UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303

Open

June 4, 1997

MEMORANDUM FOR: Frederick J. Hebdon, Director
Project Directorate II/III
Office of Nuclear Reactor Regulation

FROM: Jon R. Johnson, Director
Division of Reactor Projects

SUBJECT: TIA 97-015 REQUEST FOR REVIEW ASSISTANCE - MAINTENANCE RULE IMPLEMENTATION FOR BROWNS FERRY, UNIT 1

The purpose of the memorandum is to request NRR's assistance in resolving the issue of the extent of Maintenance Rule implementation for Browns Ferry, Unit 1. Region II completed the Maintenance Rule Baseline Inspection at Browns Ferry on April 18, 1997. The results of the inspection are documented in NRC Inspection Report No. 50-259, 260,296/97-04.

During the inspection, the inspection team conducted a detailed review of the implementation of the Rule on all three units. The team did not have any safety concerns with the manner in which the Tennessee Valley Authority (TVA) had implemented the Rule on Unit 1, and concluded that TVA actions to implement the Rule were technically adequate. However, a question arose, as to whether or not the action taken by TVA met the Rule legally. Plant conditions for Unit 1 are shutdown and defueled, and there are no current plans to restart the unit. Although Unit 1 is licensed, it cannot be restarted without prior Commission approval. TVA's implementation of the Rule is for a shutdown, defueled condition on Unit 1 and does not encompass all systems and components that are covered on the operating units. Enclosure 1 provides a more detailed discussion of the issue, and Enclosures 2, 3, and 4 provide supporting documentation that may be useful.

This issue was discussed with the NRR staff, the OGC staff, and with the licensee during the inspection, and no resolution to the issue was obtained at that time. As a result, an unresolved item was issued to assure tracking and resolution.

The Region requests your technical assistance with OGC to develop a list of actions necessary for TVA to comply legally with the Rule on Unit 1. This list of actions should be provided directly to TVA with a copy to the Region. The Regional technical contacts are Bill Holland (404) 562-4612 and Ron Gibbs (404) 562-4611.

Enclosures:
1. Excerpt from Inspection Report 50-259,260,296/97-04
2. Browns Ferry MR Scoping Matrix
3. Excerpt from Browns Ferry Technical Instruction 0-TI-346, Rev. 7
4. April 16, 1996, Letter from the President, TVA Nuclear and CNO to NRC

SSC unavailability. Also, all ROs indicated the need to document SSC outages in the control room log books for all SSCs under the scope of the maintenance rule. Finally, the ROs indicated that they make additional entries into the log books such that the system engineers can clearly identify the period during which the component was actually non-functional, distinct from the Technical Specification determination of equipment operability. This distinction is especially important for the emergency diesel generators.

The "Dual Unit Maintenance Matrix" in SSP 7.1 (Revision 16) provides guidance for evaluating the plant configuration risk for equipment out of service while the plant is at power. The SROs stated they use the matrix when emerging failures occur and occasionally to check work week activities. For cases where two SSCs may be taken out of service, the SRO's understanding of the matrix was good, except for some uncertainty in the interpretation of two of the systems on the matrix: Control Rod Drive (CRD) pumps and Residual Heat Removal (RHR) unit crossovers. For the CRD, there was uncertainty whether the CRD entry should be interpreted as both pumps or either pump. Also, for the RHR crossover events, the matrix entries appeared to be similar to matrix entries for the RHR trains (not involving crossovers between units). For cases where three SSCs on the matrix may be taken out of service, the SROs correctly stated that they would have to contact engineering (for PRA evaluation). Such guidance is stated on the matrix. Finally, for SSCs not listed on the matrix, the operators stated they use Technical Specifications, evaluations of "closeness to scram", and engineering judgment to decide if such SSC outages are risk significant.

c. Conclusions

In general, the ROs and SROs interviewed clearly understood the philosophy of the Maintenance Rule and their responsibilities for implementation of the rule. There was some confusion concerning the interpretation of several systems on the "Dual Unit Maintenance Matrix." However, there was no evidence that the confusion led to a high risk plant configuration.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 Scope of Structures, Systems, and Components Included Within the Rule

a. Inspection Scope (62706)

Prior to the onsite team inspection, the Team reviewed the Browns Ferry UFSAR, LERs, the EOPs, previous NRC Inspection Reports, and other information provided by the licensee. The Team selected an independent sample of SSCs that the Team believed should be included within the scope of the Maintenance Rule. SSC scoping criteria are described in 10 CFR 50.65 (b). During the onsite review, the Team used this sample and the 10 CFR 50.65 (b) criteria to determine if the licensee had adequately identified the SSCs that should have been included in the scope of the Browns Ferry program.

b. Observations and Findings

The licensee appointed an expert panel to perform several Maintenance Rule implementation tasks including establishing the scope of the Maintenance Rule. The expert panel reviewed the 162 systems in the plant and determined that 97 structures, systems, and components were in the scope of the Maintenance Rule.

The Team reviewed the licensee's SSC Selection and Performance Monitoring Matrix in an effort to verify that all required structures, systems, and components were included within the scope of the Maintenance Rule. The Team's review was performed to assure the scoping process included:

- All safety-related SSCs that are relied upon to remain functional during and following design basis events and ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines
- Non-safety SSCs that are relied upon to mitigate accidents or transients
- Non-safety SSCs which are used in the plant emergency operating procedures
- Non-safety SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function
- Non-safety SSCs whose failure could cause a reactor trip or actuation of a safety-related system.

The Team verified that all required SSCs were included in the Rule for Units 2 and 3.

The Team reviewed the licensee's implementation of the Maintenance Rule on Unit 1 in a considerable amount of detail. This was necessary due to the fact that the licensee had considered plant status (i.e., Unit 1 is shutdown and defueled and has been for several years) in Rule implementation. The following information was obtained from this review:

1- ° The licensee's Maintenance Rule implementing procedure (0-TI-0346) specifically stated that SSCs on Unit 1 had been scoped under the Rule considering plant status (i.e., shutdown and defueled).

2- ° This procedure also stated that if Unit 1 conditions were to change scoping would be re-evaluated based on the change.

- The procedure referenced a letter regarding Unit 1 status, which includes specific commitments to notify NRC of any plans to return the unit to operation and also to obtain Commissioners' approval prior to restart of the unit (Reference April 16, 1996, letter from President, TVA Nuclear and Chief Nuclear Officer, (A00 960415900) to the US Nuclear Regulatory Commission).

- The procedure included a Maintenance Rule scoping matrix which provided a column for scoping of Units 2, 3, and common, and a separate column for scoping Unit 1 only.

- Unit 1 systems which support Unit 2 and 3 operation, and Unit 1 systems which interface (are common) with Unit 2 or 3 were properly scoped in the Rule, as appropriate. Active performance monitoring, data collection and trending was being performed on these systems.

- Unit 1 systems required to maintain safe shutdown of the unit, such as, spent fuel pool cooling were properly scoped in the Rule. Active performance monitoring, data collection and trending was being performed on these systems.

- Unit 1 systems which would normally be included in the scope of the Rule for an operating plant, such as High Pressure Coolant Injection, were not included in the scope of the Rule. Performance monitoring, data collection and trending was not being performed on these systems. These systems were in layup, not in use, and the licensee determined that normal Maintenance Rule monitoring was not appropriate.

The Team determined that the licensee actions to implement the Rule, based on the above facts, were technically adequate. However, the Team noted that other utilities with plants shutdown for considerable amounts of time had not considered plant status in implementation of the Maintenance Rule. This resulted in a question as to whether or not the approach taken by the licensee with respect to Unit 1 was in fact legal under the Maintenance Rule. This issue remained unresolved at the conclusion of the inspection. As a result, an Unresolved Item URI 50-290/97-04-01, Resolve Maintenance Rule Implementation on Browns Ferry Unit 1, is identified pending further NRC review.

c. Conclusions

The Team determined that the required structures, systems, and components were included within the scope of the Maintenance Rule for Units 2, 3, and Common. The Team also determined that the licensee's actions to implement the Rule for Unit 1 were technically adequate. However, an unresolved item was identified concerning Maintenance Rule implementation for Unit 1.

APPENDIX B
(Page 1 of 15)

Bullet #4 of Inspection Report

SSC SELECTION AND PERFORMANCE MONITORING MATRIX

		SSC Scoping Criteria									Specific Monitoring						
Sys. ID	System Description	S. R. SSC	NSR MA/T	NSR EOP	NSR Fail Safety	NSR Trips	M. R. Scope U0 U2/3	M.R. Scope U1 only	Risk Signif.	Standby	SCRAM	ESF	UCLE	UNAVA	RELIA	COND	Reference Comments and Information
000	Spare Local Panels and Misc.	Yes	No	No	No	No	No	No	No	No							EMS lists 15 SR components as system 000. These are administrative component assignments and do not provide an installed plant equipment function.
001	Main Steam	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes				X	X		Risk Significant functions are related to SRV overpressure protection, ADS, and MSIV operation. Refer to Attachments 1 and 2
002	Condensate and Demineralized Water	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	X		X	X			Refer to Attachment 3
003	Reactor Feedwater	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	X		X	X			Refer to Attachment 4
004	Hydrogen Injection	No	No	No	No	No	No	No	No	No							This system is not in service. EMS lists components as design in progress.
005	Extraction Steam	No	No	No	No	No	No	No	No	No							Refer to Expert Panel minutes, RIMS R40970116828, for scoping evaluation
006	Heater Drains and Vents	No	No	Yes	No	Yes	Yes	No	No	No							
008	Miscellaneous Turbine Connections	No	No	No	No	No	No	No	No	No							
009	Control Bay Panels (Common)	Yes	No	Yes	No	No	Yes	No	No	No							See Note 9
010	Boiler Drains and Vents	Yes	No	No	No	No	Yes	No	No	No							
012	Auxiliary Boiler	Yes	No	No	No	No	No	No	No	No							SR devices in System 012 are monitored with System 064 (Containment Integrity)
018	Fuel Oil System (Common)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 24
020	Lubricating Oil Transfer	No	No	No	No	No	No	No	No	No							
021	Nitrogen Purging	No	No	No	No	No	No	No	No	No							EMS lists 1 component for this system. This component is monitored with the Main Steam system.
023	RHR Service Water (Common)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 5

Bullet #5 of Inspection Report

APPENDIX B
(Page 5 of 15)

SSC SELECTION AND PERFORMANCE MONITORING MATRIX

		SSC Scoping Criteria									Specific Monitoring						
Sys. ID	System Description	S. R. SSC	NSR MA/T	NSR EOP	NSR Fail Safety	NSR Trips	M. R. Scope U0 U2/3	M.R. Scope U1 only	Risk Signif.	Standby	SCRAM	ESF	UCLE	UNAVA	RELIA	COND	Reference Comments and Information
064A	Primary Containment Integrity	Yes	No	No	No	No	Yes	No	Yes	No					X	X	Refer Attachment 13. This function captures all containment related monitoring across system boundaries.
064B	Reactor and Refuel Zone Ventilation	Yes	No	Yes	No	Yes	Yes	Yes	No	No							Core Spray and RHR room coolers are monitored with systems 75 and 74 respectively.
064C	Secondary Containment (Common)	Yes	No	Yes	No	No	Yes	No	No	No							
064D	Primary Containment Isolation (PCIS)	Yes	No	No	No	No	Yes	No	Yes	No		X			X		Refer to Attachment 13
065	Standby Gas Treatment (SBGT) (Common)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 14
066	OffGas System	Yes	Yes	Yes	No	Yes	Yes	No	No	No							
067	Emergency Equipment Cooling Water (EECW) (Common)	Yes	No	No	No	No	Yes	No	Yes	No				X	X		Refer to Attachment 15
068	Reactor Water Recirculation	Yes	Yes	Yes	No	Yes	Yes	No	No	No							
069	Reactor Water Cleanup (RWCU)	Yes	No	Yes	No	Yes	Yes	No	No	No							
070	Reactor Building Closed Cooling Water (RBCCW)	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No							
071	Reactor Core Isolation Cooling (RCIC)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 16
073	High Pressure Coolant Injection (HPCI)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 17

Bullet # 7 of Inspection Report

Bullet # 5 of Inspection Report

APPENDIX B
(Page 6 of 15)

SSC SELECTION AND PERFORMANCE MONITORING MATRIX

		SSC Scoping Criteria									Specific Monitoring						
Sys. ID	System Description	S. R. SSC	NSR MAIT	NSR EOP	NSR Fail Safety	NSR Trips	M. R. Scope U0 U2/3	M.R. Scope U1 only	Risk Signif.	Standby	SCRAM	ESF	UCLE	UNAVA	RELIA	COND	Reference Comments and Information
074	Residual Heat Removal (RHR)	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes				X	X		Refer to Attachment 18
075	Core Spray	Yes	No	Yes	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 19.
076	Containment Inerting System	Yes	No	Yes	No	Yes	Yes	No	No	No					X		Refer to Attachment 20
077	Radwaste System	Yes	No	Yes	No	No	Yes	Yes	No	No					X		Refer to Attachment 21
078	Spent Fuel Pool Cooling and Cleanup (SFPCC)	Yes	No	No	No	No	Yes	Yes	No	No						X	Refer to Attachment 22
079	Fuel Handling and Storage	Yes	No	No	Yes	Yes	Yes	No	No	No						X	Refer to Attachment 23
080	Primary Containment Cooling	Yes	No	No	No	No	No	No	No	No							SR components monitored with system 064A
082	Standby Diesel Generators	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Refer to Attachment 24
084	Containment Atmosphere Dilution (CAD)	Yes	No	No	No	No	Yes	No	No	Yes					X		Refer to Attachment 25
085	Control Rod Drive	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes					X	X		Refer to Attachment 26
086	Diesel Generator Starting Air (Common)	Yes	No	No	No	No	Yes	No	Yes	Yes				X	X		Monitored with diesel generators (System 082). Refer to Attachment 24
090	Radiation Monitoring	Yes	No	Yes	No	Yes	Yes	Yes	No	No					X	X	Refer to Attachment 27
092	Neutron Monitoring	Yes	No	No	No	No	Yes	No	No	No							
094	Traversing Incore Probe (TIP)	Yes	No	No	No	No	No	No	No	No							SR components are associated with PCIS Group 8 isolation and are monitored with System 064D
096	Recirculation Flow Control	Yes	Yes	No	No	Yes	Yes	No	No	No							
097	Agriculture Waste Heat Supply	No	No	No	No	No	No	No	No	No							
099	Reactor Protection	Yes	No	No	No	No	Yes	No	Yes	No			X		X		Refer to Attachment 32
100	Penetrations and Sleeves	Yes	No	No	No	No	Yes	No	No	No							Refer to Attachment 13. Monitored as part of containment integrity function

Bullet # 6 of Inspection Report.

1.0 INTRODUCTION

1.1 Purpose

This Technical Instruction (TI) provides guidance for initiation, analysis, retrieval, trending, and reporting of data relative to "Plant Level" and "Function Specific" indicators of performance required by the Maintenance Rule, hereafter referred to as the Rule. The requirements of this TI are in compliance with 10CFR50.65 and NUMARC 93-01, unless otherwise specified in paragraph 3.3 of the TVAN Maintenance Rule Program Manual.

Additional guidance is provided for trending and reporting of repetitive preventable functional failures which are within the scope of the Rule. Appendix A is a summary level process flow chart for the trending and reporting activities described by this instruction.

1.2 Scope

This instruction applies to individuals involved in the monitoring and trending of performance of Units 1, 2, 3 and Common plant systems, structures, and components (SSCs) listed in Appendix B, SSC Selection and Performance Monitoring Matrix. Systems monitored as Common are designated in Appendix B. Refer to paragraph 3.0, Definitions, for clarification of the term "system". It includes the performance of cause determinations for failures to meet performance criteria and for repetitive Functional Failure.

Scoping of Unit 1 SSCs has been performed based on current plant conditions (Unit 1 defueled and in layup, Units 2 and 3 in operation). If Unit 1 conditions change, the affected SSCs will be re-evaluated for 10CFR50.65 applicability (refer to Reference 2.13).

Generally, plant level performance criteria apply to normally operating system functions within the scope of the Rule that are not risk significant. Function specific performance criteria apply to risk significant functions, nonrisk standby functions, and those nonrisk, nonstandby functions whose performance cannot be measured at the plant level. Functional failures, both initial and repetitive, apply to all system functions within the scope of the Rule.

2.0 REFERENCES

2.1 10CFR50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants

2.2 NUMARC 93-01, Revision 2, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, April 1996

BULLETS # 1, 2 & 3 OF INSPECTION REPORT

2.0 REFERENCES (Continued)

2.3 TVAN Maintenance Rule Program Manual

2.4 INPO 96-003, Performance Indicator Program - Utility Data Coordinator Reference Notebook, dated September 1996

2.5 SSP-3.4, Corrective Action Program

2.6 SSP-4.4, Managing The Operating Experience Program

2.7 SSP-4.5, Regulatory Reporting Requirements

2.8 SSP-7.1, Work Control

2.9 SSP-9.3, Plant Modifications and Design Change Control

2.10 SSP-12.16, Emergency Operating Instruction Control

2.11 SSP-12.9, Incident Investigations and Root Cause Analysis

Bullet #3 of Inspection Report

2.12 SEP-9.5.8, Probabilistic Safety Assessment (PSA) Program

2.13 April 16, 1996 letter from President, TVA Nuclear and Chief Nuclear Officer, (A00 960415 900) to the US Nuclear Regulatory Comission

3.0 DEFINITIONS

As used in this document, (a)(1), (a)(2), and (a)(3) refer to paragraphs included in 10 CFR 50.65. Paragraph (a)(1) of the Rule refers to SSCs cited for improved performance. Paragraph (a)(2) refers to SSCs exhibiting adequate performance. Paragraph (a)(3) refers to the periodic assessment of the effectiveness of goals, the balancing of unavailability and reliability of risk significant SSCs, and the impact on plant safety from performing elective on-line maintenance.

Function: As used in this document and the Maintenance Rule program, the function is that attribute (e.g., safety related, mitigates accidents, causes a scram, etc.) that included the SSC within the scope of the Maintenance Rule. For example, the condenser vacuum system is scoped under the Maintenance Rule because its total failure could cause a scram and not the function of pulling a vacuum on the condenser.

Functional failure: Refer to paragraph 7.4.

A00 960415 900

April 16, 1996

Bullet # 3 OF INSPECTION Report

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Dear Mr. Taylor:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

This letter requests that the Nuclear Regulatory Commission (NRC) remove Browns Ferry Nuclear Plant (BFN) Unit 1 as a Category 3 plant on the NRC's Problem Plant List. This could be accomplished when NRC determines to remove BFN Unit 3, presently a Category 2 plant, from the list. Much has transpired since the BFN units were placed on the list in October 1986. There have been major management and cultural changes in TVA's nuclear program, which is now completely focused on operational excellence. At BFN, we have demonstrated our ability to restart Unit 3 and operate both Units 2 and 3 as a multi-unit site with sustained good performance. Unit 2 was removed from the Problem Plant List in June 1992.

At this time, TVA has not reached a decision on the long-term operational status of Unit 1. However, those Unit 1 systems that support operations of Units 2 and 3 will continue to be maintained in-service. Unit 1 is currently defueled and maintained in a lay-up condition. There are no current plans for equipment refurbishment or recovery activities. If TVA were to decide to return Unit 1 to operation, our policy of open communications with the NRC will ensure that the NRC is notified immediately upon that decision being made. Prior to any restart of Unit 1, TVA has committed to implement the same programs that were employed for the Unit 3 recovery effort. Further, TVA has committed to not restart Unit 1 without prior Commissioners' approval. If TVA ultimately decides not to restart Unit 1, applicable NRC regulations governing decommissioning activities will be followed.

ENCLOSURE 4

TVA believes that retaining Unit 1 on the Problem Plant List would no longer fairly characterize the current condition of and situation regarding that unit. Close NRC monitoring of Unit 1 is unnecessary for the foregoing reasons, and TVA has acknowledged that prior NRC authorization will be required if Unit 1 is to be restarted. We urge that the NRC remove Unit 1 from the Problem Plant List.

I am available to respond to any questions which you or your staff may have with respect to this request. We appreciate your consideration of the thoughts expressed in this letter. If you have any questions concerning this request, please telephone me at (423) 751-4770.

Sincerely,

Original signed by
O. D. Kingsley

Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer

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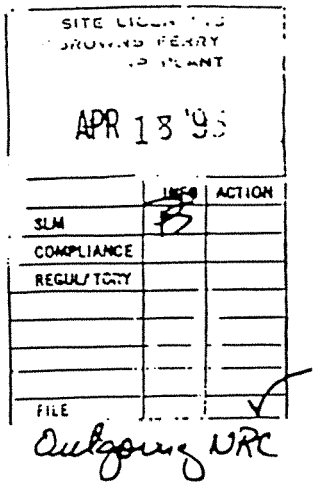

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