

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9901120166      DOC. DATE: 98/12/31      NOTARIZED: NO      DOCKET #  
 FACIL: 50-260 Browns Ferry Nuclear Power Station, Unit 2, Tennessee      05000260  
 AUTH. NAME      AUTHOR AFFILIATION  
 ROGERS, A.T.      Tennessee Valley Authority  
 SINGER, K.W.      Tennessee Valley Authority  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 98-004-00: on 981202, SR intent was not adequately implemented. Caused by procedural inadequacy. Revised procedures to provide proper SR implementation. With 981231 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

Karl W. Singer  
Vice President, Browns Ferry Nuclear Plant

December 31, 1998

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

10 CFR 50.73

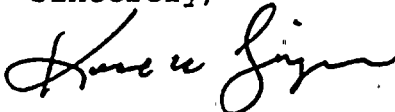
Dear Sir:

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 2 AND 3 - DOCKET NOS. 50-260 AND 296 - FACILITY OPERATING LICENSE DPR-52 AND 68 - LICENSEE EVENT REPORT (LER) 50-260/1998004

The enclosed report provides details concerning an event involving two instances where the intent of Technical Specification surveillance requirements were not being adequately met by the applicable surveillance procedure.

This condition is reportable in accordance with 10 CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's technical specifications.

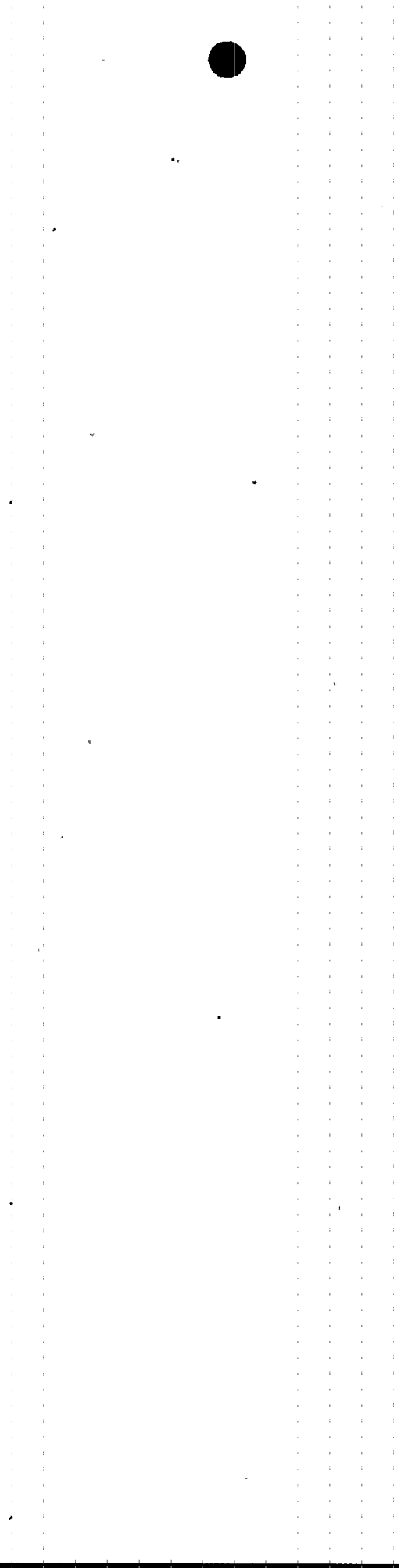
Sincerely,



Karl W. Singer

cc: See page 2

9901120166 981231  
PDR ADOCK 05000260  
S PDR



U.S. Nuclear Regulatory Commission

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Enclosure

cc (Enclosure):

Mr. H. O. Christensen, Branch Chief  
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NRC Resident Inspector  
Browns Ferry Nuclear Plant  
10833 Shaw Road  
Athens, Alabama 35611

Mr. L. Raghavan, Project Manager  
U.S. Nuclear Regulatory Commission  
One White Flint, North  
11555 Rockville Pike  
Rockville, Maryland 20852-2739



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**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

<b>FACILITY NAME (1)</b> Browns Ferry Nuclear Plant Unit 2	<b>DOCKET NUMBER (2)</b> 05000260	<b>PAGE (3)</b> 1 of 5
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**TITLE (4)**  
Surveillance Requirement Intent Not Adequately Implemented

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				FACILITY NAME	DOCKET NUMBER
12	02	98	1998	004	000	12	31	98	Browns Ferry Unit 3	05000296
									NA	DOCKET NUMBER

<b>OPERATING MODE (9)</b> 1	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)</b>									
<b>POWER LEVEL (10)</b> 100	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)	50.73(a)(2)(viii)					
	20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(iii)	50.73(a)(2)(x)					
	20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71					
	20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER					
	20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A					
	20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)						

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> Anthony T. Rogers, Senior Licensing Project Manager	<b>TELEPHONE NUMBER (Include Area Code)</b> (256) 729-2977
--	---

**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS
NA									

**SUPPLEMENTAL REPORT EXPECTED (14)**

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	<b>EXPECTED SUBMISSION DATE (15)</b>	MONTH	DAY	YEAR
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**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

Two examples of inadequate implementation of surveillance requirements (SRs) were discovered in SR-2, Instrument Checks and Observations. It was discovered that SR 3.4.4.1 for the verification that reactor coolant system unidentified leakage is less than or equal to 5 gallons per minute did not meet the literal SR frequency of 12 hours. The unidentified leakage was being verified every 4 hours based on the quantity of water pumped out of the drywell floor drain sump and averaged over the previous 24 hours. In addition, SR 3.3.1.1.1, channel check of Average Power Range Monitors (APRM) voters, was not being properly implemented.

The first example was the result of a procedural inadequacy. The second example was caused by a misinterpretation of the channel check requirements by the procedure preparer (contract). Corrective actions include procedure revisions to provide for proper SR implementation, a review of other SR procedures for similar problems, and training sessions with operations personnel responsible for procedure preparation.

This condition is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.





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Browns Ferry Nuclear Plant - Unit 2	05000260	1998	004	000	2 of 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**I. PLANT CONDITION(S)**

At the time of the discovery of this condition, Unit 2 and Unit 3 were operating at 100 percent power, and Unit 1 was shutdown and defueled.

**II. DESCRIPTION OF EVENT**

**A. Event:**

During the performance of routine NRC inspection activities, two examples of inadequate implementation of surveillance requirements (SRs) were discovered in SR-2, Instrument Checks and Observations.

On December 2, 1998, an NRC Resident Inspector noted during review of SR-2, that SR 3.4.4.1 for the verification that reactor coolant system [AD] unidentified leakage is less than or equal to 5 gallons per minute (gpm) did not meet the literal SR frequency of 12 hours. Unidentified leakage was being verified every 4 hours based on the quantity of water pumped out of the drywell floor drain sump, however, the measured value was being averaged over the previous 24 hours. Upon notification, TVA implemented interim measures to verify the 12-hour limit was verified and SR-2 was subsequently revised.

In addition, the NRC Inspector notified TVA on December 6, 1998, that the method of performing the channel check in SR-2 required by SR 3.3.1.1.1 did not appear to adequately verify the operability of Average Power Range Monitors (APRM) [IG] voters. The APRM voter continuously performs a self-diagnostic check to verify communications between the APRM chassis and the associated voter which verifies voter operability, however, this was not being adequately verified and documented to satisfy the requirements of the SR. Operations began documentation of the APRM voter channel check in the operations narrative log until SR-2 was revised.

These conditions applied to both Units 2 and 3. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications (TS).

**B. Inoperable Structures, Components, or Systems that Contributed to the Event:**

None.

**C. Dates and Approximate Times of Major Occurrences:**

December 2, 1998 ~1000 hours CST

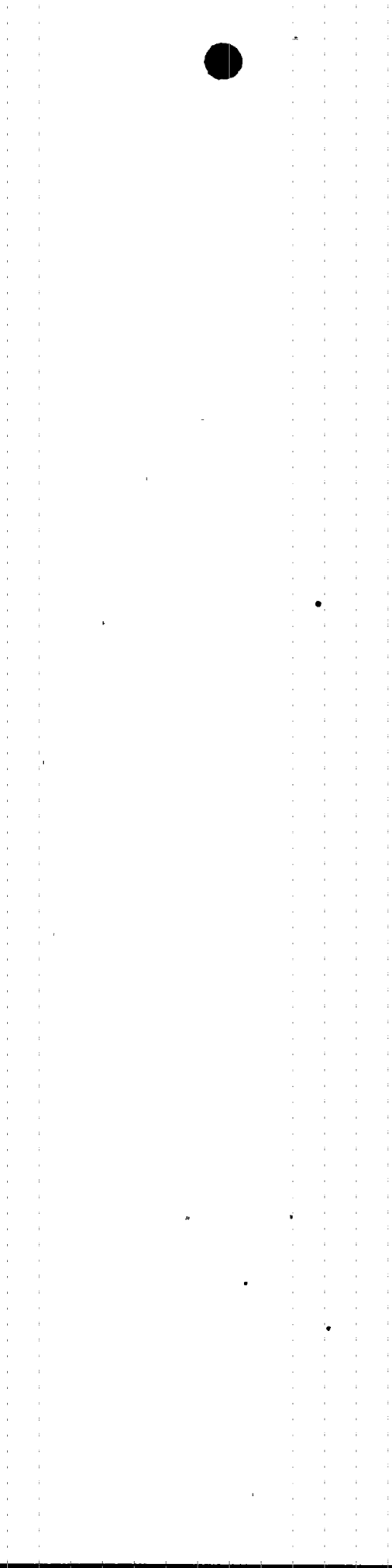
An NRC Resident Inspector questioned whether SR 3.4.4.1 was adequately being met.

December 2, 1998 ~1200 hours CST

TVA began obtaining and recording a 12-hour average for drywell unidentified leakage and verified acceptance limits were satisfied.

December 6, 1998 ~1000 hours CST

NRC Resident Inspector notified TVA that SR 3.3.1.1.1 channel check did not appear to be met for APRM voters by SR-2.



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**C. Dates and Approximate Times of Major Occurrences, continued:**

December 7, 1998 ~1650 hours CST	TVA concluded that SR 3.3.1.1.1 requirements were not being met. Began channel checks and recorded the results in the narrative log.
December 9, 1998	SR-2 was revised for Units 2 and 3 to meet subject SRs.

**D. Other Systems or Secondary Functions Affected**

None.

**E. Method of Discovery**

These conditions were discovered by an NRC Resident Inspector's review of procedure SR-2, Instrument Checks and Observations.

**F. Operator Actions**

Upon NRC questioning whether the drywell unidentified leakage surveillance requirement was not being met, Operations began recording the data based on a 12-hour average and in SR-2 after it was revised.

Following the determination that the method of verifying the APRM voter was inadequate to meet the requirements of SR 3.3.1.1.1 as a channel check, Operations began performing channel checks and recording the results in the narrative log until SR-2 was revised.

**G. Safety System Responses**

None.

**III. CAUSE OF THE EVENT**

**A. Immediate Cause**

Same as root cause.

**B. Root Cause**

The root cause for the failure to meet the requirement to verify 5 gpm unidentified drywell leakage every 12 hours per SR 3.4.4.1 was an inadequate procedure. It is not possible to measure unidentified leakage instantaneously and, therefore, an average value must be used. It appears that a 24 hour average was used to be consistent with the period used to monitor the TS requirement that limits total leakage and increased leakage which are measured over a 24 hour period. Neither the TS nor the TS Bases prescribe the period for calculating this average value for unidentified leakage.



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**B. Root Cause, continued:**

The root cause for the inadequate documentation of the APRM Voter channel check is due to misinterpretation of the channel check requirements by the procedure preparer (contract). The APRM voter self-diagnostic check was assumed to satisfy the SR, however, this self-diagnostic check was not being verified and documented in SR-2.

**IV. ANALYSIS OF THE EVENT**

Two instances of SRs not being properly implemented were found during an NRC review of procedure SR-2, Instrument Checks and Observations. The first case was SR 3.4.4.1, which states "Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits" with a frequency requirement of 12 hours. Limiting Condition for Operation (LCO) 3.4.4.b states RCS Operational LEAKAGE shall be limited to  $\leq 5$  gpm unidentified LEAKAGE. TVA implemented this SR by measuring drywell unidentified leakage every 4 hours and calculating an average over the previous 24 hours. However, although the leakage was being measured more frequently than TS requirements (every 4 hours versus 12 hours), the 24-hour average leakage value being recorded exceeded the 12 hour SR frequency. A 24-hour average of unidentified leakage is also needed in order to obtain data to calculate the total leakage required to meet LCO 3.4.4.c which limits total leakage over the previous 24-hour period and LCO 3.4.4.d which limits leakage increase over a 24 hour period. It is suspected that the 24-hour average for unidentified leakage was originally established for consistency with the frequency for these TS requirements.

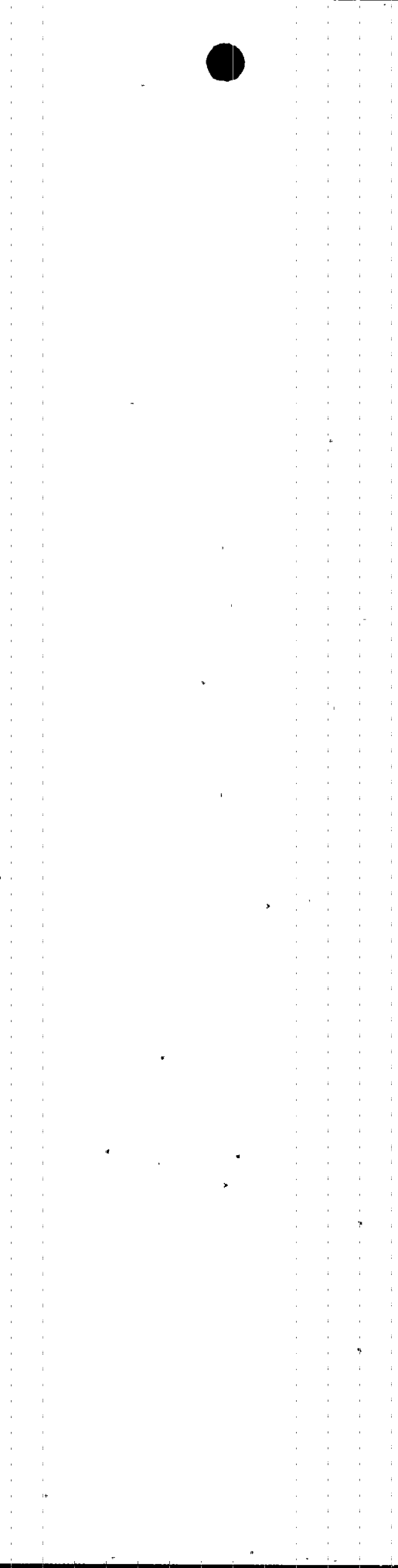
The second case was the SR 3.3.1.1.1 channel check for APRM voters. This SR was not being met since the self-diagnostic channel check was not being documented every 24 hours. As stated in TS Bases 3.3.1.1 (2.e), the APRM voter channel continuously runs a self-diagnostic to detect a fault in its own processing. This self-diagnostic check was assumed to satisfy the SR, however, this was not adequately documented and recorded in SR-2. A channel check was established and implemented by SR-2.

**V. ASSESSMENT OF SAFETY CONSEQUENCES**

SR 3.4.4.1 requires verification that unidentified leakage is within limits every 12 hours. TVA was more conservatively monitoring unidentified leakage every 4 hours, however used a 24-hour average. The Bases for the TS requirements do not specify the period the leakage should be averaged. By measuring the leakage every 4 hours, data were available that could detect leakage above TS limits sooner than the 12-hour TS frequency. Therefore, while the implementation of SR 3.4.4.1 was inadequate, it is highly unlikely that the TS limit could be exceeded before an increase in the 4-hour data would be noticed by the operators. There is no evidence that the leakage approached the TS limit. At the time of this event, the difference in the 12-hour and 24-hour average was 0 .003 gpm and .001 gpm for Unit 2 and 3 respectively.

In the second case, a channel check is required by SR 3.3.1.1.1 on APRM voters. However, the procedure preparer (contract) believed that the internal check of the voter was sufficient to meet this SR. Although the implementing procedure did not adequately document that a channel check was performed, internal checks were actually being performed by the voter circuitry and would provide alarms to alert operators of a failure. Therefore, it is highly unlikely that a failure would have been undetected. Also, there were no voter failures during the period this procedure was in place.

There were no actual or potential safety consequences as a result of this event. For the reasons stated above, this event did not adversely affect the safety of plant personnel or the public.



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**VI. CORRECTIVE ACTIONS**

**A. Immediate Corrective Actions**

Operations began recording the drywell unidentified leakage based on a 12-hour average and documenting a channel check of the APRM voter in the narrative logs.

**B. Corrective Actions to Prevent Recurrence**

SR-2 has been revised to incorporate the proper methodology for channel checks required by SR 3.4.4.1 and SR 3.3.1.1.1.

TVA has reviewed TS and the Technical Requirements Manual to ensure channel checks are accounted for and represented correctly in appropriate procedures. In addition, a sampling of Operations Department SRs was reviewed to ensure TS SR requirements are met. No additional SR inadequacies were discovered.

A training session focused on this event will be conducted with Operations personnel responsible for procedure preparation.<sup>1</sup>

**VII. ADDITIONAL INFORMATION**

**A. Failed Components**

None.

**B. Previous LERs on Similar Events**

LER 260/97004 documented a TS surveillance which was missed. The root cause was determined to be ineffective control of outage schedules. Therefore, the corrective actions for that event would not have prevented this missed surveillance requirement.

LER 260/97002 documented an inadequate surveillance procedure discovered during a review associated with Generic Letter 96-01. The corrective actions for this condition would not have prevented this missed surveillance requirement.

No other LERs were identified where a SR was not met.

**C. Additional Information**

None.

**VIII. COMMITMENTS**

None.

<sup>1</sup> TVA does not consider this corrective action a regulatory commitment. The completion of this item will be tracked in TVA's Corrective Action Program.

