CATEGORY 1

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FACIL:50-260 Browns Ferry Nuclear Power Station, Unit 2, Tennessee 05000260
AUTH.NAME AUTHOR AFFILIATION
ROGERS,A.T. Tennessee Valley Authority
HERRON,J.T. Tennessee Valley Authority
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 99-007-00:on 990623,discovered that SR for monitoring of primary containment oxygen concentration had not been met. Caused by failure of operators to adequately communicate. Required surveillances were performed.With 990720 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 9
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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John T. Herron
Interim Vice President, Browns Ferry Nuclear Plant

July 20, 1999

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) 50-260/1999007

The enclosed report provides details concerning an event where the Technical Specifications surveillance requirements were not being met.

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,

John T. Herron
Interim Site Vice President
cc: See page 2

270053

Enclosure
cc (Enclosure):

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NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Browns Ferry Nuclear Plant Unit 2	05000260	1 of 6

TITLE (4)
Surveillance Requirement Not Met For Monitoring of Primary Containment Oxygen Concentration

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
									Browns Ferry Unit 3	05000296
06	23	99	1999	007	000	7	20	99	NA	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(viii)
POWER LEVEL (10)	100		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		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)

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

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
NA									

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

The Surveillance Requirements (SR) of Technical Specification (TS) 3.6.3.2, Primary Containment Oxygen Concentration require the primary containment oxygen concentration be verified below four percent by volume to ensure the containment remains inerted. Each unit has two oxygen analyzers, one that is normally aligned to the drywell and the other aligned to the suppression chamber. The 3B oxygen analyzer had become inoperable and in order to satisfy the SR, plant procedures require the operable monitor be manually aligned to verify both the drywell and suppression chamber are within limits as required on a seven day frequency. However on June 23, 1999, it was discovered that the SR was not being met since the operable analyzer was aligned to the drywell and no valid data had been collected or recorded for the suppression chamber in the past seven days. Further investigation revealed the same SR was not being met on Unit 2 since the operable analyzer had not been aligned to the suppression chamber within the last 7 days.

Upon discovery of the failure to meet the requirements of SR 3.6.3.2.1, a 24 hour TS Limiting Condition for Operation (LCO) was entered for each unit until a valid sample was obtained. The root cause of the event was failure of the operators (utility-licensed) to adequately communicate and track the status of the inoperable oxygen sample pumps. There were no actual or potential safety consequences as a result of this event nor did this event adversely affect the safety of plant personnel or the public.

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.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION	
Browns Ferry Nuclear Plant - Unit 2	05000260	1999	- 007	- 000	2 of 6

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:

The SR of TS 3.6.3.2, Primary Containment Oxygen Concentration requires the primary containment oxygen concentration be verified below four percent by volume to ensure the containment remains inerted. Each unit has two oxygen analyzers, one that is normally aligned to the drywell and the other aligned to the suppression chamber. Each oxygen analyzer is a sub-component of a hydrogen/oxygen (H2O2) analyzer system. The 3B oxygen analyzer had become inoperable and in order to satisfy the SR, plant procedures require the operable monitor be manually aligned to verify both the drywell and suppression chamber are within limits as required on a seven day frequency. However on June 23, 1999, it was discovered that the SR was not being met since the operable analyzer was aligned to the drywell and no valid data had been collected or recorded for the suppression chamber in the past seven days. Further investigation revealed the same SR was not being met on Unit 2 since the operable analyzer had not been aligned to the suppression chamber within the last 7 days.

Upon discovery of the failure to meet the requirements of SR 3.6.3.2.1, a 24 hour TS LCO was entered for each unit until a valid sample was obtained.

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:

2B and 3B Oxygen Analyzers inoperable.

C. Dates and Approximate Times of Major Occurrences:

May 8, 1999	Last valid reading taken for suppression chamber oxygen concentration on Unit 3.
May 12, 1999 1715 hours CST	Maintenance personnel found the 3B Oxygen Analyzer Inlet Pump not operating. Corrective maintenance initiated.
May 13, 1999 0925 hours CST	Caution order placed on the 3A H2O2 Analyzer which identifies it as the only operable analyzer.
June 12, 1999	Last valid reading taken for suppression chamber oxygen concentration on Unit 2.
June 17, 1999 2130 hours CST	2B H2O2 analyzer declared inoperable due to water in the sample lines. Corrective maintenance initiated.

C. Dates and Approximate Times of Major Occurrences (continued):

June 18, 1999	Caution order placed on the 2B H2O2 Analyzer which requires it to remain out of service until corrective maintenance is completed.
June 23, 1999 1015 hours CST	Operations personnel determined that TS SR was not being met on Unit 3 since the operable analyzer had not been aligned to the suppression chamber to obtain an oxygen sample within the last seven days. Entered 24 hour TS LCO to obtain the required oxygen sample in accordance with SR 3.0.3.
June 23, 1999 1100 hours CST	Operations personnel determined that TS SR was not being met on Unit 2 since the operable analyzer had not been aligned to the suppression chamber to obtain an oxygen sample within the last seven days. Entered 24 hour TS LCO to obtain the required oxygen sample in accordance with SR 3.0.3.
June 23, 1999 1150 hours CST	Aligned the 2A H2O2 Analyzer to the suppression chamber and obtained the required sample. Exited the 24 hour TS LCO on Unit 2.
June 23, 1999 1215 hours CST	Aligned the 3A H2O2 Analyzer to the suppression chamber and obtained the required sample. Exited the 24 hour TS LCO on Unit 3.

D. Other Systems or Secondary Functions Affected

None.

E. Method of Discovery

These conditions were discovered by the Shift Technical Advisor during the periodic review of procedure SR-2, Instrument Checks and Observations which documents the SR specified by TS 3.6.3.2.

F. Operator Actions

This event resulted from a cognitive error by the operators (utility-licensed) to adequately communicate and track the status of the inoperable sampling systems. Upon discovery of this condition, a 24 hour LCO was entered until the requirements of the SR were met for Units 2 and 3.

G. Safety System Responses

None.

III. CAUSE OF THE EVENT

A. Immediate Cause

The requirements of SR 3.6.3.2.1 to verify primary containment oxygen concentration every 7 days had not been met.

B. Root Cause

The root cause of this event was failure of the operators to adequately communicate and track the status of the inoperable oxygen sampling system.

IV. ANALYSIS OF THE EVENT

Two cases of an SR not being met were found by operations personnel during a periodic review of SR-2, Instruments Checks and Observations. In each case, once on Unit 2 and once on Unit 3, a containment oxygen analyzer was inoperable. This condition alone did not result in failure to meet the SR. However, with one of the analyzers inoperable, plant procedures allow either alternate sampling or operator manipulation of controls. This provides the operator allowance to align an operable analyzer to either the drywell or suppression chamber. However, the operator performing the 7 day verification, did not realign the operable analyzer to the suppression chamber and a valid reading for the suppression chamber was not obtained. In each case, the inoperable analyzer was providing a comparable recordable reading although it would not be valid without a sample pump in service.

Upon recognition of this condition, a valid sample was obtained for the suppression chamber on both Unit 2 and 3. The procedure used to document these results has been revised to ensure a valid reading is obtained from the drywell and suppression chamber from each operable analyzer every 7 days as required.

V. ASSESSMENT OF SAFETY CONSEQUENCES

In normal operation, the primary containment atmosphere is maintained at less than four percent oxygen by volume, with the balance nitrogen. The calculations for a loss of coolant accident, as described in the Final Safety Analysis Report, assume that the primary containment is initially inerted. Thus, the hydrogen assumed to be released to the primary containment as a result of metal water reaction in the reactor core will not produce combustible gas mixtures in the primary containment. Oxygen, which is subsequently generated by radiolytic decomposition of water, is diluted and removed by the Containment Air Dilution System more rapidly than it is produced. These are the only significant sources of hydrogen and oxygen. If the concentrations of hydrogen and oxygen were not controlled, a combustible gas mixture could be produced. To ensure that a combustible gas mixture does not form, the oxygen concentration must be kept below five percent by volume, or the hydrogen concentration kept below four percent by volume. During normal operation, TS require the primary containment be inerted such that the oxygen concentration is maintained less than four percent by volume. Therefore, a combustible mixture cannot be present in the primary containment for any hydrogen concentration. The oxygen concentration monitors provide the ability to monitor oxygen concentration from the main control room. The LCO for Primary Containment Oxygen Concentration requires the primary containment oxygen concentration to be less than four percent by volume and the SR requires the concentration be verified within limits every 7 days in both the drywell and

V. ASSESSMENT OF SAFETY CONSEQUENCES (continued)

suppression chamber. The frequency is based on the slow rate at which oxygen concentration can change and on other indications of abnormal conditions which would lead to more frequent checking by operators in accordance with plant procedures.

Each Hydrogen/Oxygen Analyzer (H2O2) consists of independent oxygen and hydrogen sample inlet pumps, filter/coalescers, traps, valves, and analyzers. Each analyzer can function independent of the other provided the flow path and single sample return pump is operable. During the period when the suppression chamber oxygen was not being sampled, on Unit 2 and 3, the oxygen analyzers were sampling the drywell. At no time was the oxygen concentration found to be above the requirement of four percent by volume in the drywell. Upon discovery of the missed SR, a sample was obtained for the suppression chamber on Unit 2 and 3. The results were verified to be within limits and recorded as required. Therefore, it can be concluded that at no time was the oxygen concentration ever above the limits in the suppression chamber. Furthermore, since the drywell is maintained at a higher pressure with respect to the suppression chamber by the Delta P air compressor, adequate mixing of the drywell and suppression chamber can be assured during the entire period while the SR was not being met.

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.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions

Entered a 24 hour TS LCO in accordance with SR 3.0.3 and performed surveillance requirements for both Unit 2 and 3.

B. Corrective Actions to Prevent Recurrence

The procedure used to document oxygen concentration was revised to require samples from both the drywell and suppression chamber from any operable analyzer weekly.

All licensed personnel were briefed on this event.

A tracking mechanism will be developed to track TS equipment compensatory actions.[1]

Management expectations were reviewed with licensed personnel.

VII. ADDITIONAL INFORMATION

A. Failed Components

None.

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

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 259/1998001 documented non-compliance with ANSI standard requirements for Standby Gas Treatment system HEPA filter testing which resulted from improper procedure revisions. The corrective actions for this condition would not have prevented this missed surveillance requirement.

LER 259/1999002 documented an inadequate surveillance instruction for calibration of Standby Gas Treatment Train B relative humidity control heater flow switches due to technical inaccuracies in the surveillance instruction. The corrective actions for this condition 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.

LER 260/296/1998004 documented improper implementation of SR requirements for drywell inleakage and Average Power Range Monitors voter checks due to misinterpretation of the requirements and procedural inadequacies. The corrective actions for this condition would not have prevented this missed surveillance requirement.

LER 260/1999002 documented failure to perform the required 24 hour check of all control rods inserted due to misinterpretation of the SR resulting from an inadequate procedure. 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. This event was the result of improper tracking and statusing of an out of service piece of TS equipment which in and of itself did not invoke any action LCO or require any compensatory measures for oxygen sampling. Therefore, it is unlikely any of the past corrective actions would have prevented this event.

C. **Additional Information**

None.

D. **Safety System Functional Failure:**

This event did not result in a safety system functional failure in accordance with NEI 99-02.

VIII. COMMITMENTS

None.