

S. Conte

STARTUP TEST REVISION

TEST PROCEDURE TITLE	CONTROLLING PROCEDURE FOR OTSG REPAIR TESTING	DATE 09/30/83 TP NO. 600/2 REV. NO. STR-3
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REASON FOR CHANGE :

Previous 90°F/Hr cooldown did not achieve required OTSG tube-to-shell
Δ T to satisfy SER.

INSTRUCTION FOR ENTERING CHANGE

- . Remove: Cover page, STR-2; Tab. of Eff Pgs. i,ii; Pages 2, 7a,18, 21, 119.
- . Insert: Cover page, STR-3, Tab. of Eff Pgs. i,ii; Pages 2, 7a, 18, 19b, 19c,
19d, 19e, 19f, 19g, 19h, 20o, 20p, 21, 119, 119a.
- . Modify Enclosure 6 to reflect changes to Section 9.8. (Pen and ink change)

CHANGES ENTERED

I certify that all changes have been accurately entered into the test procedure:

The following replaced pages of the Official Field/Office Copy are attached:

OFFICIAL FIELD COPY _____ DATE _____

OFFICIAL OFFICE COPY _____ DATE _____

Page _____ of _____

TMI UNIT 1

STARTUP AND TEST

NUCLEAR SAFETY/ENVIRONMENTAL IMPACT EVALUATION
DETERMINATION AND REVIEW REQUIREMENTS

CLASS	<u>1</u>	TITLE	<u>CONTROLLING PROCEDURE</u>	NUMBER	<u>TP 600/2</u>
CATEGORY	<u>A</u>		<u>FOR</u>	MTX	<u>600.5.1.7</u>
			<u>OTSG REPAIR TESTING</u>	REVISION	<u>STR-3</u>

1. Safety Evaluation

Does this procedure/change

- (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes ☐ no ☒
- (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes ☐ no ☒
- (c) reduce the margin of safety as defined in the basis for any technical specification? yes ☐ no ☒

2. Environmental Impact Evaluation

Does this procedure/change

- (a) possibly involve a significant environmental impact? yes ☐ no ☒
- (b) have a significant adverse effect on the environment? yes ☐ no ☒
- (c) involve a significant environmental matter or question not previously reviewed and evaluated by the NRC? yes ☐ no ☒

NOTE: If any of the answers to the above are YES, a detailed evaluation MUST be attached.

Preparer W. A. SchaffDate 9/30/83Section Manager J. M. HawkinsDate 9-30-83Technical Reviewer David PorterDate 9/30/83Independent Safety Reviewer David Porter for V. OrlandoDate 10/1/83 per telecon

MANAGER SU/T (or designee):

This procedure must be reviewed and commented on by: (check all applicable)

☒ OEM DIRECTOR☒ Technical Functions☒ NSSS (BSW)☐ QC Mod-Ops☒ QA Mod-Ops☐ Other _____Signature J. M. HawkinsDate 9-30-83

Original to History File

THREE MILE ISLAND UNIT 1

CLASS 1 CONTROLLING PROCEDURE
CATEGORY A FOR
OTSG REPAIR TESTING

NUMBER TP 600/2
MTX 600.5.1.7
REVISION STR-3

PREPARED: Cognizant Engineer

W. Schaff

Date 9-30-83

RESPONSIBLE TECHNICAL REVIEWER:

Signature

Ivan D. Porter

Date 9/30/83

IMPLEMENTATION APPROVAL:

Signature

J. M. Hawkins

Date 10-1-83

O&M DIRECTOR CONCURRENCE:

Signature

G. Toole

Date 10-1-83

APPROVAL OF TEST RESULTS:

SU & T Representative

Date

ENCLOSURES:

1. Test Exception and Deficiency List
- 1A. Questions for Test Exception Acceptability
2. Quality Control Witness Signoff Sheet
3. OP 1102-1, Plant Heatup to 532°F (Modified by TP 600/2)
4. OP 1102-11, Plant Cooldown (Modified by TP 600/2)
5. EP 1202-5, OTSG Tube Leak/Rupture (Modified by TP 600/2)
6. OTSG Repair Testing Sequence
7. Heatup and Cooldown Computer Points
8. OTSG Leak Rate Data Sheets
9. General Emergency Operating Guidelines for HFT Program

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1.0 PURPOSE (cont'd)

- 1.3.4 Conduct an RCS cooldown to 350°F at a rate of 60°F/hr using main feedwater.
 - 1.3.5 Conduct a second RCS Heatup to 532°F, 2155 psig and allow approximately 11 days for soak time.
 - 1.3.6 Conduct a second RCS cooldown to 350°F at 90°F/hr using main feedwater in order to approach a 140°F ΔT between the OTSG shell and RCS Tave.
 - 1.3.7 Conduct a third RCS heatup to 532°F, 2155 psig and allow approximately 11 days for soak time.
 - 1.3.8 Conduct plant cooldown at 90°F/Hr to 350°F using Emergency Feedwater System in order to achieve a minimum of 70°F ΔT and approach 120°F ΔT between the OTSG shell and RCS Tave; and to heatup the plant to 532°F, 2155 psig.
 - 1.3.9 Conduct a retest of TP 664/1 - PORV Flow Indication Functional Test.
 - 1.3.10 Conduct an RCS cooldown to approximately 130°F, 300 psig at 90°F/Hr using EP 1202-5, OTSG Tube Leak/Rupture.
- 1.4 During the test sequence, OTSG leakage will be monitored through the use of the Krypton-85 tracer injected into the Makeup pump suction piping. Additional RCS/OTSG data will be recorded during heatups and cooldowns to improve our understanding of tube loads and to confirm our assumptions used in the tube load analyses.

STR-3

6.0 LIMITS AND PRECAUTIONS (Cont'd.)

- 6.8 OP 1102-11 Plant Cooldown (Enclosure 4) as modified for this procedure is to be used for all cooldowns, scheduled or unscheduled, for the duration of this test.
- 6.9 EP 1202-5 (Enclosure 5) as modified for this procedure is to be used only for performance of Section 9.7 of this procedure. Use approved plant procedure EP 1202-5 as directed by Manager of Operations standing order for other than performance of Section 9.7.
- 6.10 During plant heatup the OTSG shell temperature must be within 60°F of the average tube temperature.
- 6.11 Do not allow OTSG level to go lower than 18" on startup range during performance of Section 9.8.
- 6.12 For plant cooldown at 90°F/hr to 350°F using Emergency Feed-water System the plant administrative limit for maintaining the OTSG average tube temperature within 70°F of the average shell temperature during cooldown is relaxed to 120°F.

STR-3

9.0 TEST METHOD (Cont'd.)

- _____ 9.6.2 In accordance with Enclosure 3 (OP 1102-1, Plant Heatup, as modified for TP 600/2) perform a plant heatup to 532°F, 2155 psig. Monitor OTSG Tube Leakage in accordance with Enclosure 8 requirements.
- _____ 9.6.3 Maintain RCS conditions are 532°F, 2155 psig for eleven (11) days.
- _____ 9.6.4 Deleted. | STR-3
- _____ 9.6.5 All necessary OTSG tube leakage monitoring data has been recorded and attached to this procedure.

Section 9.6 Accomplished: SAT _____ UNSAT _____

Signature _____ Date _____

NOTE: Perform Section 9.8 prior to performing Section 9.7. | STR-3

9.7 Third Plant Cooldown

- _____ 9.7.1 Initiate the PPMP computer data collection (Enclosure 7) every ten (10) minutes prior to initiation of the cooldown and program to collect data every ten (10) minutes. The time should also be recorded when either RC Pumps or Decay Heat Pumps are turned on or off. The data should be taken throughout the cooldown until Tcold is below 150°F and the maximum OTSG shell temperature is less than 200°F. Any additional activities that occur during cooldown that would make a significant change on the OTSG Tube-Shell temperature rofile should also be recorded and at the completion of the cooldown print out the data collected.

9.0 TEST METHOD (Cont'd.)

9.8 Plant Cooldown at 90°F/hr to 350°F, using emergency feedwater, while maintaining the OTSG Tube-To-Shell ΔT near, but not exceeding 120°F

____ 9.8.1 Initiate the PPMP computer data collection (Enclosure 7) ten (10) minutes prior to initiation of the cooldown and program to collect data every ten (10) minutes. The time should also be recorded when either RC Pumps or Decay Heat Pumps are turned on or off. The data should be taken throughout the cooldown until Tcold is 350°F. Any additional activities that occur during cooldown that would make a significant change on the OTSG Tube-Shell temperature profile should also be recorded and at the completion of the cooldown print out the data collected. Mark up the computer printouts with the following: Step number, TP number, initials, date, page number and attach as part of Enclosure 7.

____ 9.8.2 Section 9.8.4 will cooldown to 350°F at a rate of 90 \pm 10°F/Hr, while approaching the 120°F ΔT (Step 6.12) in accordance with Enclosure 4 (OP 1102-11, Plant Cooldown, as modified for TP 600/2). Monitor OTSG Tube Leakage in accordance with Enclosure 8 requirements.

____ 9.8.3 The following prerequisites have been met prior to commencing cooldown.

STR-3

9.0 TEST METHOD (Cont'd.)

9.8.3.1 RM-A5 Low is operable and in service for cooldown.

Signature _____ Date _____

9.8.3.2 Grab sample for offsite analysis has been taken from RM-A5 line prior to commencing cooldown.

Signature _____ Date _____

9.8.3.3 Collars made and installed to block EF-V30A and B to prevent complete valve closure (to preclude additional EFW nozzle thermal cycles) and documented per AP 1013.

Signature _____ Date _____

9.8.3.4 Plant at hot shutdown conditions with four RC pumps running.

Signature _____ Date _____

9.8.3.5 Cycle valves EF-V30A and EF-V30B open and closed to insure proper operation.

Signature _____ Date _____

9.8.3.6 Krypton-85 (6 Curies) added to RCS and RCS kr 85 in equilibrium, based on sample results.

Signature _____ Date _____

STR-3

9.0 TEST METHOD (Cont'd.)

- 9.8.3.7 Dissolved oxygen concentration of at least one condensate storage tank is less than 850 ppb, or level agreeable by Operations and Chemistry Departments.

CST 'A' _____ d.o. ppb

CST 'B' _____ d.o. ppb.

Signature _____ Date _____

- 9.8.3.8 EFW System valves lined up to pump water from CST with lowest dissolved oxygen to both OTSG's per OP 1106-6 "Auxiliary System Operating Procedures, Emergency Feed".

Signature _____ Date _____

STR-3

- 9.8.4 To accomplish the desired cooldown rate of 90°F/hour and approach the 120°F ΔT limit proceed as follows:

_____ 9.8.4.1 Stop Main Feedwater flow to both OTSG's by closing valves FW-V85A/B, FW-V16A/B and FW-V92A/B and reducing feedpump speed to minimum. Start boiling down OTSG's while maintaining constant OTSG pressure and constant RCS Tave and pressure.

_____ 9.8.4.2 Insure EF System auto defeat switches in the Control Room are in the 'Defeat' position.

9.0 TEST METHOD (Cont'd.)

- _____ 9.8.4.3 When OTSG levels reach approximately 30 inches startup range, with Bailey ICS Controls in manual for EF-V30A/B, manually start one Emergency Feedwater Pump, EF-P-2A (or EF-P-2B). Insure Emergency Feedwater Pump is operating properly, then trip the Main Feed pump.

NOTE: If running EFW pump stops, immediately start second motor driven EFW pump or turbine driven EFW pump.

CAUTION: DO NOT ALLOW OTSG LEVEL TO GO LOWER THAN 18" ON THE STARTUP RANGE.

- _____ 9.8.4.4 Trip ~~one~~ RCP then gradually adjust Bailey ICS stations (if necessary) and place EF-V30A/B in 'AUTO' if possible, then adjust Turbine Bypass valve setpoints to smoothly decrease the OTSG pressure in both OTSG's from 900 psig to 600 psig to cause Tcold to decrease at approximately 90°F/hour. Record data as required by Section 10.8.4.4

- _____ 9.8.4.5 Monitor average shell temperatures, Tcold, and tube-to-shell ΔT every ten (10) minutes.

- _____ 9.8.4.6 Continue lowering steam pressure to maintain 90°F/hr. cooldown of Tcold. If tube-to-shell ΔT approaches 120°F, decrease the cooldown rate to maintain the tube-to-shell ΔT at $\leq 120^\circ\text{F}$.

STR-3

9.0 TEST METHOD (Cont'd.)

- _____ 9.8.4.7 Continue cooldown until the RCS T_{cold} is approximately 350°F. Cooldown to T_{cold} approximately 330°F is permissible if it appears desired 70° ΔT would result.
- _____ 9.8.4.8 At the completion of the cooldown, throttle the Turbine Bypass Valves to stop cooldown; then control EF-V30A/B Bailey ICS stations (auto control preferred) to feed OTSG's as necessary to maintain level. Restart Main Feed Pump and establish feed gradually to both OTSG's through valves FW-V85A/B then secure EFW pump.
- _____ 9.8.4.9 Open valves FW-V92A/B and commence gradual refill of steam generators using FW-V85A/B and/or FW-V16A/B and fill to level specified per Figure 2 on Enclosure 2, page 53/54.
- _____ 9.8.4.10 With T_{cold} at approximately 350°F and stable count rate on RMA5 low, perform grab sample from RM-A5 line for offsite analysis.
- _____ 9.8.4.11 Remove collars from valves EF-V30A and B that were installed in Step 9.8.3.3, and removal documented per AP 1013.

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9.0 TEST METHOD (Cont'd)

9.8.5 Plant Heatup to 532°F, 2155 psig

_____ 9.8.5.1 Initiate the PPMP computer data collection (Enclosure 7) every 10 minutes prior to initiation of the heatup and program to collect data every 10 minutes. The time should also be recorded when either RC pumps or Decay Heat Pumps are turned on or off. The data should be taken throughout the heatup until hot standby conditions are reached and at the completion of the heatup printout the data collected. Mark up the computer printouts with the following: Step number, TP number, initials, date, page number, and attach as part of Enclosure 7.

_____ 9.8.5.2 In accordance with Enclosure 3 (OP 1102-1, Plant Heatup, as modified for TP 600/2), perform heatup to 532°F, 2155 psig. Monitor OTSG Tube Leakage in accordance with Enclosure 8 requirements.

_____ 9.8.5.3 Collect grab sample on RM-A5 line, for offsite analysis, after 12 hours at 532°F.

_____ 9.8.5.4 Maintain RCS conditions at 532°F, 2155 psig until directed to proceed by D. Slear or his designate.

_____ 9.8.5.5 At the completion of Step 9.8.5.4, perform TP 664/1 - PORV Flow Indication Retest, to verify PORV operability.

STR-3

9.0 TEST METHOD (cont'd.)

_____ 9.8.5.6 All necessary OTSG tube leakage monitoring data
has been recorded and attached to this procedure.

STR-3

Section 9.8 Accomplished: SAT _____ UNSAT _____

Signature _____ Date _____

10.0 DATA REQUIRED

Step No.	Description of Data Required	Data	Acceptance Criteria	Initials	
				Org.	Date
10.8.4.4	CONTROL ROOM				
	OTSG Pressure A & B Computer points 0556 and 0557	A _____ psig B _____ psig	Record Data		
	EF-P-2A (EF-P-2B) discharging pressure PI-71 (PI-72)	_____ psig	Record Data		
	EFW flow Indication { EF-FI-788 EF-FI-782	_____ gpm _____ gpm	Record Data		
	Valve position { EF-V30A (% open) EF-V30B	_____ % _____ %	Record Data		
	'A' Condensate Storage Tank Level 'B' Condensate Storage Tank Level LI-43 LI-44	_____ ft. _____ ft.	Record Data		
	LOCAL				
	Pump suction pressure PI-69 (PI-70) Pump discharge pressure PX-67 (PX-68)	_____ psig _____ psig	Record Data		
	Inlet pressure to EF-V30A/B { PI-476 (A) PI-477 (B)	_____ psig _____ psig	Record Data		
	Cavitating venturi inlet pressure { PXI-1154 (A) PXI-1155 (B)	_____ psig _____ psig	Record Data		
	Pump suction flow EF-FIS-77 (79) Pump bearing flow EF-FI-162A (B)	_____ gpm _____ gpm	Record Data		

10.0 DATA REQUIRED

[illegible]

11.0 ACCEPTANCE CRITERIA

11.1 Acceptance criteria for specific tests listed in Enclosure 6 are contained in Section 11.0 of the individual test procedures or in the appropriate enclosures of this procedure.

11.2 OTSG tube-to-shell ΔT of at least 70°F achieved during plant cooldown at 90°F/hr. to 350°F using Emergency Feedwater System (Section 9.8).

STR-3

ENCLOSURE 8

GPUNC Specification 1101-28-008, Rev. 0, is being issued to define the OTSG Leakrate Monitoring Program during hot testing. The parameters being measured and the sampling frequencies are as follows:

<u>Parameter</u>	<u>Sample Location</u>	<u>Frequency</u>	<u>Data Sheet #</u>	
Krypton-85	RMA-5L (offgas monitor)	Continuous ¹ - Counts/minute to be logged every 15 minutes during cooldown and every 30 minutes during steady state. Leakrate calculations must be performed at these times.	1	
	RCS	Daily	2	} See Note 3 STR-3
		One hour \pm 30 minutes after each addition of the radioactive tracer (Krypton-85)	2	
		One hour \pm 30 minutes after each large addition of water (2000 gallons or more) to the RCS during the OTSG hot testing	2	
	MU Tank (Gas space)	Following each RCS sampling after a Kr-85 injection	2	} See Note 3 STR-3
Boron	OTSG	Daily	3A/3B	
Tritium	OTSG	Daily	3A/3B	
	Hotwell	Daily	2	
Gamma	OTSG and Hotwell	Daily	2	
Isotopic Analysis	RMA-5L (Grab sample)	1 Hour (Cooldowns)	2	} See Note 3 STR-3
	RMA-5L (Grab sample)	4 Hours (Steady State)	2	
	RMA-5L (Grab sample)	Every 2 gph or more increase over a period of 4 hours or less as calculated from the RMA-5L (offgas monitor) count rate.	2	

DATA SHEET 4 - Primary to Secondary Leak Rate Calculations.
Fill out Data Sheet and Compute P/S Leak Rates
whenever Kr-85 grab samples at RM-A-5 Low are taken.

¹ Log the average count rate for the 15 minutes (30 minutes during steady state) since the last reading, on Data Sheet 1 and compute the primary to secondary leak rate using the most recent RCS Kr-85 activity, condenser vacuum pump exhaust flow rate, and formula

$$L.R. = \frac{(5.16 \times 10^{-6})(\text{COND. EX. FLOW})(\text{RMAS netcpm})}{\text{RCS Kr-85 Activity}}$$

² OTSGs must also be analyzed for parameters in accordance with SP 1101-28-002, Rev. 1.

³ For performance of Sections 9.8 and 9.7 see revised analysis frequencies on Enclosure 8, Page 119a.

TMI UNIT 1
TP 600/2
Enclosure 8, 1/
Effective Page STR-3
Page 119

The following changes to the sampling and analysis frequencies are required for the remainder of the OTSG Hot Testing Program; for analyses listed below all other samples to be performed per Enclosure 8, Page 119.

- 1) Sample and analyze the Reactor Coolant System for krypton-85 approximately three (3) hours after krypton-85 addition and every four (4) hours after that for twelve (12) hours. Reduce this frequency to once per day thereafter. The Kr-85 will be considered to be in equilibrium when two consecutive Kr-85 analyses are within $\pm 15\%$
- 2) Sample and analyze the RCS make-up tank for krypton-85 approximately six (6) hours after krypton-85 addition.
- 3) RM-A5 (Low) samples for outside vendor analysis.
 - a) steady state - 3/week Mon., Wed., and Fri.
 - b) cooldowns - three (3) samples required.
 1. One (1) sample within four (4) to eight (8) hours of the start of the cooldown after Kr-85 has reached equilibrium in RCS.
 2. One (1) sample with RCS at 350°F.
 3. One (1) sample twelve (12) hours after the RCS is heated to 532°F.
4. RM-A5 (Low) samples for site analysis:

As a result of the low activity of these samples, thus far, this requirement for sampling is unnecessary and may be suspended until RM-A5 (Low) exceeds 1000 cpm or other signs indicate a high enough leakrate to produce $> 6 \times 10^{-6}$ $\mu\text{Ci/cc}$ of krypton-85 activity in the condenser exhaust.

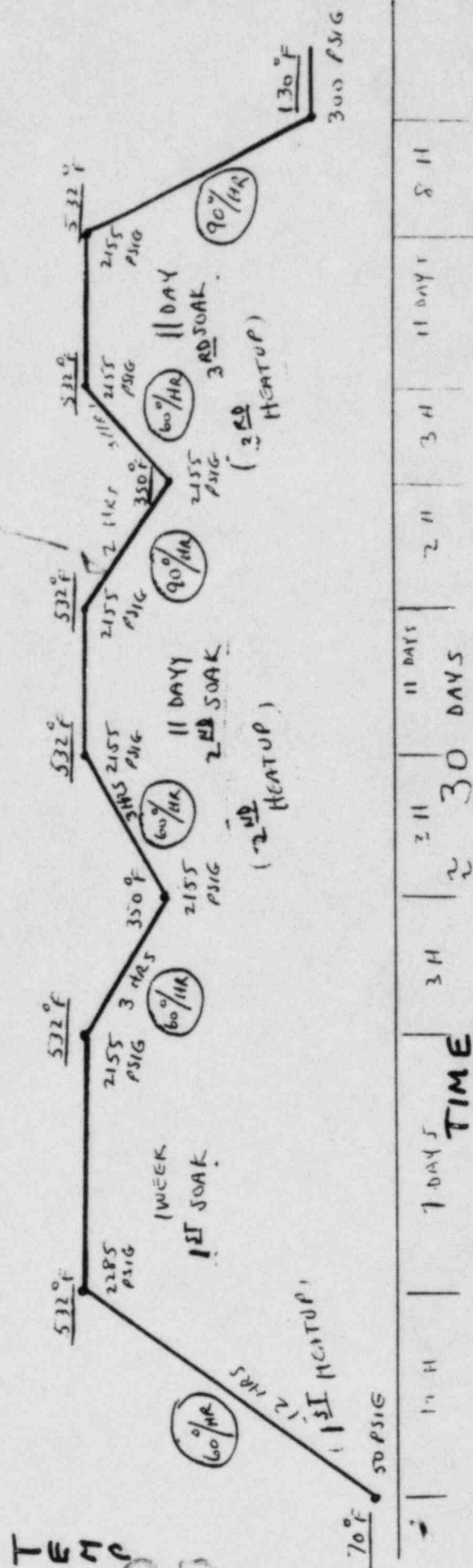
The increased RCS sampling after krypton-85 addition is to provide sufficient data prior to the cooldown for increased statistical certainty of the reactor coolant krypton-85 activity. Therefore, the krypton-85 must be added at least 15 to 24 hours prior to the cooldown.

A0000648

9/16/83
K3
from HN

STEAM GENERATOR TUBE REPAIR

TESTING



DETAILS

1. Persons Contacted

General Public Utilities (GPU) Nuclear Corporation

- R. Barley, Lead Mechanical Engineer
- R. Corbit, Site Weld Engineering Supervisor
- * J. Colitz, Plant Engineering Director, TMI-1
- R. Fenti, G.C. Manager
- S. Giacobbe, Materials and Welding Manager (Reading, N.J.)
- * H. Hukill, V.R. and Director of TMI-1
- C. K. Lee, Supervisor, Pressure Components (Parsippany, N.J.)
- * D. Langan, QA/QC - OTSG Repair
- * S. Pruitt, TMI-1 Supervisor
- * S. Levin, Acting Director, Maintenance and Construction
- * R. Szczech, TMI-1 Licensing
- * C. Smyth, Supervisor TMI-1 Licensing
- M. Torborg, ISI Program Engineer

U. S. Nuclear Regulatory Commission

- * R. Conte, Senior Resident Inspector
- * F. Young, Resident Inspector

*Indicates present at the March 24, 1983 Exit Interview.

2. Licensee Action on Previous Inspection Findings

83-07 (Open) Licensee Identified Item (289/81-LO-13), steam generator repair and recovery. Work is continuing in the area of steam generator repair with tube plugging in progress during this inspection. Inspection of steam generator repair activities for this report are covered in paragraph 3.

HM → Inspection of final steam generator repairs, H₂O₂ cleanup, cold pressure testing and hot functional testing activities is intended during and after completion of these steps. *still in progress*

This item remains open pending satisfactory completion of required recovery tasks.

3. Steam Generator Repair and Recovery Activities

3.1 Background

At the start of this inspection the tubes of st. A and B had been kinetically expanded in the up the post expansion tube flushing operation was stabilizer insertion as required for certain tube in progress with final preparations being made

generators (OTSG) tubesheets and etc. Tube to be plugged was tube plug

Steam
Generator
Program

#1

DATE 11/24/83
GPU TO HAVE A management review
- FINAL DATA & Final Report
TAKE START UP / Test
PROGRAM *SPONSORED*

LEN ZUBEY
8222

in S. Levine
previous office

8⁰⁰ AM
9/24/83

correction or repair and the work towards completion have been in progress. The Safety Evaluation Report dated December 10, 1982, portions of which are proprietary, include the OTSG tube failure analysis; prevention of recurrence; and, summary of tube repair process as necessary to complete adequate corrective measures. This item is closed.

83-02 (Open) Licensee Identified Item (298/81-LD-13). Work in the area of steam generator repair including tube expansion; post repair clean-up; tube end milling, plugging, cold testing; RCS H_2O_2 cleaning if required; and, hot functional testing are the remaining topics for completion and inspection during the steam generator recovery process.

This item remains open pending satisfactory completion of required recovery tasks.

(Closed) Inspector Follow Item (289/80-04-03). Fire hazard analysis of cable butt splices. The inspector reviewed the fire hazard analysis for task RM-1, Heat Shrink Tubing/Butt Splicing Inside Reactor Building. The analysis concluded that the addition of butt splices has no significant effect on the fire loading of various areas in which the splices are located. Discussions with responsible licensee personnel indicated that the fact that the red sealant used in conjunction with the heat shrinkable tubing is combustible was considered in the analysis, however the amount of combustible material added to a fire area by butt splicing in relation to the area total fire loading was found to be insignificant. This item is closed.

(Closed) Inspector Follow Item (289/80-04-05). Documentation of quality control inspection criteria for engineering change memoranda. The inspector reviewed the licensee's Program for documenting Quality Control (QC) inspections and discussed the program with QC personnel. Engineering Change Memoranda (ECM), which require QC inspection, are denoted as such on the ECM cover sheet. The QC organization then determines what inspections are required and documents these inspections on QC Plant Inspection Reports. The inspector reviewed QC activities for several modification packages and noted no discrepancies. This item is closed.

(Closed) Unresolved Item (289/80-05-03). Procedure for LOCA qualified cable splices does not incorporate manufacturer's recommendations. The inspector reviewed selected portions of task RM-1 and noted that the installation procedure for butt splicing required that cable surfaces be cleaned with isopropyl alcohol prior to the application of heat shrink sleeving as recommended by the manufacturer. This requirement is also contained in the licensee's Corrective Maintenance Procedure 1420-Y-24, Installation of Ray-Chem Splices, Revision 0. Further information concerning this item is discussed in NRC Inspection Report 289/82-02, paragraph 2, item 289/80-04-02. The inspector concluded that the licensee's procedures adequately address the manufacturer's recommendations and had no further questions. This item is closed.

POST-INSPECTION COVER SHEET

DATE SUBMITTED: _____ 19 _____

FROM: E. H. GRAY RE: 289/ES-25 on 9/19-9/21/83
(Reporting Inspector) (Inspection No.) (Dates of Inspection)

TO: J. DURR TMI #1
(Reporting Inspector's Supervisor) (Facility Identification)

☒ The facility project inspector has been informed of the inspection results.

☐ Inspection Report is completed and ATTACHED.

☒ Feeder Reports have been completed, reviewed by author's supervisor, and are attached - List: → To H. NICHOLAS

1. _____
2. _____
3. _____

N/A ☒ Documentation letter completed and attached (a standard form with new or modified paragraphs desired).

☒ List of updated outstanding items completed. For Materials, license folder attached (list will be with it).

☒ Statistical Data Sheet completed and ATTACHED.

☒ Inspection Plan as corrected, ATTACHED for Branch Files.

N/A ☒ Input for Gray Book/Yellow Book submitted to Project Inspector.

Additional Comments: _____

E. H. GRAY
(Reporting Inspector)

File:
Reporting Inspector's Branch

NOTE: Cross out and initial sections not applicable.

PRE-INSPECTION COVER SHEET
(Region I Work Form)

PAUL ①

From: E. H. Gray
(Reporting Inspector)

Report No. 50-289/83-25

To: J. Dunn
(Reporting Inspector's Supervisor)

FERDINANDO (CONTE) YOUNG
→ H. Nick. →

Subj: INSPECTION OF TINT #1
(Facility)

ON 9/19-9/21/83
(Dates)

/ / List of outstanding items up to date, reviewed and proper items selected.

/X/ Inspection plan completed (attached or summarized below).

Inspection Items: _____

B1-L0-13 - S.G. LEAKS/REPAIR PROGRAM/TEST RESULTS

B2-06-01 - RCS INSPECTION/QUALIFICATION INCLUDING RECENT VALVE PROBLEM

B2-L0-02 WASTE GAS PIPE CRACKS

INSPECTOR'S OPTION (INDEPENDENT INSPECTION) B2-L0-11 } P.O.R.U. POWER OPERATED
E3-L0-03 } RELIEF VALVES.
→ (COOPERATING WITH H. GREGG) - DISCUSSED w/ H. GREGG 9/21/83 (NL)

added 20/83 { B3-07-01 - O13 PLUG WELDING STD - REVISION
B3-07-02 - MECHANICAL PLUG

NAMES OF ACCOMPANYING PERSONNEL: _____

RESIDENT INSPECTOR
NOTIFIED: _____

Yes (S. YOUNG) 9/2/83
Project Section Chief

None.

ACKNOWLEDGED: " " "
Project Inspector

ACKNOWLEDGED: N/A.
Accompanying Inspector's
Supervisor (if applicable)

SUBMITTED: E. H. Gray.
Reporting Inspector

APPROVED: J. Dunn
Reporting Inspector's
Supervisor

File:

Branch Files (Inspector's Branch and Project Branch)

Hotel: HARRISBURGH HOST Phone: () - FTS: 8-717-939-7841

Site Contact (Name) S. YOUNG Phone: () - FTS: 590-1155

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

①
FEEDER REPORT
TO H. NICHOLS

Report No. 50-289/83-25

Docket No. 50-289

License No. DPR-50 Priority -- Category C

Licensee: GPU NUCLEAR CORPORATION

P.O. Box 480

MIDDLETOWN, PENNSYLVANIA 17057

Facility Name: THREE MILE ISLAND NUCLEAR STATION UNIT #1

Inspection At: MIDDLETOWN, PENNSYLVANIA

Inspection Conducted: SEPTEMBER 19-21, 1983

Inspectors: _____

_____ date

E. H. GRAY, LEAD REACTOR ENGINEER

_____ date

_____ date

Approved by: J. P. DURR - CHIEF MATERIALS AND PROCESSES SECTION date

Inspection Summary: INSPECTION ON SEPTEMBER 19-21, 1983 (INSPECTION REPORT NUMBER 50-289/83-25).

ROUTINE, ANNOUNCED INSPECTION BY THE REGION BASED INSPECTOR OF LICENSEE ACTION ON PREVIOUS INSPECTION FINDINGS; STEAM GENERATOR REPAIR PROGRAM, REACTOR COOLANT SYSTEM INSPECTION/REQUALIFICATION, POWER OPERATED PRESSURE RELIEF VALVE REPAIR/TESTING, AND WASTE GAS PUR SYSTEM REPAIRS/HDE. THE INSPECTION INCLUDED 22 HOURS ON SITE AND 8 HOURS OF FOLLOWUP INSPECTION AT THE REGION OFFICE.
RESULTS : NO VIOLATIONS WERE NOTED IN THE SIX AREAS INSPECTED.

1) PERSONS CONTACTED

GPU NUCLEAR (GPUN)

R. BARLEY - LEAD MECHANICAL ENGINEER

R. CORBIT - SITE WELD ENGINEERING SUPERVISOR

J. GREEN - QC INSPECTOR

W. KIMMICK - QC, WELDING, INDE COORDINATOR

G. KULL - PLANNER

D. LANGAN - QA ENGINEER

C.K. LEE - SUPERVISOR, PRESSURE COMPONENTS (PARSIPPANY, N.J.)

J. MARSDEN - QA., ACTING MANAGER - MODIFICATIONS/OPERATIONS

R. MILLER - METALLURGIST (READING LAB)

F. PAULEWICZ - MECHANICAL ENGINEER

J. PERDUE - SITE ENGINEER - MAINTENANCE

J. TIETJEN QC SUPERVISOR

M. ZEISE QC, NDE, WELDING SUPERVISOR

C. SMITH - SUPERVISOR TMS-I LICENSING

C. STEPHENSON - LICENSING ENGINEER

L. ZUBEY - CONTRACTOR SERVICES MANAGER

(YES)

D. JACKSON - NDE INSPECTOR (RT LEVEL III)

2) LICENSEE ACTION ON PREVIOUS INSPECTION FINDINGS

2.1 (CLOSED) LICENSEE IDENTIFIED ITEM (289/81-LO-13), STEAM GENERATOR, ^(OTSG) REPAIR AND RECOVERY.

INSPECTION OF THE STEAM GENERATOR REPAIR PROGRAM BY RESIDENT AND REGION BASED INSPECTORS IS DOCUMENTED IN NUMEROUS IVRC INSPECTION REPORTS DURING 1982 AND 1983. IN REPORT 289/83-07 IT WAS CONCLUDED THAT COMPLETED ACTIVITIES ON THE OTSG REPAIR PROGRAM WERE UNDER CONTROL BY THE LICENSEE IN TECHNICAL SUPPORT, WORK PERFORMANCE AND RECORDS AREAS.

DURING THIS INSPECTION (83-25) THE INSPECTOR SAMPLED RECORDS OF FINAL STEAM GENERATOR REPAIR ACTIVITIES FOR COMPARISON TO PROGRAM REQUIREMENTS INCLUDING TYPICAL REPORT 008 REVISION 2 AND THE TMI-1 STEAM GENERATOR REPAIR SAFETY EVALUATION REPORT (NUREG-1019).

SPECIFICALLY THE INSPECTOR EXAMINED RECORDS OF WORK PERFORMED ON T.O. / INSPECTION NUMBER A25M-V1512-80212 FOR FINAL TUBE STOPPLING.

(4)

PLUG WELDING, MECHANICAL PLUG INSTALLATION AND RELATED ACTIVITIES. BASED ON PREVIOUS INSPECTIONS AND THE ABOVE INSPECTION OF FINAL STRAIN GENERATOR REPAIRS THE INSPECTOR CONCLUDED THAT REQUIRED OTSG REPAIR TASKS ARE COMPLETE. COINCIDENT WITH INSPECTION OF THE FINAL OTSG REPAIRS, THE OTSG HOT PRESSURE TEST PASSED THE FIRST 90°F PER HOUR COOLDOWN RATE WITHOUT PROBLEM. INSPECTION OF OTSG PRESSURE TESTING IS REPORTED SEPARATELY IN PARAGRAPH ____.

THIS ITEM IS CLOSED.

(5)

(289/82-06-01)

2.2 CLOSED (INSPECTOR FOLLOWUP ITEM). REACTOR COOLANT
SYSTEM INSPECTION AND REQUALIFICATION.

THE INSPECTOR REVIEWED:

-- LETTER DATED 9/16/82, KARANNIS/RHEDRICK TO SMYTH

-- "O" RING ^{EXAMINATION} FINAL REPORT RDD:83:5490/5491:02
DATED 6/3/82.

• -- TEST 4, RESULTS OF TASK 7, APPENDIX "C", RCS EXAMINATION.

THE 825°F - 850°F HEAT TREATMENT ACTUALLY
DEFINES THE SAME HEAT TREATMENT AS IS
DISCUSSED IN THE LETTER OF 9/16/82. THE
INSPECTOR HAD NO FURTHER QUESTION ON THIS ISSUE.

THE ABOVE REFERENCED "O" RING REPORT AND TEST
RESULTS OF TASK 7 APPENDIX "C" WERE REVIEWED BY THE
INSPECTOR. THESE REFERENCES SUPPORT THE
POSITION OF THE 9/16/82 LETTER AND SHOW
THAT THE HIGHEST STRESSED AREAS OF THE "O"
RING WERE EXAMINED DURING TASK 7 AND
FOUND TO BE FREE OF INTERGRANULAR ATTACK.

⑥

THE INSPECTOR REVIEWED TASK 7, APPENDIX "C"
AND DETERMINED THAT VIDEO INSPECTION TAPES
HAD BEEN INTERPRETED AND DOCUMENTED
FOR PERMANENT RECORD PURPOSES BY
MEANS OF A LETTER REPORT DESCRIBING
THE VIDEO INSPECTION AND THE RESULTS.
THIS CONFIRMS THAT VIDEO INSPECTION TAPES
HAVE BEEN CONVERTED TO A WRITTEN RECORD
AS DISCUSSED IN THE LETTER OF 9/16/82.

THE INSPECTOR'S CONCERN IN THE
ABOUT THREE AREAS HAS BEEN SATISFACTORILY
ADDRESSED, THEREFORE THIS ITEM IS CLOSED.

(7)

2.3 (CLOSED) LICENSEE-IDENTIFIED ITEMS (289/82-LO-02)
WASTE GAS DISPOSAL SYSTEM - SOCKET WELD/PIPE
HAZ CRACKS.

AS REPORTED IN LER 82-002/03L-1, CRACKS
WERE FOUND IN THE 2" DIAMETER TYPE 304
STAINLESS WASTE GAS PIPING BY TWO SOCKET
WELDS. CORRECTIVE ACTION, ^{AS NOTED IN NUREG 1019} INCLUDED REPLACEMENT
OF ABOUT 50' OF 2" LINE IN THE AREA WHERE CRACKS
WERE FOUND ^{WITH TYPE 304L} AND NON DESTRUCTIVE EVALUATION
OF THE REMAINDER OF WELDS IN THIS LINE
INCLUDING THE 3/4" LINE INSIDE CONTAINMENT.

THE INSPECTOR EXAMINED THE 2" WASTE GAS
LINE ON 9/20/83 AND REVIEWED RADIOGRAPHS
AND ULTRASONIC TEST REPORTS. THE SCOPE OF
THIS INSPECTION INCLUDED:

2" LINE - RECORDS OF REPLACEMENT (304L S.S.)

2" LINE - ULTRASONIC EXAMINATION RECORDS OF WELDS
REMAINING IN PLACE.

3/4" LINE - RADIOGRAPHS OF WELDS.

CRACKED PIPE SECTIONS HAVE BEEN REPLACED,
NDE COMPLETED ON ^{THOSE} UNCRACKED WELDMENTS
NOT REPLACED AND METALLURGICAL ANALYSIS IS
COMPLETED, INDICATING CRACKING TO BE INTERMETALLIC STRESS

⑧

CORROSION CRACKING. ONE ULTRASONIC INDICATION IN THE WELD HEAT AFFECTED ZONE OF VALVE WDC-V-8 HAS BEEN REINSPECTED ~~RE-INSPECTION~~ BY THE LICENSEE AT 6 AND 12 MONTH ^{INTERVALS} AS A CONTROL OBSERVATION. NO GROWTH OF THE INDICATION HAS BEEN OBSERVED, HOWEVER A THIRD RE-INSPECTION IS SCHEDULED FOR MARCH 1984. THE REGIONAL INSPECTOR REQUESTED TO BE ADVISED OF THE ACTUAL DATE OF THE 1984 ULTRASONIC TEST.

THIS ITEM IS CLOSED

⑦

2.4 (CLOSED) UNRESOLVED ITEM (289/83-07-01)

THE INSPECTOR REVIEWED THE REVISION
TO GPU MTWS-013 DATED 3/25/83 AND
VERIFIED THAT SKETCH 8.3 DOES SHOW
THE TYPE WELDED PLUG IN ACTUAL USE
FOR FINAL WELDED PLUG INSTALLATION.

THIS ITEM IS CLOSED.

2.5 (OPEN) UNRESOLVED ITEM (289/83-07-02). MECHANICAL
TEMPORARY PLUGS.

THE INSPECTOR DETERMINED THAT THE
REPORT PROVIDING THE SUBJECT PLUG
QUALIFICATION DATA IS SCHEDULED FOR
COMPLETION IN LATE OCTOBER.

THIS ITEM REMAINS UNRESOLVED PENDING
NRC REVIEW OF MECHANICAL PLUG
QUALIFICATION DATA AND RELATED FACTORS.

2.6 (OPRN) LICENSEE IDENTIFIED ITEMS (82-LO-11, 83-LO-03)
POWER OPERATED RELIEF VALVE (PORV) AND
PRESSURIZER SAFETY VALVES.

THE INSPECTOR EXAMINED RECORDS OF THE
REPAIR AND TESTING OF PORV BS-03989
COMPLETED IN APRIL 1983. THIS PORV IS
DOCUMENTED TO BE IN POSITION ON THE PRESSURIZER.
THE INSPECTOR DISCUSSED THE PORV REPAIR AND
PRESSURE TEST WITH THE Q.C. INSPECTOR
WHO HAD OBSERVED PORTIONS OF THE REPAIR AND
THE PORV TEST.

THE INSPECTOR ALSO REVIEWED RECORDS
ON SET PRESSURE ADJUSTMENT AND LEAKAGE
TESTING ON THE PRESSURIZER SAFETY VALVES
BR-06612 AND -BR 06613 NOW REPORTED TO
BE IN PLACE ON THE PRESSURIZER.

THIS ITEM REMAINS OPEN PENDING VERIFICATION
THAT THE ABOVE IDENTIFIED VALVES ARE THESE
ACTUALLY IN PLACE ON THE PRESSURIZER.

[illegible]

NRC FORM 705
(11-81)
1E MC 0535

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTOR (Name last, first, and middle initial)

INSPECTOR'S REPORT
Office of Inspection and Enforcement

Gray, Edwin H.
REVIEWER
J. Over

INSPECTORS
E. H. Gray

LICENSEE/VENDOR

TRANSACTION
TYPE

DOCKET NO. (8 digits) OR LICENSE
NO. (BY PRODUCT) (13 digits)

REPORT

NEXT INSP. DATE

GPU NUCLEAR

X I - INSERT
M - MODIFY
D - DELETE
R - REPLACE

05000289

8325

NO.

SEQ.

MO.

YR.

A

B

C

D

PERIOD OF INVESTIGATION/INSPECTION

INSPECTION PERFORMED BY

ORGANIZATION CODE OF REGION/HQ CONDUCT-
ING ACTIVITY (See IEMC 0530 "Manpower Report-
ing—Weekly Manpower Reporting" for code)

REGION

DIVISION

BRANCH

FROM

TO

1 - REGIONAL OFFICE STAFF

OTHER

MO.

DAY

YR.

MO.

DAY

YR.

2 - RESIDENT INSPECTOR

3 - PERFORMANCE APPRAISAL TEAM

091983 092183

REGIONAL ACTION
(Check one box only)

TYPE OF ACTIVITY CONDUCTED (Check one box only)

1 - NRC FORM 591

2 - REGIONAL OFFICE LETTER

02 - SAFETY

03 - INCIDENT

04 - ENFORCEMENT

05 - MGMT. AUDIT

06 - MGMT. VISIT

07 - SPECIAL

08 - VENDOR

09 - MAT. ACCT.

10 - PLANT SEC.

11 - INVENT. VER.

12 - SHIPMENT/EXPORT

13 - IMPORT

14 - INQUIRY

15 - INVESTIGATION

INSPECTION/INVESTIGATION FINDINGS
(Check one box only)

TOTAL NUMBER
OF VIOLATIONS AND
DEVIATIONS

ENFORCEMENT CONFERENCE
HELD

REPORT CONTAIN 2,790
INFORMATION

LETTER OR REPORT TRANSMITTAL DATE

A

B

C

D

1 - CLEAR

2 - VIOLATION

3 - DEVIATION

4 - VIOLATION & DEVIATION

A

B

C

D

A

B

C

D

1 - YES

A

B

C

D

1 - YES

NRC FORM 591
OR REG.
LETTER ISSUED

REPORT SENT
TO HQ. FOR
ACTION

MO.

DAY

YR.

MO.

DAY

YR.

MODULE INFORMATION

MODULE INFORMATION

REC. ORD.		MODULE NUMBER INSP.					PRIORITY	DIRECT INSPEC- TION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED	TO DATE	STATUS	MODULE REQ. FOLLOWUP					REC. ORD.		MODULE NUMBER INSP.					PRIORITY	DIRECT INSPEC- TION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED	TO DATE	STATUS	MODULE REQ. FOLLOWUP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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