



A PECO Energy/British Energy Company

Ron J. DeGregorio
Vice President

AmerGen Energy Company, LLC
Oyster Creek
U.S. Route 9 South
P.O. Box 388
Forked River, NJ 08731-0388
Telephone: 609 971 2300

2130-00-20291
November 2, 2000

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington DC 20555

Subject: Oyster Creek Nuclear Generating Station
Facility License No. DPR-16
Docket No. 50-219
Core Spray Sparger – 18R Inspections

Reference: Correspondence No. 1940-00-20040 dated March 21, 2000, "Technical Specification Change Request No. 276, Delete Reporting Requirement for Core Spray Sparger Inspection"

Oyster Creek Facility Operating License paragraph 2.C(5) and Technical Specification Section 6.9.3.d require that a special report presenting the results of the in-service inspection of the core spray spargers be submitted to the NRC prior to restart from a refueling outage. Commission approval is required for restart.

Enclosed is Topical Report TR-137, which provides the information described above for the current Cycle 18 refueling outage. In order to support a potential early plant restart date of November 9, 2000, NRC approval is requested to be docketed by November 7, 2000.

The above reference requested the NRC to eliminate the requirement to submit the core spray sparger inspection report and obtain NRC approval for restart. It is AmerGen's understanding that the NRC intends to approve the request and issue the license amendment shortly. If the license amendment is issued prior to the scheduled date of plant restart, then it is also AmerGen's understanding that NRC approval of plant restart would not be required as the change to license condition 2.C(5) would be immediately effective.

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2130-00-20291

Page 2 of 2

If any additional information or assistance is required, please contact Mr. Paul F. Czaya of Oyster Creek Licensing at 609-971-4139.

Very truly yours,

A handwritten signature in black ink, appearing to read 'R. DeGregorio', with a large, sweeping flourish extending to the left.

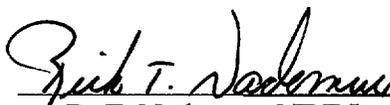
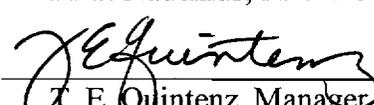
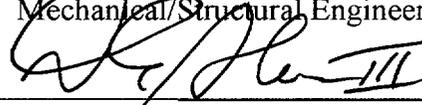
Ron J. DeGregorio
Vice President
Oyster Creek

Enclosure

c: Administrator, USNRC Region I
USNRC Senior Project Manager
USNRC Senior Resident Inspector

Oyster Creek Core Spray System
Inspection Program - 18R

Topical Report No. TR-137

| | | |
|------------|--|-----------------|
| Author: |  _____ | 11/1/00 Date |
| Approvals: |  _____ | 11/1/00 Date |
| |  _____ | 11/1/00 Date |

R. T. Nademus, NDE Level III

T. E. Quintenz, Manager,
Mechanical/Structural Engineering

D. G. Slear, III, Senior Manager, Design
Engineering

Abstract

During the 2000 refueling outage (18R) at the Oyster Creek Nuclear Generating Station, an augmented inspection program was implemented on the Core Spray Sparger System. In addition to the augmented program, AmerGen performed visual examinations per the recommendations of the BWRVIP, (Boiling Water Reactor Vessel and Internals Project) document BWRVIP-18, "BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines." The inspection scope included the in-vessel annulus piping, sparger assemblies, and sparger brackets utilizing remote visual examination and supplemental air test *. In accordance with BWRVIP-18, under the BWRVIP re-inspection approach the following inspections were performed:

All creviced welds in the annulus piping, 25% of butt welds in the annulus piping not inspected during the 17R refueling outage, the sparger end cap welds, sparger nozzles, sparger piping, all repair clamps, and 25% of sparger brackets not inspected during 17R were inspected. Cleaning with a nylon brush was necessary for the end cap welds, creviced welds and annulus piping butt welds. These items were inspected to the BWRVIP enhanced VT technique called EVT-1, with ½ mil resolution. A best effort approach to inspect the sparger T-Box welds was done. All 4 (four) of the T-Boxes are clamped and very little weld is accessible for inspection. The nozzles and brackets were inspected to the BWRVIP visual technique VT-1. Remote visual examinations revealed no new indications. The air test revealed leakage reported in previous outages in System II at the 208 ° azimuth repair clamp and the fillet weld L-3A at the downcomer at 240° azimuth, System I. This also was reported as a through weld hole in previous outages.

* A baseline inspection per BWRVIP-18 was performed during the 16R outage in 1996.

Table of Contents

| | Page |
|--|------|
| Introduction | 4 |
| Core Spray Sparger | 5 |
| Core Spray Annulus Piping | 6 |
| Air Test | 6 |
| Conclusions | 7 |
| References | 8 |
| Attachments | |
| Table 1 - Core Spray Piping Inspection Summary | |
| Figure 1 - Core Spray Annulus Piping Azimuths | |
| Figure 2 - General Layout - Core Spray Sparger | |
| Figure 3 - Upper Piping Unit | |
| Figure 4 - Lower Piping Unit | |
| Figure 5 - Pipe Joint Configuration for Downcomers at 60° and 240° Azimuth | |
| Figure 6 - Downcomer at 60° Azimuth and Location of Weld U-3A Indications | |
| Figure 7 - Downcomer at 240° Azimuth and Location of Weld L-3A Indication | |

Oyster Creek Core Spray Sparger System Inspection Program

Introduction

The augmented inspection for the Core Spray Sparger System was performed during the 2000 refueling outage (18R). The results contained in the inspection report herein are in accordance with Section 6.9.3.d, "Unique Reporting Requirements," of the Oyster Creek Technical Specifications.

Visual Inspection

The Core Spray spargers and annulus piping were visually inspected utilizing the IST ETV-1250 underwater camera with the twin 50-watt underwater lighting affixed and the VIT CA-Zoom color camera. Auxiliary lighting was provided as needed by acorn lights and/or area lights lowered into the vessel from the refueling bridge. This inspection program has exceeded inspections prior to 16R by conforming to the BWRVIP, Reference 6. The videotapes were reviewed by visual Level II and III individuals. Agreement of the individuals was required to finalize the disposition of these inspections.

Core Spray Spargers

Accessible portions of the end cap welds on the spargers, (8 places), were cleaned using a nylon brush attached to an underwater motor. These welds were inspected utilizing the BWRVIP-enhanced VT-1 designated as EVT-1. This technique uses a ½ mil wire for camera/system resolution. The remainder of the spargers were inspected to the VT-1 technique using a 1 mil wire for camera/system resolution. Oyster Creek utilized the refueling bridge and an auxiliary bridge to perform these inspections. The primary means of operating the camera system was by hand held camera manipulated by ropes. A portable pole system from the refueling bridge was used when accessibility permitted. The calibration standards used for qualification of the camera system were as stated above.

The visual inspection of the Core Spray spargers was performed as follows (Reference Figure 1 and 2):

Lower Sparger

1. Upper view - looking down on the sparger from above.
2. Front view - looking straight at the sparger.
3. Nozzle view - looking below the sparger directly at the nozzles and tack welds.
4. End cap welds - cleaned and EVT-1.

Upper Sparger

1. Upper view - looking down on the sparger from above.
2. Front view - looking straight at the sparger.
3. Nozzle view - looking below the sparger directly at the nozzles and tack welds
4. End cap welds - cleaned and EVT-1.

No relevant indications were noted during the inspections or subsequent review of the videotapes.

Annulus Piping

Accessible portions of the Core Spray annulus piping welds (Figures 3 through 7) were cleaned using a nylon brush and visual inspections performed utilizing the EVT-1 technique. All accessible portions of the following piping welds were visually inspected:

U3, U3A, U4, U7, U8, U15A and U16 on System II (see Figure 3); and

L3, L3A, L4, L6, L13A, L14, L15 and L20A on System I, (see Figure 4).

Inspections were performed using the ETV-1250 camera system and the VIT CA-Zoom color camera. No new relevant indications were noted during the inspection or subsequent review of the videotapes.

Air Test

Air tests were performed on the Core Spray System I and II spargers. Because of the configuration of the Core Spray piping, the upper spargers with downward pointing nozzles were filled completely with air (System II). The down leg between the reactor vessel penetration and the horizontal circumferential pipe run in the annulus was filled completely with air. All other piping was partially filled with air or just passed air bubbles along its upper inside surface.

The Core Spray Sparger System air test was performed in accordance with Special Procedure 91-001, Reference 5. The pressure was held at 90 psi for System II and 100 psi for System I, as verified through the Instrumentation and Controls Department.

System I (Lower Spargers)

During the performance of the air test, Core Spray Sparger System I was inspected utilizing a hand held VIT CA-Zoom color camera. It was attached to a hand held pole and was used for the sparger and annulus inspections.

Inspection of the sparger during the air test noted air bubbles coming from the nozzles. With no means of isolating the nozzles, air escaping is normal during this examination. Inspection of the balance of the lower spargers on System I revealed no additional air leaks. Air bubbles were observed from the downcomer at 240°, weld L-3A as previously observed.

System II (Upper Spargers)

During the performance of the air test, Core Spray Sparger System II was inspected utilizing a hand held VIT CA-Zoom color camera. It was attached to a hand held pole and was used for the sparger and annulus inspections.

As pointed out during the System I air test, air bubbles were also observed emitting from the sparger nozzles. Air bubbles were also observed coming from the end (204 degrees) and middle (208 degrees) of the repair clamp located between azimuth 204-210 degrees. No other air bubbles were observed coming from the other seven repair clamps, spargers or annulus piping other than that previously noted above.

Conclusions

The following are the conclusions relative to the inspection of the Core Spray System conducted during Oyster Creek refueling outage 18R:

- The number of confirmed cracks in the Core Spray Sparger System is one (1) in System II, that being the through wall crack at 208 degrees identified and clamped in 1978 and confirmed by continuous stream of air bubbles. No change was noted from previous inspections.
- Visual inspection of the spargers and annulus piping showed various scuff marks, scrapes, undercut, arc strikes, oxide deposits (in locations that had not been brushed), and discoloration on sparger surfaces. No changes from previous inspections were noted.
- All repair clamps are intact and in good condition.
- No indications that could be interpreted as crack like in appearance were noted during the examination or post examination review of the sparger assembly.
- One rounded, through wall, indication was observed in the toe of weld designated as L-3A. This weld is in System I of the annulus piping. Visual examination during outage 18R and previous air test revealed no change in this indication since it was discovered during outage 14R. This indication was determined to be a fabrication flaw.
- Two linear indications originally observed during outage 14R in the annulus piping in System II at weld U-3A appear to be a weld pass between 2 beads, as determined after cleaning. No changes and no air bubbles were observed emanating from this location during the air test.

References

- 1) NRC IE Bulletin 80-13, "Cracking in Core Spray Spargers"
- 2) GE Nuclear Procedure GE-VT-202, "Procedure for In-vessel Visual Inspection (IVVI) of BWR 2 RPV Internals"
- 3) Specification SP-1302-56-131, "Reactor Vessel Internals Inspection - 18R"
- 4) Topical Report No. TR-119, "Oyster Creek Core Spray System Inspection Program -17R"
- 5) Procedure - Special 91-001, "Core Spray Sparger Inspection"
- 6) BWRVIP-18, "BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines"

TABLE 1
CORE SPRAY PIPING INSPECTION SUMMARY

| | Spargers | | Annulus Piping | | Air Test | Remarks |
|------|--|--|---|-------------------------------------|--|--|
| | Visual | Ultrasonic | Visual | Ultrasonic | | |
| 1978 | 1 through wall crack | ----- | No indications | ----- | Air release observed from 1 crack (208° only) | One repair bracket installed at 208° (Sys. II) |
| 1980 | 19 indications <hr/> 28 Total indications (excluding 1978 indication) | 16 indications | 2 indications | ----- | " " " | Seven repair brackets installed (Sys. II) two repair brackets installed (Sys. I) |
| 1982 | Video enhanced 1980 visual indications. Results identified: 3 cracks 2 possible cracks | ----- | Video enhanced on 1980 indication Results: Not a crack on the 6x5 reducer) | ----- | ----- | ----- |
| 1983 | No indications* (4 of the 1980 indications examined) | No indications* (5 of 16, 1980 indications examined) | No indications | No indications 7 welds inspected | " " " | *Area of inspection limited by repair brackets |
| 1986 | No indications* | No indications* | No indications | ----- | ----- | ----- |
| 1988 | No indications* | ----- | No indications | ----- | ** Air release observed from repair brackets upper sparger | **air release from 196° repair bracket intermittent air release from 208° repair bracket |

TABLE 1 (Continued)

CORE SPRAY PIPING INSPECTION SUMMARY

| | Spargers | | Annulus Piping | | Air Test | Remarks |
|------|-----------------|------------|--|------------|---|---|
| | Visual | Ultrasonic | Visual | Ultrasonic | | |
| 1991 | No indications* | ----- | No indications | ----- | Air release observed from one repair bracket (208°) upper sparger | Air release from 208° repair bracket continuous (Sys. II) |
| 1992 | No indications* | ----- | Initial no indications | ----- | Air release observed from one repair bracket | Air release from 208° repair bracket continuous (Sys. II) |
| | | | *** Additional Visual 3 indications A) 1 through weld hole B) 2- linear | ----- | Air release from downcomer at 240° Weld L-3A has through weld hole | Air release from weld L-3A is continuous (Sys. I) |
| 1994 | No indications* | ----- | No indications | ----- | Air release observed from repair bracket Air release from downcomer at 240° Weld L-3A has through weld hole | Air release from 208° repair bracket continuous (Sys. II). Air release from Weld L-3A is continuous (Sys. I) No change from 2 linears Note on Weld U-3A (Sys. II) |
| 1996 | No indications* | ----- | ***No indications | ----- | Air release from one repair clamp Weld L-3A has through weld hole | Air release from 208° repair bracket (Sys. II) No visual change to indication in U-3a (Sys. II) and L-3A (Sys. I) |

TABLE 1 (Continued)

CORE SPRAY PIPING INSPECTION SUMMARY

| | Spargers | | Annulus Piping | | Air Test | Remarks |
|------|-----------------|------------|-----------------------|------------|--|--|
| | Visual | Ultrasonic | Visual | Ultrasonic | | |
| 1998 | No indications* | ----- | *** No indications | ----- | Air release from one repair bracket. Air release from downcomer at 240° weld L-3A through weld hole. | Air release from 208° repair bracket (System II). No visual change to indication in U-3A (System II) and L-3A (System I) |
| 2000 | No indications* | ----- | *** No indications | ----- | Air release from one repair bracket. Air release from downcomer at 240° weld L-3A through weld hole. | Air release from 208° repair bracket (System II). No visual change to indication in U-3A (System II) and L-3A (System I) |

* Area of inspection limited by repair brackets.

** A subsequent air test confirmed that air bubbles were released from the sparger nozzles beneath the 196° repair clamp.

*** Through weld hole in weld L-3A System I, and 2 linears, both in same weld U-3A System II.

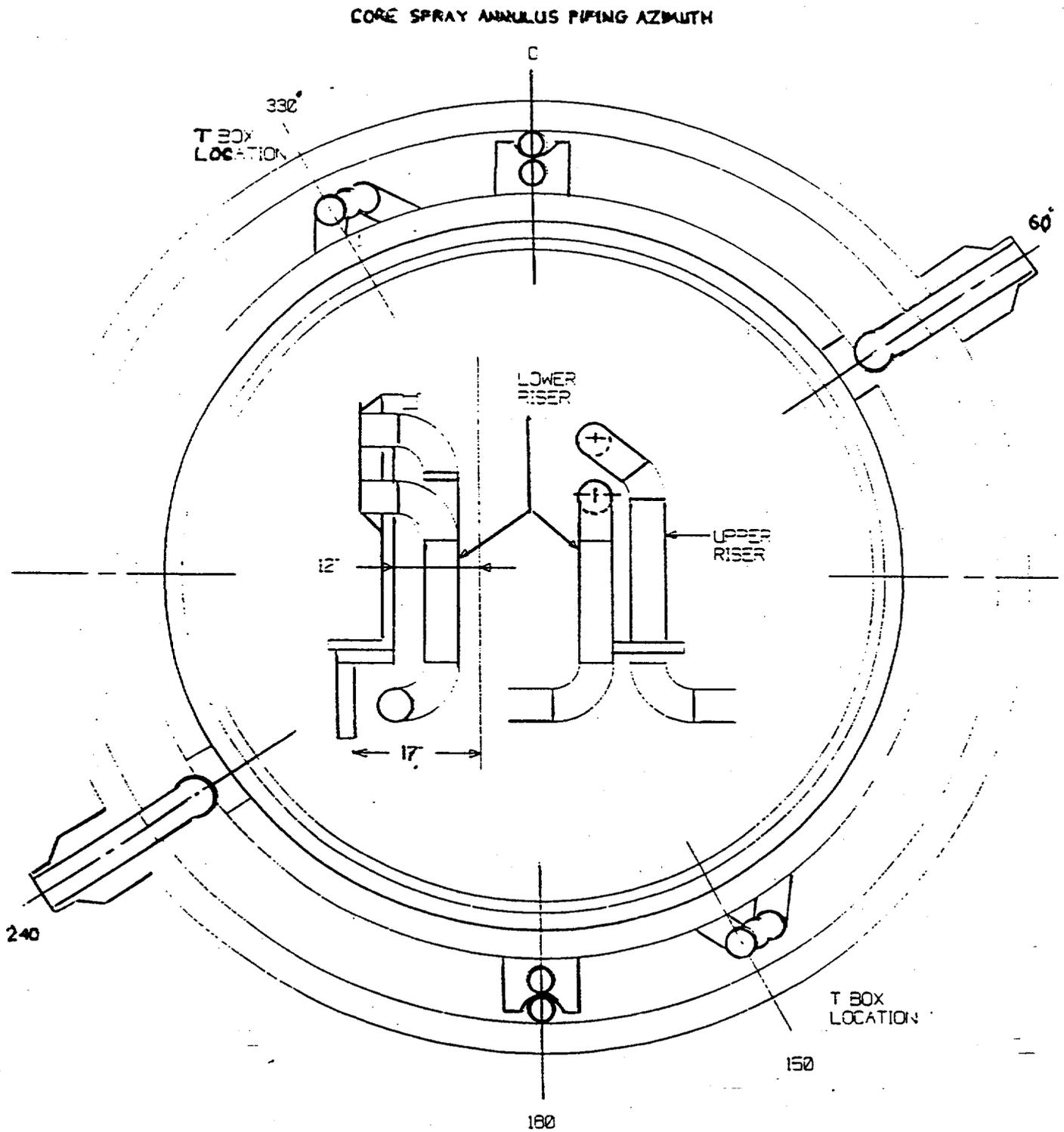
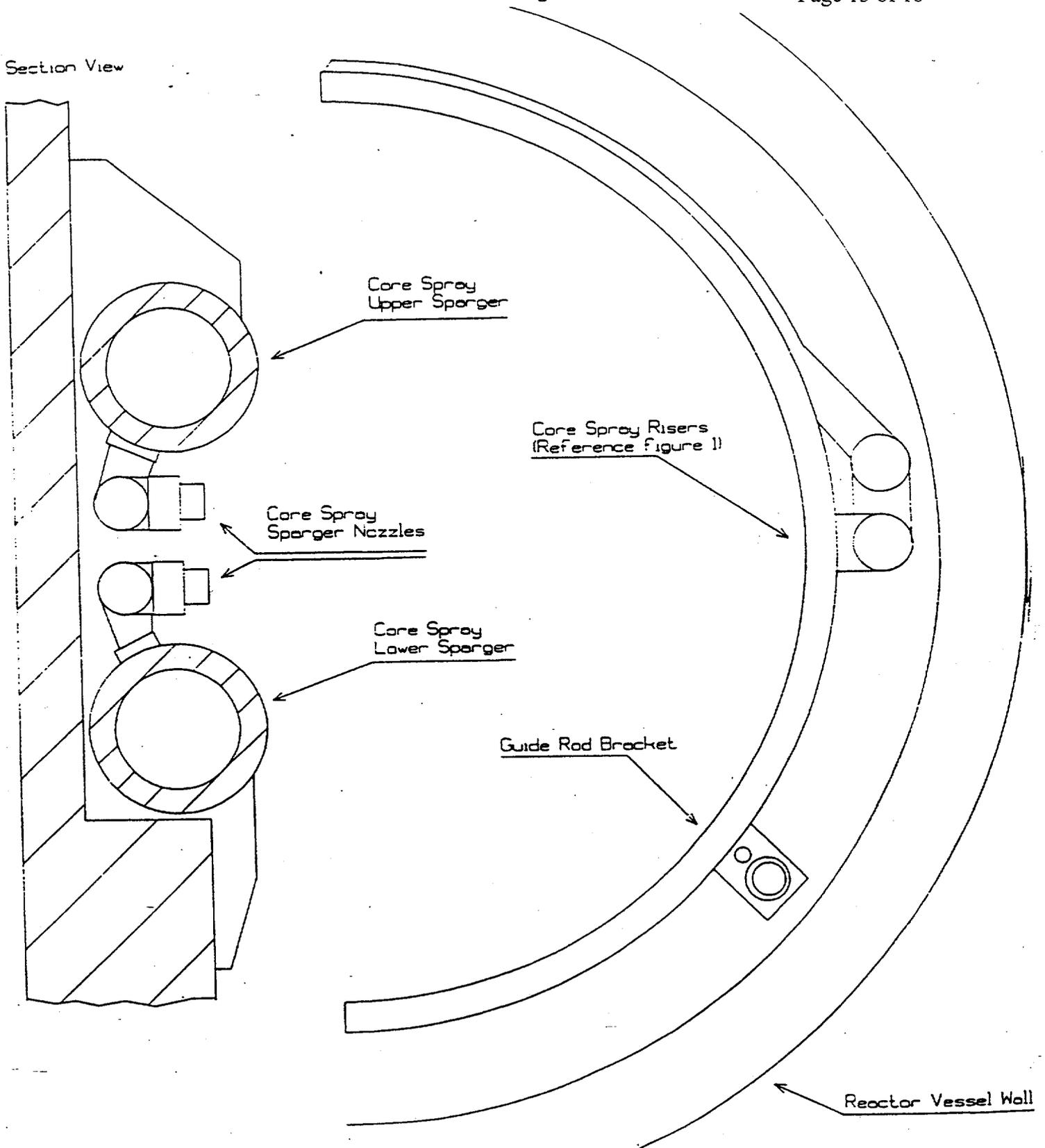


FIGURE 1

Section View



Oyster Creek Nuclear Generating Station
Figure Number 2

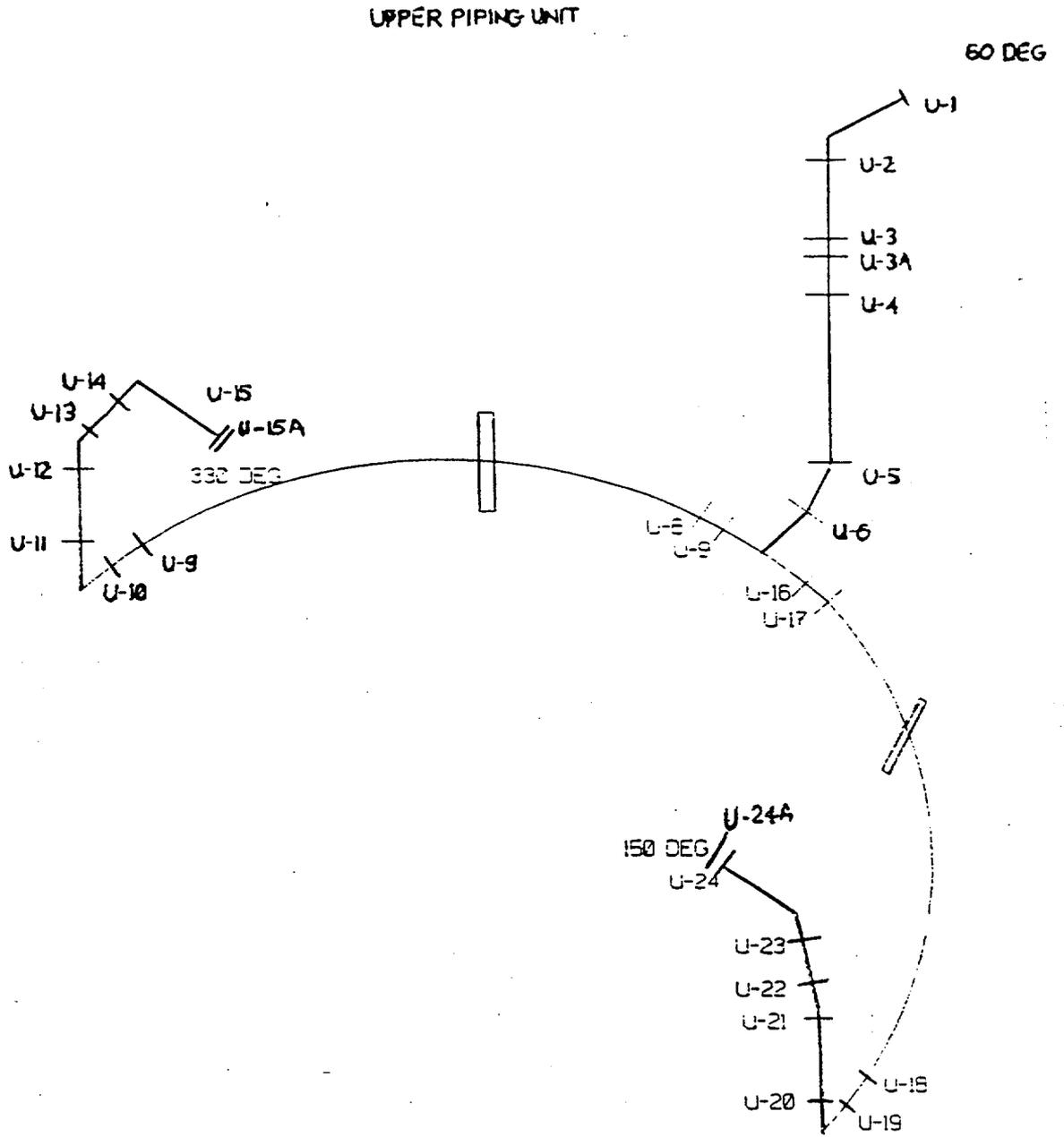


FIGURE 3

LOWER PIPING UNIT

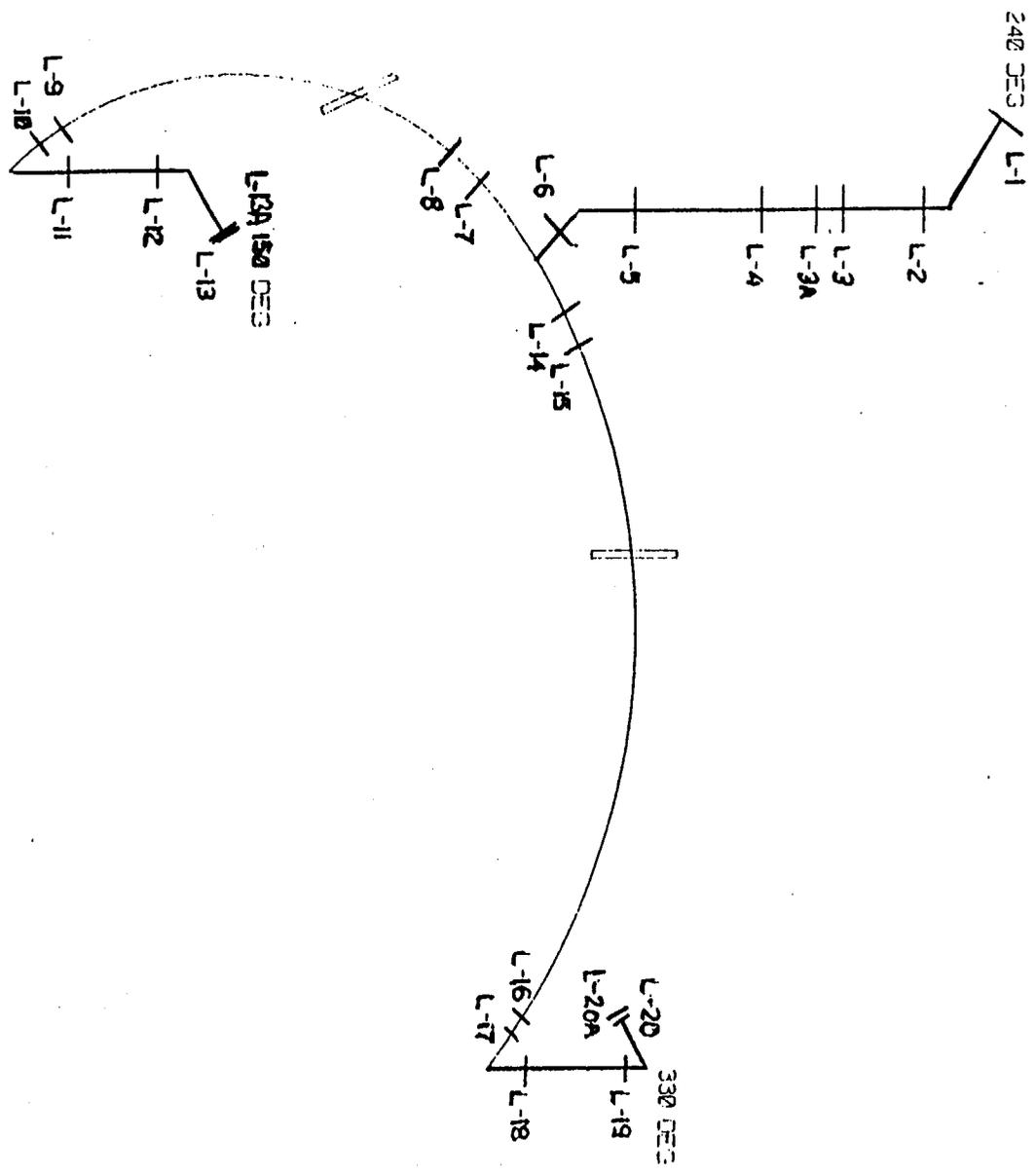


FIGURE 4

OYSTER CREEK CORE SPRAY SPARGER INLET PIPE COUPLING

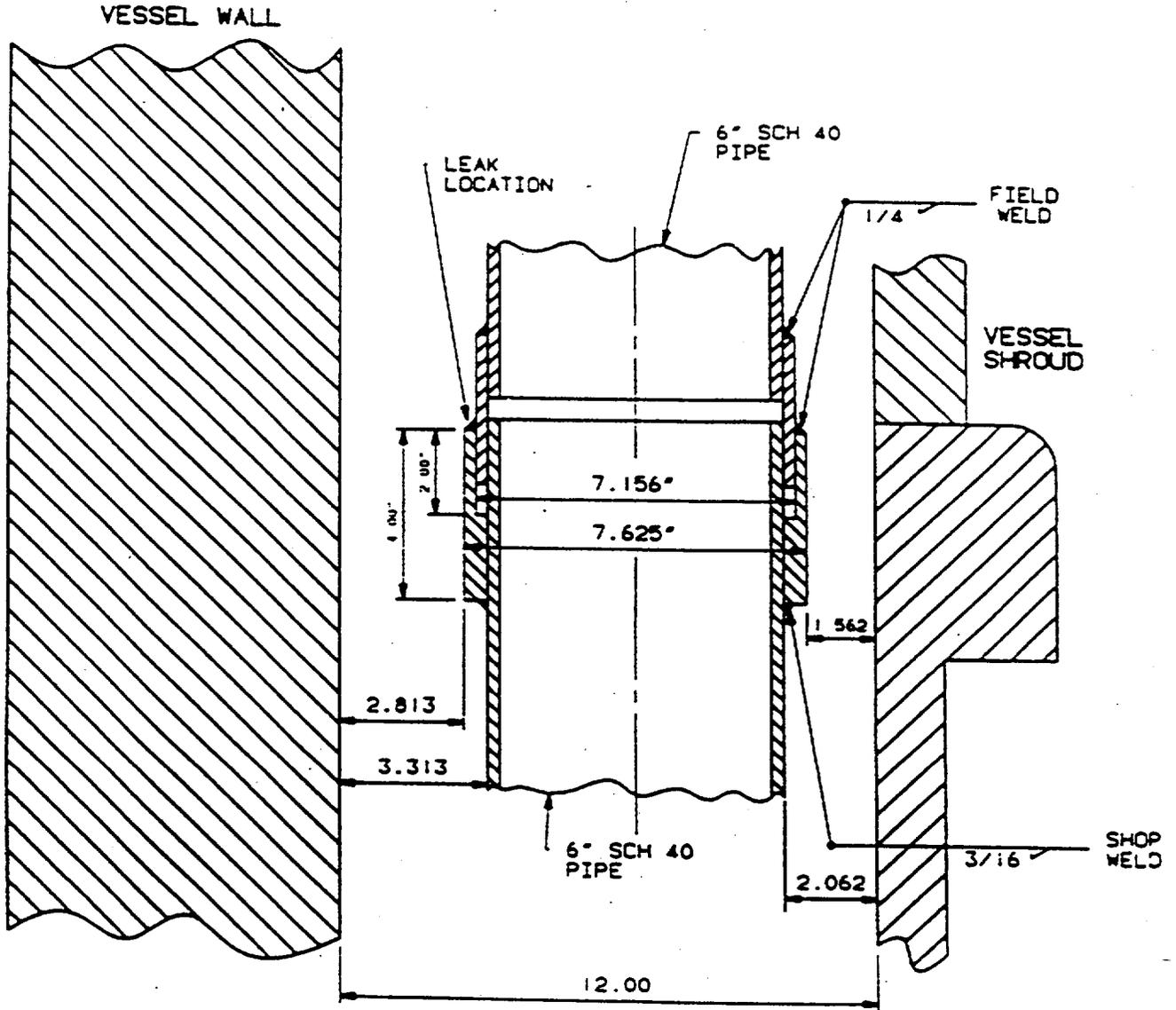


FIGURE 5

CORE SPRAY PIPING WELD I.D.S
INDICATION AT WELD U-3A

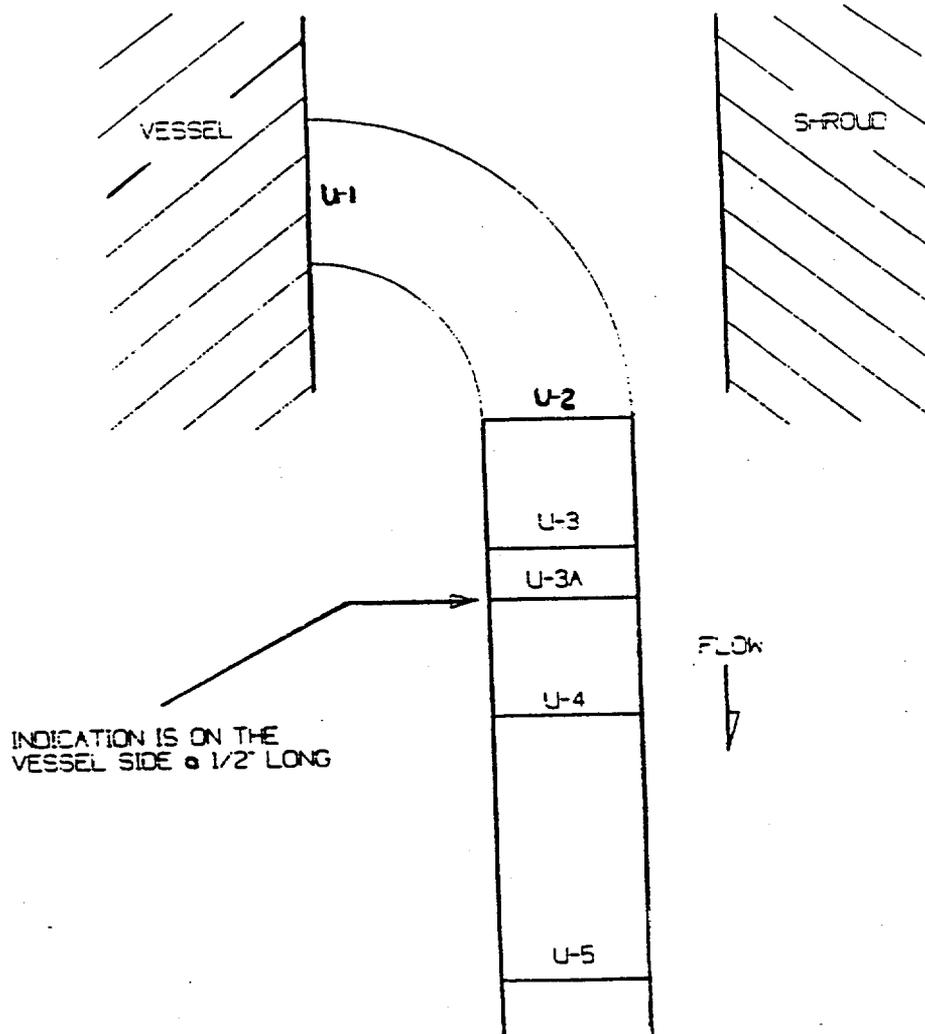


FIGURE 6

CORE SPRAY PIPING WELD ID'S
LEAKER AT WELD L-3A

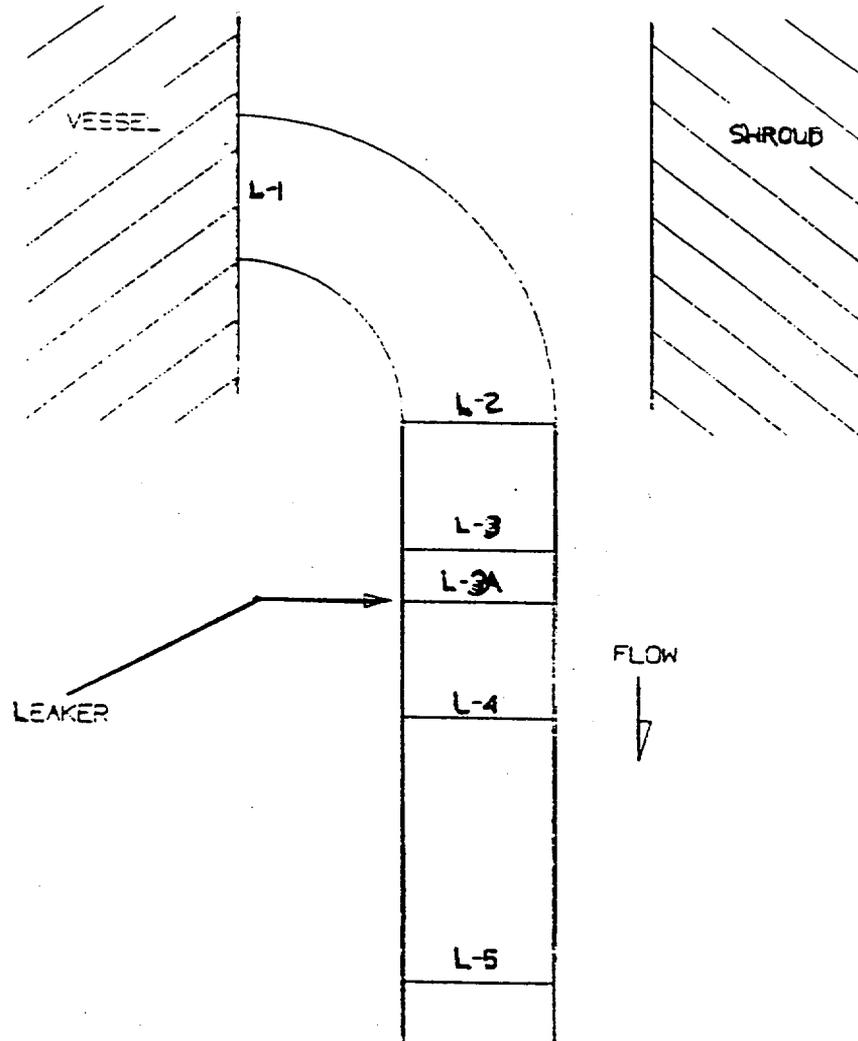


FIGURE 7