

UNITED STATES NUCLEAR REGULATORY COMMISSION **REGION II** 101 MARIETTA STREET, N.W. ATLANTA, GEORGIA 30303

Report No.: 50-259/78-29, 50-260/78-32, 50-296/78-30 Docket No.: 50-259, 50-260, 50-296 License No: DPR-33, DPR-52, DPR-68 Licensee: Tennessee Valley Authority 818 Power Building Chattanooga, Tennessee 37401 Facility Name: Browns Ferry Units 1, 2, and 3 Inspection at: Browns Ferry Site, Athens, Alabama Inspection conducted: October 30 - November 3, 1978 Inspectors: E. H. Brooks A. H. Johnson marti-Reviewed by:

1:30/28

R. D. Martin, Chief Nuclear Support Section Reactor Operations and Nuclear Support Branch

Inspection Summary

Inspection on October 30 - November 3, 1978 (Report Nos. 50-259/78-29, . 50-260/78-32, and 50-296/78-30

Areas Inspected: Routine, unannounced inspection of plant surveillance program of pipe support and restraint systems (Units 1, 2, and 3) refueling maintenance (Unit 3). The inspection involved 65 inspector-hours on-site by two NRC inspectors.

Results: Of the areas inspected no items of noncompliance or deviations were identified.





DETAILS I

Prepared by: E. H. Brooks, Reactor Inspector Nuclear Support Section No. 1

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Support Branch

Dates of Inspection: Actober 30 - November 3, 1978

Reactor Operations and Nuclear

Approved by:

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R. D. Martin, Chief Nuclear Support Section No. 1 Reactor Operations and Nuclear Support Branch

1. Persons Contacted

- \*J. E. Dewease, Plant Superintendent
- \*H. L. Abercrombie, Assistant Power Plant Superintendent
- \*J. L. Harness, Quality Assurance Supervisor
- \*R. T. Smith, Mechanical Engineer
- \*D. Collins, Mechanical Engineer
- \*G. T. Jones, Outage Director
- \*J. R. Pittman, Instrument Engineer
- A. Anderson, Mechanical Engineer

\*Denotes those present at exit interview.

#### 2. Licensee Action on Previous Inspection Findings

Not applicable.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 5.

4. Exit Interview

The inspectors met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on November 3, 1978. All items presented in these details were discussed. With regard to the unresolved item in paragraph 5, the licensee agreed to submit a written report to the NRC within 30 days.





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# 5. Inspection of Pipe Support and Restraint Systems

The inspectors reviewed the licensee's surveillance procedures and maintenance procedures for safety-related hydraulic and mechanical supports and restraints. Included in the review were the data and results of all previous inspections and functional testing of hydraulic and mechanical restraints. Subsequent to review of the procedures, visual inspections were conducted of both accessible and inaccessible (within the drywell) restraints installed in Unit 3, which was in a refueling outage. Accessible restraints were inspected on Units 1 and 2. Procedures were reviewed, and inspections conducted as follows:

## a. Procedures Reviewed

SI 4.6.4 - Surveillance Instructions for Hydraulic Snubbers

M.M.I.45 -	Mechanical Maintenance Instructions for Removal, Disassembly, Reassembly, and
	Replacement of Bergen-Paterson and Grinnel Snubbers

- M.M.I.59 Mechanical Maintenance Instruction Functional/ Correction
- M.M.I.59B Grinnel Functional Tests
- M.M.I.59C E System Hydraulic Snubbers
- M.M.I.59D Functional Test Mechanical Snubbers
- M.M.I.59-1 As Found Piston Velocity Measurement and Bleed Result Data - Bergen-Paterson
- •M.M.I.59-2 As Left Piston Velocity Measurement and Bleed Result Data - Bergen-Paterson

As a result of the review of the above documents it was concluded that the licensee was in compliance with the surveillance requirements for hydraulic snubbers as stated in the Technical Specifications as regards acceptability of seal material, inspection interval, and functional testing requirements. The documents confirm that 1) correction factors are used for temperature dependent functional tests, 2) written guidelines are provided for selection of representative samples for testing, 3) acceptance criteria is identified for



> lock-up rate, bleed rate, piston rod extension, and reservoir fluid level and 4) corrective action is taken to repair or replace inoperable snubbers.

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Review of the above procedures disclosed that on unit number 3, four mechanical restraints could not be moved to their extreme ends during testing due to interference with structural grating. M.M.I-59D requires replacement of the restraints in the event that complete extension of the restraints can not be accomplished. The data sheet was signed off September 24, 1978, with no indication of corrective action. This item was identified for future inspection (50-296/78-30-01).

No procedure for inspection of spring hangers was available for review, and the licensee stated that an appropriate procedure is being prepared. This item was identified for future inspection (50-296/78-30-02).

Following is a summary of the visual inspection and functional testing results as documented by the licensee:

Unit 3 - Visual Inspection

Date	Inoperable Snubbers	Next Inspection
6-3-76	0	Operating Cycle
9-14-77	3	124 days +25%
1-29-78	0	6  months  +25%
8-21-78	0	12 months +25%

Unit 3 - Functional Testing (4-20-76 to 5-22-76)

Inaccessible snubbers

48 hydraulic snubbers tested
6 snubbers with unacceptable lock-up speeds

Accessible snubbers

82 hydraulic snubbers tested 23 snubbers with unacceptable lock-up speeds

Unit 3 - Functional Testing (9-16-78 to 9-19-78)

Inaccessible snubbers

3 snubbers tested 0 snubbers inoperable



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RII Rpt. Nos. 50-259/78-29, **I-4** 50-260/78-32 and 50-296/78-30 Accessible snubbers 7 snubbers tested 0 snubbers inoperable Unit 2 - Visual Inspection Inoperable Snubbers Date 1 (accessible) 5-25-76 (accessible & inaccessible) 8-26-77 (accessible & inaccessible) 1 (each) 5-25-78 (inaccessible) 0 0 7-29-78 (accessible) Unit 2 - Functional Testing Location Number Tested Number Inoperable Date

5-17-76	Accessible	88	17
5-17-76	Inaccessible	50	5
3-26-78	Accessible	15	0
3-26-78	Inaccessible	5	1

Unit 1 - The available documentation was superficially reviewed for inspection and testing results. No items of noncompliance were apparent.

### b. Inspections Conducted

Accompanied by licensee personnel, the inspectors examined hydraulic and mechanical restraints in all three Browns Ferry reactor plants. Only Unit 3 drywell was available for inspection of inaccessible snubbers.

While examining hydraulic snubbers on the main steam and feedwater lines within the drywell of Unit 3, grease was discovered on the hydraulic reservoir fluid fill fittings of Bergen-Paterson type snubbers identified as SS-B4 and SS-B2. These fittings are provided for filling the snubber reservoirs with high quality radiation resistant hydraulic fluid. The presence of grease on these fittings, suggested contamination of the reservoir fluid with general service lubricant. This condition was reported to Region II management who subsequently obtained agreement from the licensee corporate headquarters that the suspect snubbers would be removed and disassembled for examination of the snubber internals. While preparing for the disassembly, six additional snubbers in Unit 3 were identified by the licensee to be potentially con-





taminated. All eight snubbers were removed from Unit 3. Results of the disassembly, witnessed by the inspectors, confirmed that general service lubricant had been injected into the reservoir, and had migrated to the control valve and into the snubber cylinder. It is estimated that the quantity of grease dispersed throughout the unit was in excess of 1/2 cubic inch.

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Discussions with the licensee's personnel disclosed that a similar situation had occurred previously, i.e. indications of grease in snubbers, in Browns Ferry Unit 2. Further review of inspection reports revealed that 16 snubbers on the pressure suppression chamber ring header had indications of grease in the fluid reservoir and had been disassembled, cleaned and reassembled. The inspectors conducted a follow-up inspection on these snubbers with no adverse findings.

The licensee agreed to remove, inspect and test all known contaminated snubbers and to investigate with responsible personnel to assure that all contaminated snubbers have been identified and removed. The licensee agreed to submit a report of the occurrence to the NRC within thirty days which would include a definition of the problem for all Browns Ferry units, and to state the consequences and proposed corrective action.

Unresolved Item: This matter of contaminated snubbers is considered to be an unresolved item subject to subsequent review by NRC. (50-296/78-30-03)

In addition to the above, the following snubber conditions were noted:

- 1) Various snubber ball joints were in need of lubrication.
- 2) Snubber SS-5B (Unit 3) reservoir clamp bolts were missing and the plastic reservoir was in contact with adjacent piping.
- 3) Loose clevis to piston rod connections were observed on several snubbers.
- 4) Snubber R-42 (Unit 1) Loose snubber to extension rod bolt.
- 5) Mechanical snubber -234 was misaligned and possibly locked up.
- 6) Snubber SS4ZA A nail was used as a substitute for a cotter pin.

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The licensee agreed to correct the above conditions. These items will be reviewed at a subsequent inspection. (50-296/78-30-04)

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DETAILS II

A. H. Johnson, Reactor Inspector

Prepared by: A. H. Johnson, Reactor Inspector Nuclear Support Section Nol. 1 Reactor Operations and Nuclear Support Branch

Dates of Inspection: Øctober 30 - November 3, 1978

Reviewed by:

R. D. Martin, Chief Nuclear Support Section No. 1 Reactor Operations and Nuclear Support Branch

1. Persons Contacted

# Tennessee Valley Authority

- \*J. G. Dewease, Plant Superintendent
- \*H. L. Abercrombie, Assistant Plant Superintendent
- \*G. T. Jones, Outage Director
- \*J. L. Harness, QA Supervisor
- \*D. Collins, Mechanical Engineer
- \*R. T. Smith, Mechanical Engineer
- \*J. R. Pittman, Instrument Engineer
- A. Anderson, Mechanical Engineer
- W. Ives, Mechanical Engineer
- J. Miller, Planner
- R. Shadick, Mechanical Engineer

\*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

Not inspected.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 5.g.







#### 4. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on November 3, 1978. The inspectors summarized the purpose and scope of the inspection and the findings. With regard to the unresolved item in paragraph 5.g, the licensee stated that they were looking into this matter.

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# 5. Refueling Maintenance

The inspector conducted a review of the following Unit 3 refueling maintenance activities:

а.	Trouble Reports	Title
ĩ	65294	Replace Accumulator Springs in 3 Snubbers in Store Room - HSSA 10 Bergen Paterson
	65289	Remove, Functional Test and Reinstall Hydraulic Snubbers
	91552	Suspect Seal and O-Ring Deteriation
	91553	Inspection of PSA-10 Snubbers Due
	91554	Yarway Snubbers Due Inspection
	94182	MSIV 1-15 Failure of LLRT
	94184	Valves 1-26, 27 & 1-37, 38 Failure of LLRT
	94215	MSIV 1-52 "D" Outboard Failed LLRT
Ъ.	Work Plan	. <u>Title</u>
	9320	HPCI Turbine Valve PCV-73-43 Replacement Modification
	9342	MSRV's Modification

- c. <u>Clearance</u> <u>Title</u> 78-1609 MSIV Valve Maintenance 78-1611 MSRV Valve Maintenance and Modification
- d. HPCI Turbine Replacement of Temporary Valve PCV 73-43TQ

Inspectors observed and/or reviewed modification replacement of temporary valve PCV-73-43T2 with permanent valve PCV-73-43 performed by work plan number 9320 and 225 psig Hydrostatic Test of Associated New Piping. Inspectors observed plant QA verification at procedure hold point and noted that there was no apparent leakage.

e. Maintenance Teardown of Snubber SS-B2

The maintenance teardown of snubber was observed by the inspectors, noting that the approved maintenance instruction was at the work location.

f. Maintenance Activity Reviews and Acceptance Criteria

The Unit 3 refueling maintenance activities of 5.a, 5.b, 5.c, 5.d, 5.e and 5.f above were reviewed by the inspector to verify that:

- The maintenance activities were accomplished using approved procedures by qualified personnel.
- The required administrative approvals were obtained prior to initiating maintenance activities.
- The maintenance activities were inspected in accordance with the licensee's requirements.
- Provisions for assuring that system valves, breakers, etc., are aligned for normal service.
- Provisions for testing equipment following maintenance.

The inspector used one or more of the following acceptance criteria for the above items:

- Technical Specifications
- Final Safety Analysis Report





- ANSI 18.7-1972
- Operating Quality Assurance Manual
- BFA 45 Trouble Reports
- BF 6.1 Performance of Maintenance
- BF 6.2 Identification of Corrective Maintenance
- g. Findings

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The inspector found that the following trouble reports were missing the indicated documentation:

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TR	<u>Title</u>	Finding
65294	Replace Accumulator Springs in 3 Snubbers in Store Room - HSSA	Missing Supervisor
	Paterson	Initials
65289	Remove, Functional Test and Reinstall Hydraulic Snubbers	Missing Supervisor Initials
91552	Suspect Seal and O-Ring Deteriation	Missing Supervisor Initial
91553	Inspection of PSA-10 Snubbers Due	Missing Supervisor Initials
91554	Yarway Snubbers Due Inspection	Missing Supervisor Initials
94182	MSIV 1-15 Failure of LLRT	Missing Operations Work Authorized by Signature
94184	Valves 1-26, 27 and 1-37, 38 Failure of LLRT	Missing Operations Work Authorized by Signature

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94215 MSIV 1-52 "D" Outboard Failed LLRT

Missing Operations Work Authorized by Signature

Standard Practice BFA 45 <u>Trouble Reports</u> requires the above initials and signatures. However, the licensee stated that BF 6.2 <u>Identification of Corrective Maintenance</u> does not require the initials and signatures and that the Trouble Reports are used only as identification of components requiring corrective maintenance. This is an apparent conflict between BFA 45 and BF 6.2 which are Standard Practices used to implement the Operation Quality Assurance Manual at Browns Ferry.

Unresolved Item: This matter of apparent conflict between standard practices BFA 45 and BF 6.2 is considered an unresolved item pending the review by the inspector with his management and further review at the next maintenance inspection (296/78-30-05).