



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-416/85-19 and 50-417/85-05

Licensee: Mississippi Power and Light Company
Jackson, MS 39205

Docket Nos.: 50-416 and 50-417

License Nos.: NPF-29 and CPPR-119

Facility Name: Grand Gulf 1 and 2

Inspection Conducted: May 28 - 31, 1985

Inspector:

George Hallstrom
to B. B. Crowley

6-11-85

Date Signed

Approved by:

[Signature]
for J. J. Blake, Section Chief
Engineering Branch
Division of Reactor Safety

6-11-85

Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 27 inspector-hours on site in the areas of turbine bypass line indications (Unit 1), residual heat removal (RHR) heat exchanger vent line break (Unit 1), inservice testing (IST) of pumps and valves (Unit 1), ASME Code welding (Unit 2), nondestructive examination (NDE) activities (Unit 2), safety-related piping activities (Unit 2), containment structural steel welding (Unit 2), and IE Bulletins (Units 1 and 2).

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. E. Cross, Grand Gulf Nuclear Station General Manager
*R. F. Rogers, III, Technical Assistant to Station General Manager
S. F. Tanner, Manager, Nuclear Site QA
*L. F. Daughtery, Compliance Superintendent
M. N. Bakarich, Nuclear Record Superintendent
W. F. Adcock, Principal Mechanical Engineer-NPE
*B. C. Lee, QA Supervisor - Audits
S. E. Thomas, Mechanical Systems Supervisor - NPE
R. K. Dubey, Engineering Supervisor - Piping/Mechanical Analysis - NPE
J. M. Feil, Materials Science Supervisor - NPE
*A. J. Malone, ISI Coordinator
W. L. Justice, Materials Science Project Engineer - NPE
M. D. Meier, Mechanical Systems Project Engineer - NPE
J. D. Bailey, Compliance Coordinator

Other licensee and contractor employees contacted included construction craftsmen, engineers, technicians, operators, security force members, and office personnel.

Other Organization

J. F. Hudson, Project QA Manager, Bechtel
D. W. Watt, Lead Field Welding QC Engineer, Bechtel
M. Shows, Lead Field Welding Engineer, Bechtel
*P. J. Collins, QA Supervisor, Bechtel
D. A. Lindsey, Lead Piping/Mechanical QC Engineer, Bechtel
T. D. Kinnebrew, Assistant Lead Piping QC Engineer, Bechtel

NRC Resident Inspectors

*R. C. Butcher, Senior Resident Inspector
*J. L. Caldwell, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 31, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Independent Inspection Effort (92706B) (Units 1 and 2)

a. General Inspection of Unit 2

The inspector conducted a general inspection of the Unit 2 reactor and auxiliary buildings to observe construction progress and general activities such as welding, material control, housekeeping, and storage. See paragraphs 6 and 10 for details of welding activities observed.

b. Indications in Main Steam Bypass Pipe (Unit 1)

In September 1984, during testing at approximately 18% power, two failures occurred in turbine bypass line "A" (see RII Report 50-416/84-38 for a summary of these failures). After the second failure, the section of 18" diameter schedule 40 pipe between the bypass valve and the pressure breakdown assembly (PBA) was replaced with schedule 100 pipe. This modification was also accomplished on lines "B" and "C". After replacement of the pipe, Wyle Lab recorded vibration measurements on line "A" using six accelerometers. From the accelerometer data, calculated stresses and displacements were very small. On March 6, 1985, after removal of an accelerometer block, nondestructive examination (NDE) of line "A" identified a 1 1/2" long indication in the 18" diameter, schedule 100 pipe near the pipe to PBA weld. This indication was identified after approximately 1740 hours of bypass operation with the thicker wall pipe. The indication was not thru wall and was repaired. After the repair, an inservice monitoring program was developed for the three 18" schedule 100 bypass lines consisting of 100% visual (VT), magnetic particle (MT) of the welds and 6" of base material on each side of the welds, and ultrasonic (UT) for mapping any questionable indications.

On May 8, 1985, as part of the inservice monitoring program, a 10" long MT indication was identified in line "A" near the 18" pipe to valve weld. This occurred after approximately 116 hours of turbine bypass operation since identification of the 1 1/2" indication. The presence of a flaw was verified using ultrasonic (UT) examination. The actual depth of the flaw could not be determined due to difficulty of UT on the pipe surface at a high temperature. However, the data did provide approximate flaw depths and profile. Line "A" was isolated and MP&L and General Electric (GE) performed analysis to show that the plant could be safely operated without the "A" bypass line.

On May 18, 1985, the schedule 100 pipes on all three bypass lines were VT and MT inspected 100%. The MT revealed that the 10" flaw previously identified on May 8, 1985, continued as a broken flaw for a total of 27 7/8". The flaw ran in a spiral around the pipe starting about 2 o'clock near the pipe to valve weld and extending to about 6 o'clock. Four other linear indications, ranging in length from 3/8" to 7/8" were identified. The flaw areas were UT inspected and the deepest area was approximately 1/4". No similar indications were identified on lines "B" and "C".

The licensee is continuing to evaluate the flaws in bypass line "A" to try to determine the nature of the flaws and thus the failure mechanism.

- c. On May 21, 1985, during steam condensing mode, a 3/4" drain line on RHR heat exchanger 1B broke. The failure was a clean break in the drain pipe at the toe of the socket weld connecting the line to the heat exchanger nozzle. The licensee indicated that the failure appeared to be caused by high-cycle fatigue due to flow-induced vibration. MNCR 0277-85 was issued to document corrective actions. The licensee determined that the drain line support system was not adequately designed due to a misapplication of the piping specification. The line was too flexible. The licensee's investigation revealed that the misapplication of the piping specification was a personnel error and an isolated case. Design Change Package 85/4032 was issued to repair the drain line and add and modify pipe supports to control pipe vibration. The inspector discussed the problem with responsible licensee personnel and reviewed MNCR 0277-85 and Design Change Package 85/4032.

d. Inservice Testing (IST) of Pumps and Valves (Unit 1)

The inspector discussed the IST program with licensee personnel as indicated below. Based on the Operating License date of June 16, 1982, the applicable code for IST, as required by 10 CFR 50.55(a)g and Technical Specification 4.0.5, is ASME Section XI, 1977 Edition, S79 Addenda. However, the licensee has updated their program to ASME Section XI, 1980 Edition, W80 Addenda as allowed by 10 CFR 50.55(a)g.

The IST program is prescribed by MP&L Specification, MP&L-M-189.1, Revision 0, "MP&L Pump and Valve Inservice Inspection Program." Revision 1 to the program, incorporating the latest NRC comments and MP&L's submittal to NRC, is being reviewed for issuance.

- (1) The below listed implementing procedures were reviewed to verify that the licensee had assigned responsibilities for: preparation, review, and approval of ISI procedures; scheduling of IST; performance of test functions; performance of maintenance; and performance of calibrations.

- Administrative Procedure 01-S-06-12, R9, "GGNS Surveillance Program"

- Administrative Procedure 01-S-01-1, R13, TCN #3, "Grand Gulf Nuclear Station Organization"
 - Administrative Procedure 01-S-07-1, R14, TCN #24, "Control of Work on Plant Equipment and Facilities"
 - Administrative Procedure 01-1-07-10, R2, "Preservice and Inservice Inspection"
 - Administrative Procedure 01-S-07-7, R8, "Planning and Scheduling Plant Maintenance Work"
 - Administrative Procedure 01-S-07-3, R7, TCN #2, "Calibration and Control of Measuring and Test Equipment"
 - Administrative Procedure 01-S-07-08, R6, "Control of Permanent Plant I&C Equipment Calibration"
- (2) The inspector reviewed the two administrative procedures listed below and a sample of the change and issue records for the four surveillance procedures listed below to verify adequate control of issue and revision of test procedure.
- Administrative Procedure 01-S-06-12, R9
 - Administrative Procedure 01-S-02-2, R20, "Control and Distribution of GGNS Operations Manual"
 - Surveillance Procedure 06-OP-SP21-Q-0001, R22, "Makeup Water Treatment Quarterly Valve Test"
 - Surveillance Procedure 06-OP-SP64-Q-0009, R21, "Fire Protection System Quarterly Valve Testing"
 - Surveillance Procedure 06-OP-1C41-M-0001, R22, "Standby Liquid Control Operability"
 - Surveillance Procedure 06-OP-1E12-Q-0023, R23, "LPCI/RHR, Subsystem A, Quarterly Functional Test"
- (3) Through discussions with test and scheduling personnel and reviewing of the following documents, the inspector verified that, in general, tests are scheduled at the required frequency.
- MP&L Specification M-189.1, R0
 - Administrative Procedure 01-S-06-12, R9
 - Technical Section Procedure 09-S-05-8, R0, "Surveillance Procedure Scheduling"

- The four Surveillance Procedures listed in paragraph (2) above.

Within the areas inspected, no violations or deviations were identified.

6. Nuclear Welding (55050) (Unit 2)

The inspector examined the licensee's program for ASME Code welding as indicated below to determine whether application code and regulatory requirements were being met. The applicable code is the ASME Boiler and Pressure Vessel Code, Section III, 1974 Edition including Addenda through the Summer of 1974.

a. Welder Performance Qualification

The inspector reviewed the qualification records and status records for the below listed welders relative to the field welds listed in paragraph b. below.

P177	P2381	P2509
P822	P294	

b. Production Welding

The inspector observed the below listed welds at the indicated stage of completion:

<u>ISO</u>	<u>Weld</u>	<u>Size</u>	<u>Status</u>
Q2P41-G005-C01	1	Lugs	Fill welding in process
M-2544C	2	2" Socket	Fill welding in process
M-2358C	8	2½" Sch. 40	Fitup in process
M-2358C	23	2½" Sch. 40	Fitup in process
M-2358C	24	2½" Sch. 40	Final weld in process
M-2358C	7	2½" Sch. 40	Final weld in process
M-2548E & FCN-PR2-0098	81	1½" Sch. 80	Observed fitup and first pass welding
M-2548E	38	1½" Sch. 80	Fill welding in process

The welding was observed to determine whether:

- Work was being conducted in accordance with a document which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval.
- Weld identification and location were as specified.
- Procedures, drawings, and other instructions were at the work station and readily available.
- Welding procedures specification (WPS) assignment was in accordance with applicable code requirements.
- Welding technique and sequence were the specified type and traceable to certifications.
- Welding filler materials were the specified type and traceable procedure and was inspected.
- Weld joint geometry was in accordance with applicable procedure and was inspected.
- Alignment of parts was as specified.
- Preheat and interpass temperatures were in accordance with procedures.
- Electrodes were used in positions and with electrical characteristics specified.
- Shielding gas was in accordance with the welding procedure.
- Welding equipment was in good condition.
- Interpass cleaning was in accordance with applicable procedures.
- Temporary attachments were removed in accordance with applicable procedures.
- Gas purging, if specified, was in accordance with applicable procedures.
- Process control system had provisions for repairs.
- Welders were qualified.
- No peening performed on root and surface layers.
- Inspection personnel were qualified.

c. Welding Material Control

Receiving inspection and material certification documentation were reviewed for the following welding materials being used for the welding observed (see paragraphs 6b and 10b).

- | | | |
|--------------------------------|--------------------------------|------------------------------|
| - 3/32" E7018
Ht. 411S61181 | - 3/32" ER70S-2
Ht. 5772 | - 3/32" ER308L
Ht. 776292 |
| - 1/8" E7018
Ht. 74619 | - 1/8" ER70S-2
Ht. 401K0151 | - 1/8" ER308L
Ht. 741119 |

Weld material issue activities were examined for the Unit 2 weld material issue station in the areas of:

- Storage of materials - identification, segregation and cleanliness
- Temperature control
- Issue control
- Handling of returns

Within the areas inspected, no violations or deviations were identified.

7. Visual Examination (57050) (Unit 2)

The inspector examined the VT examination activities described below to determine whether applicable code and regulatory requirements were being met. See paragraph 6 above for the applicable code.

a. The inspector observed the following in-process VT examinations:

Dwg. M-2548E: Welds 38, 45, and 49 observed VT of final weld

Dwg. M-2358C: Welds 7 and 24 observed VT of final weld

Dwg. M-2548E: Weld 81 observed fitup

The examinations were observed to verify that:

- Applicable instructions or travelers clearly specified the procedure to be used and that a copy of the procedure was available for the inspection
- Personnel performing the examinations were qualified
- Required tools and aids were available

- Specific areas, locations and extent of examination were clearly defined
 - Test attributes were specified and consistent with applicable procedures
 - Defects were evaluated in accordance with applicable procedure and inspection results were reported as required
- b. Personnel qualification/certification records for NDE personnel who performed the VT inspections of the welds in paragraphs a. above were reviewed.

Within the areas inspected, no violations or deviations were identified.

8. Liquid Penetrant Examination (57060) (Unit 2)

The inspector examined the liquid penetrant (PT) examination activities described below to determine whether applicable code and regulatory requirements were being met. See paragraph 6 above for the applicable code.

- a. The inspector observed in-process PT inspection for the following welds:

Dwg. M-2548E: Welds 38 and 49

Dwg. M-2544C: Weld 2

The examinations were observed to verify that:

- Applicable instructions or travelers clearly specified the procedure to be used and that a copy of the procedure was available for the inspection.
- Sequencing of examinations relative to other operations were specified and in accordance with applicable code and procedures
- Personnel performing the examinations were qualified
- Materials used for the examinations were certified and the certifications met applicable requirements
- Areas, locations and extent of examinations were clearly defined
- The following attributes were as specified in the applicable procedure and consistent with applicable code:
 - (1) Surface preparation/cleaning method, type, time, etc.
 - (2) Penetrant type
 - (3) Penetrant application method

- (4) Penetration time
- (5) Temperature of surfaces
- (6) Penetrant removal
- (7) Drying
- (8) Developer, application, type
- (9) Developing time
- (10) Evaluation technique
- (11) Acceptance criteria
- (12) Reporting of results

- b. Personnel qualifications/certifications records for NDE personnel who performed the PT inspections of the welds listed in paragraphs a. above were reviewed.
- c. Material certification records for the below listed PT materials, used to inspect the welds listed in paragraph a. above, were reviewed.

Remover - DR60 - Batch 33K4
 Penetrant - DP40 - Batch 26H1
 Developer - D100 - Batch 415B6

Within the areas inspected, no violations or deviations were identified.

9. Safety-Related Piping - Observation of Work and Work Activities (49063B)
 (Unit 2)

The inspector observed the work activities below relative to safety-related piping to determine whether work was being conducted in accordance with applicable procedure and code requirements. See paragraph 6 above for the applicable code.

Work activities listed below were observed to determine whether requirements were being met in the following areas, as applicable:

- Conformance with inspection (QC) and work performance procedures
- Conformance with recordkeeping requirements
- Conformance with construction/installation specifications
- Issuance and use of materials as specified
- Performance of prescribed inspections
- Performance of prescribed NDE activities
- Calibration and use of proper measuring and test equipment
- Utilization of qualified inspection (QC) and NDE personnel

Specific activities observed were:

- Installation activities, including identification and cleanliness verification, of pipe spools Q2P41-G003-05, 06, 19 and 20 at field welds 7 and 24 on drawing M-2358C.
- Installation activities, including identification and cleanliness verification, of pipe spool Q2E12-G115-01H-20 at field weld 81 on drawing M-2548E.
- Installation activities of pipe spool Q2E12-G115-14-20 at field weld 38 on drawing M-2548E.
- Laydown yard storage of pipe spools Q2P41-G008-04-24, Q2P41-G008-03-24, Q2E61-G001-06-23, Q2G41-G016-38-23, Q2E12-G017-01-23, Q2G41-G009-21-22, and in-plant storage of spool Q2P41-G003-07-22.

Within the areas inspected, no violations or deviations were identified.

10. Containment (Structural Steel Welding) - Observation of Work & Work Activities (55053B) (Unit 2)

The inspector observed in-process welding of containment structures as indicated below to determine whether applicable code and procedure requirements were being met. The applicable codes for this welding are the AWS structural welding code D1.1, 1982 edition and Bechtel Specification C-133.0, Revision 17.

- a. In-process welding for the following structures inside the containment was observed:

ISI Platform P-4

Dwg. C-2040A

WP & IR Q2M20-Y-23173B0A, Rpt. #5

FCN C2-0976

Welding bracket to beam 614B3 at intersection of beams 614B3 and 112B18.

Main steam hanger and snubber supports

Dwg. C-2086J

Section J welds

The work was compared with applicable requirements in the areas of:

- Weld identification/location
- Joint preparation and alignment
- Use of applicable weld procedure
- Welder qualified to perform weld
- Use of specified filler material
- Repair procedures

- NDE performed at proper stage of fabrication
 - Periodic checks of welding variables
- b. Weld material control was examined (see paragraph 5.c above).
- c. Work areas were observed for the presence of uncontrolled filler material.
- d. The inspector examined the level of QA/QC involvement in the above welding activities.
- e. Welder qualification records and status records for the below listed welders relative to the welds listed in paragraph a. above were reviewed.

I 450
P 250

Within the areas inspected, no violations or deviations were identified.

11. IE Bulletins (92703) (Units 1 and 2)

(Closed) 416, 417/83-BU-07, Apparently Fraudulent Products Sold By Ray Miller, Inc. The inspector reviewed the licensee's internal correspondence and responses to NRC, AECM-84/0391 dated August 16, 1984, AECM-84/0083 dated March 13, 1984, and AECM-84/0126 dated May 24, 1984. The licensee's and their contractor's investigations revealed that no Ray Miller products were purchased or installed at Grand Gulf Units 1 and 2.