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LaSalle Generating Station
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Marseilles, IL 61341-9757
Tel 815-357-6761



April 15, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: LaSalle County Nuclear Power Station Unit 1
L1R07 Core Shroud Inspection Results
NRC Docket No. 50-373

- References:**
1. BWRVIP document GENE-523-113-0894, BWR Core Shroud Inspection and Evaluation Guidelines, dated September 1994.
 2. Letter from Mr. G. G. Benes (NLA) to USNRC dated October 18, 1995.

The above References provided ComEd's response to Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors". As indicated in our response (and required by the Generic Letter), we committed to providing the NRC with our core shroud inspection results within 30 days from the completion of the inspection. Attached is the Core Shroud Inspection Results for the LaSalle 1, Seventh Refuel Outage (L1R07). The Core Shroud inspection for L1R07 was completed on March 16, 1996.

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If there are any questions or comments concerning this letter, please refer them to me at (815) 357-6761, extension 3600.

Respectfully,

R. E. Querio 4/18/96

R. E. Querio
Site Vice President
LaSalle County Station

Enclosure

cc: H. J. Miller, NRC Region III Administrator
P. G. Brochman, NRC Senior Resident Inspector - LaSalle
D. M. Skay, Project Manager - NRR - LaSalle
F. Niziolek, Office of Nuclear Facility Safety - IDNS
Central File

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Response to Generic Letter 94-03

References:

1. BWRVIP document GENE-523-113-0894, *BWR Core Shroud Inspection and Evaluation Guidelines*, dated September 1994.
2. Letter from Mr. G.G. Benes (NLA) to USNRC dated October 18, 1995.

Attachments:

1. Shroud examination sketches plan views and rollout view.
2. Examination Summary Sheet, Report No. RS-02 for the H4 circumferential weld.

This document is the LaSalle County Station (LSCS) response pursuant to the Station's commitment to comply with the additional reporting requirements of item 3., of USNRC Generic Letter 94-03; *"Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors"*, as that item applies to LSCS Unit 1. Additional responses to address these reporting requirements for LSCS Unit 2 have been submitted in accordance with the time frame requested in the Generic Letter. The format of this LSCS response retains the numbering sequence of the Generic Letter.

As a utility, ComEd is committed to the BWRVIP. ComEd has been, and will continue to be an integral part of the BWRVIP. LaSalle County Station will follow the guidance provided by the BWRVIP with respect to flaw assessment, inspection, and repair options as this guidance is provided, and if it should be subsequently revised.

Reporting Requirements

3. Within 30 days from the completion of the inspection, provide the results of the inspection.

The examination plan docketed under the letter of Reference 2 was completed during the seventh refueling outage of LSCS Unit 1. Data collection began on March 2, 1996 with data analysis and review concluding on March 16, 1996. As described in the inspection plan, 100% of the accessible length of welds designated as H3, H4, H5, H6, and H8 were examined using the ultrasonic method. Welds H1, H2, and H7 were not examined, nor did they require examination as part of the Category B (Limited Inspection) described in the Reference 1 BWRVIP document.

For those welds which were inspected, examination of the far (inside diameter) surface was accomplished using standard 45 degree Shear wave, and 60 degree Refracted Longitudinal wave ultrasonic (UT) testing. The near (outside diameter) surface of the welds were examined using the "Creeping Wave" UT method. All ultrasonic data for Welds H3, H4, H5, H6, and H8 was collected using an automated scanner known as the "O.D. Tracker".

Eight non-geometric reflectors were recorded during the examination of the H4 weld, which are discussed below. While non-relevant indications and geometric reflectors were detected, no indications of cracking were detected in any of the other welds examined. Accessibility for UT scanning was limited by vessel internal components such as Guide Pins, Core Spray Piping, Low Pressure Coolant Injection Bellows, Jet Pumps, and Jet Pump Riser Braces. The effective examined length of each weld is listed below as well as the inspected length as a percentage of the total weld length. The effective length is the length of weld metal interrogated by all three of the UT beam angles.

EFFECTIVE WELD LENGTH EXAMINED

Weld H3 - 526.7" examined representing 80.83% of the total weld length.

Weld H4 - 506.8" examined representing 77.77% of the total weld length.

Weld H5 - 506.8" examined representing 77.77% of the total weld length.

Weld H6 - 523.3" examined representing 80.30% of the total weld length.

Weld H8 - 499.6" examined representing 79.30% of the total weld length.

The ligaments into which each effective length was split are represented pictorially (in plan views and in a roll out) for each weld on the sketches of Attachment 1. A conversion factor of 1.81" per degree is applicable to welds H3, H4, H5, and H6 based on a 207.12" outside diameter for the Core Shroud at these elevations. A conversion factor of 1.75" per degree is applicable to weld H8 based on a 200.75" shroud outside diameter at the H8 elevation.

A summary of the indications detected in the H4 weld follows:

Eight indications were detected by the 60 degree Refracted Longitudinal and/or the OD Creeping Waves during examination of the H4 circumferential weld. The total combined length of the eight indications is 15.2", representing 3% of the examined

length. The longest of the individual indications is 2.72" long. The depth of the indications does not exceed .60". Ultrasonic data shows that three of the eight indications are OD connected, none of the eight are ID connected. Visual examination of one indication confirmed that it was open to the OD of the Shroud. Attachment 2 (Examination Summary Sheet, Report No. RS-02) provides a detailed summary of the H4 weld examination and the locations and sizes of all of the indications.

An evaluation of the indications and the unflawed areas of the H4 circumferential weld was completed using the LEFM approach recommended in the reference 1 BWRVIP document. Areas which were inaccessible for examination were assumed to be flawed through wall. The eight indications were assumed to be IGSCC and a crack growth rate of 5×10^{-5} inches/hour was applied for a 24 month operating cycle. The results of the evaluation indicate that the H4 weld continues to meet the required normal/upset and emergency/faulted condition safety factors with significant margin. This evaluation and associated calculation (NED-C-MSD-035, Revision 00) is on file at LaSalle County Station.

In conclusion, the LSCS Unit 1 Core Shroud has been examined during the seventh refueling outage in accordance with the inspection plan of Reference 2, using the best available industry methods and technology. A small number (3% of the examined length) of indications were detected on the H4 circumferential weld. These indications have been evaluated as IGSCC using the applicable BWRVIP guidance and found to be acceptable for at least one 24 month fuel cycle. While non-relevant indications and geometric reflectors were detected, no crack like indications were detected in any of the other welds examined.

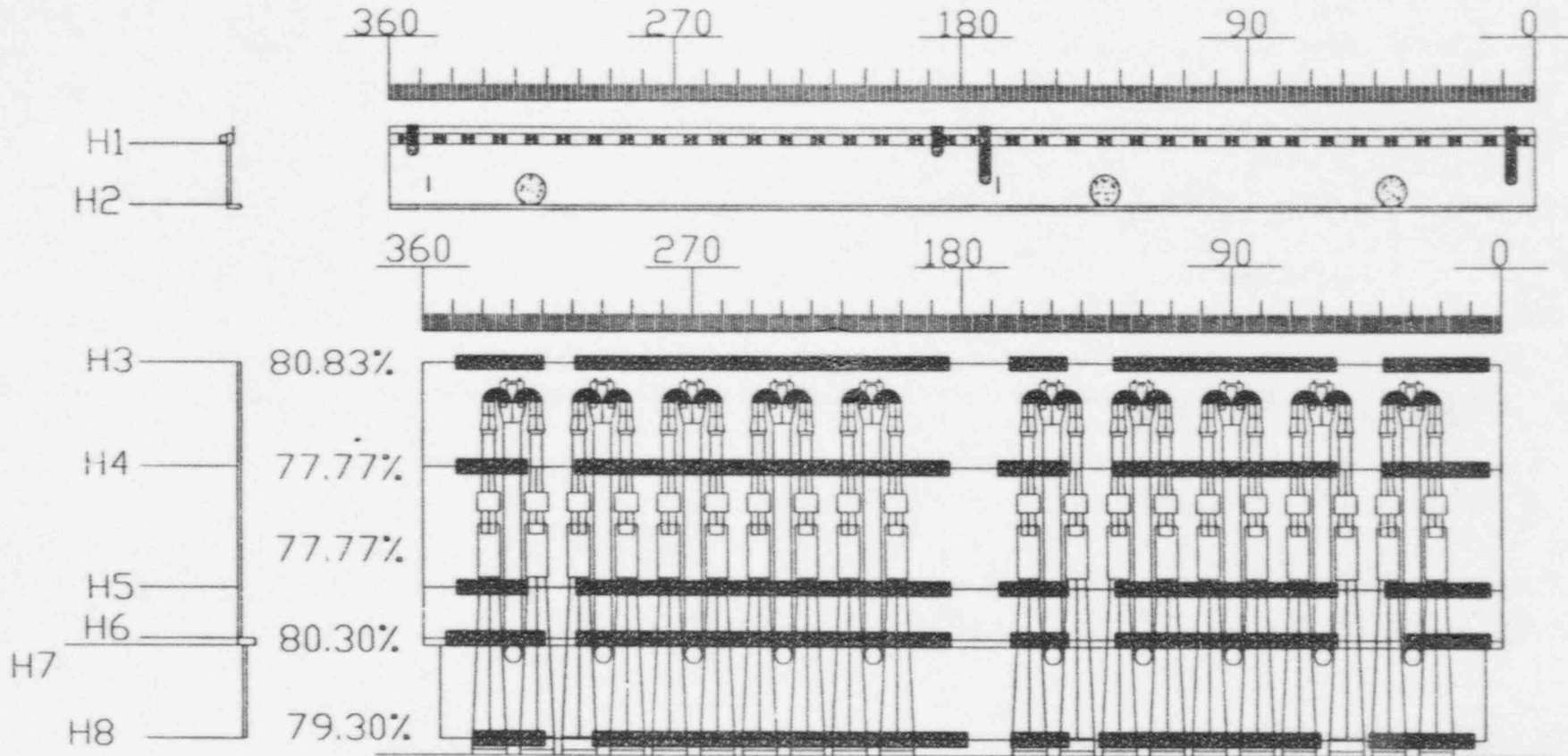
ATTACHMENT 1
SHROUD SKETCHES




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LASALLE UNIT 1

EFFECTIVE COVERAGE FOR
H3, H4, H5, H6 & H8

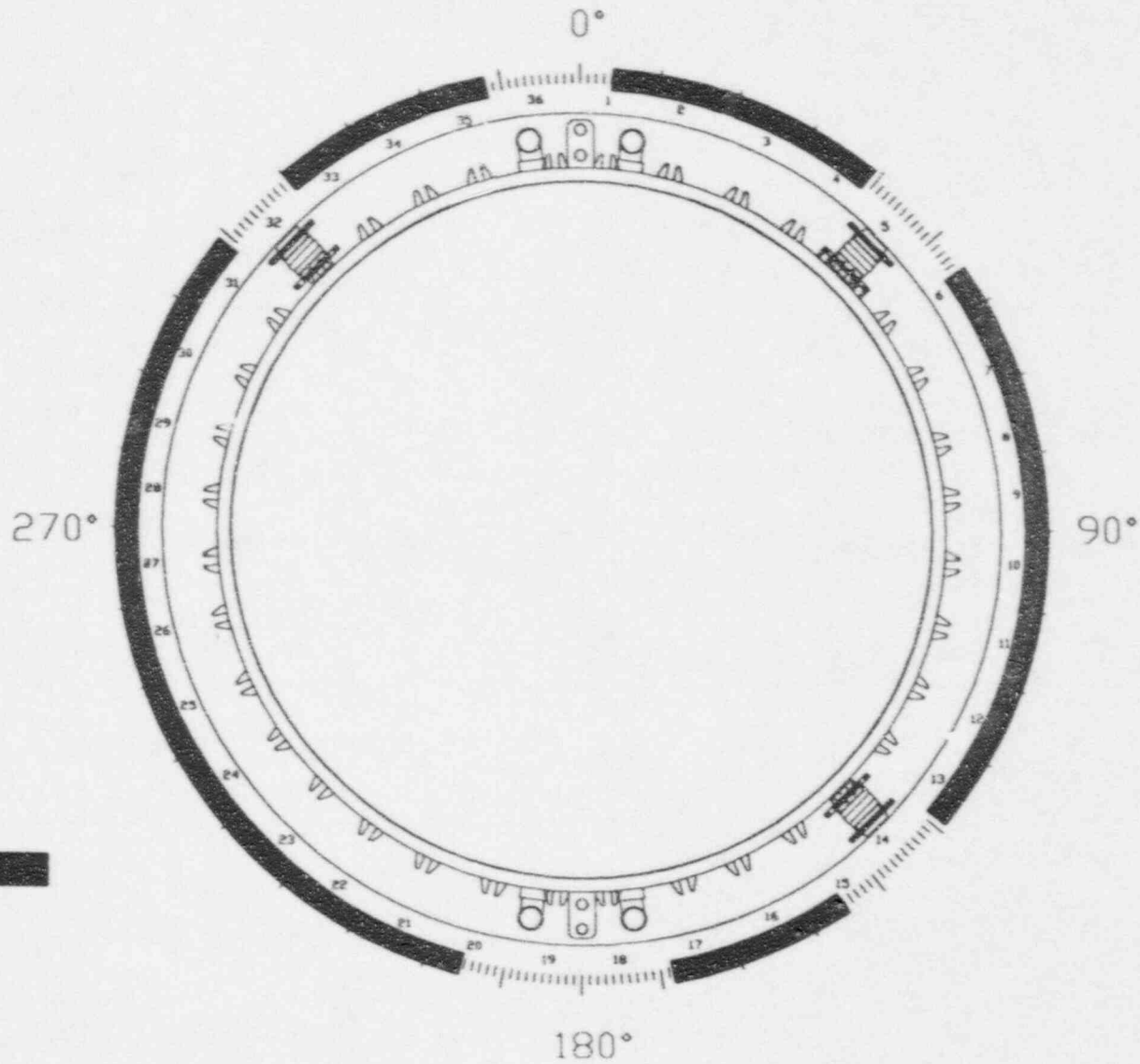


EFFECTIVE SCAN 

REPORT NO.: RSHRD

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LASALLE UNIT I SHROUD INSPECTION H3 WELD COVERAGE MAP



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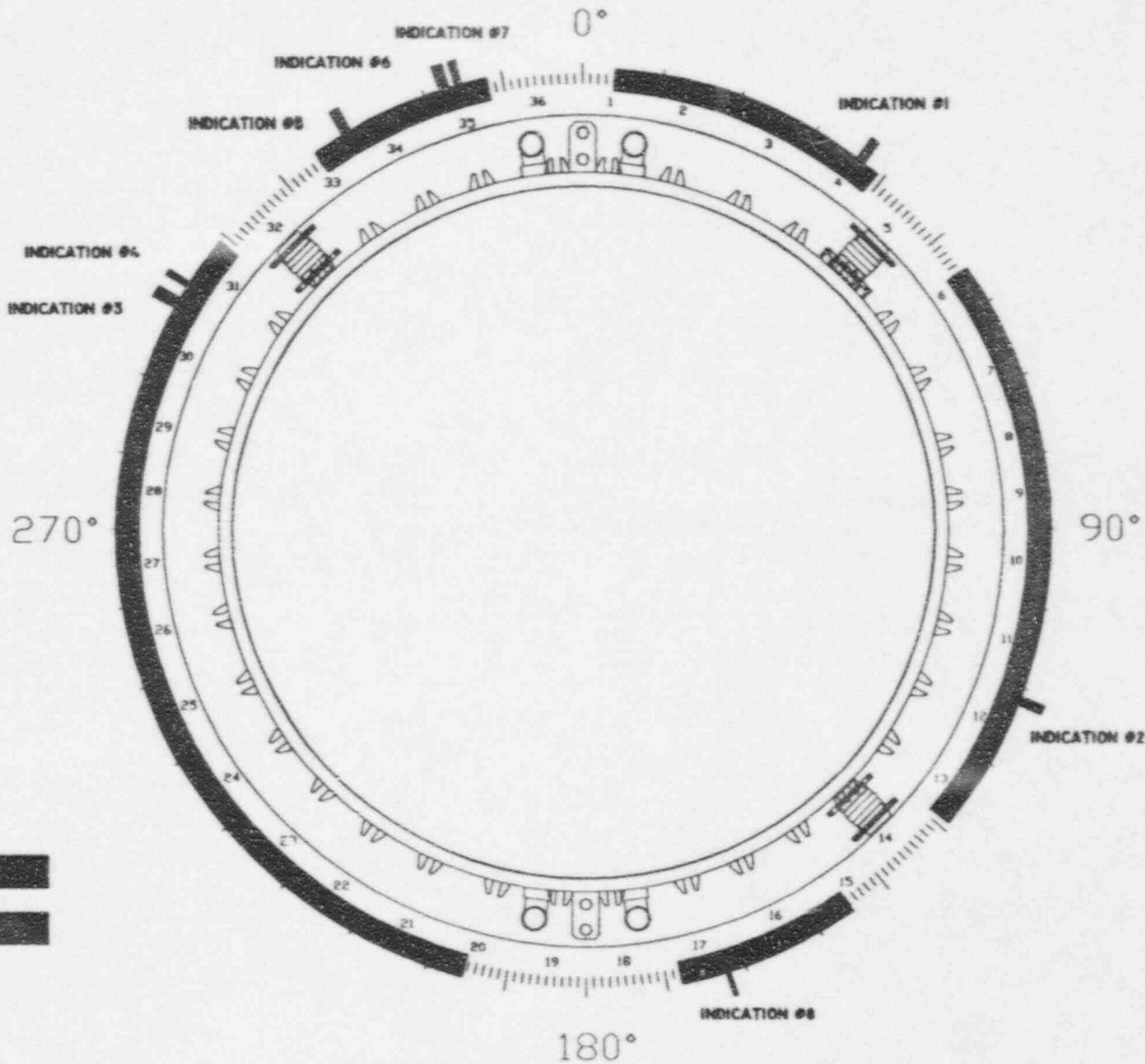
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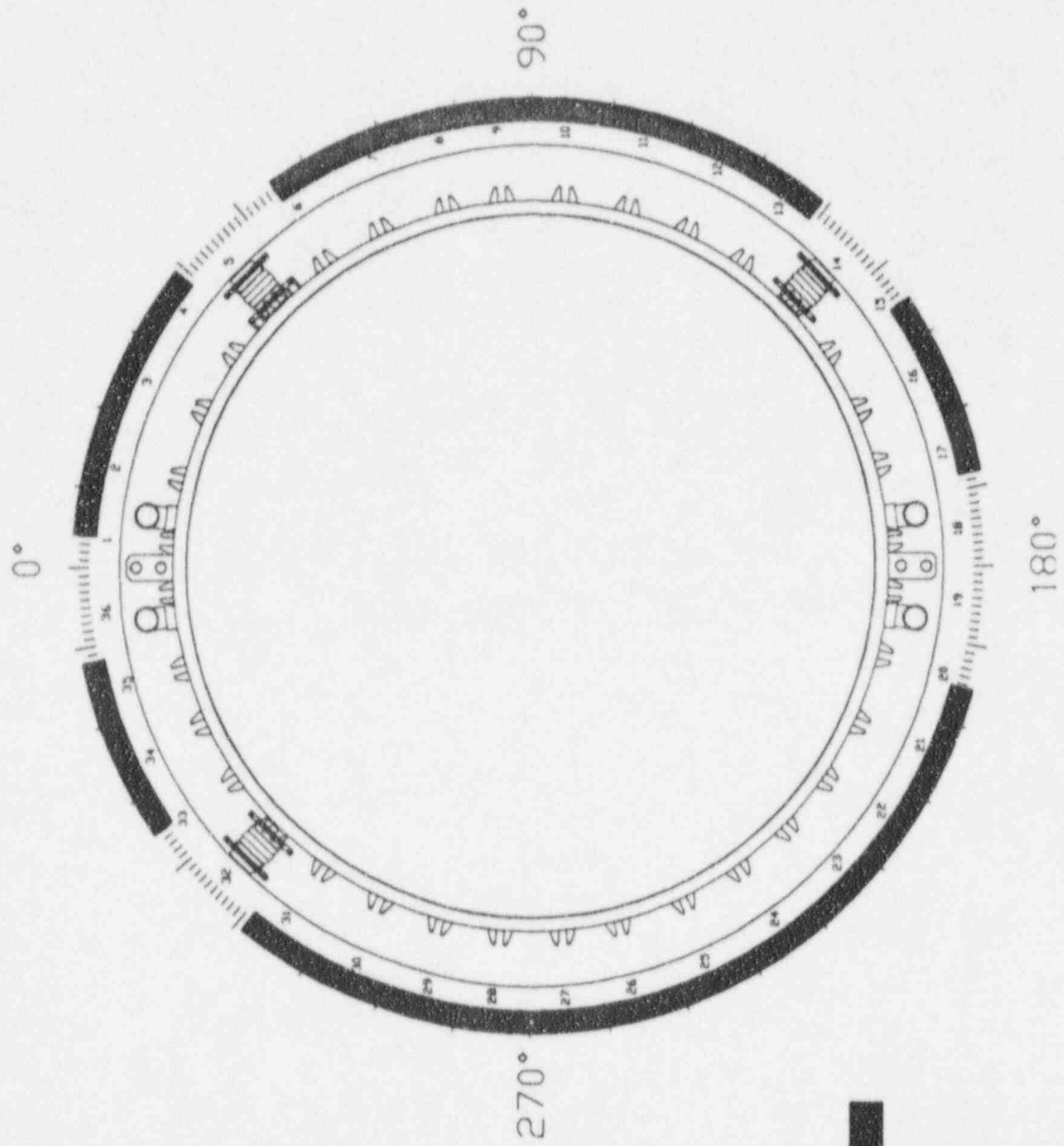


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LASALLE UNIT I SHROUD INSPECTION H4 WELD FLAW & COVERAGE MAP



LASALLE UNIT 1 SHROUD INSPECTION H5 WELD COVERAGE MAP

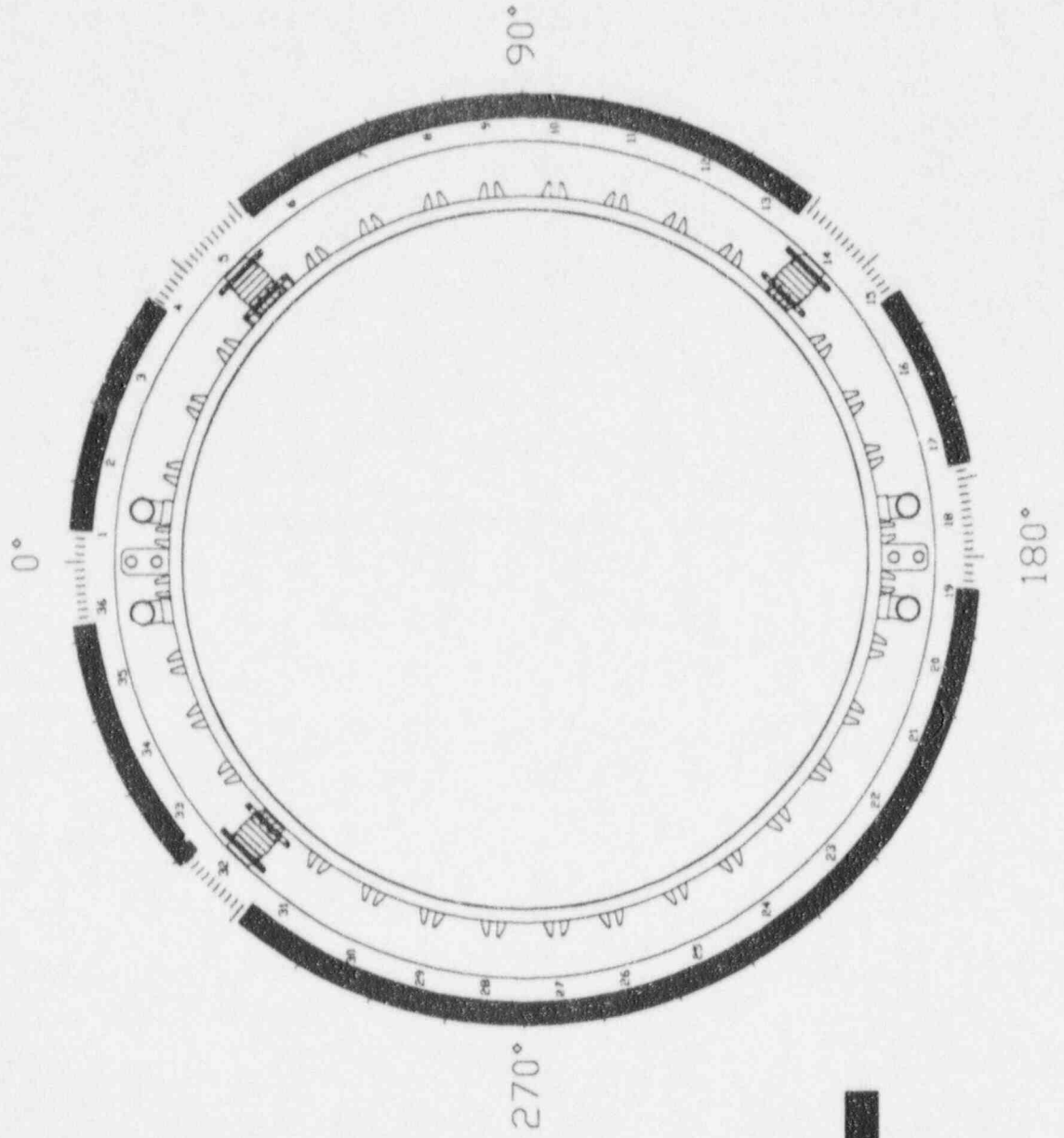


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LASALLE UNIT 1 SHROUD INSPECTION
H6 WELD COVERAGE MAP

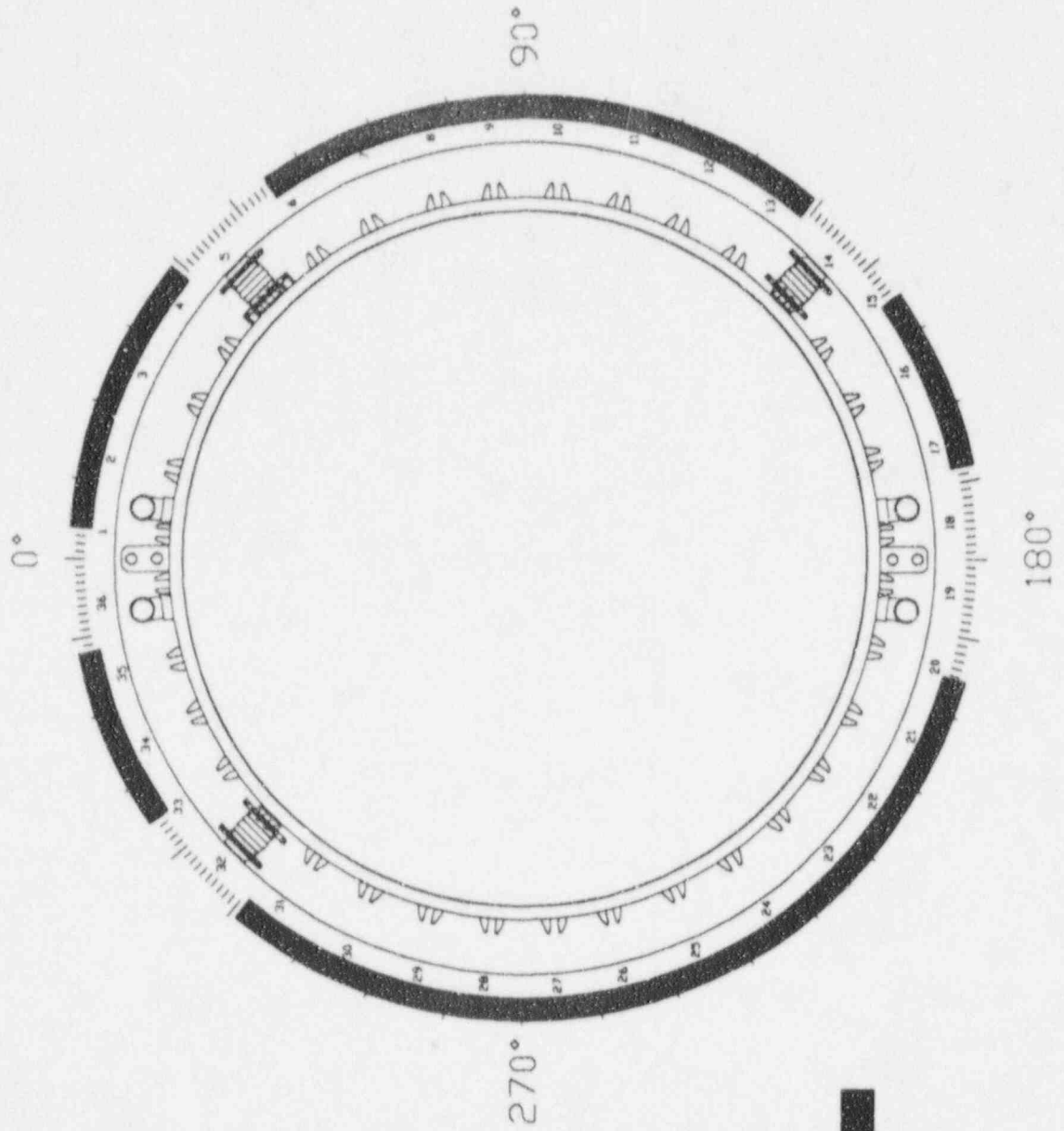


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AREA SCANNED

LASALLE UNIT 1 SHROUD INSPECTION H8 WELD COVERAGE MAP



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AREA SCANNED 

ATTACHMENT 2

WELD H4 EXAMINATION SUMMARY SHEET



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EXAMINATION SUMMARY SHEET

REPORT NO.:

RS-02

PROJECT: LaSalle Unit 1
L1R07

PROCEDURE: UT-LAS-503V4 REV: 0 FRR: N/A
N/A
N/A

SYSTEM: CORE SHROUD

N/A REV: N/A FRR: N/A
N/A
N/A

WELD NO.: H-4

CONFIGURATION: SHELL - SHELL

N/A REV: N/A FRR: N/A
N/A
N/A

EXAMINER: C. MCKEAN LEVEL: II

MT PT UT VT

EXAMINER: C. VAN HECKE LEVEL: II

CIRCUMFERENTIAL

EXAMINER: E. SWITZER, J. BULLEN LEVEL: II/II

WELD TYPE: LONGITUDINAL OTHER N/A

DATA SHEET NO.(S): DS-02

CAL SHEET NO.(S): CS-04
CS-05
CS-06

During the Ultrasonic examination of the above referenced weld, eight (8) non-geometric indications were recorded by the Smart 2000 System utilizing a Tri-modal search unit composed of 45° shear wave, OD creeping wave (80°RL) and a 60° refracted longitudinal (60°RL) wave.

These indications have the following parameters:

Indication Number	Distance from Vessel 'O'	Lug Set	Total Length	Flaw Depth	Distance from weld	Side of Weld	Surface Connection	Search Unit
1	35.79°- 36.89°	4	1.1"	*	2.8"	Lower	OD	60°/ODCR
2	110.47°-111.57°	12	1.1"	*	.50"	Lower	**	60°/ODCR
3	298.58°-300.08°	31	1.5"	*	1.1"	Lower	OD	60°/ODCR
4	302.06°-302.86°	31	.8"	*	.90"	Lower	OD	60°/ODCF
5	328.38°-329.58°	34	1.2"	*	.60"	Lower	**	60°/ODCh
6	341.76°- 343.06°	35	1.3"	*	.40"	Lower	**	60°
7	343.95°-344.85°	35	.9"	*	.50"	Lower	**	60°/ODCR
8	161.96°-162.46°	17	.5"	*	.80"	Lower	**	60°/ODCR

Total flaw length is 8.4" or 15.2". The conversion factor for linear units is 1.81" per degree.

* Flaw depth does not exceed 30% of t or .60"

Total effective exam area was 284" or 506.8". This represents 77.77% of the weld length. Effective coverage is the area interrogated by all three beam angles. 100% of all accessible areas were examined. Access was limited due to the proximity of Guide Pins, Core Spray downcomers and LPCI bellows. This examination was performed from the lower shroud shell side only, due to Jet Pump riser brace interference.

Indication # 1, 3 and 4 are OD connected flaws as confirmed by UT. Indication # 1 was also confirmed by visual.

Indication # 2 a visual examination was performed and could detect no abnormal condition.

Indications # 2, 4, 5, 6, 7 and 8, the weld crown geometry prevents the search units from scanning over the indication, therefore OD confirmation could not be determined.

Effective Exam Area: 4.1° to 39.1°, 55.1° to 129.1°, 145.1° to 168.1°, 184.1° to 309.1° and 325.1° to 348.1°

Non-relevant indications and weld geometry were also recorded.

W. Bellotti III 3-22-96
SUMMARY BY LEVEL DATE

Thomas D. ... III 3/27/96
SMAD REVIEWED BY LEVEL DATE

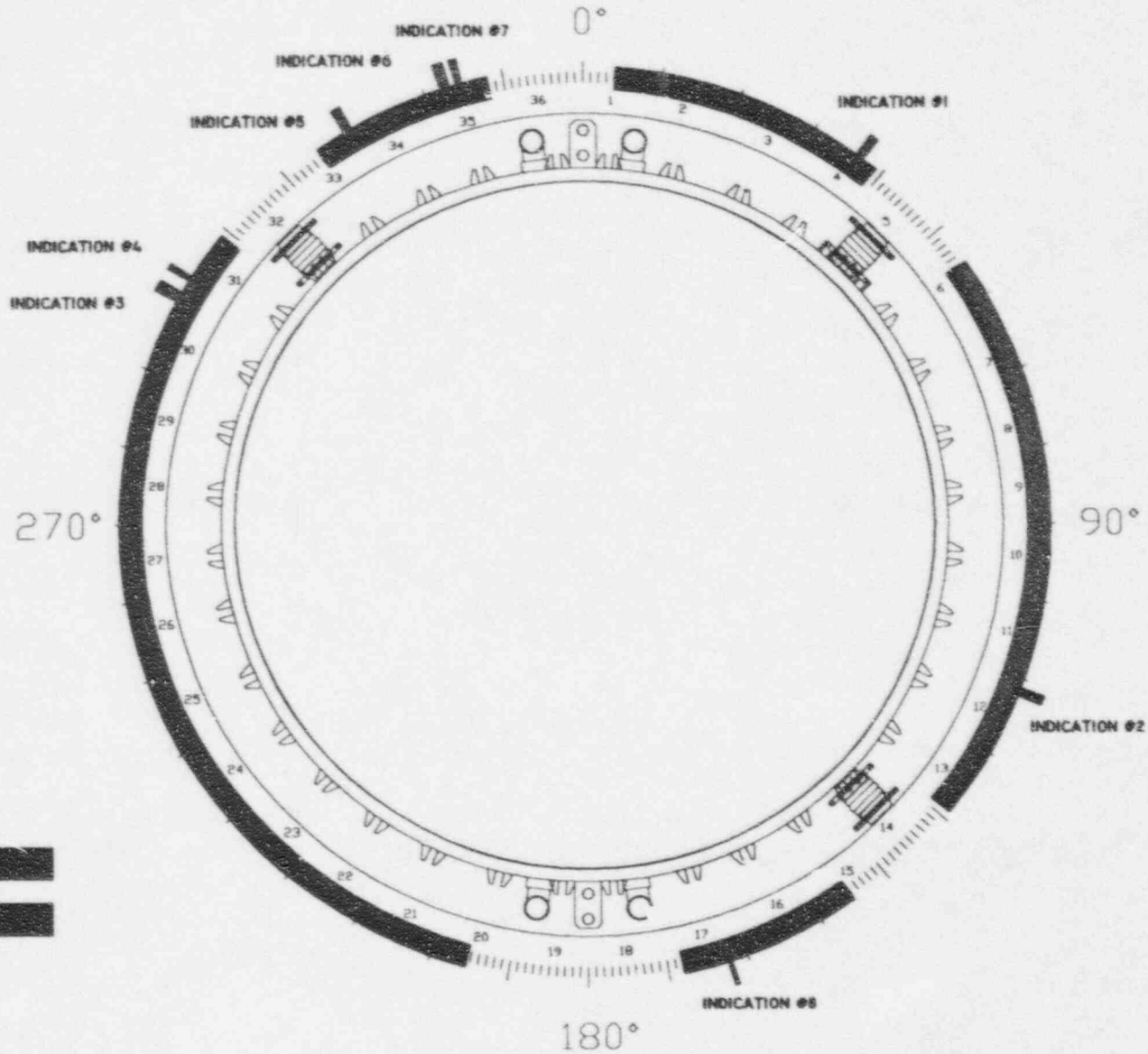
J. E. ... III 3-25-96
GE REVIEWED BY LEVEL DATE

... 3/27/96
UTILITY REVIEWED BY DATE



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LASALLE UNIT I SHROUD INSPECTION H4 WELD FLAW & COVERAGE MAP



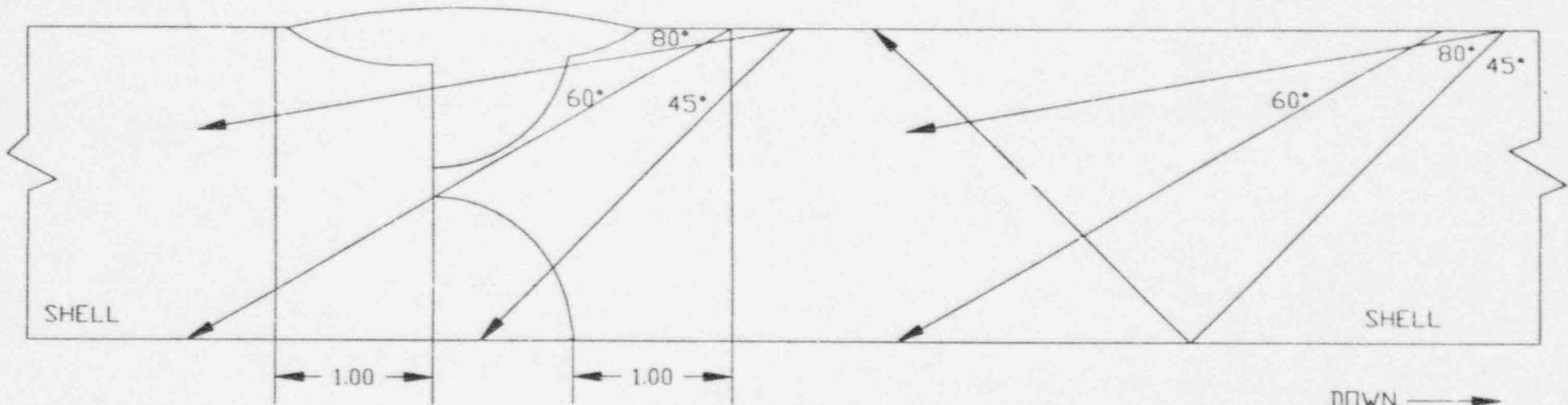
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H4 BEAM COVERAGE PLOTS

SCAN COVERAGE



SCALE 1:1

Bellett
GE REVIEWED BY

III 3-22-96
LEVEL DATE

Arthur L. Lewis
UTILITY REVIEW

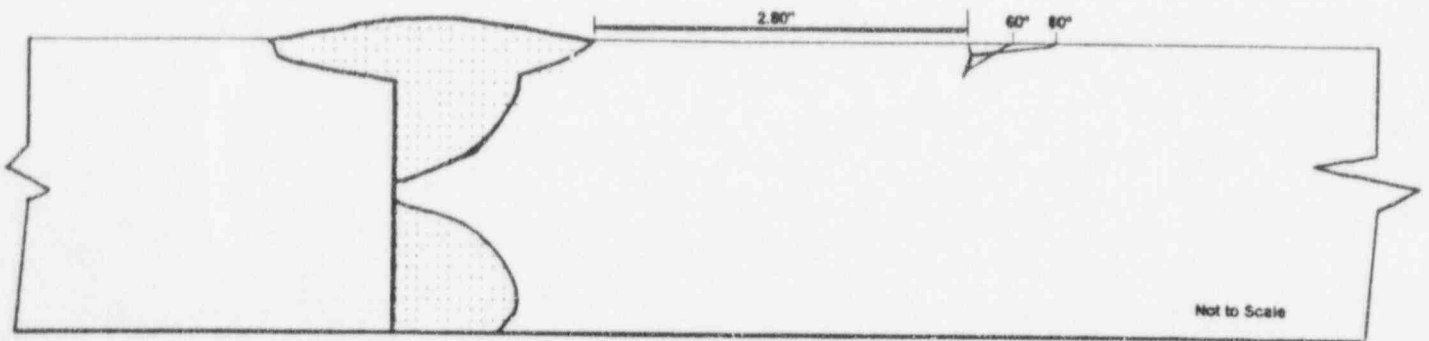
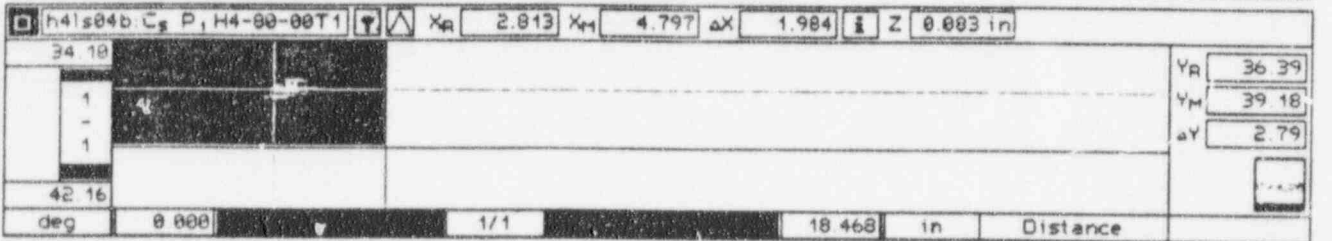
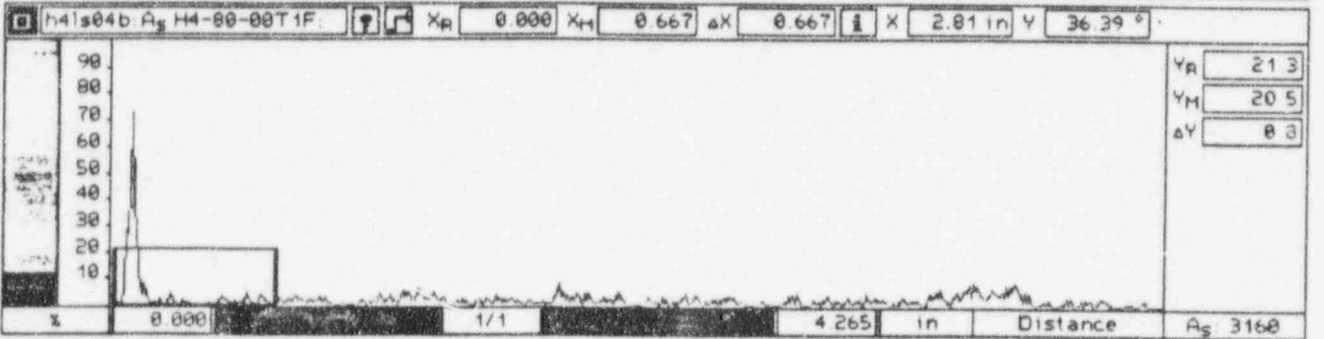
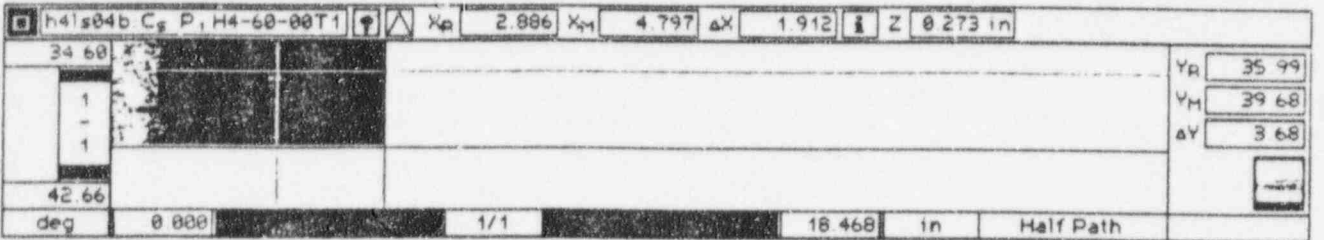
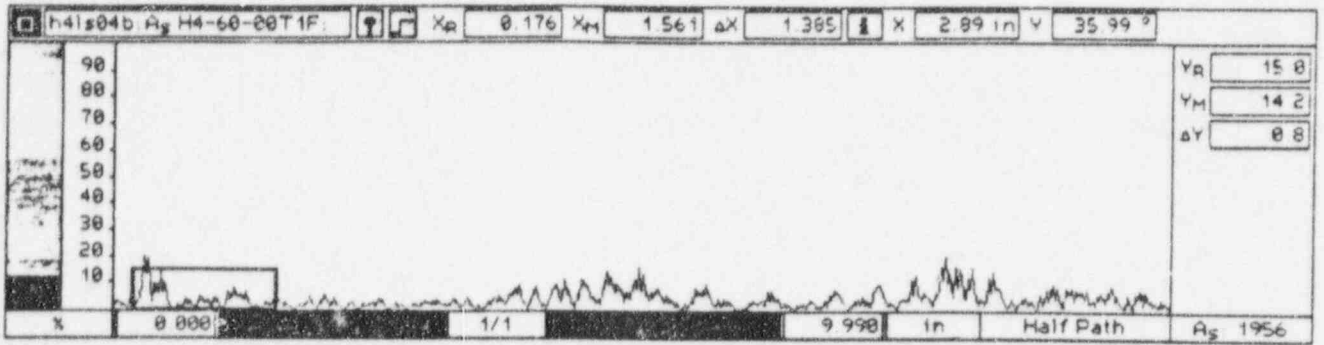
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DATE

Thomas D. Hockley L. III 3/27/96
SMAD REVIEW DATE



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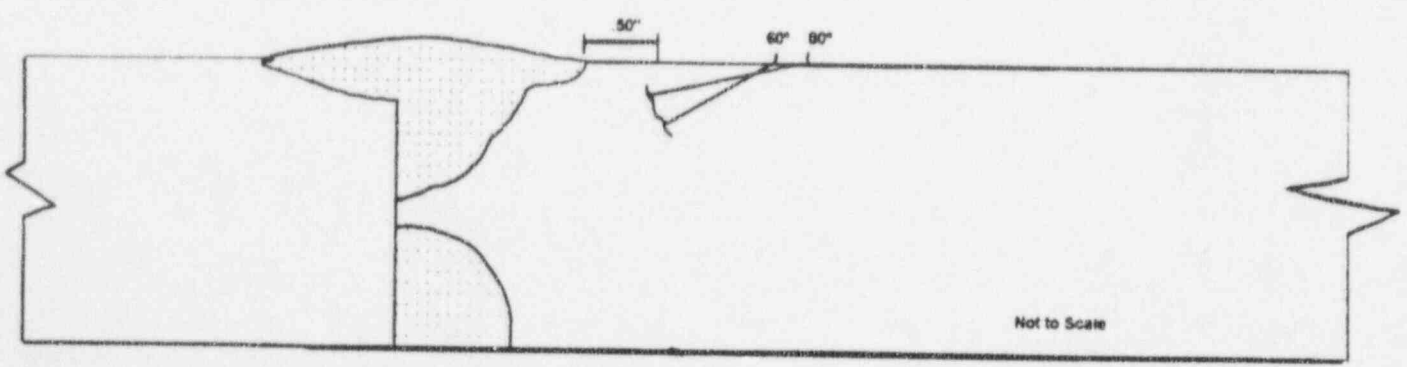
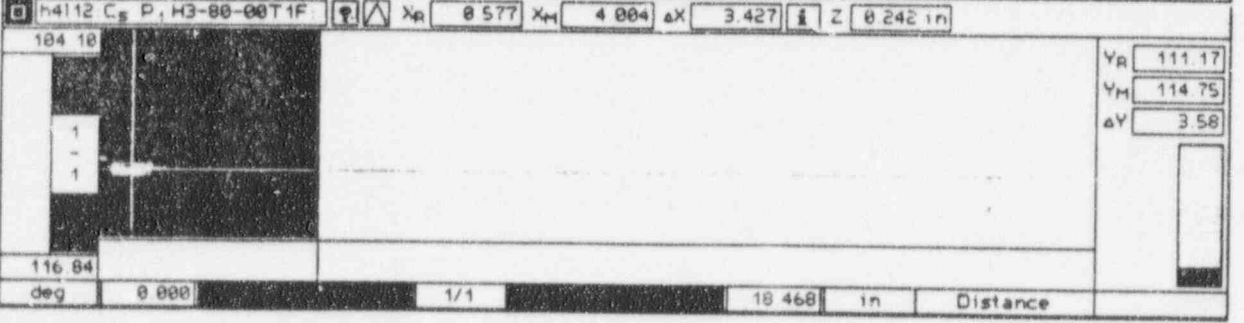
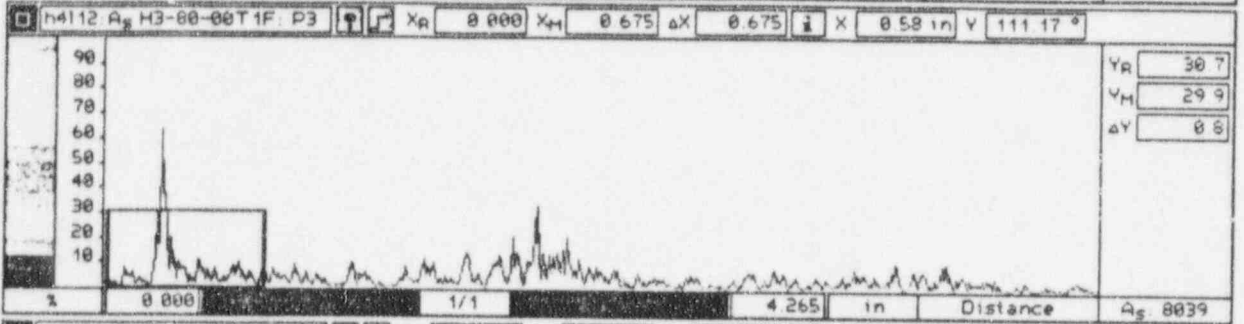
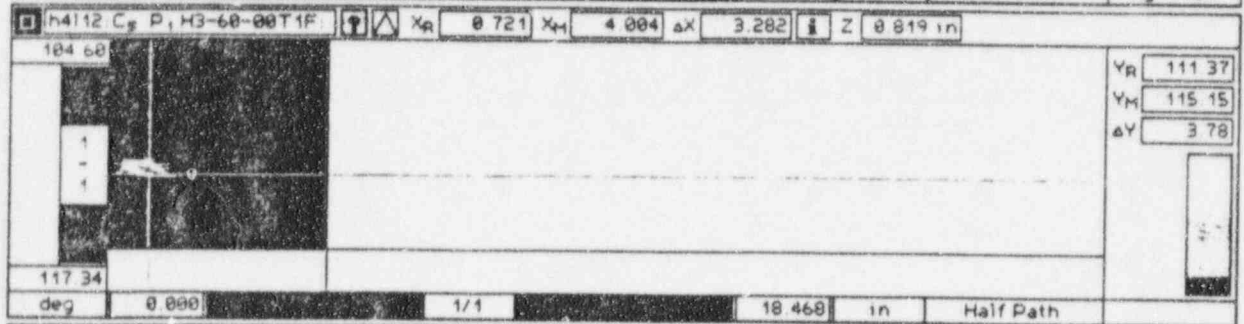
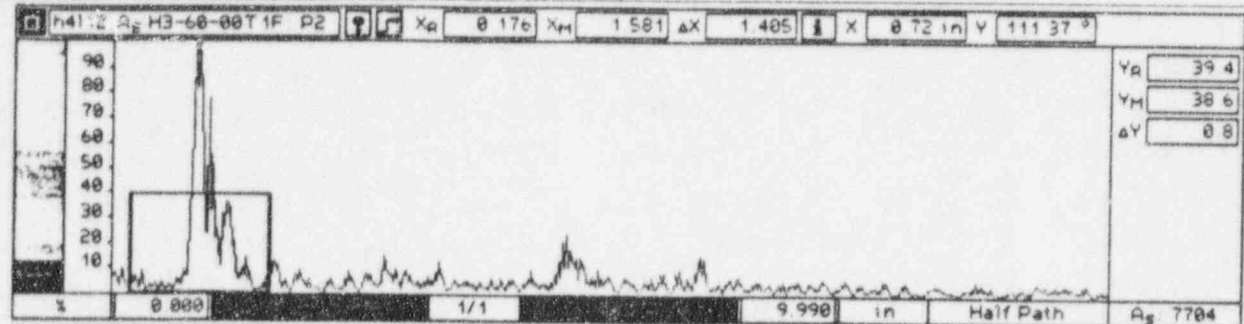


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 WELD NO.: H-4 SEARCH UNIT: 60° & 80° INDICATION NO.: 1 PAGE: 4 OF: 21



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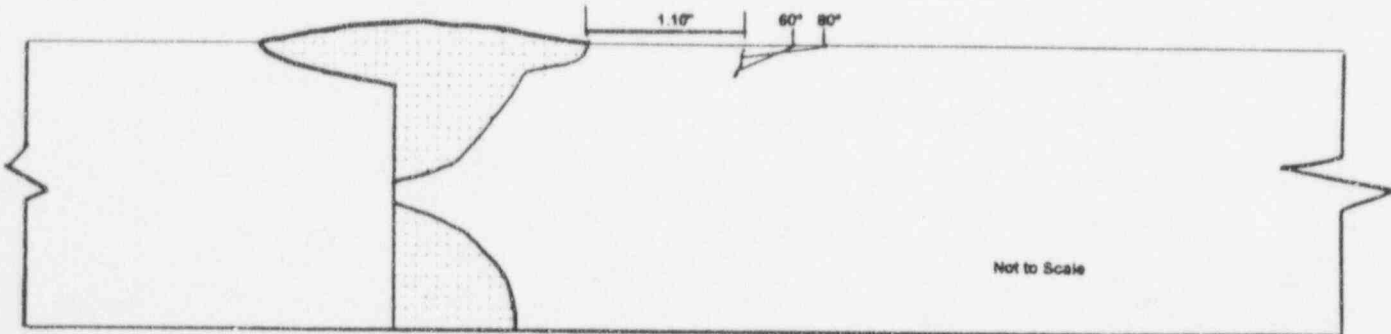
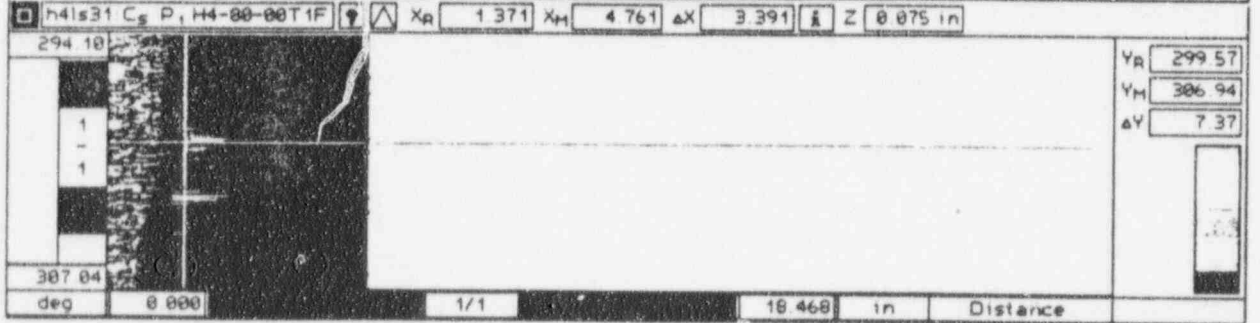
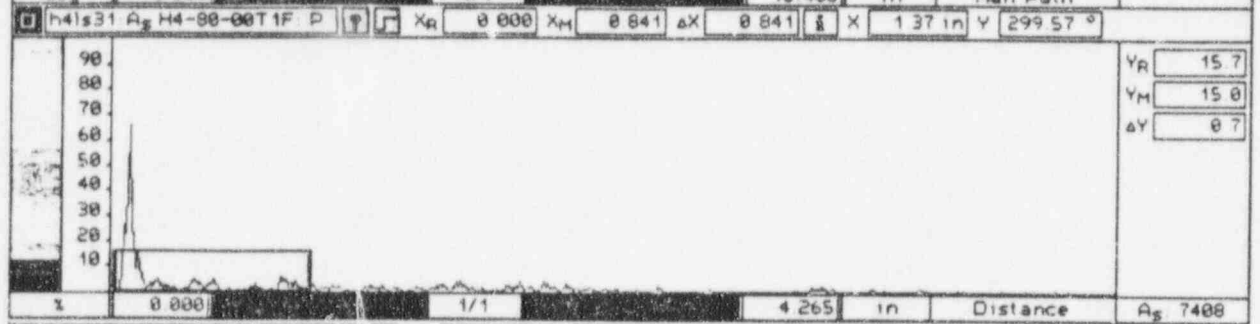
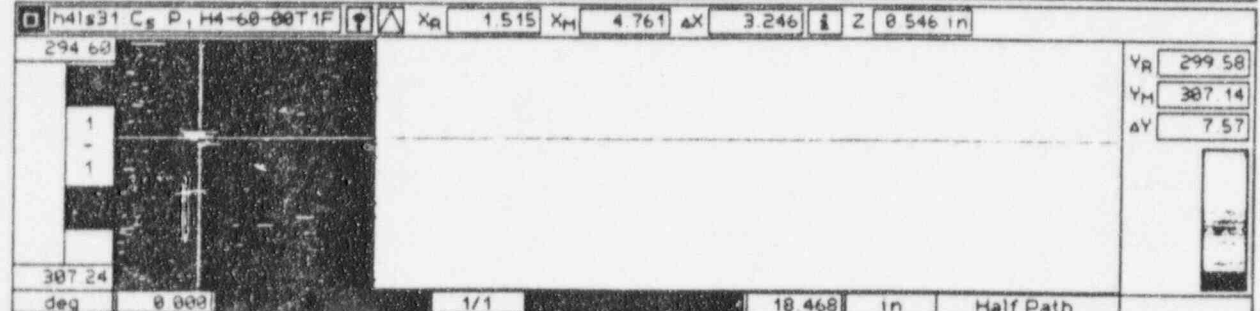
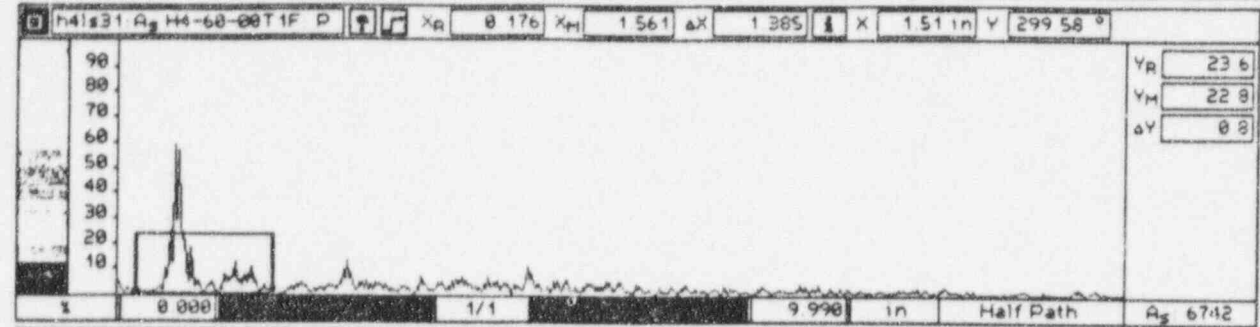
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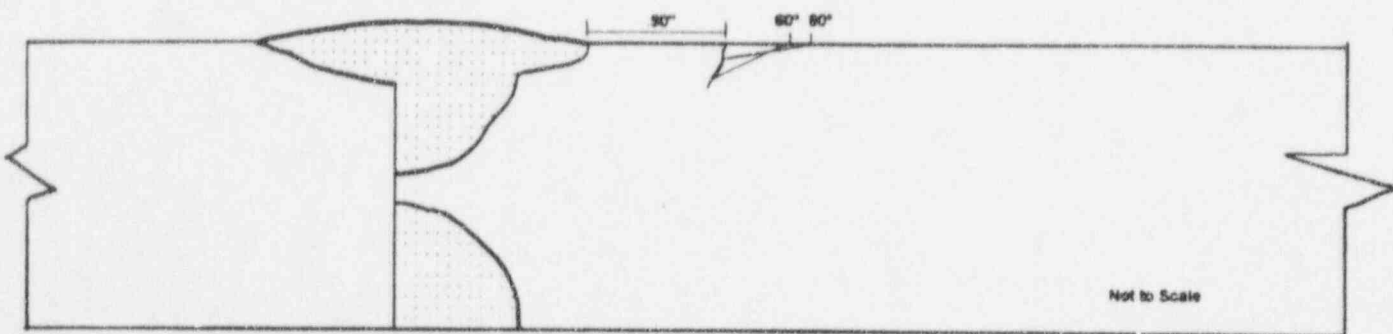
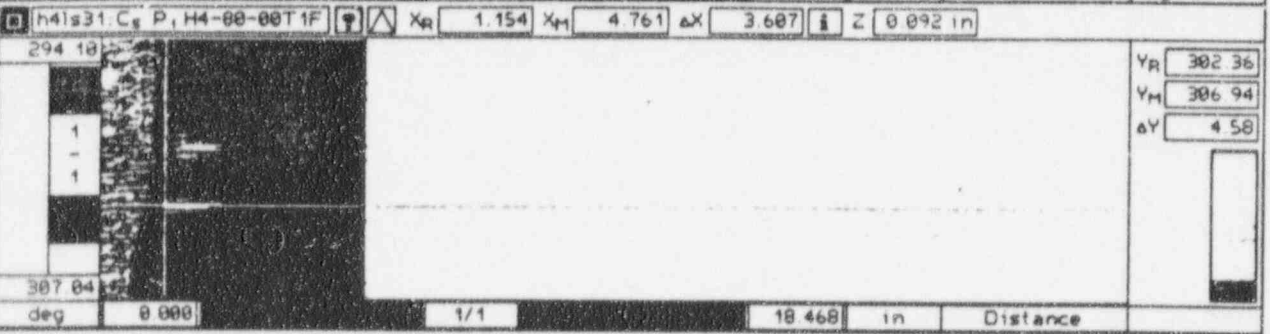
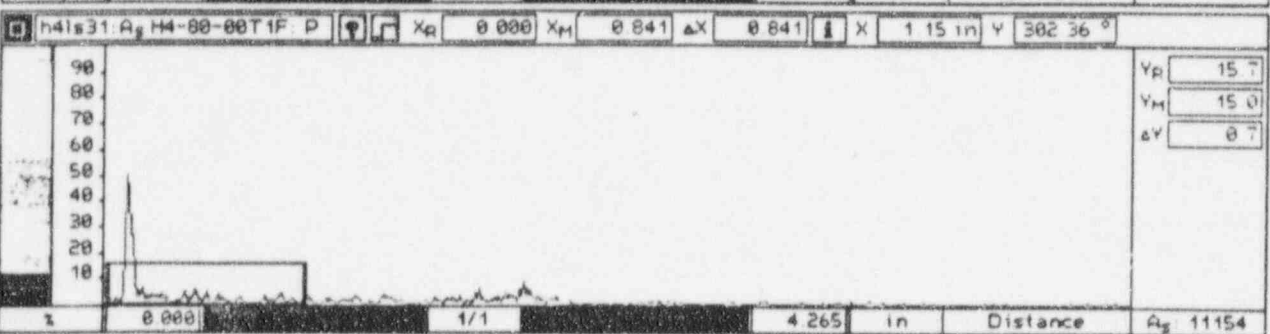
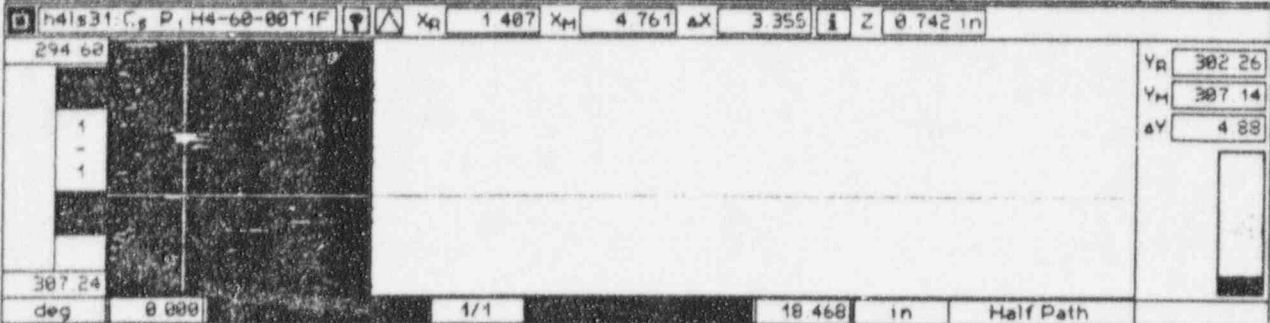
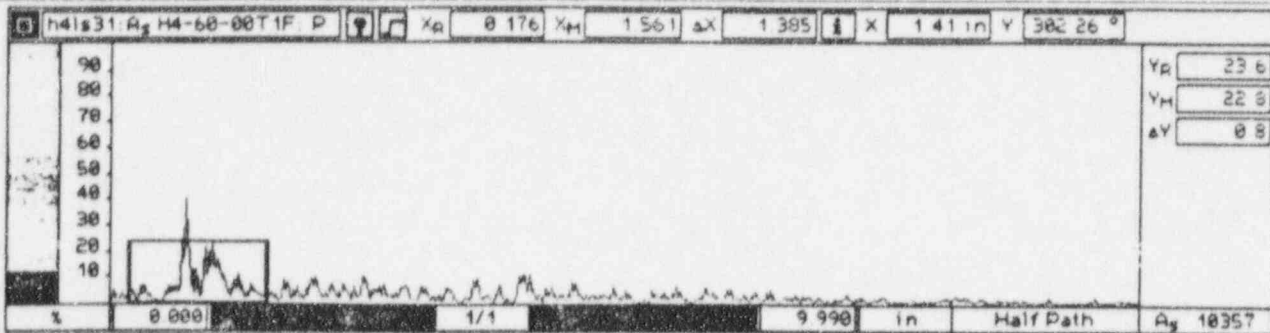


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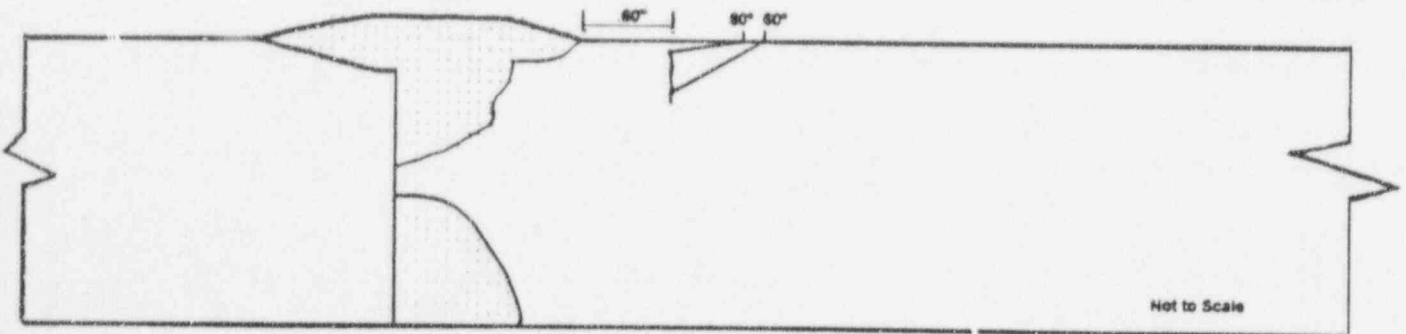
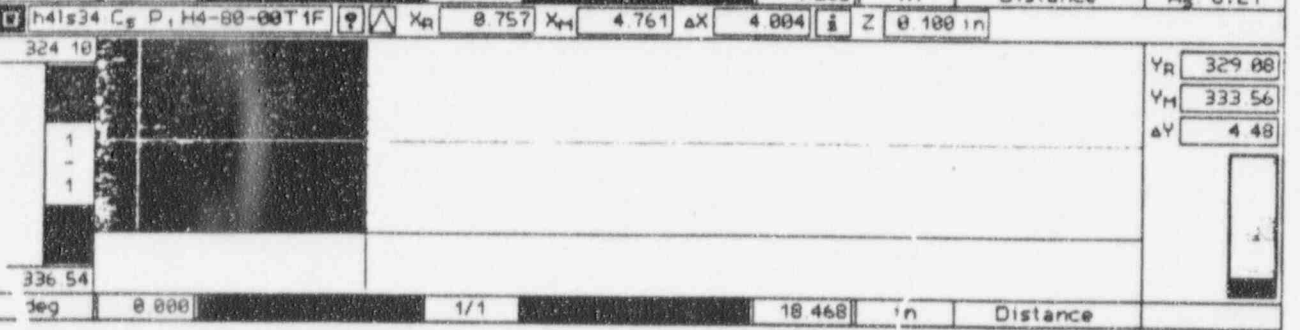
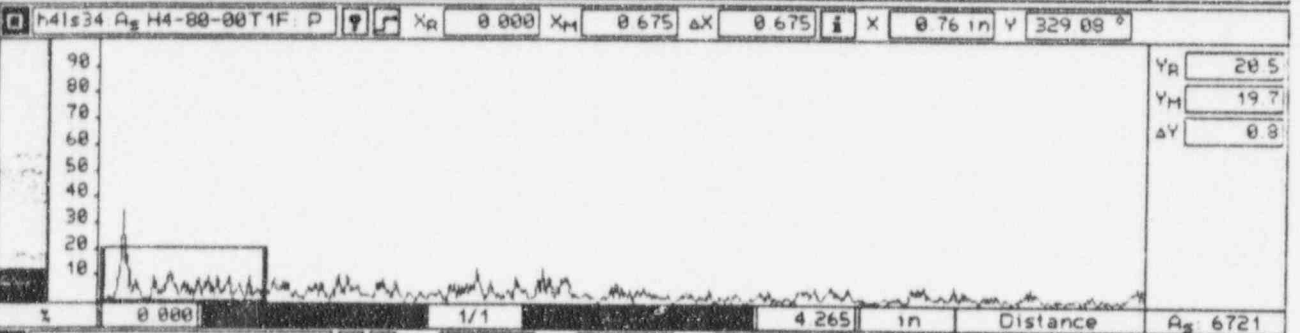
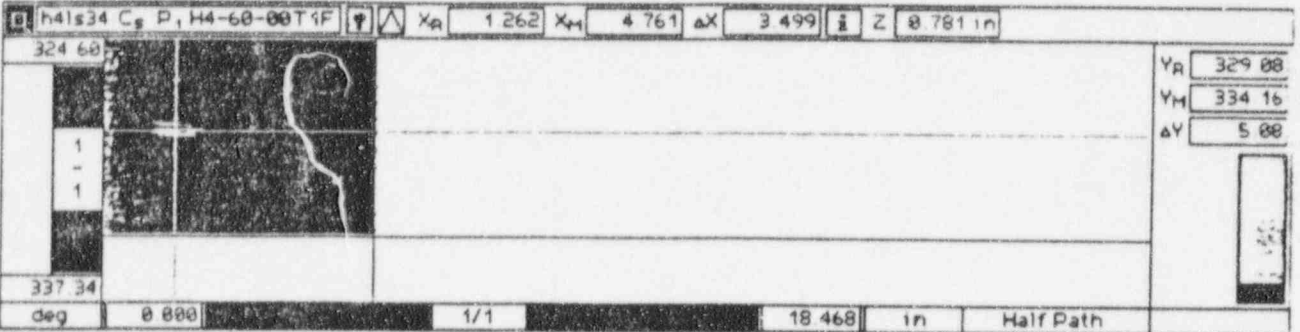
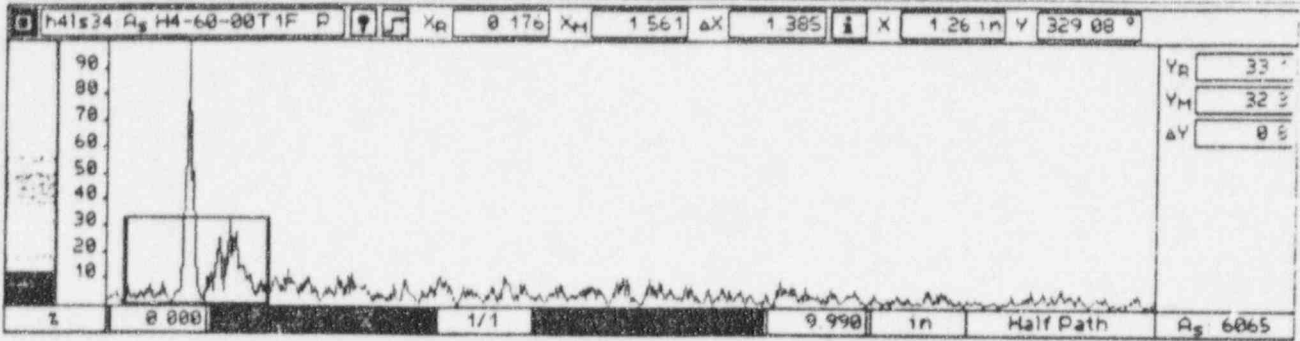


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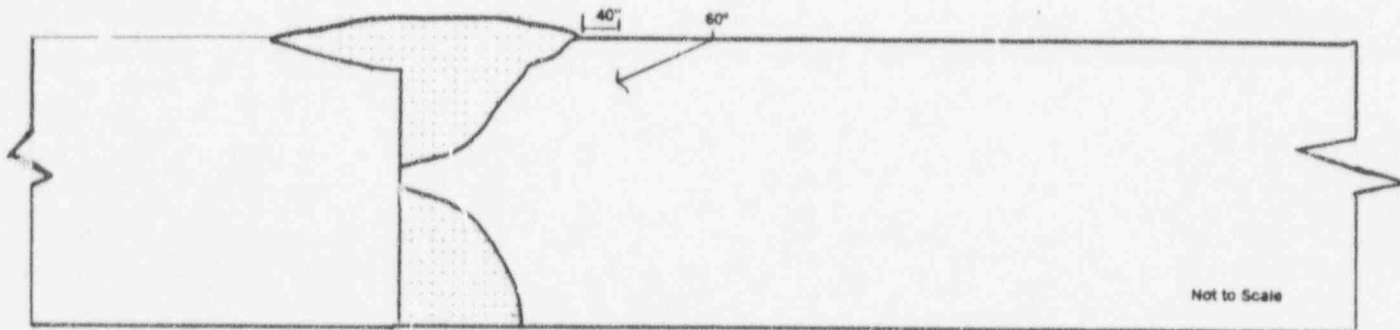
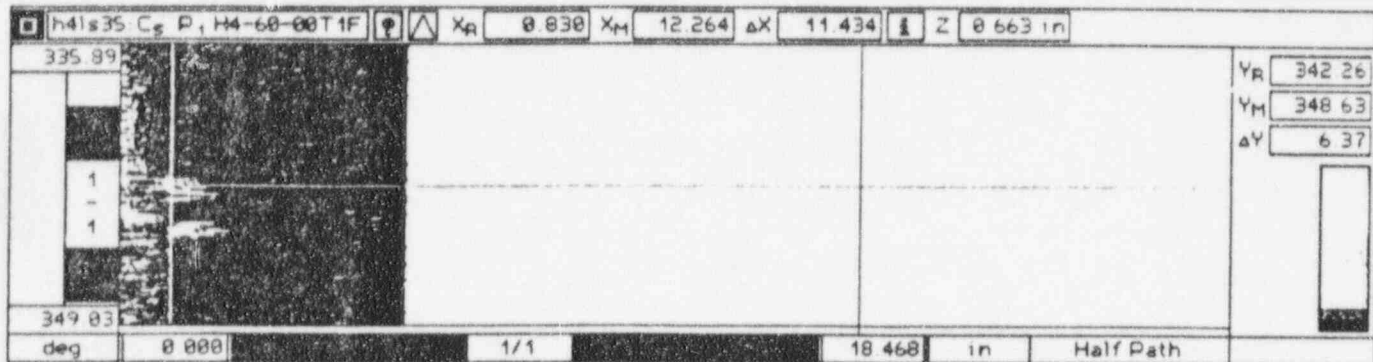
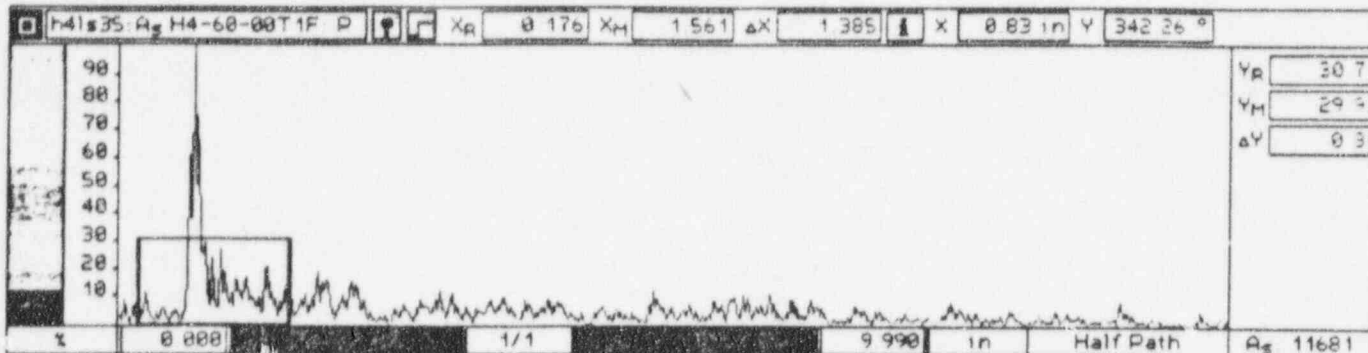


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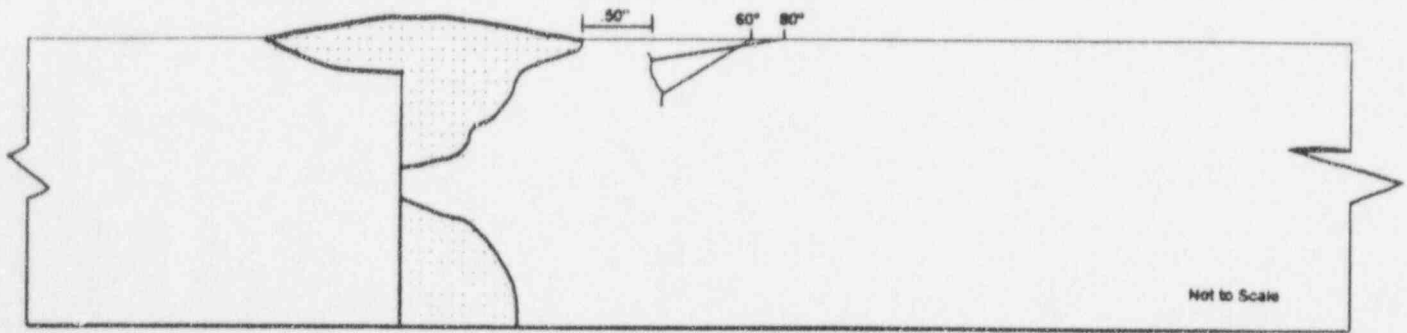
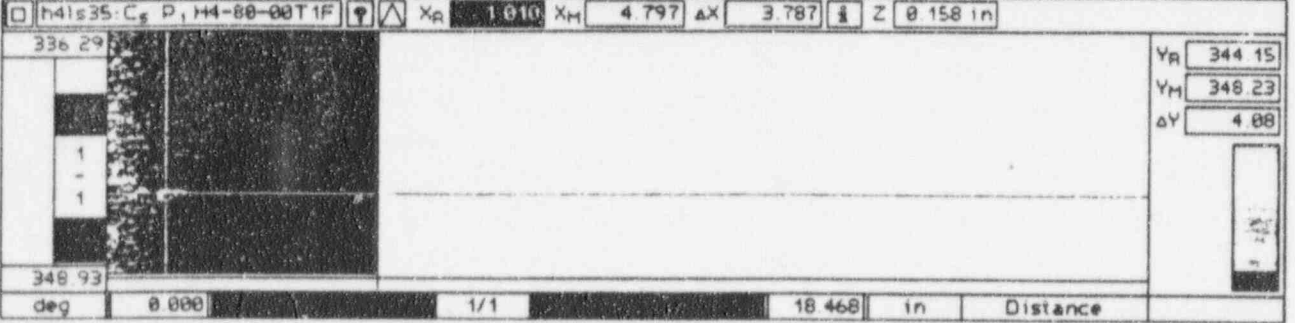
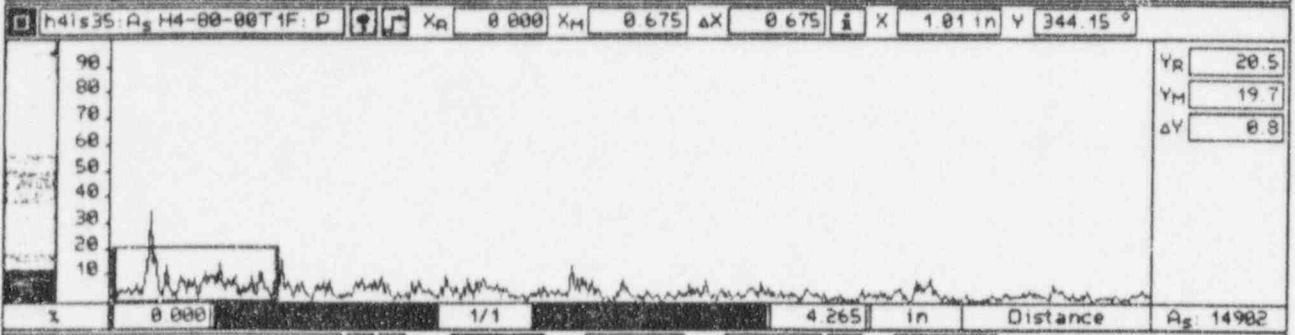
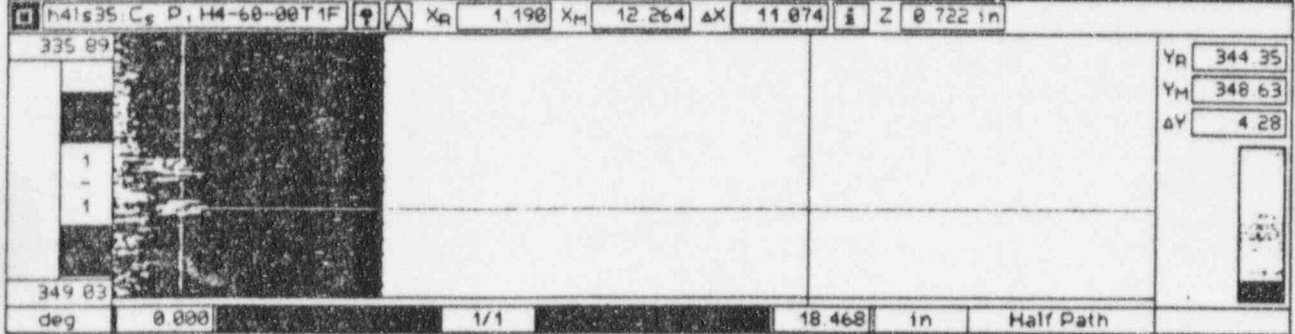
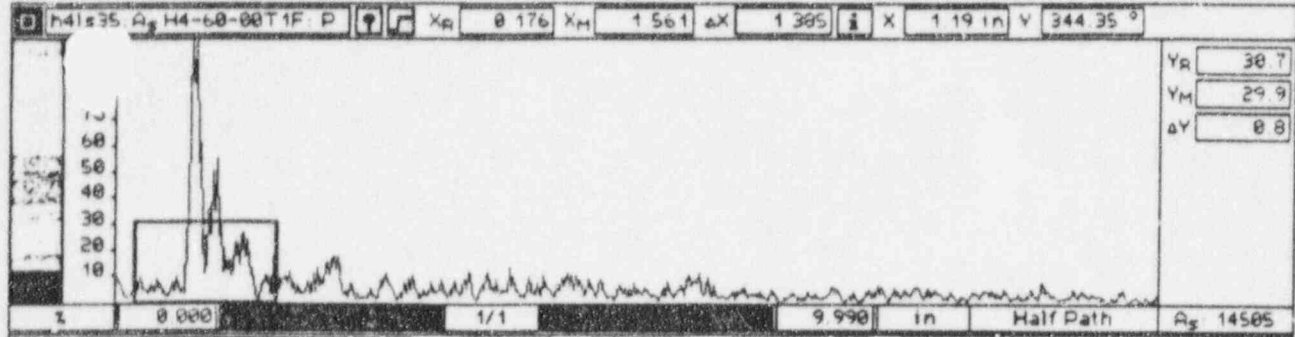
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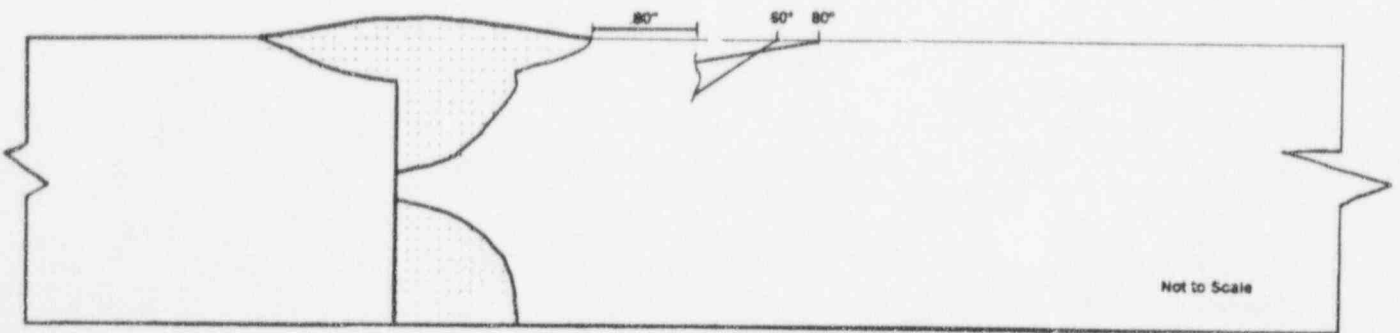
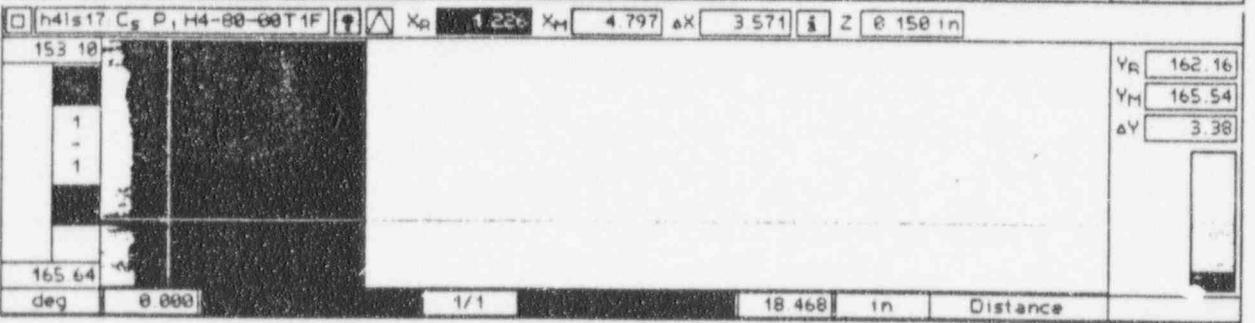
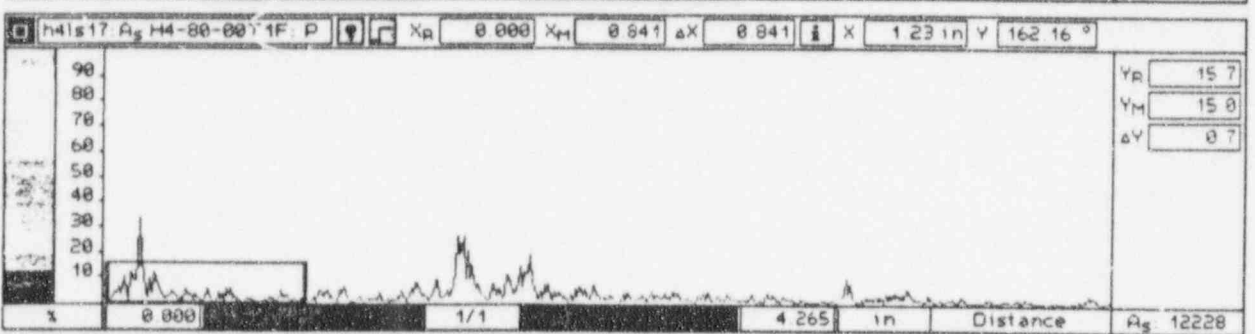
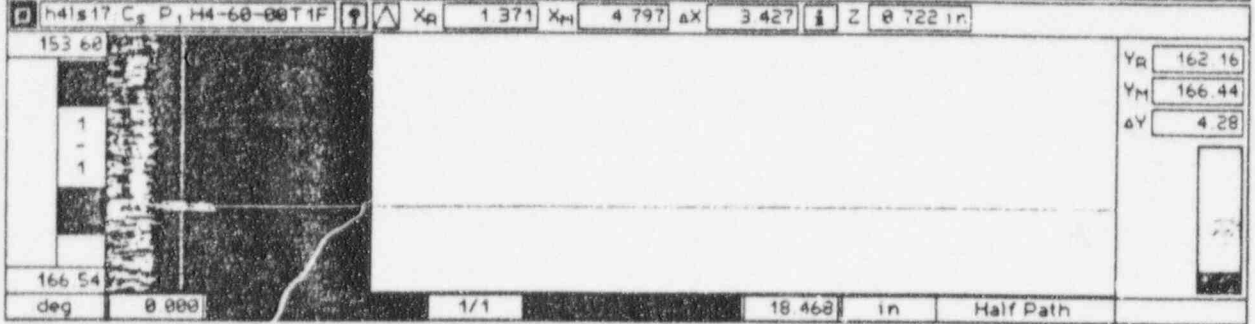
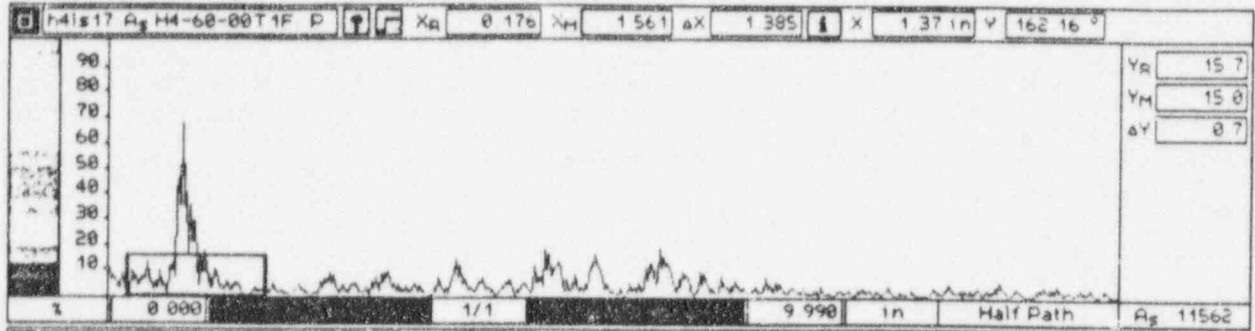


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ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



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