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OPERATIONS DCC
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E.S.
HOUSTON LIGHTING AND POWER COMPANY
SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION
PLANT PROCEDURES MANUAL

ISSUED FEB 03 1988
EXPIRES MAR 03 1988
BADGE# 450-53-3108
ISSUED TO: Juanita Kuykendall

STATION PROCEDURE

SAFETY-RELATED (Q)

Isolation and Capping
Leaking Incore Thimble

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Rev. 0
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APPROVED: Wassent Kuykendall 1/19/88 1-20-88
PLANT MANAGER DATE APPROVED DATE EFFECTIVE

1.0 Purpose and Scope

- 1.1 This procedure provides guidelines for crimping, applying a freeze plug, and capping a leaking Incore Instrumentation Thimble.
- 1.2 This procedure provides the methods and responsibilities for the qualification and certification of this procedure and personnel who will perform the procedure.
- 1.3 Steps of this procedure need not be performed sequentially and may be performed concurrently at the discretion of the Foreman.

2.0 Definition

- 2.1 None

3.0 Prerequisites

NOTE

"Record" indicates a data entry on Form (-1) of this procedure.

Record 3.1 Foreman shall mark sections to be performed or enter NA on Form (-1).

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- 3.2 Verify availability of the following, as applicable, and obtain as needed:
 - 3.2.1 Thimble crimping device (Shown on Addendum 1)
 - 3.2.2 Hydraulic pump for crimping device
 - 3.2.3 Pyrometer
 - 3.2.4 Freeze Seal Equipment consisting of:
 - 3.2.4.1 Freeze Box (Shown on Addendum 2)
 - 3.2.4.2 Quick-Freeze portable pipe freezing equipment
 - 3.2.4.3 20 lb. Cylinder of CO₂
 - 3.2.4.4 Face Shield
 - 3.2.4.5 Protective gloves
 - 3.2.5 5/16" Swagelok Cap
 - 3.2.6 Series 500 Swagelok Gap Inspection Gauge
 - 3.2.7 Wrenches, as necessary, to install the equipment listed above.
- 3.3 Pressure check the hydraulic components of the crimping device, check and repair any leaks.
- 3.4 Reactor Coolant System is equal to or less than 200^oF.
- 3.5 Discuss with Shift Supervisor the plan of action and obtain system clearance if required.
- 3.6 An RWP has been requested in accordance with OPGP03-ZR-0002, Request and use of Radiation Work Permits.
- 3.7 All Incore Instrumentation System detectors are in the STORAGE location.
- 3.8 Freeze seals to be performed by qualified personnel only.
- 3.9 Verify that the procedure has been qualified.
- 3.10 Ensure prerequisites are met.

Record

4.0 Precautions

- 4.1 Personnel shall follow radiological precautions outlined on RWP.
- 4.2 As CO₂ is heavier than air, care should be taken to disperse CO₂ in confined and low-lying areas. Always make sure there is adequate ventilation in the work area. Two RCFCs in operation should be enough to ensure that adequate ventilation exists.
- 4.3 Protective gloves should be used during installation of a freeze seal and care should be taken to prevent contact of liquid CO₂ with the skin.
- 4.4 Freeze seals shall be monitored continuously (direct visual observation is preferred, but other methods may be used to satisfy ALARA).

5.0 Procedure

- | | | |
|--------|-----|--|
| Record | 5.1 | Record MWR number on Form (-1). |
| Record | 5.2 | Record Unit number on Form (-1). |
| | 5.3 | Identify the leaking thimble using a hand held pyrometer. The leaking thimble should be at approximately the same temperature as the RCS. |
| | 5.4 | Apply a crimp to the 18 inch section of 5/16 inch tubing which connects the thimble tube to the 3/8 inch casing going to the 10 path device as follows: <ol style="list-style-type: none">5.4.1 Install crimp block #1 and #2 over stainless steel tubing using studs and nuts part #5 and #6 (making sure tubing stays in the center of crimp blocks).5.4.2 Tighten nuts (part #6) to a point that there is no easy movement of crimp block.5.4.3 Connect the hydraulic pump to the 5 ton ram.5.5.4 Connect Instrument Air to the hydraulic pump.5.4.5 Extend ram piston (part #8) approximately 1" and check that puller plate (part #3) is tight on ram (part #4).5.4.6 Attach puller plate and ram to crimp block making sure piston is aligned with piston hole (part #9) and studs are aligned. |

- 5.4.7 Install puller nuts (part #7) and tighten down evenly making sure you have a minimum of a full nut.
 - 5.4.8 Start pumping by applying pressure to the front of the foot petal until stops on crimp block meet.
 - 5.4.9 Tighten nuts (part #6) using proper size wrench.
 - 5.4.10 Release pressure by applying pressure to the rear of the foot petal.
 - 5.4.11 Loosen puller nuts and remove ram with puller plates till attached to ram.
 - 5.4.12 With hose still attached to ram and pump, with the release button pushed, push piston down inside the ram.
 - 5.4.13 Disconnect hose from ram and store in job box.
- 5.5 Apply a freeze to the thimble as follows:

NOTE

Refer to the Operating Procedure contained in the Quick-Freeze Kit, as necessary, for any additional details.

- 5.5.1 Install the freeze box (shown on Addendum 2) on the 1 inch diameter section of the thimble guide tube.

* * * * *

* CAUTION *

* Protective gloves should be used during the *

* following operation and care should be taken *

* to prevent contact of Liquid CO₂ with the *

* skin. *

* * * * *

- 5.5.2 Make approximately one cup of dry ice using the QWIK-FREEZER portable pipe freezing equipment as follows:
 - 5.5.2.1 Close a freezer jacket using the velcro strips and tie the ends of the jacket closed.

- 5.5.2.2 Connect a hose from the CO₂ bottle to the freezer jacket.
 - 5.5.2.3 Open the valve on the CO₂ bottle fully for approximately 10 seconds.
 - 5.5.2.4 Open the freezer jacket and check the quantity of dry ice produced. Repeat the process described above, as necessary, until approximately 1 cup of dry ice has been produced.
 - 5.5.3 Pack the freeze box full of dry ice.
 - 5.5.4 When a frost band forms on the outside of the thimble guide tube the freeze seal is complete. This should require approximately 15 to 30 minutes.
 - 5.5.5 Continue to add dry ice to the freeze box as necessary to keep the box full until the plugging process in the next section of this procedure is completed.
 - 5.5.6 Observe the frost bands on the thimble guide tube and ensure that they do not decrease in length indicating that the freeze is thawing.
- 5.6 Install a Swagelok Cap on the end of the thimble as follows:

* * * * *

* CAUTION *

* * * * *

* Loosen the fittings specified in the next *
* step slowly and watch for any leakage *
* that would indicate that the freeze plug *
* did not seal the tubing. If the freeze *
* plug is not complete, IMMEDIATELY retighten *
* the fittings. *

* * * * *

- 5.6.1 Remove the 18 inch section of tubing which connects the thimble to the 3/8 inch casing running to the 10 path device.
- 5.6.2 Install a Swagelok Cap on the end of the thimble.
- 5.6.3 Check the gap on the cap with the Swagelok Gap Inspection Gauge and retighten if necessary.

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- 5.7 Upon completion of the thimble capping, remove the freeze box and clean pipe of any excess ice build-up.
- 5.8 Allow ice plug in thimble guide tube to thaw naturally. The ice plug should melt within 1 hour.
- 5.9 Notify the Shift Supervisor that the leak has been isolated and capped.
- 5.10 Notify Plant Engineering of any abnormal conditions observed during the freeze process.
- Record 5.11 Record identification of the capped thimble on Form (-1).
- 5.12 Return documentation to Foreman for disposition.

NOTE

Performance of Step 5.13 may be delayed until the Incore Room has been cleaned and decontaminated, but must be performed prior to repressurizing the RCS.

- QIP 5.13 Request Q. C. to perform (Post-Freeze) liquid penetration examination of the welds in the Thimble Guide Tube in the vicinity of the freeze.
- 5.14 A copy of the completed Qualification Test/Data Sheet (-1) shall be attached to the work package.

6.0 Acceptance Criteria

- 6.1 The leaking thimble has been identified and capped.

7.0 Qualification

- 7.1 Qualification of this procedure and personnel who will perform it shall be by performance of a qualification test of the procedure on a mock-up constructed of pipe of the same size and material as the installed piping.
- 7.1.1 For qualification of the procedure, perform sections 5.4 through 5.8.
- 7.1.2 For qualification of personnel perform sections 5.4 through 5.8.

- 7.2 The Mechanical Maintenance Manager or designee shall review the test results and evaluate them against the acceptance criteria listed in Section 6.0 of this procedure.
- 7.2.1 If the test results meet the acceptance criteria the procedure/person is qualified and may be certified by the Mechanical Maintenance Manager.
- 7.2.2 If the test results fail to meet the acceptance criteria, the procedure may be modified to correct the cause of failure or the procedure may be reperfomed by another individual.
- 7.3 A copy of the Qualification Test/Data Sheet (-1) shall be retained by the Foreman and a copy placed in the Maintenance Department Certification File.

8.0 References:

- 8.1 Z139XM181AWN, Technical Manual for Incore Instrumentation, Vol. 2
- 8.2 OPMP04-ZG-0062, Liquid Carbon Dioxide (CO₂) Freeze Seal, Rev. 0
- 8.3 Operating procedure contained in Quick-Freezer Kits, Manual No. ME-COE-00001XXA

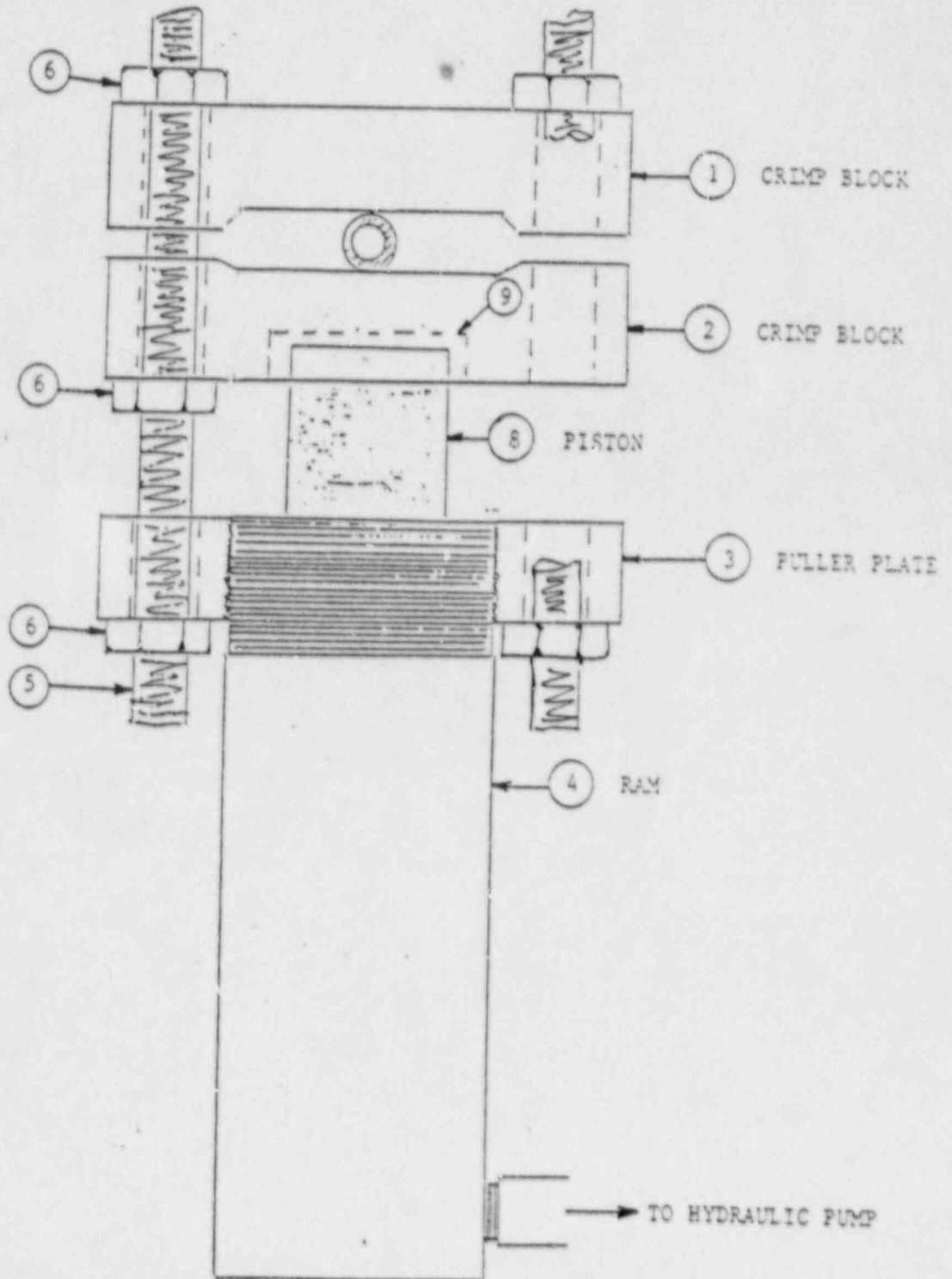
9.0 Documentation

- 9.1 The following documentetion is required to be retained
- 9.1.1 Qualification Test/Data Sheet OPMP04-II-0001-1

10.0 Support Documents

- 10.1 Addendum 1 - Thimble Crimping Device
- 10.2 Addendum 2 - Freeze Box
- 10.3 Addendum 3 - Incore Seal Plate
- 10.4 Addendum 4 - Incore Room Layout
- 10.5 Qualification Test/Data Sheet (-1)

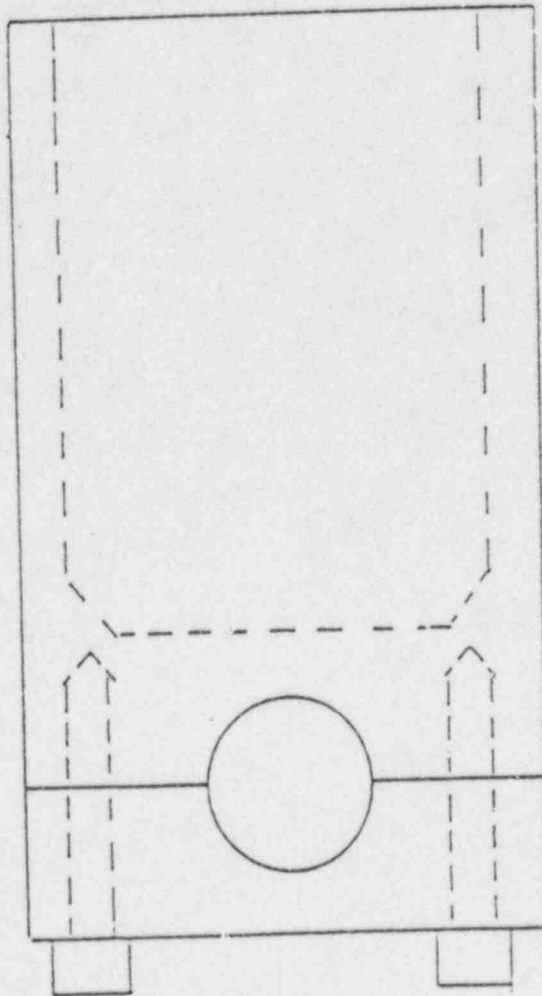
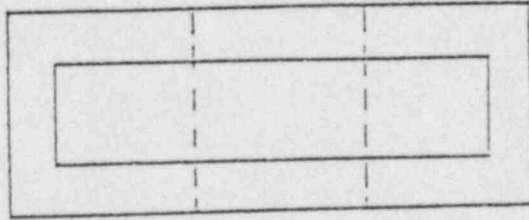
ADDENDUM 1
THIMBLE CRIMPING DEVICE
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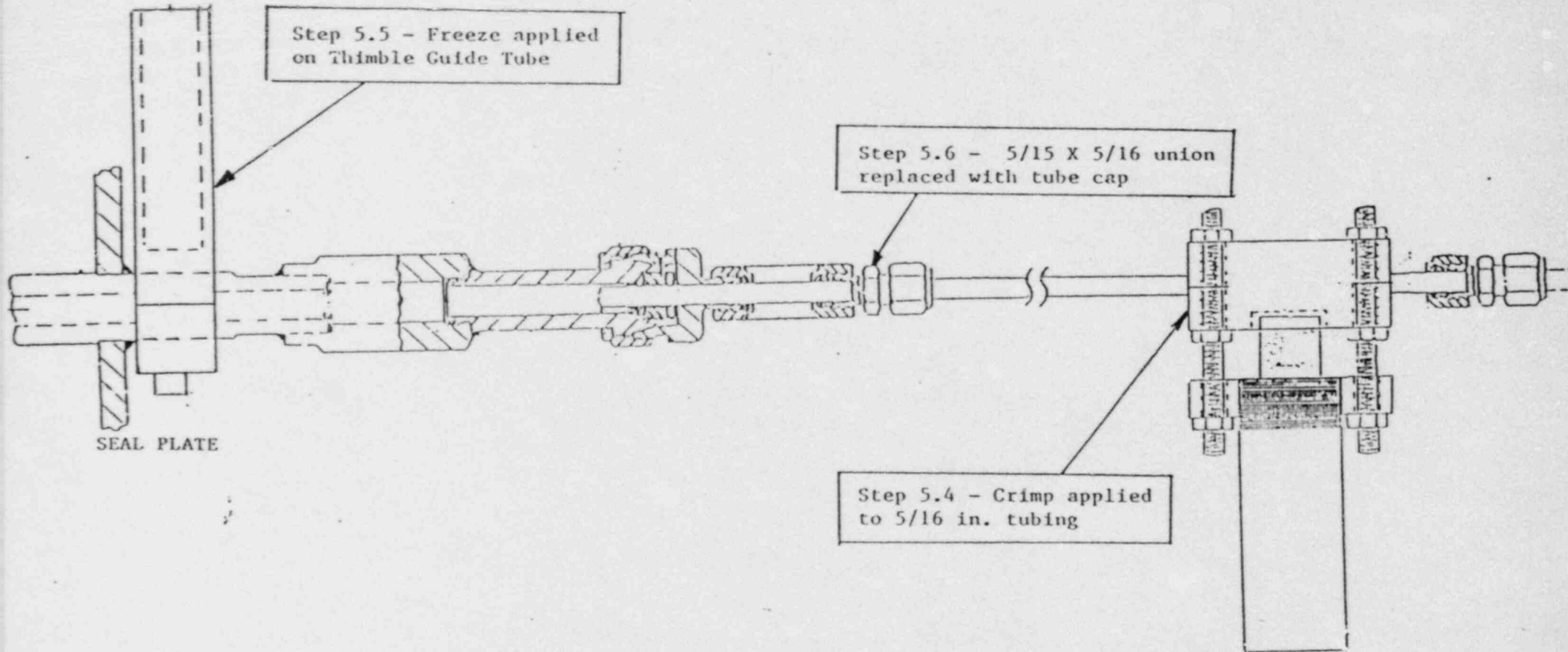
ADDENDUM 2
FREEZE BOX
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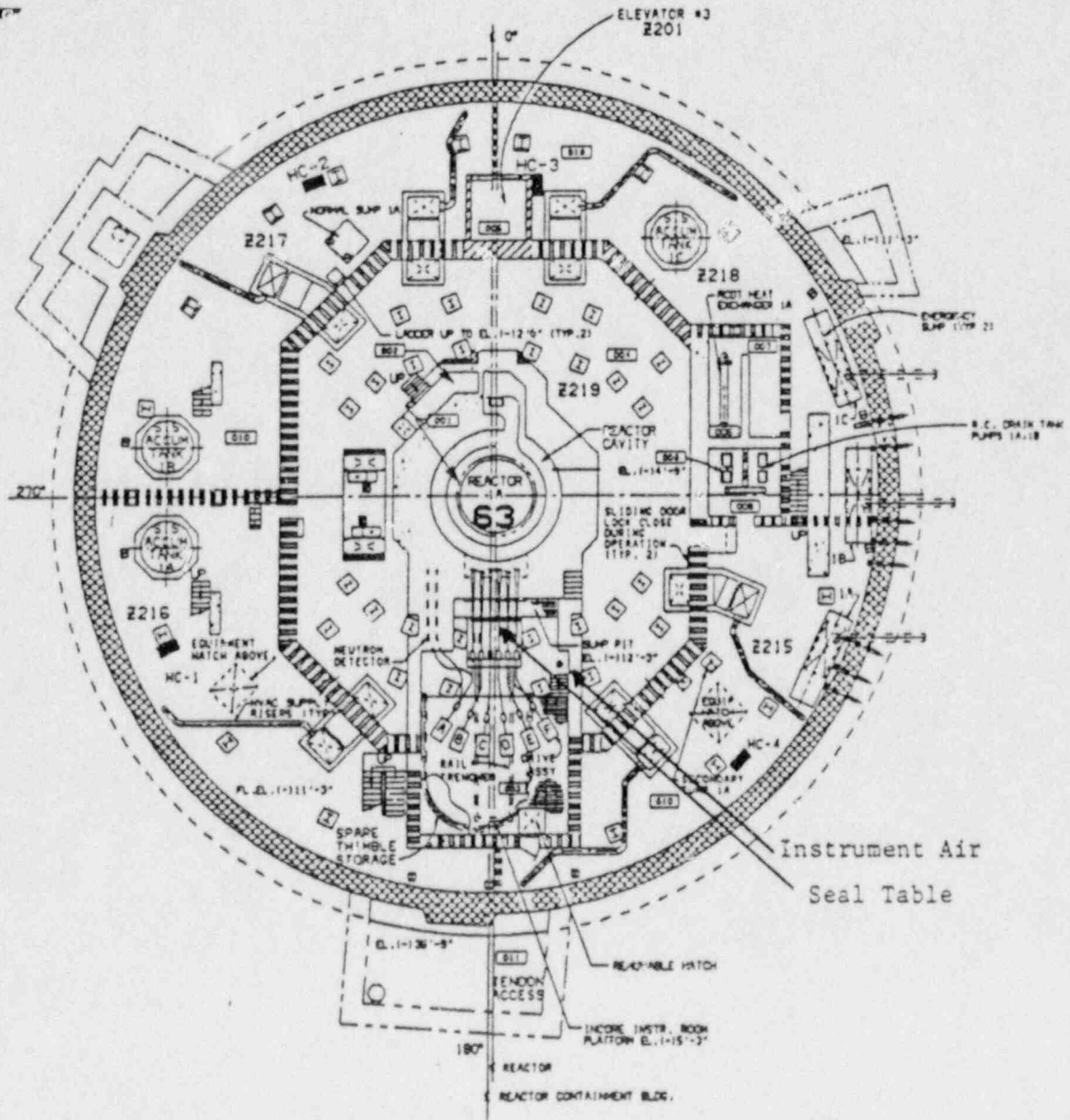
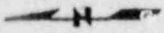
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ADDENDUM 3
INCORE SEAL PLATE
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ADDENDUM 4
INCORE ROOM LAYOUT
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DATA SHEET
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3.1

FOREMAN SHALL MARK SECTIONS TO BE PERFORMED OR ENTER NA			
	5.3 Identify Leaking thimble		5.5 Apply Freeze
	5.4 Apply Crimp to tubing		5.6 Cap tube
			7.1.1 Procedure Qualification
			7.1.2 Personnel Qualification

3.9 Prerequisites Met _____

5.1 MWR No. _____

5.2 Unit No. _____

5.11 Record identification of capped thimble _____

5.13 Q. C. Inspection _____

COMMENTS _____

Performed by _____
Mechanic Date

Reviewed by _____
Foreman Date

This form, when completed, shall be retained for the life of the plant.