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Approval <i>Bob Nester</i>	Vogtle Electric Generating Plant NUCLEAR OPERATIONS		Procedure No. 54840-1
Date 2-5-90			Revision No. 1
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INSTALLATION AND REMOVAL INSTRUCTIONS
FOR THE RCS TEMPORARY LEVEL INDICATION TYGON TUBE
AND THE DEFEAT OF THE RESIDUAL HEAT REMOVAL
SUCTION VALVE AUTO CLOSURE INTERLOCK

FOR INFORMATION ONLY

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1.0 PURPOSE

- 1.1 This procedure provides the installation and removal instructions for a tygon tube which is used for Reactor Coolant System Level Indication, when the RCS is depressurized and less than 100°F (approx.).
- 1.2 This procedure establishes a standard configuration for routing and protection of tubing, with required installation inspections by the Engineering Support Group.
- 1.3 The tygon tube is connected between RCS loop 1 crossover leg drain valve (1-1201-U4-003) and the pressurizer vent valve (1-1201-U4-100).
- 1.4 This procedure provides the installation and removal instructions for the defeat of the RHR Pump Suction Valve Auto-Closure interlock. This interlock is defeated to prevent inadvertent closure of the RHR Pump Suction Valves when the RCS is being cooled by RHR. This interlock will be defeated only in Modes 5 and 6.

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 All applicable radiological controls and requirements shall be observed when installing and removing the tygon tubing.
- 2.2 The routing will be such that there are no kinks, sharp bends, or other irregularities which could cause incorrect readings.
- 2.3 The tygon tubing shall be installed with a continuous slope up, to the extent practical, from valve 1-1201-U4-003 to prevent the entrapment of air in the tubing.
- 2.4 The tygon tubing shall be routed away from high traffic areas, to the extent practical.
- 2.5 The tygon tubing shall be appropriately protected from damage when routing through traffic areas.
- 2.6 The tygon tubing shall be positively identified along the route to ensure personnel take appropriate precautions when working over or around the tubing.

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- 2.7 Any work associated with the installation of the tygon tube inside the secondary shield walls should not take place during modes 1 and 2 for ALARA reasons.
- 2.8 The Tygon tube shall not be placed in service unless the RCS is depressurized and less than 140°F (approx).
- 2.9 When the Tygon Tube is in service the RCDT Pumps can not take suction from Loop One as valve 1-1201-U4-002 will be clearance tagged closed to avoid incorrect readings.
- 2.10 Defeat of the RHR Auto-Closure interlock will not render the Low Pressure Open permissive inoperable. Also, the RHR suction relief valves will remain available to prevent overpressurization of the RCS in Modes 5 and 6.
- 2.11 The Auto-Closure interlock must be restored prior to entry into Mode 4, in accordance with Technical Specifications 4.5.2.d.1.b, and 4.5.3.1.
- 2.12 The defeat of the Auto-Closure Interlock must not remain in effect more than 90 days. If the modification must remain in effect more than 90 days, a 00307-C Temp Mod shall be issued.

3.0 MEASURING AND TEST EQUIPMENT

- 3.1 M&TE
 - 3.1.1 Combination Pressure and Vacuum Gauge (max pressure 50 psig).
 - 3.2 Tools or other equipment.
 - 3.2.1 400 feet approx. of 1 inch inside diameter heavy duty clear tygon tube preferably with wide mesh reinforcing suitable for pressure of approximately 80 psig (at 70°F); with appropriate quick connect hose fittings and clips for RCS level indication. Good visual clarity is required.
 - 3.2.2 100 feet approx. of rubber hose and quick connect hose fittings to connect to the Demin Water System (System #1418).

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- 3.2.3 One hose adapter suitable for the 3/4" screwed connection downstream of 1-1201-U4-003 (1X4DB111 grid C8).
- 3.2.4 One hose adapter and flexitalic gasket suitable for the 3/4" flange connection downstream of 1-1201-U4-100 (1X4DB112 grid D7).
- 3.2.5 Temporary tubing fittings and tee to allow the M&TE gauge to be tee'd-off fittings on 1-1201-U4-100 without restricting the tygon tube gas/fluid flow.
- 3.2.6 Appropriate torque wrenches, and gaskets for removal/replacement of the blind flange downstream of 1-1201-U4-100.

NOTE

The steps in this procedure may be signed off by the person performing the work, unless specifically defined otherwise.

4.0 PREREQUISITES OR INITIAL CONDITIONS

NOTE

The Liner Plate Survey will be performed after installation of tygon tubing and will require specific RWP.

- 4.1 This procedure allows the installation of a temporary tygon level tubing and the defeat of the RHR Suction Valve Auto-Closure Interlock. If either of these two modifications are not required, their appropriate steps are to be marked N/A. Indicate below which modification is to be achieved by performance of this procedure and mark all non-required steps N/A.
 - 4.1.1 Tygon tubing installation [] Steps not required are: 4.6, 5.14 - 5.17, 6.12 - 6.15, IVOI, IVOR.

 - 4.1.2 Auto Closure Interlock defeat [] Steps not required are: 4.2 - 4.5, 5.1 - 5.13, 6.1 - 6.11.

- 4.1.3 Both Tygon tube and Auto-Closure Interlock are required
 [] All Steps are required.

4.2 MWO prepared to verify the containment liner plate survey and the liner plate markings as follows:

- a. One foot increments from 180' through 196', 215' through 225', and 245' through 255'.
- b. One inch increments from 185' through 190', and 216' through 220'.
- c. Elevation 208'6".
- d. Elevation 222' 7".

Detail MWO number _____

- 4.3 Clearance installed on the following valves during installation of tygon tubing:

1-1201-U4-003 Clearance tag closed

1-1201-U4-100 Clearance tag closed

Detail the clearance number _____

- 4.4 Specific RWP available for use during installation of tygon tube, RWP # _____.

- 4.5 Appropriate MWO available to permit removal and replacement of the insulation and the blind flange downstream of 1-1201-U4-100.

Detail MWO number _____

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4.6 Ensure plant is in Mode 5 or 6 prior to defeat of the RHR Pump Suction Valve Auto-Closure interlock.

5.0 INSTALLATION OF TYGON TUBE

5.1 Obtain Shift Supervisor permission to install tygon tubing for RCS Level Monitoring.

Shift Supervisor

5.2 Install the tygon tubing using the following routing:

5.2.1 From valve 1-1201-U4-003 loop around the adjacent number one Steam Generator support column and through the unused wall penetration, approximately one foot off the floor.

5.2.2 Support the tygon tube between accumulators numbers one and four angling up to an approximate elevation six feet above the floor.

5.2.3 Support the tygon tube as it passes over the walkway till it reaches the containment liner plate.

5.2.4 Continue the tubing route up the containment liner plate between the capped chemical cleaning penetration number 5 and ILRT penetration number 87 at level B (elevation 184').

5.2.5 Angle the tubing below and to the west of the Main Feedwater Penetration, then up between the Aux. FW penetration number 104 and PSV 8121 to elevation 225' on level 1.

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5.2.6 Slope the tubing round the containment on level 1 to the metal stairs beside the pressurizer cubicle. The tubing can be supported from any convenient location provided the precautions in section 2.0 are observed. It is not necessary for the tubing to be against the containment liner.

5.2.7 Continue the tubing route up the containment liner plate at a point close to the steel stairs, up to elevation 252' and into the pressurizer cubicle. The tubing should be looped over the top handrail and may be supported from the monorail support outside the cubicle. Leave the tygon tube disconnected.

NOTE

Step 5.3 may be performed in parallel with Steps 5.4 through 5.9.

5.3 Perform the Survey of the containment liner and mark the liner plate as follows:

- a. One foot increments from 180' through 196', 215' through 225', and 245' through 255'.
- b. One inch increments from 185' through 190', and 216' through 220'.
- c. Elevation 208'6".
- d. Elevation 222'7".
- e. Attach the Inspection Report for the survey to this procedure as attachment #1.

5.4 Remove the insulation at 1-1201-U4-100.

5.5 Remove the blind flange at 1-1201-U4-100, install the hose adapter, tubing tee, combination gauge and connect the tygon tube.

5.6 Remove the pipe cap at 1-1201-U4-003, install the hose adapter and connect the tygon tube.

5.7 Connect the vent of the temporary pressure gauge at the pressurizer end of the tygon tube to a suitable demineralized water supply from system 1418 and slowly fill, vent and pressurize the tygon tube to identify any leaks.

5.8 Tygon tube and fittings verified as leak tight.

5.9 Disconnect the demineralized water supply system 1418 from the tygon tube.

5.10 Hang Temporary Modification tags per "Exclusions section" of 00307-C in various locations on the tygon tube with the procedure # 54840-1 detailed.

5.11 Verify that the installation of the tygon tubing as follows:

5.11.1 The tube routing does not have any kinks, bends or other irregularities which could cause incorrect readings.

Independent Verification System Engineer

5.11.2 The tube routing has a continuous slope to the extent practical to prevent entrapment of air.

Independent Verification System Engineer

5.11.3 The tubing is routed away from high traffic areas to the extent practical and where necessary is protected from damage.

Independent Verification / System Engineer

5.11.4 The following elevations are clearly marked:

187' RCS half loop

Independent Verification / System Engineer

190' Bottom of RCP Seal Package

Independent Verification / System Engineer

194' Top of RV flange

Independent Verification / System Engineer

208'6" Pressurizer Level 17%

Independent Verification / System Engineer

222' 7" Pressurizer level 50%

Independent Verification / System Engineer

5.11.5 The location of the pressure gauge installed at the top of the pressurizer is easy to read.

Independent Verification / System Engineer

5.11.6 The tygon tube is identified with Temp. Mod. tags at various location.

Independent Verification / System Engineer

5.12 Install a clearance on valve 1-1201-U4-002 (RCDT pump suction from RCS Loop One) to keep this valve closed while the tygon tube is being used to avoid incorrect readings due to hydraulic effects.

1-1201-U4-002 Clearance tag closed

_____ / _____

Detail the clearance number _____

5.13 Advise the Shift Supervisor that installation of the tygon tube is complete and ready to be placed in service when required, provided precaution 2.8 is observed. Ensure that the SS understands precaution 2.9.

_____ / _____
Shift Supervisor

5.14 Obtain Shift Supervisor permission to defeat the RHR Pump Suction Valve Auto-Closure Interlock.

_____ / _____
Shift Supervisor

5.15 Defeat the Auto-Closure Interlock (ACI) as follows, documenting defeat per exclusions section of 00307-C.

V5.15.1 For valve 1-HV-8701A, defeat ACI by lifting and taping conductors X3 and T5 of cable LABEL5SH, from TB716-1 and TB716-2 of 1ACQSPAOP2 and install temp mod tag.

_____ / _____

V5.15.2 For valve 1-HV-8701B, defeat ACI by lifting and taping conductors X3 and T5 of cable 1CD115NSH, from TB1304-1 and TB1304-2 of 1CCQSPC, and install temp mod tag.

_____ / _____

V5.15.3 For valve 1-HV-8702A, defeat ACI by lifting and taping conductors X3 and T5 of cable 1DD116NSH, from TB1304-1 and TB1304-2 of 1DCQSPD, and install temp mod tag.

_____ / _____

V5.15.4 For valve 1-HV-8702B, defeat ACI by lifting and taping conductors X3 and T5 of cable 1BBE13SH, from TB716-3 and TB716-4 of 1BCQSPBOP2 and install temp mod tag.

5.16 Complete IVOI.

5.17 Notify Shift Supervisor that the Auto-Closure Interlock has been defeated.

Shift Supervisor

6.0 RES. RATION

5.1 Confirm with the Shift Supervisor that the tygon tube may be removed.

Shift Supervisor

6.2 Advise HP that tygon tube removal is about to proceed and that the fluid in the tube may be contaminated.

Detail RWP Number _____

6.3 Verify that the following valves are Clearance tagged closed:

1-1201-U4-003 Clearance tag closed

1-1201-U4-100 Clearance tag closed

Detail the clearance number _____

6.4 Disconnect the lower end of the tygon tube, remove temporary fitting and install pipe cap on 1-1201-U4-003.

- 6.5 Disconnect the upper end of the tygon tube, remove the temporary fitting and pressure gauges from 1-1201-U4-100.
_____ / _____
- 6.6 Install the blind flange and gasket on 1-1201-U4-100 and torque the bolts in accordance with the MWO.
_____ / _____
- 6.7 Replace the insulation on 1-1201-U4-100.
_____ / _____
- 6.8 Remove the tygon tube, temporary tubing supports, pressure gauge, fittings and hose connections from the containment.
_____ / _____
- 6.9 Remove the clearances on 1-1201-U4-003 and 1-1201-U4-100.
_____ / _____
- 6.10 Remove the clearance on 1-1201-U4-002
_____ / _____
- 6.11 Advise the Shift Supervisor that all temporary equipment has been removed from the containment, that the pipe cap has been reinstalled on 1-1201-U4-003 and that the blind flange and insulation have been replaced on 1-1201-U4-100.
_____ / _____
- 6.12 Obtain Shift Supervisor permission to restore the RHR Pump Suction Valve Auto-Closure Interlock.
_____ / _____
Shift Supervisor
- 6.13 Restore the Auto-Closure Interlock (ACI) as follows.
 - V6.13.1 For valve 1-HV-8701A, restore ACI by relanding conductors X3 and T5 of cable 1ABE15SH, on TB16-1 and TB716-2 of 1ACQSPAOP2 and remove temp mod tag.
_____ / _____

V6.13.2 For valve 1HV-8701B, restore ACI by relanding conductors X3 and T5 of cable 1CD1I5NSH, on TB1304-1 and TB1304-2 of 1CCQSPC, and remove temp mod tag.

V6.13.3 For valve 1-HV-8702A, restore ACI by relanding conductors X3 and T5 of cable 1DD1I6NSH, on TB1304-1 and TB1304-2 of 1DCQSPD, and remove temp mod tag.

V6.13.4 For valve 1-HV-8702B, restore ACI by relanding conductors X3 and T5 of cable 1BBE13SH, on TB716-3 and TB716-4 of 1BCQSPBOP2, and remove temp mod tag.

6.14 Complete IVOR.

6.15 Notify Shift Supervisor that the Auto-Closure Interlock has been restored and that ACI defeat is no longer a restraint to Mode 4 entry.

7.0 ACCEPTANCE CRITERIA

None

8.0 REFERENCES

8.1 P&ID DIAGRAMS

8.1.1 1X4DB111 Rev. 17 Reactor Coolant System
System No. 1201

8.1.2 1X4DB112 Rev. 24 Reactor Coolant System
System No. 1201

8.2 1X4DL4A17 Sheet 1 of 3 Rev. 20 Containment Building
Piping Area 4A, B, C, D
Level B Plans Sections
Reactor Coolant Loops.

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8.3 ELEMENTARY DIAGRAMS

- 8.3.1 1X3D-BD-E02G Rev. 6, Residual Heat Removal System
1-HV-8701A
- 8.3.2 1X3D-BD-E02H Rev. 6, Residual Heat Removal System
1-HV-8701B
- 8.3.3 1X3D-BD-E02J Rev. 6, Residual Heat Removal System
1-HV-8702A
- 8.3.4 1X3D-BD-E02K Rev. 7, Residual Heat Removal System
1-HV-8702B

8.4 WIRING DIAGRAMS

- 8.4.1 1X3D-CD-B04C Rev. 4, SSPS Output Cabinet 2
1-1605-Q5-SPA
- 8.4.2 1X3D-CD-B12A Rev. 3, SSPS Logic Cabinet C and D
1-1605-Q5-SPC and SPD
- 8.4.3 1X3D-CD-B09C Rev. 5, SSPS Output Cabinet 2
1-1605-Q5-SPB

END OF PROCEDURE TEXT

INDEPENDENT VERIFICATION OF INSTALLATION

- 5.15.1 Conductors X3 and T5 of cable 1ABE15SH are lifted at TB716-1 and TB716-2 of 1ACQSPAOP2.
/
- 5.15.2 Conductors X3 and T5 of cable 1CD1I5NSH are lifted at TB1304-1 and TB1304-2 of 1CCQSPC.
/
- 5.15.3 Conductors X3 and T5 of cable 1DD1I6NSH are lifted at TB1304-1 and TB1304-2 of 1DCQSPD.
/
- 5.15.4 Conductors X3 and T5 of cable 1BBE13SH are lifted at TB716-3 and TB716-4 of 1BCQSPBOP2.
/

INDEPENDENT VERIFICATION OF RESTORATION

6.13.1 Conductors X3 and T5 of cable 1ABE15SH are rabeled at TB716-1 and TB716-2 of 1ACQSPAOP2.

/

6.13.2 Conductors X3 and T5 of cable 1CD115NSH are rabeled at TB1304-1 and TB1304-2 of 1CCQSPC.

/

6.13.3 Conductors X3 and T5 of cable 1DD116NSH are rabeled at TB1304-1 and TB1304-2 of 1DCQSPD.

/

6.13.4 Conductors X3 and T5 of cable 1BBE13SH are rabeled at TB716-3 and TB716-4 of 1BCQSPBOP2.

/