

January 14, 2000

Tennessee Valley Authority
ATTN: Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: NRC INSPECTION REPORT NO. 50-327/99-10 AND 50-328/99-10

Dear Mr. Scalice:

On December 3, 1999, the NRC completed an inspection at your Sequoyah 1 & 2 reactor facilities. The enclosed report presents the results of this inspection.

The inspection was an examination of activities conducted under your license as they relate to problem identification and resolution and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. As identified in the report, no findings were identified during this inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

Sincerely,

Original signed by
George A. Belisle

George A. Belisle, Chief
Maintenance Inspection Branch
Division of Reactor Safety

Docket Nos. 50-327, 50-328
License Nos. DPR-77, DPR-79

Enclosure: NRC Inspection Report

cc w/encl: (See page 2)

cc w/encl:

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E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-327, 50-328
License Nos: DPR-77, DPR-79

Report No: 50-327/99-10, 50-328/99-10

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant, Units 1 & 2

Location: Sequoyah Access Road
Hamilton County, TN 37379

Dates: November 15 through December 3, 1999

Inspectors: J. Blake, Senior Project Manager (Team Leader)
W. Bearden, Reactor Inspector
R. Telson, Resident Inspector

Approved by: G. Belisle, Chief
Maintenance Branch
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

Sequoyah Nuclear Plant, Units 1 & 2
NRC inspection Report 50-327/99-10, 50-328/99-10

The report covers a two-week inspection in the area of problem identification and resolution as applied in each of the strategic performance areas.

No findings were identified during this inspection period.

Report Details

4. OTHER ACTIVITIES

4OA1 Identification and Resolution of Problems

Inspection Scope - General

a. Inspection Scope

The inspectors reviewed documented root causes and corrective actions for risk significant issues which had been identified by the licensee or the NRC. The issues were reviewed under the seven nuclear plant operation cornerstones. Plant documents, (e.g., shift logs, self assessments, inservice inspection reports, and system health reports) were reviewed for issues that should have been identified on corrective action documents, but were not. The inspectors also looked for adverse trends or patterns (e.g., recurring or longstanding problems) which were not identified as such, and any other issues showing a lack of effectiveness in identifying and correcting problems. The effectiveness of the licensees' Problem Identification and Resolution (PI&R) programs was also reviewed.

1. Identification and Resolution of Problems Affecting Initiating Events

Licensee Self Assessments: The inspectors reviewed selected self assessments which had been conducted during the period from October 1, 1998, through September 30, 1999. Assessment SQ-SA-OPS-99-010 was included in the area of initiating events because three problem evaluation reports (PERs) resulting from this assessment identified a weakness and two deficiencies involving risk management.

PER 99-007527-000 identified a weakness in risk management throughout all levels of plant personnel due to the lack of written guidance on management's expectations for implementation of an acceptable safety culture.

PER 99-007528-000 identified a deficiency in performance monitoring, in that, data for scheduled non-completed work was not available for common cause analysis to ensure effective reoccurrence controls were in place.

PER 99-007311-000 identified a problem that uncompleted weekly scheduled activities did not always have a risk assessment performed or were not always approved by a senior reactor operator for roll over and merging into the next work week.

Violations (VIOs) - The inspectors reviewed approximately 20% of the non-cited violations (NCVs) issued over the preceding two-year period and one cited violation for which corrective actions had not been reviewed in detail by the NRC. The following issues were reviewed for potential impact on risk significant structures, systems and components and the likelihood of involving complex corrective actions. Particular emphasis was placed on activities following issuance of the one violation reviewed:

NCV 50-327/99-03-04, "Failure to Properly Categorize Preventable Functional Failures and Repetitive Functional Failures," and the associated PERs 99-001846-000, 99-002075-000, SQ981734PER, and SQ980481PER relating to Maintenance Rule (MR) deficiencies concerning the failure to review System 201A (the 480 VAC distribution system) and System 202A (the 6.9 KVAC load shed logic) for a (1) status when required under the maintenance rule (MR). This issue impacted the initiating events and mitigating systems cornerstones and addressed application of the MR, industry-wide issues relating to circuit breakers, and site-specific issues related to post-maintenance testing and self-assessment.

VIO 50-327/98-09-01, "Inadequate Post Maintenance Testing of 480 VAC Circuit Breakers," and associated PERs SQ981283PER and SQ981220PER relating to inadequate 480 VAC circuit breaker maintenance and testing. This issue impacted the initiating events and mitigating systems cornerstones and addressed industry-wide issues relating to circuit breakers and lubrication as well as human performance, training, procedures, and post-maintenance testing.

NCV 50-327/98-11-03, & VIO 50-327/98-11-02, "Failure to Follow EOPs & Control RCS Parameters" and associated PER SQ981581PER relating to failure to follow emergency operating procedure (EOP) requirements, inadequate control of reactor coolant system (RCS) parameters, and failure to provide an adequate procedure. These cross-cutting issues impacted the initiating events, mitigating systems, and barrier integrity cornerstones and addressed human performance, use and adequacy of procedures, and training.

b. Observations and Findings

No findings were identified and documented through this inspection.

2. Identification and Resolution of Problems Affecting Mitigating Systems

Issues Associated with the Auxiliary Feedwater (AFW) System and the Emergency Diesel Generators (EDGs). The AFW system and EDGs were among the systems designated in the plant's probabilistic safety analysis as risk significant. Special attention was given to any potential common mode failures of hardware.

Several issues had previously been identified related to the AFW system. As stated below, NCV 50-327/99-01-01 identified two examples of failure to promptly identify and initiate corrective action for contamination of lube oil for a turbine driven AFW (TDAFW) pump and a motor driven AFW pump. In addition to those problems, PER 99-001806-000 identified TDAFW oil particle count above the alert range recommended by the vendor, and PERs 99-006861-000 and 99-003523-000 identified MR reliability monitoring issues.

Three PERs were identified related to the EDGs: PER 99-008796-000 identified that the 1B-B EDG exhaust fan hand switch was out of proper position; PER 99-002912-

000 identified that EDG 2A-A tripped on reverse power during outage surveillance testing; and PER 99-001840-000 identified that EDG vibration was in the alert range.

NCV 50-327/99-01-01, "AFW Pump Water Contamination of Lube Oil" The inspectors reviewed this NCV and associated PERs, SQ990182PER and SQ990092PER, and Technical Operability Evaluation (TOE) 0-99000300092 (Revs. 0 and 1) addressing bearing oil contamination of 1B-B MDAFWP and the 2A-S TDAFWP through cooling water in-leakage. In addition, inspectors reviewed related PERs 99-001585-000 and 99-002664-000 addressing water-contaminated lube oil in SI pumps 2AA and 1AA, respectively.

Operator Workarounds (OWAs) - The inspectors reviewed the licensee's program for tracking OWAs. The inspectors reviewed selected open OWAs to determine the OWAs impact on plant operations, specifically considering whether the OWAs affected the operators' ability to implement abnormal or EOPs.

The inspectors also reviewed Nuclear Assurance (NA) assessment, NA-SQ-99-06. This self-assessment was performed to evaluate the cumulative effect of OWAs on the ability of personnel to safely operate the plant and effectively respond to abnormal and emergency plant conditions. Although licensee NA personnel concluded that the cumulative effect of OWAs did not significantly impede the safe operation of the plant, several areas for improvement were identified.

Six OWAs had not been assigned a scheduled completion date and one concern associated with the potential for masking OWA issues was identified. The licensee's program allows other programs such as work control, system health and other administrative processes to track conditions that might meet the criteria of an OWA, without including those issues as OWAs. (The inspectors noted that the six OWAs had subsequently been assigned completion dates, and did not identify any significant conditions that were not tracked as OWAs.)

b. Observations and Findings

No findings were identified and documented through this inspection.

3. Identification and Resolution of Problems Affecting Barrier Integrity

b. Observations and Findings

No findings were identified and documented through this inspection.

4. Identification and Resolution of Problems Affecting Emergency Preparedness

Licensee Self Assessments and Audits: The inspectors reviewed the results of the most recent self assessments of the Emergency Preparedness Program, along with the PERs generated as a result of these assessments. The assessments reviewed included: EP-99-001, EP-99-002, EP-99-003 and NA-SQ-99-11.

PER SQ981570 documented the finding from EP-99-002 that the emergency response team failed to ensure the state was notified of the declaration of a site area emergency within the required 15 minutes during the 1998 graded exercise. The licensee determined that the cause was a communications problem due to lack of specificity in the exercise procedure. The inspectors reviewed the corrective actions taken as a result of this PER and noted that the current procedures now clearly define the requirements for notification.

b. Observations and Findings

No findings were identified and documented through this inspection.

5. Identification and Resolution of Problems Affecting Occupational Radiation Safety

Licensee Self Assessments and Audits: The inspectors reviewed the results of the most recent self assessments of the Occupational Radiation Safety Program, along with the PERs generated as a result of these assessments. The assessments reviewed included: NA-SQ-99-25, NA-SQ-98-58, NA-SQ-98-61, SQ-SA-RP-99-001, and SQ-SA-RP-99-002.

b. Observations and Findings

No findings were identified and documented through this inspection.

6. Identification and Resolution of Problems Affecting Public Radiation Safety

Licensee Self Assessments and Audits: The inspectors reviewed the results of SA-CEM-99-004, along with PERs generated as a result of this assessment. PERs reviewed included the following: 99-010231-000, 99-010562-000, and 99-010587-000.

b. Observations and Findings

No findings were identified and documented through this inspection.

7. Identification and Resolution of Problems Affecting Physical Security

Licensee self assessments and audits: The inspectors reviewed the results of the most recent self assessments of the Physical Security and Contingency Plan, along with the problem evaluation reports generated as a result of these assessments. The assessments reviewed included: SA-NSS-99-002, SA-NSS-99-003, SA-NSS-99-004, and SA-NSS-00-001.

PERs associated with these assessments were evaluated for PI&R. The PERs reviewed were: SQ980847PER, SQ981543PER, SQ981544PER, and 99-001429-000.

b. Observations and Findings

No findings were identified and documented through this inspection.

8. Effectiveness of Problem Identification and Resolution Programs

a. Inspection Scope

The inspectors reviewed licensee self assessments of the effectiveness of their PI&R programs. The following assessments were reviewed: NA-SQ-98-19, SA-SIT-99-003, NA-SQ-99-019, and SIT-99-006,

The inspectors reviewed the progression of PER SQ981096PER, which documented that during an assessment (NA-SQ-98-019) of the corrective action process, 10 of 41 PERs reviewed were identified as not fully addressing the identified problem or the corrective actions or the documentation was incomplete. Revision (Rev.) 1 of this PER documented problems associated with attempts to close the issue, and Revision 2 of this PER documented additional examples of the conditions found during assessment NA-SQ-99-019. The inspectors' review was to understand whether the original PER was too broad in scope to close in a reasonable time, or whether original corrective actions had not prevented recurrence of the problem before the next assessment.

The inspectors also reviewed minutes of the Sequoyah Nuclear Safety Review Board meetings, monthly business plan performance reports, and monthly and quarterly problem identification and corrective action document trending reports published by the licensee.

b. Observations and Findings

No findings were identified and documented through this inspection.

40A5 Management Meetings

The inspectors presented the inspection results to licensee management at the conclusion of the inspections on November 19 and December 3, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Bajestani, Site Vice President
 J. Beasley, Site Quality Manager
 H. Butterworth, Operations Manager
 E. Freeman, Maintenance and Modifications Manager
 J. Hamilton, Performance and Analysis Manager, Business and Work Performance
 O. Hayes, Operations Support Supervisor

C. Kent, Radcon and Chemistry Manager
D. Koehl, Plant Manager
M. Lorek, Site Engineering Manager
P. Salas, Licensing and Industry Affairs Manager
J. Wilkes, Operations Superintendent
J. Valente, Engineering and Support Services Manager

NRC

G. Belisle, Chief, Maintenance Branch
R. Gibbs, Senior Resident Inspector
D. Starkey, Resident Inspector

INSPECTION PROCEDURES USED

IP 71152, "Identification and Resolution of Problems."

DOCUMENTATION REVIEWED

LICENSEE PROCEDURES

Technical Instruction, 0-TI-PDM-000-002.0, "Oil Sampling and Monitoring," Rev. 3
 Standard Department Procedure, NEDP-12, "Equipment Failure Trending," Rev. 1
 Standard Programs and Processes, SPP-3.1, "Corrective Action Program," Rev. 1
 SPP-3.6, "Trend Analysis," Rev. 1
 SPP-6.1, "Work Order Process Initiation," Rev. 0
 SPP-9.8, "Drawing Deviations (DD) Program," Rev. 0

LICENSEE ASSESSMENTS

EP-99-001	"Drill Effectiveness Review"
EP-99-002	"Biennial Graded Exercise"
EP-99-003	"Severe Accident Management Guidelines (SAMG) Program"
NA-SQ-98-19	"Corrective Action Assessment"
NA-SQ-98-58	"Contamination Control Assessment"
NA-SQ-98-61	"Radcon Self-Assessment Oversight"
NA-SQ-99-06	"Operator Workarounds"
NA-SQ-99-11	"Emergency Preparedness Assessment"
NA-SQ-99-019	"Corrective Action Program (CAP) Assessment"
NA-SQ-99-25	"Nuclear Assurance - As Low As Reasonably Achievable (ALARA) Planning and Controls Assessment"
SQ-SA-OPS-99-010	"Safety Culture"
SQ-SA-RP-99-001	"Self-Assessment - Radiation Worker Compliance (ARP/RWP Controls)"
SQ-SA-RP-99-002	"Self-Assessment - Radiation Protection Management and Leadership"
SA-CEM-99-004	"Radiological Environmental Monitoring Program (REMP) and Offsite Dose Calculation Manual (ODCM) Compliance"
SA-E&M-98-008	"Containment Leak Rate Program (CLRP) Implementation (10CFR50, App. J. Option B)"
SA-NSS-99-002	"Security Planning and Implementing Procedures - Testing and Maintenance"
SA-NSS-99-003	"Security Lighting Requirements"
SA-NSS-99-004	"Alarm Stations/Communications"
SA-NSS-00-001	"Security Plans and Procedures, Management Effectiveness, Security Organization, Security Program Audit of Self Assessments, and Safeguards Contingency Plan"
SA-SIT-99-003	"Corrective Action Program"
SIT-99-006	"Identification & Resolution of Problems (NRC Module 71152)"

PROBLEM EVALUATION REPORTS

SQ970022PER	Generic review of Browns Ferry problem associated with Terry Turbine oil particle count.
SQ980481PER	Two circuit breaker failures incorrectly documented under maintenance rule.
SQ980811PER	Self Assessment SA-E&M-98-008 identified that SI-158.1 does not state the correct accuracy for a Heisse [sic] pressure gauge use in a pressure decay method test.
SQ980847PER	Security testing procedure needs to be enhanced to more closely comply with Regulatory Guide 5.44, "Perimeter Intrusion Alarm Systems."
SQ981096PER	During an assessment (NA-SQ-98-019) of the corrective action process, 10 of 41 PERs reviewed were identified as not fully addressing the identified problem or the corrective action/documentation was incomplete.
SQ981220PER	Circuit breaker as-found material deficiencies.
SQ981283PER	Failure to detect circuit breaker deficiencies prior to installation.
SQ981543PER	During a security self assessment, some zones were found to be weak in some manners of testing for self assessment by camera call-up.
SQ981544PER	During a security self assessment, some zones were found to be weak in jump over attempts.
SQ981570PER	During the 1998 graded exercise, the emergency response team failed to ensure the state was notified of the declaration of a site area emergency within 15 minutes.
SQ981581PER	Unit 1 reactor trip due to failure of I-IV vital instrument power board.
SQ981734PER	Circuit breaker failure incorrectly categorized under maintenance rule.
SQ990013PER	PER SQ950537 incorrectly closed.
SQ990092PER	Unit 2 TDAFW pump lube oil contamination.
SQ990182PER	Predictive maintenance program lacks technical limits.
99-001429-000	Improper display of security badges.
99-001510-000	Maintenance Rule performance criteria exceeded for 2B shutdown board room HVAC.
99-001511-000	Disassembly of valve in hot valve shop without radcon coverage.
99-001585-000	2A-A Safety Injection pump lube oil contamination.
99-001634-000	Operating experience program expectations not reaching all personnel.
99-001806-000	TDAFW oil particle count higher than vendor recommendation.
99-001840-000	EDG bearing vibration higher than vendor recommendations.
99-001846-000	Improper evaluations for Maintenance Rule functional failures for past breaker problems.
99-001910-000	Safety assessment did not adequately consider the environmental temperature effects on the removal of the cooling water to the outboard bearing housing of the 1B MDAFWP.
99-001938-000	Failure to identify areas requiring temporary security lighting.
99-002075-000	Maintenance Rule functional failures for DS 480V breakers.
99-002240-000	Workers exceeded planned RWP dose limit.
99-002643-000	Inconsistent application of causal codes for level D and level C PERs.
99-002664-000	1A-A Safety Injection pump lube oil contamination.
99-002912-000	2A-A EDG tripped on reverse power.

99-003284-000 Six operator workarounds did not have scheduled completion dates.
99-003424-000 Improper cancellation of workorders which served as basis for closure of PERs.

99-003523-000 Repeat TDAFW control circuit dropping resistor failures.
99-004035-000 Unplanned outage of 2A-A EDG due to lube oil circulating pump coupling failure.

99-004089-000 Improper storage of safeguards information.
99-006861-000 TDAFW has not had demand failures documented for reliability monitoring.
99-007311-000 Weekly schedule activities do not always have a risk assessment performed or approved by a Senior Reactor Operator for roll over activities emerged into the next work week.

99-007433-000 Maintenance Rule unavailability exceeded for vital inverters.
99-007527-000 Work group risk management standards needs improving to ensure management standards for event, trip, and transient prevention are met.

99-007528-000 Performance monitoring data for schedule non-completed work is not available for common cause analysis and to ensure effective reoccurrence controls are in place.

99-007820-000 Failure of maintenance instrument group to initiate PER.
99-008460-000 Maintenance Rule unavailability for risk significant HVAC equipment had not included warm-up time for refrigerant oil.

99-008769-000 PERs not always initiated when problems identified.
99-008877-000 Radcon observation only marginally effective.
99-008796-000 1B-B EDG exhaust fan hand switch out of proper position.
99-009375-000 Open workorders in EMPAC, which were cross referenced to PERs, were not scheduled.

99-010216-000 Maintenance Rule unavailability exceeded for CCP 1B-B.
99-010231-000 Assessment SA-CEM-99-004 identified that the ODCM mixing factor of effluent in river value of 0.6 differs from the FSAR dilution factor of 0.2.

99-010271-000 Maintenance Rule performance criteria exceeded for EDG 480 VAC auxiliary boards.
99-010562-000 Assessment SA-CEM-99-004 identified errors in ODCM Table 2.3-3, "Maximum Values for the Lower Limits of Detection."
99-010587-000 Assessment SA-CEM-99-004 identified various administrative errors in the body of the ODCM.
99-010995-000 During sampling of U-1 VCT 11/10/99 from 2215 to 2230 per 0-TI-CEM-00-016.3 the WGA room went airborne.