

OYSTER CREEK CORE SPRAY SYSTEM
INSPECTION PROGRAM

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ABSTRACT

During the 1991 Refueling Outage (13R) at Oyster Creek, an augmented inspection program was implemented on the Core Spray Sparger System. In-Vessel annulus piping and sparger assemblies were inspected utilizing remote visual examination. In addition, an air test was performed. No new relevant indications were identified.

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OYSTER CREEK CORE SPRAY SPARGER SYSTEM
INSPECTION PROGRAM

INTRODUCTION

The augmented inspection program for the Core Spray Sparger System was performed during the present 1991 refueling outage. The results of the inspection are reported herein as required by Section 6.9.3.e, "Unique Reporting Requirements" of Oyster Creek's Technical Specification.

VISUAL EXAMINATIONS

The Core Spray Spargers were visually inspected utilizing a Westinghouse Model ETV-1250 video camera with twin 50 watt auxiliary underwater lighting. The video camera was mounted on a pole which was attached to a fixture mounted on the refueling bridge. The calibration standard utilized for the visual examinations, a one mil wire, was in accordance with the requirements of NRC I & E Bulletin 80-13.

The visual inspections of the spargers were performed as follows:

1. Downward view of the top of the upper spargers (spargers A & C)
2. Straight on view of the upper spargers
3. Straight on view with a slight down angle (due to guide blade interference) of the lower spargers (spargers B & D)
4. Straight on view of both upper and lower spargers with their associated nozzles
5. Straight on view of the upper and lower nozzles

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

Visual inspection of the Core Spray System Annulus Piping was performed utilizing a Westinghouse Model ETV-1250 video camera with underwater auxiliary lighting. Due to access restrictions, a hand held camera technique was used to perform the examination. All accessible areas of the piping were inspected. Refer to figures 1 through 4. No relevant indications were noted during the inspection or subsequent review of video tapes.

AIR TEST

An air test was performed on Core Spray Sparger Systems I and II. Because of the configuration of the core spray piping, the upper spargers with downward pointing nozzles should fill completely with air. The down leg between the reactor vessel penetration and the horizontal circumferential pipe run in the annulus should fill completely with air. All other piping will, at best, fill only partially with air or just pass air bubbles along its upper centerline inside surface.

Observation of the Core Spray Sparger System during the air test was performed by utilizing a hand held Westinghouse Model ETV-1250 video camera with twin 50 watt auxiliary underwater lighting. Air bubbles were observed coming from the nozzles as expected. A steady stream of air bubbles were observed coming from the end (204°) and middle (208°) of the repair clamp located at azimuth 204° to 210°. No other air bubbles were observed coming from the other eight repair clamps, the spargers themselves, or the annulus piping.

CONCLUSIONS

Following completion of all inspections relative to the Core Spray System, a review was conducted of the results along with the acceptance criteria of specification SP-1302-56-119, Rev. 1, the following conclusions are drawn from this review.

- ° The number of confirmed cracks in the sparger assemblies is one (1), that being the through-wall crack at 208° identified and clamped in 1978 and confirmed by a continuous supply of air bubbles during the air test.
- ° Visual inspection of the spargers showed various scuff marks, scrapes, undercut and discolorations on the sparger surface.
- ° All repair clamps appeared to be intact and in good condition.
- ° No indication that could be interpreted as crack-like was noted during the examination or post examination review.

REFERENCES

- (1) NRC I & E Bulletin 80-13, "Cracking in Core Spray Spargers"
- (2) General Electric Nuclear Energy Procedure #GE-VT-200, Rev. 0, FRR #OCN1-1, "Invessel Visual Inspection (IVVI) Procedure for BWR 2 Reactor Pressure Vessel Internals."
- (3) Specification SP-1302-56-119, Rev. 1, "Specification for Reactor Vessel Internal Inspection 13R Outage."

TABLE 1

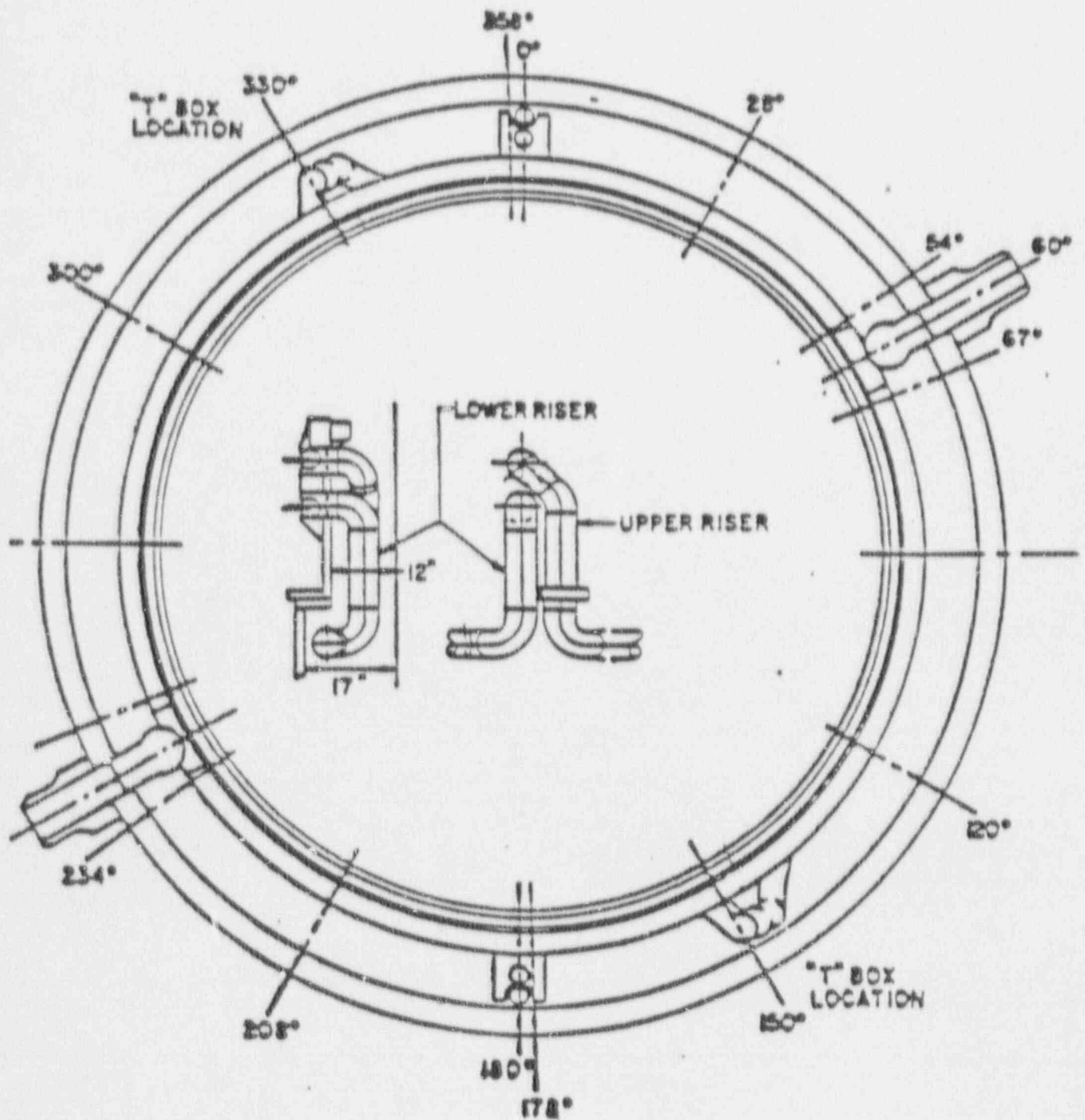
CORE SPRAY PIPING INSPECTION SUMMARY

	<u>Spargers</u>		<u>Annulus Piping</u>		<u>Air Test</u>	<u>Remarks</u>
	<u>Visual</u>	<u>Ultrasonic</u>	<u>Visual</u>	<u>Ultrasonic</u>		
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 called cracks	16 indications	2 indications	--	"	Seven Repair Brackets installed (Sys II) two repair brackets installed (Sys I)
28 Total Indications (excluding 1978 indication)						
1982 Video Enhancements	Video enhanced 1980 visual indications. Results identified: 3 cracks 2 possible cracks	--	Video enhanced on 1980 indication Results: Not a crack (6 x 5 reducer)	--	--	--
1983	No indications* (4 of 1980 indications examined)	No indications* (5 of 16 - 1980 indications rechecked)	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 two repair brackets upper sparger	Air release from 196° repair bracket intermittent. Air release from 208° repair bracket continuous.

TABLE 1 - (Continued)

CORE SPRAY PIPING INSPECTION SUMMARY

	<u>Spargers</u>		<u>Annulus Piping</u>		<u>Air Test</u>	<u>Remarks</u>
	<u>Visual</u>	<u>Ultrasonic</u>	<u>Visual</u>	<u>Ultrasonic</u>		
1991	No indications	--	No indications	--	Air release observed from one repair bracket (208") upper sparger.	Air release from 208" repair bracket continuous.



CORE SPRAY ANNULUS PIPING AZIMUTH

FIGURE NUMBER 1
OYSTER CREEK NUCLEAR GENERATING STATION

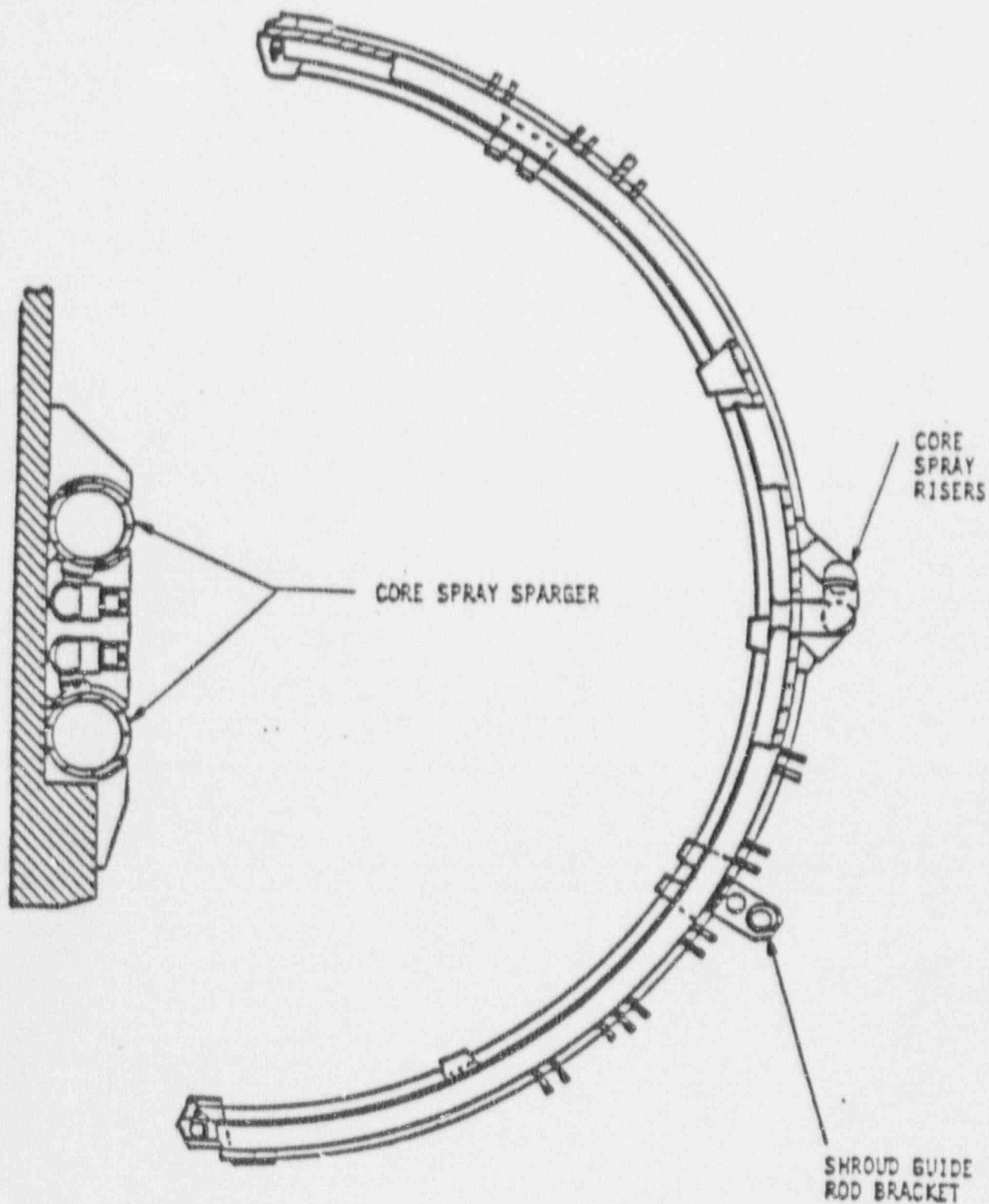
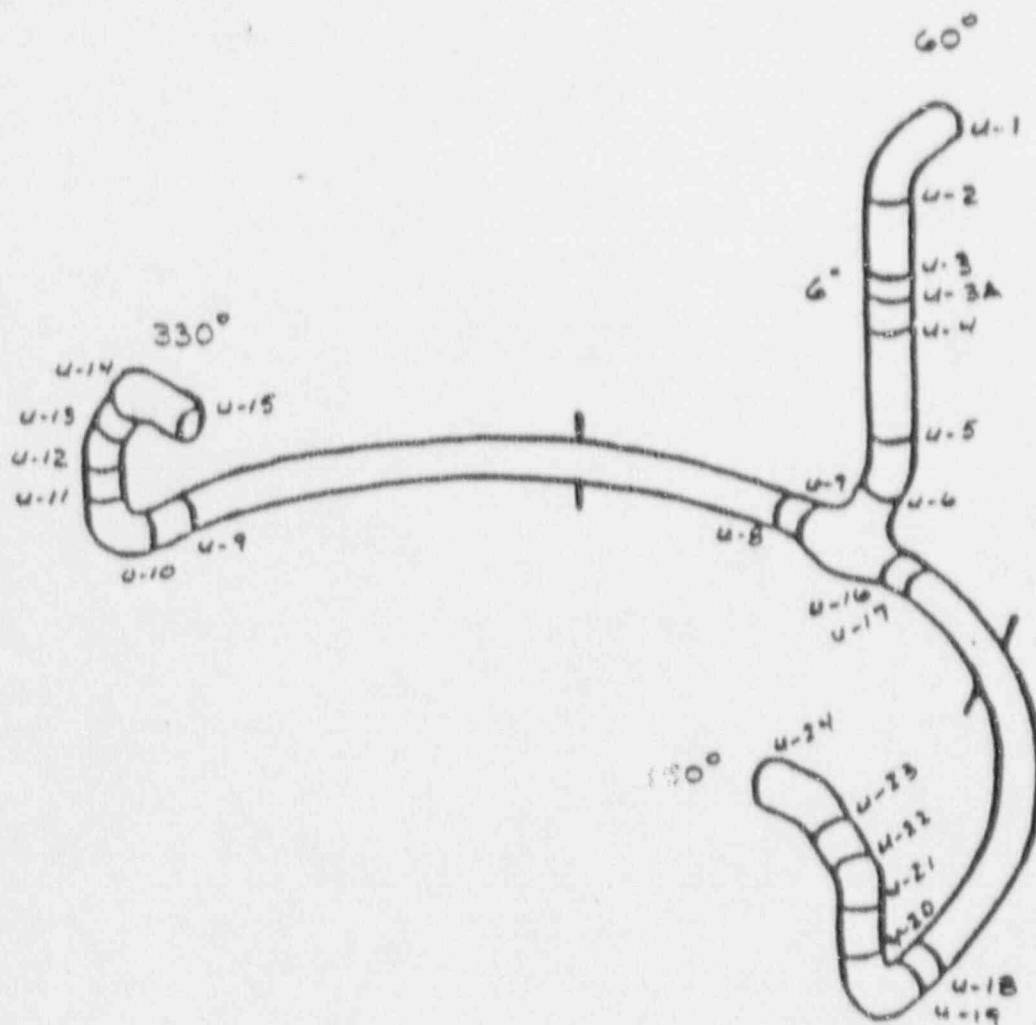
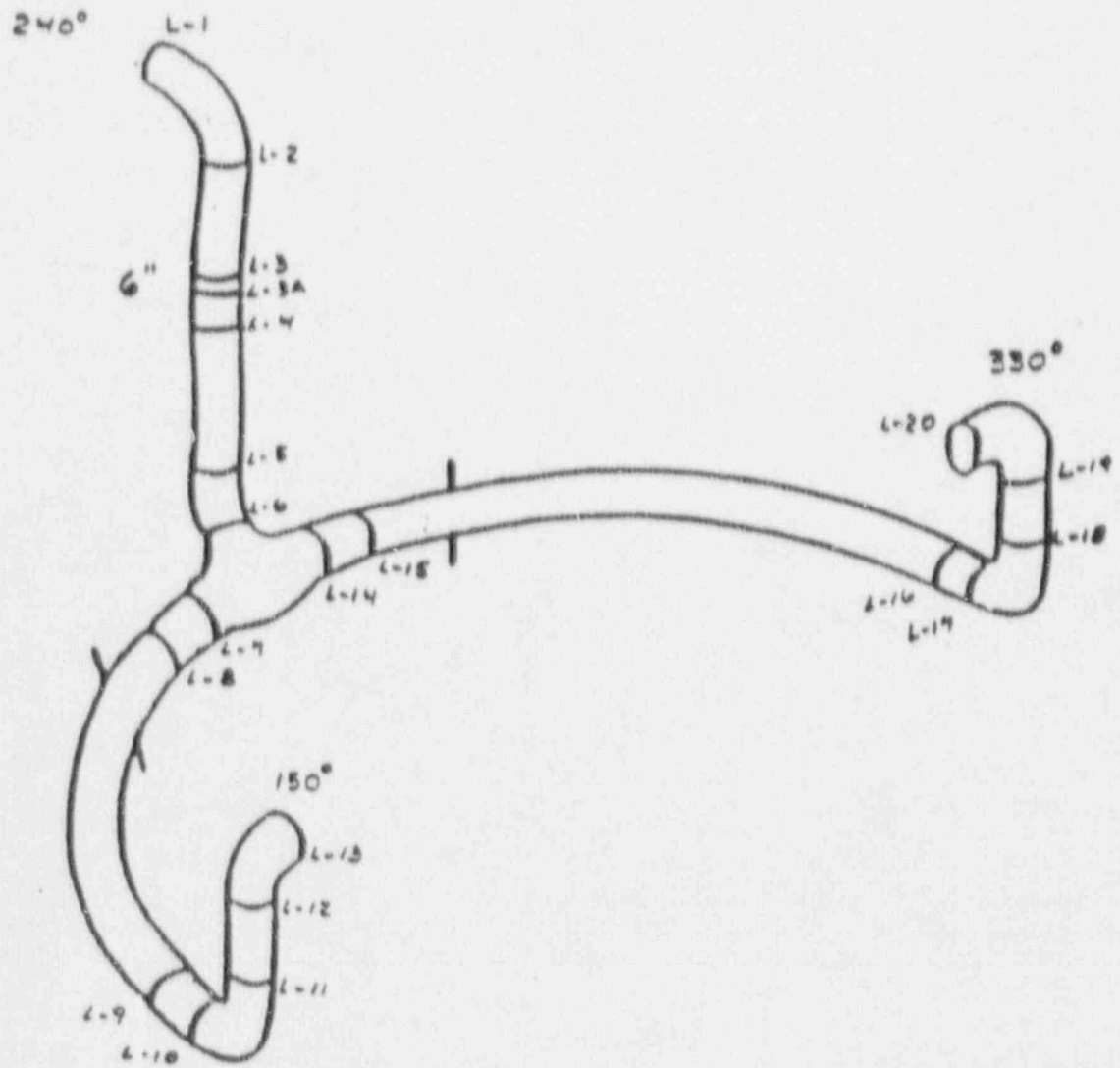


FIGURE NUMBER 2
OYSTER CREEK NUCLEAR GENERATING STATION



UPPER PIPING UNIT

FIGURE NUMBER 3
OYSTER CREEK NUCLEAR GENERATING STATION



LOWER PIPING UNIT

FIGURE NUMBER 4
OYSTER CREEK NUCLEAR GENERATING STATION