINT (Wo	24" Riser E	SCAN W		15"		20 14	ANGLE 10
I" from weld toe SIZING METHOD		0 04		AL CUCE	- 1	15'		CET	UD
1 45 DEGREE SHEAR	ANGLE リック	-	REFERENCE C	AL. SHEE!	+			SET-	<u> </u>
2 60 DEGREE SHEAR	7.5	\dashv			1				
3 AATT			·····		_		7		
4 DUAL 0 DEGREE						/	/		
			CATION INFO						•
	EPTH MAX LIG. AMF		LENGTH	L2 \	N1	WID	тн	W2	INDICATION TYPE
No Crack	liko I	- / / (
100 Cach	11KG 1	-Mar	cations.						
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REMARKS									
124A						· · · · · · · · · · · · · · · · · · ·			
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2/99								
		NIC P-SCAN REPORT			REI	PORT#		
LOCATION HANFORD	SYSTEM	**************************************	EXAM START	FYAN	#END []	JOB#		
HANFORD	DST TANK	A4102	18/5 EXAMINATION	120	75 C	N/A		
PRIMARY WALL PLATE	2 ScANI	450		NOM. THICKNESS				
CONFIGURATION	TO	7.10	CALIBRATED	ID PAINTE	U .	TEMP		
CIRCUMSERENCE TOTAL LENGTHEY	PLATE	2	L_ <i>U-</i> 2.5	73" SP		AMB1607-0F		
CIRCUMFERENCE/TOTAL LENGTH EX	AMINEU SCAI	N LENGTH/PART ノンロ	REF. LEVEL CO	PRRECTION (TR	ANS. CORR			
PROCEDURE SDI 2.1		REV 3	MATERIAL TYP	E OTHER		CONDITION		
FILE NAME/TIEM# DATA DISK# TRANSPINCED								
V DCC DOINT (1)								
I' from weld toe	1º cw of	24" Kiser I		1511				
SIZING METHOD	ANGLE	REFERENCE CAL	SHEET		SET-UP	·		
1 45 DEGREE SHEAR	45°							
2 60 DEGREE SHEAR								
3 AATT 4 DUAL 0 DEGREE								
4 DUAL 0 DEGREE		0.000000		1-1				
IND METHOD WELD DE	UNI PTH MAX L	CATION INFOR			· · · · · · · · · · · · · · · · · · ·	·		
1	LIG. AMP	1 LENGTH I	.2 W1	WIDTH	W2	INDICATION TYPE		
No Crack like	- 17 - A-							
100 Crack Tike	5 tr 11015	allons.						
								
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REMARKS	<u></u>			<u> </u>		<u> </u>		
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Level 111 Date 5/5/99		ite 5/13/99	LOW A	Date		20 of 30		
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2/99	DATA	NIC P-SCAN REPORT	I sv			REPORT#	
LOCATION HANFORD	DST TANK	K AYIOZ	EXAM STAI	RT	EXAMEND 7206	JOB# NA	
COMPONENT ID		450	EXAMINATI	ON SURFACE		NOM. THICKNESS	
PRIMARY WAY, 7LAT	€ 3, Scan 1	, 13	CALIBRATE	D D D P	AINTED		
	TO PLATE	3	1 10-2	7.5%" SP)	AMBIEO7 OF	
CIRCUMFERENCE/TOTAL LENGTH EX	AMINED SCA	N LENGTH/PART / 2 REV >	REF. LEVE	CORRECTIO	N (TRANS. C	ORR) D8	
PROCEDURE 5D/2.1 REV 3 MATERIAL TYPE CONDITION SS (X) CS OTHER FAIC							
FILE NAME/ITEM# AY2PW314	DATA DISK#		TRANSDUC	FR		MANGLE KS	
XO REF. POINT (LO) 1/2" from weld toe. (Etaper)	YOREF. POINT (V	No)	SCAN WIDT	7	15"	LX ANGLE 70	
SIZING METHOD	ANGLE	REFERENCE CAL	SHEET	r		T-UP	
1 45 DEGREE SHEAR	45	1121 21121102 011	011221		^		
2 60 DEGREE SHEAR				1	/		
3 AATT						1	
4 DUAL 0 DEGREE					12/		
		ICATION INFOR					
	PTH MAX L LIG. AMP	.1 LENGTH I	.2 W1	WIDT	TH W2	INDICATION TYPE	
No Constit	7/						
No Cracklik	e thore	ations					
	- -		·				
							
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DEMARKS							
REMARKS							
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				A REP						REF	CAL.#	
										, ,_,	. 0, 12. 11	NIA
LOCATION HAN	FORD		SYSTEM DST	TANK	A4102		EXAM /	START SOO	EXAM 190		JOB#	alu
COMPONENTID	WALL VE	RT	WELD :	_	70		EXAM	NATION SURF	ACE	~	NO	V. THICKNESS
CONFIGURATION	PLATE :		TO .	PLATE 3	3		CALIBR	RATED RANGE	=			TEMP Ambierot of
CIRCUMFERENC	ETTOTAL LENGT	H EXA	MINED	SCANIF	NGTH/PART		REF. L	EVEL CORRE	CTION (TRA	NS. CO	RR)	() DB
PROCEDURE	SDI	2.	1		REV 3		MATER	RIAL TYPE DAICS C	THER			CONDITION Fair
FILE NAME/ITEM	#		DATA DIS	iK#			TRANS	DUCER DUAL S		·	LANGLE	rair
Xo REF. POINT (L	o) 0.4-7.3	11	Yoref. P	OINT (Wo)			SCAN	WIDTH /	111	<u>.</u>	ANGLE	
PART#/	L START	LS	TOP	W START	W STOP		L /E. {K.	MIN. THK,	AREA	01.5	COM	MENTS
i			<u></u>			4	2767	R. LIG. D.73D	REPORTAL	BLE	 	
2						0	767.	D.745	100			
3			11	_/	1	_	2774	0.156	<i>∾0</i>		 	1)/
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6			_/_			_	7774	8773	100			-/A
7	****			/).ny	0,772	100		 	14
8							ากช	0.741	NO			
9						Ĉ).ng	0,752	NO)	/	
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SUMMARY MERGED RESULTS												
REMARKS				<u> </u>	<u> </u>	·		1			1	
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2/99		NIC P-SCAN REPORT			REP	ORT#		
LOCATION HANFORD	SYSTEM DST- TANK	AYINZ	EXAM STAI		MEND JO	B# AA		
COMPONENT ID POLIMARY WA		3. 600	EXAMINAT	ON SURFACE	·	NOM. THICKNESS		
CONFIGURATION DE ATTE >	TO PLATE		CALIBRATE	D ID PAINT	ED [TEMP		
CIRCUMFERENCE/TOTAL LENGTH		LENGTH/PART	REF. LEVE	3.57 " CORRECTION (T	RANS. CORR)	, ,		
PROCEDURE 5D1 2.		12" REV 3	MATERIAL SS	PYPE CS OTHER	·	CONDITION		
FILE NAME/ITEM#		10						
AY2VW36A □ DUAL A SGL □ ODEG X ANGLE _ Xo REF, POINT (Lo) Yo REF, POINT (Wo) SCAN WIDTH								
SIZING METHOD ANGLE REFERENCE CAL. SHEET SET-UP								
1 45 DEGREE SHEAR)	<u> </u>			
2 60 DEGREE SHEAR 3 AATT								
4 DUAL 0 DEGREE								
IND METHOD WELD D		CATION INFOR						
	PEPTH MAX L R. LIG. AMP	1 LENGTH	L2 W1	WIDTH	W2	INDICATION TYPE		
No Crack	like Indi	cations						
100 0100	7110 31101	Callons						
		 						
				-				
						· · · · · · · · · · · · · · · · · · ·		
								
REMARKS Intermitent noise from Surface roughness and/or probe(s) rocking up at toe of weld. Also weld geometry indications (f)								
Analyst Reviewer Page Fonald V. Wain Level III Date 58/99 Level Z7 Date 6-499 COGEMA Reviewer Page Level Z7 Date 6-499 COGEMA								

2/99		NIC P-SCAN REPORT			REPORT#				
LOCATION	SYSTEM DST TANK	A4102	EXAM START	EXAMENI	JOB# N/A				
COMPONENT ID PRIMARLY WAL			EXAMINATION	SURFACE ID PAINTED	NOM. THICKNESS				
CONFIGURATION PLATE 3	TO PLATE		CALIBRATED R	ANGE	TEMP AMDIENI OF				
CIRCUMFERENCE/TOTAL LENGTH E		N LENGTH/PART	REF. LEVEL CO	PRRECTION (TRANS	CORR) O DB				
PROCEDURE SDI	2.1	REV 3	MATERIAL TYP	E OTHER	CONDITION				
FILE NAME/ITEM# AY2VW34C									
AYAVW34C DUAL X SGL ODEG ANGLE 45 Xo REF. POINT (Lo) SCAN WIDTH SCAN									
SIZING METHOD ANGLE REFERENCE CAL. SHEET SET-UP									
1 45 DEGREE SHEAR 2 60 DEGREE SHEAR	45		1)						
3 AATT			79	1					
4 DUAL 0 DEGREE									
IND METHOD WELD DE		DICATION INFOR		1146000	0 (") 0104="01				
	LIG. AMP	_1 LENGTH	L2 W1	WIDTH W	2 INDICATION TYPE				
No Crack	167								
No Crack	The Indi	cations.		 					
				 					
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REMARKS									
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			DAT	A REPO	ORT					REF.	CAL.	
LOCATION			SYSTEM				EVAL	OTADT	L EVAN	-ND	100.4	NA
COMPONENT ID	oeb			TANK A	4102		19.	START OO	EXAMI 201	END 10	JOB#	א/א
PRIMAR	4 WALL.	VE/	LT WELT) A	. 00		EXAMI.	NATION SURF	ACE PAINTED			M. THICKNESS つっち"
CONFIGURATION TO CALIBRATED RANGE 2 0.3-1.0"								=			TEMP • F	
CIRCUMFERENC	E/TOTAL LENGT	HEXA	MINED	SCAN LEN	GTH/PART		REF. L	EVEL CORREC	CTION (TRA	NS. CO	RR)	O DB
PROCEDURE	- [٠			В 3		MATER	RIAL TYPE				CONDITION Fair
FILE NAME/ITEM	#	<u>2. (</u>	DATA DIS	_			TRANS	C SDUCER			—l	
AYZ PVI Xo REF. POINT (I	ဂ)		Yo REF. P	OINT (Wo)			SCÁN I	DUAL SO	SL XX ODE	G □	ANGLE	
1" below 7	LATE 1-2 WELL START	LS	WELD		WSTOP			6	,		1.0014	MENTO
INDICATION	LSIARI	1.3	10P	WSIARI	WSTOP	AV TH	K.	MIN. THK, R. LIG.	AREA REPORTA	BLE	COM	MENTS
7		ļ					<u>250</u>	0.493	100		ļ	\longrightarrow
3							515 510	0,485	NO			/ -
4			//				508	0.485	NO		-	17/
5							515	5840	NO		<u> </u>	10/
<u>6</u>			_/_	Λ	,	8	212	88413	NO	,		//-
7		_		H			515	8,490	NO		ļ	///
8				<u> </u>			515	0.493	NO		 	/
10							518 523	0.465	NO		/	
							<u>پيدي</u>	0013	.00		/	
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SUMMARY MERGED		,										
RESULTS REMARKS	<u> </u>]	l,			<u> </u>			<u>L.</u>	
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Examiner o	<u> </u>		· · · · · · · · · · · · · · · · · · ·	nalvet	(On	····		Poviovo-			1 1	Page
Janes	See		15	Lames	Elle.		1,	Reviewer ムル	Jeho	<u></u>		Page
L∕ével <u>≀u</u> [Date <u>5/11/9</u>	2	4	ével <u>III</u>	Date <u> 5//</u>	2/9	<u>5</u> Ì	Level 777	Date_&	-4	29 2	? <u>5</u> of <u>3</u> U

2/99	ULTRASONIC DATA RE	=			REPORT#
LOCATION HAUFORD	SYSTEM TANK	A4/07	EXAMSTART	EXA	MEND JOB#
COMPONENT ID JUMPAN WALL		600	EXAMINATION	N SURFACE ☐ ID ☐ PAINTE	NOM. THICKNESS
CONFIGURATION PLATE 7	TO PLATEZ		CAL BRATED	RANGE	-3.51" JEMP AMBIENT OF
CIRCUMFERENCE/TOTAL LENGTH	EXAMINED SCAN LE	NGTH/PART	REF. LEVEL C	CORRECTION (TR	ANS. CORR)
PROCEDURE		REV 3	MATERIAL TY	CS OTHER	CONDITION
FILE NAME/ITEM# AY 2VWZ6A	DATA DISK#		TRANSDUCE	R Magain Dar	DEG KANGLE 60
Xo REF. POINT (Lo)	Yo REF. POINT (Wo)		SCAN WIDTH	13-30C 110C	DEG MANGLE COC
SIZING METHOD		EFERENCE CA	L. SHEET		SET-UP
1 45 DEGREE SHEAR 2 60 DEGREE SHEAR	60			<u> </u>	
3 AATT	SU		10		
4 DUAL 0 DEGREE	INDIC	ATION INFOR	PAAATIONI	77	
	DEPTH MAX L1 R. LIG. AMP		L2 W1	WIDTH	W2 INDICATION TYPE
A) C ai	14 7 1. 1.				1111
No crackle	ke Indication	hs.			
		 			
<u> </u>					
<u> </u>					
					-
·					
					
REMARKS Intermittent 1013e	from rough	<c< td=""><td>and/o</td><td>r probe</td><td>e(s) Tocking up</td></c<>	and/o	r probe	e(s) Tocking up
at toe of well	1 7 1 7	weld a	jeon of ex	indicati	
		·			<u> </u>
· · · · · · · · · · · · · · · · · · · 	7				
Example	Adalyst R 5	2	Reviewe	51.	Page
Level 11 Date 5/14/15	Level III Date	5/23/19	Level 11	Date 6-4	1-99 25 of 30

2/99		_	C P-SCAN PORT	1					REPORT#
LOCATION HANGER TO	SYSTEM DST	K	A4102	\top	EXAM STAP	रा	IZY	MEND	JOB#
COMPONENT ID		_	(100		EXAMINATI	ON SURFAC	Έ		NOM. THICKNESS
CONFIGURATION O	VERT WE		_73		CALIBRATE	☐ ID ☐ D RANGE	PAINTE	D	0.5 TEMP
CIRCUMFERENCE/TOTAL LENGTH E	YAMINED	PC47E	ENICTU/OADT	_ _		<u>2.5</u>	ON CO	AUG 6	AMBIENTOF
113.28	- XAIVIINED		NGTH/PART			CORRECT	און אט	ians. U	D8
PROCEDURE SD/	2.1		REV 3		MATERIAL ☐ SS X	TYPE CS OTH	FR		CONDITION
FILENAME/ITEM# 4Y2YW34C	DATA DIS	K# TRANSDUCER ☐ DUAL XX SGL ☐ ODEG				DEG D	ANGLE 450		
Xo REF. POINT (Lo)	Yo REF. PC	OINT (Wo)	11		SCAN WIDT	4	11	7	
SIZING METHOD	ANGLE	R	EFERENCE C	AL.	SHEET			SET	-UP
1 45 DEGREE SHEAR	45								
2 60 DEGREE SHEAR					_/	U			
3 AATT 4 DUAL 0 DEGREE	<u> </u>						}		
7 BOAL O BEOILE		INDIC	ATION INFO	RM	1ATION				
	EPTH MAX	([1	LENGTH	L2		WIE	TH	W2	INDICATION TYPE
11000	11/1 -	7 1.							
No wack	-1110 -1	-ndic	ations	- _				<u> </u>	
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REMARKS		L	J	Щ				<u> </u>	
INCINIATIO									
									
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AUTOMATE	D ULTRASO		KNES	s		REPC	PRT#		
	REF.	CAL.#							
Looizov		··-					AK		
	YSTEM DST TANK A	4102	EXAM:	START 'O	1630		JOB# NA		
1	PLATE HERE WE	^	EXAMII	NATION SURF	ACE		NOM. THICKNESS		
CONFIGURATION LATE 1 7	O PLATE 2	HORE 3.	CALIBE	CATED RANGE			TEMP AMBIENT OF		
CIRCUMFERENCE/TOTAL LENGTH EXAMIN	IED SCAN LENG	GTH/PART	REF. LE	EVEL CORREC	TION (TRAI	NS. COR	R) DB		
PROCEDURE SD/ 2.1	·	CONDITION							
1A4284W3D	DATA DISK#		TRANS	ZACS O DUCER DUAL □ SG	THER	G \square	ANGLE		
33" Cw fran Platel Vert. (Noth)	oREF. POINT (Wo) We (L L		SCAN	WIDTH 6"	,,,,,,,,,,	<u></u>			
PART#/ L START L STOP			1 /E. {K.	MIN. THK, R. LIG.	AREA REPORTAI	RIF	COMMENTS		
A4284W30.1			.508	.493	NO	<u> </u>	/		
" 72			.508	.490	NO				
', 3			.508	.480	ND				
" '4			520	.498 .498	ND				
1.6	-		.218 .250	.498	NO		/		
" ·)			,525	500	ND				
N. 8. 11			.222	.500	NO		4.1		
.1 .9	\int		,515	.485	NO		////		
a .10	/_/		.212	.498	NO				
-, 11	/ / - /		.523	.498	NO				
11 .12			523	'200	NO		//		
a .[3]			212	,493	<i>NO</i> _		——/ Y		
11 15			253	.500	<u> </u>				
1 16	 		\$20 \$20	508	NO				
4 17			518	.498	<u> </u>		-/		
11 18			<u>250</u>	,500	NO				
" 119			.513	.505	NO				
14 120 /			เรียง	.500	GOV				
Ayze4430,21			.523	.505	NO		1 -		
SUMMARY		¥ .23	.515	,4 9 g	NO		1		
MERGED RESULTS		* ·22 -23 -23 -24 -25	219	-500	NO 0		/		
REMARKS	1		.520	1202	20	i	/		
* Scan to 293" (24+ feet) to include weld repairs in examination area.									
Repairs at 258-266"	and 281-2	91"	• 1						
Plate I vert weld at 34" (- 1121/2'), Plate 2 Vert, weld at 270" (132' mark)									
Examiner S Comments	Analyst	500	F	Reviewer	Nels	4 .	Page		
Level _(((Date _ 5/11/99		Date_5/12/9	9 1	evel 725	Date_6	-4_ G	₹ 30 of 30		

2/99	DATA	ONIC P-SCAN REPORT			REPORT#	
LOCATION HAN PORD	DST TA	NK AYIOZ	EXAM STAI		MEND JOB# N/A	
COMPONENT ID PLIMARY WALL		3, 60° Ax.	EXAMINATI	ON SURFACE	NOM. THICKNESS	
CONFIGURATION PLATE 1	TO	7E Z	CALIBRATE		TEMP	
CIRCUMFERENCE TOTAL LENGTH E	EXAMINED SC	CAN LENGTH/PART	REF. LEVE	CORRECTION (TR	RANS. CORR) O DB	
PROCEDURE						
FILE NAME/ITEM# AYZHW36A	DATA DISK#		TRANSDUC	FR	DEG MANGLE 60°	
Xo REF. POINT (Lo)	Yo REF. POINT	(Wo)	SCAN WIDT	المحققة المحققة المح		
SIZING METHOD	ANGLE	RÉFERENCE C	AL. SHEET	<u> </u>	SET-UP	
1 45 DEGREE SHEAR			· · · · · · · · · · · · · · · · · · ·			
2 60 DEGREE SHEAR	60.			$\mathcal{O}_{}$		
3 AATT 4 DUAL 0 DEGREE		- 		A		
- BONE O BEONEE	IN	DICATION INFO	RMATION			
	DEPTH MAX R. LIG. AMP	L1 LENGTH	L2 W1	WIDTH	W2 INDICATION TYPE	
1/2 0 01	171	. 115				
100 Mack	ike Lndi	ications				
		- -				
			 		 	
			 			
			·			
					<u> </u>	
	e from Si		shness		probe(s) rocking	
up at toe of u	seld. Also	weld geon	etery in	dications.	1/2	
	<u></u>					
Examiner V Virgi	Analyst	R 5000-	Review	ver 12/20-	Page	
Zevel // Date 5/14/99	Level III	Date 5/23/99	Levei	Date 6 3	29 of 30	

2/99	DATA	NIC P-SCAN REPORT			REPORT#			
LOCATION HAUFORD	SYSTEM DS 7 74	NK 44102	EXAM STAF		MEND JOB# NA			
COMPONENT ID WALL HOLD	. WELD 3	45° CIRC.	EXAMINATI	ON SURFACE	NOM THICKNESS			
CONFIGURATION	TO 2.45		CALIBRATE	☐ ID ☐ PAINTE D RANGE	TEMP			
PLATE I CIRCUMFERENCE/TOTAL LENGTH E 240"	XAMINED SCA	N LENGTH/PART	REF. LEVEL CORRECTION (TRANS. CORR) O DB					
PROCEDURE SD1 2.1 REV 3 MATERIAL TYPE SS M2 CS OTHER								
FILE NAME/ITEM# AYZHW3YC	EU E MANGETTANI							
Xo REF. POINT (Lo)	Yo REF. POINT O	No) , ,	SCAN WIDT	TH SGL □ 01	DEG ANGLE 45°			
SIZING METHOD	ANGLE	REFERENCE CA	1		CCT LID			
1 45 DEGREE SHEAR	450	REFERENCE CA	L. SHEET		SET-UP			
2 60 DEGREE SHEAR	10		_1	2				
3 AATT				$-\pi$				
4 DUAL 0 DEGREE	INIT	DICATION INFOR	PMATION	7				
		1 LENGTH	L2 W1	WIDTH	W2 INDICATION TYPE			
N. O. I		1,						
100 Crackli	he Indi	cations.						
								
								
								
					 			
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REMARKS	<u> </u>				<u> </u>			
								
								
Examiner L. Wain	Analyst	Olo -	Review	(er)	Page			
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DISTRIBUTION SHEET

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Distribution Tank Systems Integrity Engr'g

Project Title/Work Order

Date 7/21/99

Final Results of Double-Shell Tank 241-AY-102 Ultrasonic Inspection EDT No. 623398

	ECN No.				
Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
R. P. Anantatmula	R1-30	х			
D. L. Becker	R3-73	x			
B. G. Erlandson	R1-51				х
E. A. Fredenburg	R1-56	×			
H. R. Hopkins, III	R2-58	х			
C. E. Jensen	R1-56	х			
L. J. Julyk	R1-56	х			
P. C. Miller	R1-51	х			
E. A. Nelson	L6-38	х			
M. A. Payne	R2-58				х
D. C. Pfluger	R1-56	х			
R. S. Popielarczyk	R2-58				х
R. W. Powell	R3-75	х			
W. J. Powell	G1-54	х			
D. S. Rewinkel	s7-40	х			
S. H. Rifaey	R1-56	х			
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D. B. Smet	R1-56	х			
T. B. Veneziano	S7-40	х			
K. A. White	s5-13	х			
D. G. Baide	\$5-05	х			
M. L. Dexter	R1-51	х			
E. E. Mayer	R2-50				х
A. F. Pardini	K5-26	х			
G. J. Posakony	K5-26	х			
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