UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

February 22, 2007

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

SUBJECT: ERRATA LETTER FOR SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000327/2006005, 05000328/2006005 AND 07200034/2006002

Dear Mr. Singer:

On December 31, 2005, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Sequoyah Nuclear Plant, Units 1 and 2. The above inspection report was issued without three inspection findings and the closeout of four unresolved items which were discussed in a conference call between Mr. R. Schin of this office and Mr. D. Kulisek and other members of the your staff on December 20, 2006. The purpose of this letter is to include those items in the inspection report and to ask that you replace the enclosed revised pages in your original document.

The three additional inspection findings were of very low safety significance and were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any of the additional NCVs in the enclosed revised pages, you should provide a response within 30 days of the date of this errata letter, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Sequoyah Nuclear Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at *http://www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

If you have any questions, please contact me at (404) 562-4550.

Sincerely,

/RA/

Malcolm T. Widmann, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos. 50-327, 50-328, 72-034
License Nos. DPR-77, DPR-79

Enclosure: Errata pages for Inspection Report 05000327/2006005 and 05000328/2006005 and 07200034/2006002

cc: w/encl: (See page 3)

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/RA/

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Docket Nos. 50-327, 50-328, 72-034
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cc: w/encl: (See page 3)

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ADAMS: X Yes ACCESSION NUMBER:_____

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NAME	LGarner	MWidmann	CPayne			
DATE	2/22/07	2/22/07	2/22/07			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\FileNet\ML070720181.wpd

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Letter to Karl W. Singer from Malcolm T. Widmann dated February 22, 2007

SUBJECT: ERRATA: SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000327/2006005, 05000328/2006005 AND 07200034/2006002

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-327, 50-328, 72-034
License Nos:	DPR-77, DPR-79
Report No:	05000327/2006005 and 05000328/2006005 and 07200034/2006002
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Sequoyah Nuclear Plant
Location:	Sequoyah Access Road Soddy-Daisy, TN 37379
Dates:	October 1, 2006 - December 31, 2006
Inspectors:	J. Baptist, Acting Senior Resident Inspector J. Diaz-Velez, Health Physicist (Section 2OS1) F. Ehrhardt, Operations Engineer (Section 1R11.2) L. Lake, Reactor Inspector (Section 1R08) G. Laska, Senior Operations Examiner (Section 1R11.3) D. Mas-Penaranda, Reactor Inspector (Sections 1R02, 1R17) E. Michel, Reactor Inspector (Section 4OA5.3) B. Miller, Reactor Inspector (Sections 1R08, 4OA5.2) R. Moore, Senior Reactor Inspector (Section 4OA5.3) S. Rose, Senior Operations Engineer (Section 1R11.3) C. Smith Senior Reactor Inspector (Sections 1R02, 1R17) M. Speck, Resident Inspector C. Stancil, Resident Inspector (Section 1EP6)
Approved by:	M. Widmann, Chief Reactor Projects Branch 6 Division of Reactor Projects

REMOVE

Enclosure

SUMMARY OF FINDINGS

IR 05000327/2006005, IR 05000328/2006005; IR 07200034/2006002; 10/01/2006 - 12/31/2006; Sequoyah Nuclear Plant, Units 1 & 2; Licensed Operator Requalification Program.

The report covered a three-month period of inspection by resident inspectors and announced inspections by 10 regional inspectors and one resident inspector from another site. One NRC-identified Green finding, which was also a non-cited violation, was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a Green, non-cited violation (NCV) of 10 CFR 55.53, “Conditions of Licenses” for failure to certify the qualifications and status of licensed operators were current and valid prior to their resumption of license duties. Specific aspects of the requalification program that were not valid included plant tours that were not completed with another licensed operator and not completing all shift functions in positions to which the individuals will be assigned. The licensee entered the finding into the corrective action program as PER No.112004.

The finding is greater than minor because it is associated with the human performance attribute of the Mitigating Systems Cornerstone that affects the cornerstone objective of ensuring the availability, reliability, and capability of operators to respond to initiating events to prevent undesirable consequences that could pose a potential risk to operations. The finding was evaluated using the Operator Requalification Human Performance Significance Determination Process. Under this SDP, record deficiencies can be either minor or of very low safety significance (Green). This finding was determined to be Green because it was related to the program for maintaining active licenses and more than 20% of the records reviewed had deficiencies. (Section 1R11.3).

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee’s corrective action program. This violation and corrective action are listed in Section 4OA7.

performance indicator data submitted to the NRC to ensure it accurately reflected the performance history of these systems.

b. Findings and Observations

No findings of significance were identified. The licensee accurately documented the baseline planned unavailability hours, the actual unavailability hours and the actual unreliability information for the MSPI systems. No significant errors in the reported data were identified, which resulted in a change to the indicated index color. No significant discrepancies were identified in the MSPI basis document which resulted in: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color.

.5 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the interim report for the INPO plant assessment report of Sequoyah conducted in July 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On January 3, 2007, the resident inspectors presented the inspection results to Mr. R. Douet and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- TS 6.8.1 requires that written procedures shall be established, implemented, and maintained covering the activities recommended in Appendix “A” of Regulatory Guide 1.33, Revision 2, February 1978. Contrary to this, on November 28, 2006, an AUO improperly implemented 0-GO-13,Reactor Coolant System Drain and Fill Operations, Revision 54, Appendix AC by mispositioning an RCS loop 4 drain valve. This revealed itself through the subsequent transfer of RCS inventory to the Reactor Coolant Drain Tank and lowering of RCS pressurizer level. The

error was promptly corrected by operations staff and the event was identified in the licensee's corrective action program as PER 115534. This finding is of very low safety significance because it did not challenge RCS inventory control by exceeding available makeup capacity.

ATTACHMENT: SUPPLEMENTAL INFORMATION

REMOVE

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

J. Adams, Boric Acid
D. Bodine, Chemistry/Environmental Manager
R. Bruno, Training Manager
R. Douet, Site Vice President
B. Dungan, Outage and Site Scheduling Manager
J. Epperson, Licensed Operator Requal Lead
J. Goulart, ISI
K. Jones, Site Engineering Manager
Z. Kitts, Licensing Engineer
D. Kulisek, Plant Manager
G. Morris, Licensing and Industry Affairs Manager
T. Niessen, Site Quality Manager
M. A. Palmer, Radiation Protection Manager
M. H. Palmer, Operations Manager
K. Parker, Maintenance and Modifications Manager
J. Proffitt, (Acting) Site Licensing Supervisor
J. Reisenbuechler, Operations Training Manager
R. Reynolds, Site Security Manager
N. Thomas, Licensing Engineer
S. Tuthill, Chemistry Operations Manager
J. Whitaker, ISI
K. Wilkes, Emergency Preparedness Manager

NRC personnel:

R. Bernhard, Region II, Senior Reactor Analyst
D. Pickett, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000327,328/2006005-01	NCV	Failure to Certify Qualifications and Status of Licensed Operators Were Current and Valid (Section 1R11.3)

Opened

05000328/2006005-02	URI	Appendix R Manual Isolation Valve Failure to Close Within the Required Time text (Section 1R15)

Closed

05000327,328/2515/169	TI	Mitigating Systems Performance Index Verification (Section 4OA5.4)

REMOVE

<u>Discussed</u>

05000327, 328/2515/150	TI	Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles (NRC Order EA-03-009) - Unit 2 (Section 4OA5.2)
05000327, 328/2515/166	TI	Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02) - Unit 2 Section 4OA5.3)

REMOVE

LIST OF ACRONYMS

AFW	auxiliary feedwater
ANSI	American National Standards Institute
AOP	abnormal operating procedures
ARC	alternate repair criteria
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
AUO	auxiliary unit operator
BACC	boric acid corrosion control
BMV	bare metal visual
CCP	cooling charging pump
CCPIT	cooling charging pump injection tank
CFR	Code of Federal Regulations
CR	condition report
CRDM	control rod drive mechanism
CVCS	chemical volume control system
DCN	design change notice
ECCS	emergency core cooling system
ECT	eddy current testing
EDY	effective degradation years
ERCW	essential raw cooling water
ETSS	examination technique specifications sheet
FCV	flow control valve
FE	functional evaluation
FME	foreign material exclusion
FOSAR	foreign object search and recovery
HR	high radiation
HUT	holdup tank
INPO	Institute of Nuclear power Operations
ISFSI	independent spent fuel storage installation
ISI	inservice inspection
LHRA	locked high radiation area
MRP	materials reliability program
MSPI	mitigating systems performance index
NCV	non-cited violation
NDE	non-destructive examination
NRC	U.S. Nuclear Regulatory Commission
ODSCC	outer diameter stress corrosion cracking
OPDP	operations department procedure
PAR	publically available records
PER	problem evaluation report
PER	protective action recommendation
PORV	power-operated relief valve
PWSCC	primary water stress corrosion cracking
RCP	reactor coolant pump
RCS	reactor coolant system
RHR	residual heat removal
RP	radiation protection

REMOVE

RPVH	reactor pressure vessel head
RTP	rated thermal power
RWP	radiation work permit
RWST	refueling water storage tank
SDP	significance determination process
SER	safety evaluation report
SG	steam generator
SI	safety injection
SI	surveillance instructions
SSC	structure, system, or component
TDAFP	turbine driven auxiliary feedwater pump
TI	temporary instruction
TS	technical specification
TVA	Tennessee Valley Authority
UFSAR	updated final safety analysis report
UHI	upper head injection
URI	unresolved item
UT	ultrasonic testing
WOs	work orders

REMOVE

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-327, 50-328, 72-034
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Report No:	05000327/2006005 and 05000328/2006005 and 07200034/2006002
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Approved by:	M. Widmann, Chief Reactor Projects Branch 6 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000327/2006005, IR 05000328/2006005; IR 07200034/2006002; 10/01/2006 - 12/31/2006; Sequoyah Nuclear Plant, Units 1 & 2; Licensed Operator Requalification Program.

The report covered a three-month period of inspection by resident inspectors and announced inspections by 11 regional inspectors and one resident inspector from another site. Four NRC-identified Green findings, which were also non-cited violations, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a Green, non-cited violation (NCV) of 10 CFR 55.53, “Conditions of Licenses” for failure to certify the qualifications and status of licensed operators were current and valid prior to their resumption of license duties. Specific aspects of the requalification program that were not valid included plant tours that were not completed with another licensed operator and not completing all shift functions in positions to which the individuals will be assigned. The licensee entered the finding into the corrective action program as PER No.112004.

The finding is greater than minor because it is associated with the human performance attribute of the Mitigating Systems Cornerstone that affects the cornerstone objective of ensuring the availability, reliability, and capability of operators to respond to initiating events to prevent undesirable consequences that could pose a potential risk to operations. The finding was evaluated using the Operator Requalification Human Performance Significance Determination Process. Under this SDP, record deficiencies can be either minor or of very low safety significance (Green). This finding was determined to be Green because it was related to the program for maintaining active licenses and more than 20% of the records reviewed had deficiencies. (Section 1R11.3).

- Green. The inspectors identified a non-cited violation of Unit 1 License Condition 16, Fire Protection, and Unit 2 License Condition 13, Fire Protection, for failure to protect certain equipment that was required for safe shutdown from fire damage. The licensee’s Safe Shutdown Analysis for a fire in the Unit 1 480V Board Room 1B (Fire Area FAA-095) relied on the fire not damaging at least two of the three Unit 1 battery chargers located in the room plus one of the two Unit 1 inverters and one of the two Unit 2 inverters located in the room. However, the battery chargers and inverters were not separated or protected from fire damage as required by the License Conditions and Fire Protection Program. The licensee entered the issue into the corrective action program.

This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. It affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences and also involved a lack of required fire barriers or separation for equipment relied upon for safe shutdown following a fire. The finding is of very low safety significance because of the low frequency of fires that could damage two of the three Unit 1 battery chargers, both Unit 1 inverters, or both Unit 2 inverters that were located in the Unit 1 480V Board Room 1B concurrent with a failure of the sprinkler system. (Section 4OA5.5)

- Green. The inspectors identified a non-cited violation of Unit 1 License Condition 16, Fire Protection, and Unit 2 License Condition 13, Fire Protection, for failure to protect certain electrical cables for safe shutdown equipment from fire damage. The power cables to Unit 1 vital inverter 1-II and Unit 2 vital inverter 2-II were routed through the north end of the Unit 1 480V Board Room 1B (Fire Area FAA-095) without protection or separation from fire damage as required by the License Conditions and Fire Protection Program. The licensee entered the issue into the corrective action program and revised the fire procedure to add local manual operator actions to mitigate the effects of fire damage to the cables of concern.

  This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. It affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences and also involved a lack of required fire barriers or separation for equipment relied upon for safe shutdown following a fire. The finding is of very low safety significance because of the low frequency of fires that could damage the cables of concern and also damage the redundant safe shutdown equipment. (Section 4OA5.6)

- Green. The inspectors identified a non-cited violation of Unit 2 License Condition 13, Fire Protection, for failure to maintain adequate lighting in the Unit 2 main steam valve vault room to support time-critical operator actions required for post-fire safe shutdown. The licensee entered the issue into the corrective action program and replaced the light bulbs to restore the room lighting.

  This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. It affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences. The finding is of very low safety significance because of the low frequency of fires that could lead to core damage if the operator actions in the Unit 2 main steam valve vault room were not performed in a timely manner. (Section 4OA5.7)

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective actions are listed in Section 4OA7.

performance indicator data submitted to the NRC to ensure it accurately reflected the performance history of these systems.

b. Findings and Observations

No findings of significance were identified. The licensee accurately documented the baseline planned unavailability hours, the actual unavailability hours and the actual unreliability information for the MSPI systems. No significant errors in the reported data were identified, which resulted in a change to the indicated index color. No significant discrepancies were identified in the MSPI basis document which resulted in: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color.

.5 (Closed) Unresolved Item (URI) 05000327,328/2005011-01, Reliance on 20-foot Separation Zones for Fire Protection in Unit 1 480V Board Room 1B

a. Inspection Scope

This in-office review followed up on URI 05000327,328/2005011-01, which had been opened for NRC review of the licensing basis regarding use of 20-foot separation zones, as specified in Appendix R, Section III.G.2 of 10 CFR 50, to protect safe shutdown equipment from fire damage and the potential for the identified condition to adversely affect safe shutdown.

b. Findings

Introduction. A Green non-cited violation (NCV) of Unit 1 License Condition 16, Fire Protection, and Unit 2 License Condition 13, Fire Protection, was identified for failure to protect certain equipment that was required for safe shutdown from fire damage. The licensee's Safe Shutdown Analysis for a fire in the Unit 1 480V Board Room 1B (Fire Area FAA-095) relied on the fire not damaging at least two of the three Unit 1 battery chargers located in the room plus one of the two Unit 1 inverters and one of the two Unit 2 inverters located in the room. However, the battery chargers and inverters were not separated or protected from fire damage as required by the License Conditions and Fire Protection Program.

Description. As described in Inspection Report (IR) 05000327,328/2005011, the NRC had identified that the battery chargers and inverters in the Unit 1 480V Board Room 1B (Fire Area FAA-095) were not separated or protected from fire damage as required by 10 CFR 50, Appendix R, Section III.G.2. One method prescribed by III.G.2 was separation of equipment of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, III.G.2 required that fire detectors and an automatic fire suppression system be installed in the fire area. The licensee had relied on 20-foot separation zones between each of the three Unit 1 battery chargers located in the room, a 20-foot separation zone between the two Unit 1 inverters located in the room, and a 20-foot separation zone between the two Unit 2 inverters located in the room. However, each 20-foot separation zone was not free of intervening combustibles or fire hazards as required in that each 20-foot zone contained

energized 480V motor control centers (MCCs), nonqualified electrical cables in open trays, and other electrical equipment including inverters. The MCCs, inverters, and non-qualified cables in trays represented both ignition sources (fire hazards) and combustibles in the form of insulated wires.

IR 05000327,328/2005011 also described the NRC-approved Deviation #11 to 10 CFR 50, Appendix R, Section III.G.2, regarding 20-foot separation zones in the auxiliary building. (The Unit 1 480V Board Room 1B was located in the auxiliary building.) Deviation #11 allowed 20-foot separation zones with intervening combustibles in the form of cable trays provided that: 1) the cables had fuse and breaker coordination to minimize the potential for fires initiating from cable faults and 2) extra sprinklers were installed to compensate for cable trays partially blocking any sprinklers. The electrical cables that were in open trays in the 20-foot separation zones in Unit 1 480V Board Room 1B had sprinklers installed above and alongside them and the cables had fuse and breaker coordination. The 480V MCCs that were in the 20-foot separation zones also had sprinklers installed above them; however, the MCCs were not included in an approved Deviation. Also, the MCCs represented much more significant ignition sources (fire hazards) than the cable trays. In addition, some of the other electrical equipment that was in one 20-foot separation zone (inverters in the 20-foot zone between battery chargers on the south end of the room) had no sprinklers above them.

After further in-office review of the licensing basis, the inspectors determined that strict compliance with Appendix R to 10 CFR 50 is not a current requirement for Sequoyah Units 1 and 2. Appendix R states that it applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979. However, Sequoyah Units 1 and 2 received their operating licenses after January 1, 1979. Prior to 1997, the Sequoyah Unit 1 and Unit 2 License Conditions for Fire Protection had required that TVA shall comply with Sections III.G, III.J, III.l, and III.O of Appendix R of 10 CFR 50, except where the NRC has approved deviations. However, the Unit 1 and Unit 2 License Conditions for Fire Protection were changed in 1997 to no longer specifically require compliance with Appendix R. The current License Conditions for Fire Protection allow the licensee to make changes to the fire protection program if the changes do not adversely affect post-fire safe shutdown.

During the inspection that is documented in IR 05000327,328/2005011, licensee engineers had written an evaluation stating that the presence of MCCs and inverters in the 20-foot separation zones in Unit 1 480V Board Room 1B did not adversely affect safe shutdown and were acceptable as installed because there were sprinklers above the cable trays and MCCs. However, after further in-office and onsite review, the inspectors determined that the arrangement of MCCs with open cable trays directly above them in the room created the potential for a fire initiating in an MCC section to quickly involve cable trays, grow large enough to damage all of the equipment in the room, and consequently to adversely affect safe shutdown. While there were sprinklers above the MCCs and cable trays that could potentially extinguish a fire before it became large, they were in a cross-zone preaction-type system that had a potential to fail. The sprinkler piping was normally dry. Supplying water into the sprinkler piping involved activation of at least two smoke detectors from different zones in the room and then automatic opening of a valve in the fire water system. If the cross-zone detector circuit

failed or the automatic valve failed, then all of the sprinklers in the room would fail to deliver water. The inspectors determined that the presence of 480V MCCs and inverters (with open cable trays above them) in the 20-foot separation zones did not comply with the approved Fire Protection Program and that this nonconforming condition did adversely affect safe shutdown. Consequently, this condition represented a violation of the Unit 1 and Unit 2 License Conditions for Fire Protection. When informed of this determination, the licensee promptly entered the condition into the corrective action program in Problem Evaluation Report (PER) 116718.

Analysis. This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. The finding affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences and also involved a lack of required fire barriers for equipment relied upon for safe shutdown following a fire. The finding is of very low significance because of the low frequency of fires that could quickly grow large enough to damage all of the equipment in the room, concurrent with a failure of the sprinkler system.

The finding affected fire protection, so the Fire Protection Significance Determination Process (SDP) (NRC Manual Chapter 0609, Appendix F) analysis was used. Because the finding affected post-fire safe shutdown, represented a high degradation, and had a duration of more than 30 days, the Fire Protection SDP Phase 1 analysis screened to Phase 2. In the Phase 2 analysis, the same fire scenarios that affected this finding also affected the finding described in the following Section 4OA5.6, so they were analyzed together. In the Phase 2 analysis, about 40 of the 480V motor control center (MCC) vertical sections in the room with multiple open cable trays directly above them could initiate a fire that could create a hot gas layer that could damage everything in the room before the fire brigade would arrive, if the automatic sprinkler system failed. With a sprinkler system failure probability of 0.05, the finding screened to greater than Green and an SDP Phase 3 was needed. In the Phase 3 analysis, two NRC Senior Reactor Analysts conducted onsite inspection of the physical arrangement of target cables and ignition sources and used more advanced analytical methods than those used in the SDP Phase 2 analysis. The SDP Phase 3 analysis concluded the finding was of very low safety significance (Green) because of the low frequency of fires that could quickly grow large enough to damage all of the equipment in the room, concurrent with a failure of the sprinkler system.

Enforcement. The Unit 1 and Unit 2 License Conditions for Fire Protection (16 and 13, respectively) require that TVA implement and maintain in effect all provisions of the approved fire protection program referenced in the Sequoyah Nuclear Plant's Final Safety Analysis Report and as approved in NRC Safety Evaluation Reports (SERs), including the SERs contained in NUREG-011, Supplement 1, and NUREG-1232, Volume 2. The License Conditions also state that TVA may make changes to the approved fire protection program without prior approval by the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The SERs in NUREG-011 and NUREG-1232 accepted the Sequoyah fire protection program based on meeting the criteria of Appendix A to BTP 9.5-1 and Sections III.G, III.J, III.I, and III.O of Appendix R. BTP 9.5-1 and Section III.G of Appendix R require

that where cables or equipment that could prevent operation or cause maloperation of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, the cables shall be separated from circuits of redundant trains or protected from fire damage by one of three specified means.

Contrary to the above requirements, the Unit 1 battery chargers, Unit 1 inverters, and Unit 2 inverters in Unit 1 480V Board Room 1B (Fire Area FAA-095) were not separated from circuits of redundant trains or protected from fire damage by one of the three specified means and thus could adversely affect safe shutdown. These electrical components that were relied on for safe shutdown during a fire in Unit 1 480V Board Room 1B had been unprotected for many years. Because this failure to protect safe shutdown components is of very low safety significance and has been entered into the licensee's corrective action program as PER 116718, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. It is identified as NCV 05000327,328/2006005-03 Inadequate 20-foot Separation Zones for Fire Protection in Unit 1 480V Board Room 1B . URI 05000327,328/2005011-01 is closed.

.6 (Closed) Unresolved Item (URI) 05000327,328/2005011-02, Unprotected Power Cables to Vital Inverters in the Unit 1 480V Board Room 1B

a. Inspection Scope

This in-office review followed up on URI 05000327,328/2005011-02, which had been opened for NRC review of the licensing basis regarding use of local manual operator actions instead of physical protection or separation of cables as required by 10 CFR 50, Appendix R, Section III.G.2.

b. Findings

Introduction. A Green NCV of Unit 1 License Condition 16, Fire Protection, and Unit 2 License Condition 13, Fire Protection, was identified for failure to protect certain electrical cables for safe shutdown equipment from fire damage. The alternating current (AC) power cables to Unit 1 vital inverter 1-II and Unit 2 vital inverter 2-II were routed through the north end of the Unit 1 480V Board Room 1B (Fire Area FAA-095) without protection or separation from fire damage as required by the License Conditions and Fire Protection Program.

Description. As described in IR 05000327,328/2005011, the NRC had identified that the licensee had failed to adequately protect the AC power cables to Unit 1 vital inverter 1-II and Unit 2 vital inverter 2-II in the north end of the Unit 1 480V Board Room 1B (Fire Area FAA-095) from fire damage. When informed of this condition, the licensee promptly entered the issue into their corrective action program in PER 91841 and revised the fire procedure to add local manual operator actions to mitigate the effects of fire damage to the cables of concern. However, this licensee corrective action relied on local manual operator actions instead of using physical protection or separation of the cables as required by 10 CFR 50, Appendix R, Section III.G.2

After further review of the licensing basis, the inspectors determined that strict compliance with Appendix R to 10 CFR 50 is not a current requirement for Sequoyah

Units 1 and 2. Appendix R states that it applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979. However, Sequoyah Units 1 and 2 received their operating licenses after January 1, 1979. Prior to 1997, the Sequoyah Unit 1 and Unit 2 License Conditions for Fire Protection had required that TVA shall comply with Sections III.G, III.J, III.l, and III.O of Appendix R of 10 CFR 50, except where the NRC has approved deviations. However, the Unit 1 and Unit 2 License Conditions for Fire Protection were changed in 1997 to no longer specifically require compliance with Appendix R. The current License Conditions for Fire Protection allow the licensee to make changes to the fire protection program if the changes do not adversely affect post-fire safe shutdown. Consequently, since the added local manual operator actions did not adversely affect safe shutdown, the licensee could rely on them as corrective action for the identified condition.

The inspectors determined that the licensee's failure to protect the AC power cables to Unit 1 vital inverter 1-II and Unit 2 vital inverter 2-II in the north end of the Unit 1 480V Board Room 1B (Fire Area FAA-095) from fire damage was not in compliance with the License Conditions for Fire Protection and the licensee's approved fire protection program, which included design criteria described in 10 CFR 50, Appendix R, Section III.G.2 and NRC Branch Technical Position (BTP) 9.5-1. Further, this condition adversely affected post-fire safe shutdown in that it created the potential for one fire to damage equipment that was relied on for safe shutdown during that fire.

Analysis. This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. The finding affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences and also involved a lack of required fire barriers for equipment relied upon for safe shutdown following a fire. The finding is of very low significance because of the low frequency of fires that could damage the cables of concern and also damage the redundant safe shutdown equipment which is located in the same fire area.

The finding affected fire protection, so the Fire Protection Significance Determination Process (SDP) (NRC Manual Chapter 0609, Appendix F) analysis was used. Because the finding affected post-fire safe shutdown, represented a high degradation, and had a duration of more than 30 days, the Fire Protection SDP Phase 1 analysis screened to Phase 2. In the Phase 2 analysis, the same fire scenarios that affected this finding also affected the finding described in the above Section 4OA5.5, so they were analyzed together. In the Phase 2 analysis, about 40 of the 480V motor control center (MCC) vertical sections in the room with multiple open cable trays directly above them could initiate a fire that could create a hot gas layer that could damage everything in the room before the fire brigade would arrive, if the automatic sprinkler system failed. With a sprinkler system failure probability of 0.05, the finding screened to greater than Green and an SDP Phase 3 was needed. In the Phase 3 analysis, two NRC Senior Reactor Analysts conducted onsite inspection of the physical arrangement of target cables and ignition sources and used more advanced analytical methods than those used in the SDP Phase 2 analysis. The SDP Phase 3 analysis concluded the finding was of very low safety significance (Green) because of the low frequency of fires that could damage the cables of concern and also damage the redundant safe shutdown equipment which is located in the same fire area.

Enforcement. The Unit 1 and Unit 2 License Conditions for Fire Protection (16 and 13, respectively) require that TVA implement and maintain in effect all provisions of the approved fire protection program referenced in the Sequoyah Nuclear Plant's Final Safety Analysis Report and as approved in NRC Safety Evaluation Reports (SERs), including the SERs contained in NUREG-011, Supplement 1, and NUREG-1232, Volume 2. The License Conditions also state that TVA may make changes to the approved fire protection program without prior approval by the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The SERs in NUREG-011 and NUREG-1232 accepted the Sequoyah fire protection program based on meeting the criteria of Appendix A to BTP 9.5-1 and Sections III.G, III.J, III.l, and III.O of Appendix R. BTP 9.5-1 and Section III.G of Appendix R require that where cables or equipment that could prevent operation or cause maloperation of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, the cables shall be separated from circuits of redundant trains or protected from fire damage by one of three specified means.

Contrary to the above requirements, the AC power cables to Unit 1 vital inverter 1-II and Unit 2 vital inverter 2-II in the north end of the Unit 1 480V Board Room 1B (Fire Area FAA-095) were not separated from circuits of redundant trains or protected from fire damage by one of the three specified means and thus could adversely affect safe shutdown. These cables had been unprotected for several years. Because this failure to protect cables is of very low safety significance and has been entered into the licensee's corrective action program as PER 91841, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. It is identified as NCV 05000327,328/2006005-04, Unprotected Power Cables to Vital Inverters in the Unit 1 480V Board Room 1B. URI 05000327,328/2005011-02 is closed.

.7 (Closed) Unresolved Item (URI) 05000327,328/2005011-04, Appendix R Operator Action to Throttle AFW in Main Steam Valve Vault Room

a. Inspection Scope

This in-office review followed up on URI 05000327,328/2005011-04, which had been opened for NRC review of the licensing basis for the post-fire operator action to throttle AFW flow in the Unit 1 and 2 main steam valve vault rooms.

b. Findings

Introduction. A Green NCV of Unit 2 License Condition 13, Fire Protection, was identified for failure to maintain lighting in the Unit 2 main steam valve vault room. The lighting was needed to support the post-fire time-critical operator action to throttle AFW flow in the room.

Description. As described in IR 05000327,328/2005011, the NRC had identified that the Unit 2 main steam valve vault room was completely dark. All of the normal lights were out because the light bulbs were burned out and the installed Appendix R emergency lights were off because normal power was available. When informed of this condition,

the licensee had promptly entered the issue into their corrective action program in PER 91899 and replaced the light bulbs to restore the normal lighting. The inspectors had determined that the operator actions in the Unit 2 main steam valve vault room were feasible with lighting, but were not feasible for one operator to reliably accomplish in complete darkness. Additionally, the inspectors had questioned the acceptability of the licensee's reliance on the local manual operator actions without obtaining NRC approval for a Deviation from the requirements of 10 CFR 50, Appendix R, Section III.G.2.

After further review of the licensing basis, the inspectors determined that strict compliance with Appendix R to 10 CFR 50 was not a current requirement for Sequoyah Units 1 and 2. Appendix R states that it applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979. However, Sequoyah Units 1 and 2 received their operating licenses after January 1, 1979. Prior to 1997, the Sequoyah Unit 1 and Unit 2 License Conditions for Fire Protection had required that TVA shall comply with Sections III.G, III.J, III.l, and III.O of Appendix R of 10 CFR 50, except where the NRC has approved deviations. However, the Unit 1 and Unit 2 License Conditions for Fire Protection were changed in 1997 to no longer specifically require compliance with Appendix R. The current License Conditions for Fire Protection allow the licensee to make changes to the fire protection program if the changes do not adversely affect post-fire safe shutdown. Consequently, if the local manual operator actions in the main steam valve vault room were feasible and reliable, then they would not adversely affect safe shutdown and the licensee could rely on them without needing NRC review and approval.

The time-critical local manual actions to throttle AFW in the main steam valve vault room were required in AOP-N.08, Appendix R Fire Safe Shutdown, Rev. 7, and in AOP-C.04, Shutdown From Auxiliary Control Room, Rev. 8. The inspectors had determined that the manual operator actions could be considered feasible if the installed lighting was working. However, with no installed lights working, the manual operator actions were not determined to be feasible. Consequently, the licensee's failure to maintain the lighting to support the operator actions created a condition that could adversely affect safe shutdown during certain fires.

After the licensee replaced the light bulbs in the Unit 2 main steam valve vault room, then both the Unit 2 and Unit 1 main steam valve vault rooms were lighted. With the rooms lighted, the inspectors considered that the manual operator actions in the rooms were feasible and would not adversely affect safe shutdown.

Analysis. This finding is of greater than minor safety significance because it affected the objectives of the Mitigating Systems Cornerstone of Reactor Safety. The finding affected the availability and reliability of systems that mitigate initiating events to prevent undesirable consequences and also involved a lack of required fire protection for equipment relied upon for safe shutdown following a fire. The finding is of very low safety significance because of the low frequency of fires that could lead to core damage if the operator actions in the Unit 2 main steam valve vault room were not performed in a timely manner.

The finding affected fire protection, so the Fire Protection Significance Determination Process (SDP) (NRC Manual Chapter 0609, Appendix F) analysis was used. Because the finding affected post-fire safe shutdown, represented a high degradation, and had a

duration of more than 30 days, the Fire Protection SDP Phase 1 analysis screened to Phase 2. In the Phase 2 analysis, because licensee mitigation of a fire in almost every area of the plant involved reliance on a manual action to throttle AFW in the Unit 2 main steam valve vault room, and no credit was given for the manual action, the finding did not screen to Green and an SDP Phase 3 analysis was needed.

A regional Senior Reactor Analyst performed the Phase 3 analysis, including onsite inspection and consideration of fires initiating in all areas of the plant. The Phase 3 analysis determined that the mitigation of fires in some areas of the plant relied on local manual throttling of the motor driven auxiliary feedwater pump flow in the main steam valve vault room; however, delay in performing that action would not lead to core damage. Fires in other areas of the plant relied on local manual throttling of turbine driven auxiliary feedwater pump flow in the main steam valve vault room; however, the frequency of those fires was low. Also, the existence of Flamastic 77 (a flame spread retardant) would slow the growth of fires in those areas. The SDP Phase 3 analysis concluded the finding was of very low safety significance (Green) because of the low frequency of fires that could lead to core damage if the operator actions in the Unit 2 main steam valve vault room were not performed in a timely manner.

Enforcement. The Unit 2 License Condition 13 for Fire Protection requires that TVA implement and maintain in effect all provisions of the approved fire protection program referenced in the Sequoyah Nuclear Plant's Final Safety Analysis Report and as approved in NRC SERs, including the SERs contained in NUREG-011, Supplement 1, and NUREG-1232, Volume 2. The License Condition also states that TVA may make changes to the approved fire protection program without prior approval by the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The fire protection program included the safe shutdown methodology that relied on the time-critical local manual operator actions to throttle emergency feedwater in the main steam valve vault room. Those local manual operator actions had been in place for many years and had been documented in NRC Inspection Report 05000327,328/1988-024, which was referenced in the SER in NUREG-1232, Volume 2.

Contrary to the above requirements, the licensee did not maintain the lighting in the Unit 2 main steam valve vault room to support the time-critical local manual operator actions in that room. Because this failure to maintain room lighting is of very low safety significance and has been entered into the licensee's corrective action program as PER 91899, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. It is identified as NCV 05000328/2006005-05, Failure to Maintain Lighting for Time-Critical Local Manual Actions for Post-Fire Safe Shutdown. URI 05000327,328/2005011-04 is closed.

.8 (Closed) Unresolved Item (URI) 05000327,328/2005011-05, Reliance on Local Manual Operator Actions for Appendix R Fires

a. Inspection Scope

This in-office review followed up on URI 05000327,328/2005011-05, which had been opened for NRC review of the licensing basis related to reliance on local manual

operator actions that had not been specifically approved by the NRC for mitigating 10 CFR 50, Appendix R, Section III.G.2 fires.

b. Findings

Introduction. The inspectors determined that licensee reliance on local manual operator actions, that had not been approved by the NRC for mitigating 10 CFR 50, Appendix R, Section III.G.2 fires, was not prohibited by the licensing basis. Consequently, this URI did not represent a finding.

Description. As described in IR 05000327,328/2005011, the NRC had identified that the licensee relied on many local manual operator actions, that had not been approved by the NRC as a Deviation, to mitigate 10 CFR 50, Appendix R, Section III.G.2 fires.

After further review of the licensing basis, the inspectors determined that strict compliance with Appendix R to 10 CFR 50 was not a current requirement for Sequoyah Units 1 and 2. Appendix R states that it applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979. However, Sequoyah Units 1 and 2 received their operating licenses after January 1, 1979. Prior to 1997, the Sequoyah Unit 1 and Unit 2 License Conditions for Fire Protection had required that TVA shall comply with Sections III.G, III.J, III.l, and III.O of Appendix R of 10 CFR 50, except where the NRC has approved deviations. However, the Unit 1 and Unit 2 License Conditions for Fire Protection were changed in 1997 to no longer specifically require compliance with Appendix R. The current License Conditions for Fire Protection allow the licensee to make changes to the fire protection program if the changes do not adversely affect post-fire safe shutdown. Consequently, if the local manual operator actions were feasible and reliable, then they would not adversely affect safe shutdown and the licensee could rely on them without needing NRC review and approval.

With the exception of the action to locally control AFW pump flow in the Unit 2 main steam valve vault room (described above in Section 4OA5.7), the inspectors had found that the local manual actions that were reviewed were all feasible. Therefore, the licensee could rely on them without obtaining NRC review and approval. URI 05000327,328/2005011-05 is closed.

.9 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the interim report for the INPO plant assessment report of Sequoyah conducted in July 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 3, 2007, the resident inspectors presented the inspection results to Mr. R. Douet and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- TS 6.8.1 requires that written procedures shall be established, implemented, and maintained covering the activities recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978. Contrary to this, on November 28, 2006, an AUO improperly implemented 0-GO-13,Reactor Coolant System Drain and Fill Operations, Revision 54, Appendix AC by mispositioning an RCS loop 4 drain valve. This revealed itself through the subsequent transfer of RCS inventory to the Reactor Coolant Drain Tank and lowering of RCS pressurizer level. The error was promptly corrected by operations staff and the event was identified in the licensee's corrective action program as PER 115534. This finding is of very low safety significance because it did not challenge RCS inventory control by exceeding available makeup capacity.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

J. Adams, Boric Acid
D. Bodine, Chemistry/Environmental Manager
R. Bruno, Training Manager
R. Douet, Site Vice President
B. Dungan, Outage and Site Scheduling Manager
J. Epperson, Licensed Operator Requal Lead
J. Goulart, ISI
K. Jones, Site Engineering Manager
Z. Kitts, Licensing Engineer
D. Kulisek, Plant Manager
G. Morris, Licensing and Industry Affairs Manager
T. Niessen, Site Quality Manager
M. A. Palmer, Radiation Protection Manager
M. H. Palmer, Operations Manager
K. Parker, Maintenance and Modifications Manager
J. Proffitt, (Acting) Site Licensing Supervisor
J. Reisenbuechler, Operations Training Manager
R. Reynolds, Site Security Manager
N. Thomas, Licensing Engineer
S. Tuthill, Chemistry Operations Manager
J. Whitaker, ISI
K. Wilkes, Emergency Preparedness Manager

NRC personnel:

R. Bernhard, Region II, Senior Reactor Analyst
D. Pickett, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000328/2006005-02	URI	Inability to Perform Required Actions of AOP-N.08, Appendix R Fire Safe Shutdown (Section 1R15)

Opened and Closed

05000327,328/2006005-01	NCV	Failure to Certify Qualifications and Status of Licensed Operators Were Current and Valid (Section 1R11.3)

05000327,328/2006005-03	NCV	Inadequate 20-foot Separation Zones for Fire Protection in Unit 1 480V Board Room 1B (Section 4OA5.5)
05000327,328/2006005-04	NCV	Unprotected Power Cables to Vital Inverters in the Unit 1 480V Board Room 1B (Section 4OA5.6)
05000328/2006005-05	NCV	Failure to Maintain Lighting for Time-Critical Local Manual Actions for Post-Fire Safe Shutdown (Section 4OA5.7)
Closed		
05000327,328/2515/169	TI	Mitigating Systems Performance Index Verification (Section 4OA5.4)
05000327,328/2005011-01	URI	Reliance on 20-foot Separation Zones for Fire Protection in Unit 1 480V Board Room 1B (Section 4OA5.5)
05000327,328/2005011-02	URI	Unprotected Power Cables to Vital Inverters in the Unit 1 480V Board Room 1B (Section 4OA5.6)
05000327,328/2005011-04	URI	Appendix R Operator Action to Throttle AFW in Main Steam Valve Vault Room (Section 4OA5.7)
05000327,328/2005011-05	URI	Reliance on Local Manual Operator Actions for Appendix R Fires (Section 4OA5.8)
Discussed		
05000327, 328/2515/150	TI	Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles (NRC Order EA-03-009) - Unit 2 (Section 4OA5.2)
05000327, 328/2515/166	TI	Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02) - Unit 2 Section 4OA5.3)

LIST OF ACRONYMS

AC	alternating currrent
AFW	auxiliary feedwater
ANSI	American National Standards Institute
AOP	abnormal operating procedures
ARC	alternate repair criteria
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
AUO	auxiliary unit operator
BACC	boric acid corrosion control
BMV	bare metal visual
CCP	cooling charging pump
CCPIT	cooling charging pump injection tank
CFR	Code of Federal Regulations
CR	condition report
CRDM	control rod drive mechanism
CVCS	chemical volume control system
DCN	design change notice
ECCS	emergency core cooling system
ECT	eddy current testing
EDY	effective degradation years
ERCW	essential raw cooling water
ETSS	examination technique specifications sheet
FCV	flow control valve
FE	functional evaluation
FME	foreign material exclusion
FOSAR	foreign object search and recovery
HR	high radiation
HUT	holdup tank
INPO	Institute of Nuclear power Operations
IR	inspection report
ISFSI	independent spent fuel storage installation
ISI	inservice inspection
LHRA	locked high radiation area
MCC	motor control center
MRP	materials reliability program
MSPI	mitigating systems performance index
NCV	non-cited violation
NDE	non-destructive examination
NRC	U.S. Nuclear Regulatory Commission
ODSCC	outer diameter stress corrosion cracking
OPDP	operations department procedure
PAR	publically available records
PER	problem evaluation report
PER	protective action recommendation
PORV	power-operated relief valve
PWSCC	primary water stress corrosion cracking
RCP	reactor coolant pump

RCS	reactor coolant system
RHR	residual heat removal
RP	radiation protection
RPVH	reactor pressure vessel head
RTP	rated thermal power
RWP	radiation work permit
RWST	refueling water storage tank
SDP	significance determination process
SER	safety evaluation report
SG	steam generator
SI	safety injection
SI	surveillance instructions
SSC	structure, system, or component
TDAFP	turbine driven auxiliary feedwater pump
TI	temporary instruction
TS	technical specification
TVA	Tennessee Valley Authority
UFSAR	updated final safety analysis report
UHI	upper head injection
URI	unresolved item
UT	ultrasonic testing
WOs	work orders