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October 28, 1994

U.S. Nuclear Regulatory Commission
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Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Licensee Event Report 50-458/94-021-02
File Nos.: G9.5, G9.25.1.3

RBG-41014
RBF1-94-0097

Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject report. This revision eliminates the October 31, 1994 due date for the final submittal of the River Bend Station (RBS) improved Technical Specifications (ITS) described in the corrective actions section of the original LER. The RBS ITS submittal is near completion and is expected to be submitted by the end of the year. Discussions with NRC staff have confirmed that a later submittal date is acceptable, since NRC has scheduled the review of the ITS submittals for two other plants prior to reviewing the RBS submittal.

Very truly yours,

JW Leavines
for

JJF/DCH/mjr
enclosure

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cc: U.S. Nuclear Regulatory Commission
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ATTN: Administrator

NRC FORM 366 (5-82)		U.S. NUCLEAR REGULATORY COMMISSION				APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95				
LICENSEE EVENT REPORT (LER)						ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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				
FACILITY NAME (1) River Bend Station						DOCKET NUMBER (2) 05000-458		PAGE (3) 1 of 7		
TITLE (4) INADEQUATE SURVEILLANCE TESTING OF CHARCOAL ADSORBER FILTER TRAINS DUE TO DEFICIENCIES IN PROCEDURES										
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	12	94	94	021	02	10	28	94	N/A	05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more (11))							
1			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
POWER LEVEL (10)			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
91			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
			20.405(a)(1)(iii)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in abstract below and in text, NRC Form 366A)	
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)			
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)			
LICENSEE CONTACT FOR THIS LER (12)										
NAME Timothy W. Gates, Supervisor - Nuclear Licensing						TELEPHONE NUMBER (Include Area Code) 504-381-4866				
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	
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)										
<p>On July 12, 1994, with the plant in Operational Condition 1 (Power Operation), the ongoing review of River Bend Station surveillance test procedures (STPs) and Technical Specifications revealed discrepancies between the Technical Specifications and the corresponding surveillance test procedures for leak testing of charcoal adsorber filter trains in three safety related systems. Previous STP performances were determined to be inadequate. The affected equipment was declared inoperable. Following this, the equipment was properly retested and determined to be operable.</p> <p>The root cause of this event is inadequate control and implementation of the procedure writing, review, and revision process. The affected procedures have been placed on hold to prevent issuance prior to revision to correct deficiencies. The Procedure Upgrade Project includes interim steps to address short-term improvement in procedure adequacy and the Long Term Performance Improvement Plan includes a comprehensive procedure improvement initiative.</p> <p>The STPs in question did not adequately implement ANSI standards referenced in the licensing basis; however, the inadequacies involved leak detection criteria that was in use when leak detection technology was less advanced than it is today. Therefore, while past surveillances did not meet the ANSI standards, there was no impact on the ability of the systems to perform their safety functions.</p>										

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

Reported Condition

On July 12, 1994, with the plant in Operational Condition 1 (Power Operation), the ongoing review of River Bend Station surveillance test procedures and Technical Specifications revealed discrepancies between the Technical Specifications and the corresponding surveillance test procedures (STPs) for leak testing of charcoal adsorber filter (*FLT*) trains in the standby gas treatment system (*BH*), and the control building (*VI*) and fuel building (*VG*) ventilation systems. An operability evaluation was performed which revealed that four STP performances in December 1993 and January 1994 were inadequate. The affected equipment was declared inoperable pursuant to Technical Specification (T.S.) 4.0.3. Following this, the equipment was successfully retested and determined to be operable. This report is submitted pursuant to 10CFR50.73(a)(2)(i)(B) as operation prohibited by the Technical Specifications due to the inadequacy of previous surveillances.

Investigation

The Technical Specifications require leak testing of the filter trains as follows:

System (Trains A and B for each)	T.S. (Frequency 1)	T.S. (Frequency 2)	STP No.
Standby gas treatment	4.6.5.4.b.1	4.6.5.4.f	257-3601
Fuel building ventilation	4.6.5.6.c.1	4.6.5.6.g	406-3601
Control building ventilation	4.7.2.c.1	4.7.2.g	402-3601

Note: The "Frequency 1" Technical Specifications are performed on an 18 month frequency.
The "Frequency 2" Technical Specifications are performed after replacement of a charcoal adsorber bank.

Both types of surveillances introduce freon gas into the operating filter housing and the freon concentration is measured upstream and downstream of the charcoal adsorber.

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The 18 month surveillance requirements all reference Regulatory Guide 1.52 which invokes ANSI standard N510-1975. The "after replacement" surveillance requirements are based on ANSI N510-1980, as stated in the Technical Specifications. Both ANSI standards require the following:

1. The upstream freon gas concentration must be at least four times the minimum workable threshold sensitivity (MWTS) of the freon detector (1.0 ppb), divided by the Technical Specification maximum penetration expressed as a fraction of total air flow (0.0005). The result of this equation is that 8.0 ppm or 8000 ppb is the required minimum concentration for the application at River Bend Station.
2. The upstream concentration must be maintained at $\pm 20\%$ of the preset value during the test.

ANSI standard N510-1975 contains an additional requirement that the upstream freon gas concentration be maintained less than 10 times the MWTS of the freon detector, or 20000 ppb.

Personnel conducting the review of the Technical Specifications and the STPs were not satisfied that the STPs adequately implemented the requirements of the ANSI standards and documented the issues in a condition report. Engineering evaluations of the 18 month surveillances performed in December 1993 and January 1994 revealed the following:

- For divisions I and II of the control building ventilation system and division I of the fuel building ventilation system, the 8000 ppb concentration was not maintained and the upstream concentration was not maintained within $\pm 20\%$ of the preset value. The 8000 ppb concentration was also not maintained for division II of the SGTS. Each of these divisions was declared inoperable pursuant to T.S. 4.0.3.
- The remaining STP performances were for division I of the SGTS and division II of the fuel building ventilation system. These tests were acceptable; the 8000 ppb concentration was maintained and the $\pm 20\%$ average concentration tolerance was also maintained. Therefore, these divisions were operable.

The inoperable equipment was retested. Compliance with the 8000 ppb concentration and the $\pm 20\%$ tolerance were maintained and therefore, the test results were acceptable. The 20000 ppb concentration upper limit from ANSI N510-1975 was not maintained for the December 1993 STP performance for division I of the SGTS or for the retest of division II of the control building ventilation system; however, this limitation is to protect the charcoal from saturation during testing. In these two cases the acceptance criteria and test integrity were not affected. Therefore, there was no impact on the acceptability of the test results or operability of the equipment.

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The investigation revealed that the applicable procedures contain the upstream concentration and the ± 20 percent tolerance (as specified in ANSI N510-1980) in the required equipment section of each procedure. This information was not included in the acceptance criteria of the procedures. This arrangement effectively "hides" the ANSI standard criteria, since the test results for the upstream concentration and the tolerance would not be compared to the ANSI standard criteria during review of the acceptance criteria. Each procedure contains a step in the initial equipment setup section with a signoff requiring the tracer gas generator to be adjusted per the information in the required equipment section. Later procedure steps do not require test personnel to return to the tracer gas injection criteria or reverify it. The implication of this is that while the procedure requires that the minimum upstream concentration of 8000 ppb and the 20 percent tolerance be established, these values could change during test performance with no path within the procedure to restore them. Therefore, improper branching exists in the procedure. In addition, while the original versions of the STPs (Revision 0), referenced the 1975 ANSI standard, the upstream concentration requirements were verbatim from the 1980 ANSI standard and thus did not include the 20000 ppb upper limit.

Although the Technical Specifications referenced two different ANSI standards, the investigation revealed that consistent ANSI standard references within the Technican Specifications would not have prevented this event. The reason for this is that the procedures as written do not provide assurance that the ANSI criteria will be maintained throughout the test.

Review of the STP performance history revealed that out of a total of 44 STP performances, the 8000 ppb minimum freon concentration was not maintained in 12 of them. The ± 20 percent variance was not met 6 times and the 20000 ppb upper limit from ANSI N510-1975 was exceeded 19 times. Eleven different test engineers were involved in the performances of these STPs. The STP failures were not identified by the procedure performers or reviewers. The non-compliance with standards in multiple test performances with various test personnel involved (including River Bend personnel and outside contractors) supports the conclusion that the procedures are inadequate.

Root Cause

The root cause of this event is inadequate control and implementation of the procedure writing, review, and revision process. Causal factors are as follows:

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- **Written Communications** - The procedural requirements for test performance were unclear. Acceptance-related criteria were "hidden" in the required equipment sections of the STPs which prevented post-testing STP reviews from identifying that the minimum freon concentration and tolerance criteria were not met. Improper branching within the procedures effectively negated the procedure step which established the freon injection criteria.
- **Work Practices** - The procedure review process did not require review to the level of the original source material.
- **Managerial Methods** - Inadequacy of River Bend Station procedures and associated processes has been a known problem. Recent LERs involving STP deficiencies with respect to Technical Specifications include LERs 92-014, 93-002, 93-005, 93-012 and 94-020. The root causes associated with all of these events involved ineffective development of the STPs. In general, limited scope corrective actions were taken to correct the deficiencies in the affected STPs up to LER 93-012. A significant programmatic corrective action was initiated as described in LER 93-012. This action resulted in an in-depth review of all STPs to verify that the Technical Specification requirements were being properly implemented. The corrective action taken following LER 93-012 has proven effective in enabling RBS personnel to identify and correct problems in the STPs, as in the cases of LERs 94-020 and 94-021.

Corrective Action

Specific corrective actions to address this event are as follows:

- The affected STPs (402-3601, 406-3601, 257-2601) have been placed on hold to prevent issue prior to revision.
- The affected STPs will be revised prior to the next performances as follows:
 1. The upstream freon injection criteria will be included as part of the test acceptance criteria.
 2. Steps and signoffs to verify the proper steps and test methodology will be included.

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- Entergy Operations Incorporated will incorporate the most recent industry standard, ASME N510-1989, into the surveillances. This standard eliminates the 8000 ppb minimum limit, reflecting improved leak detection technology, and retains the ± 20 percent variance. Also, there is no upper concentration limitation. A license amendment request will be developed and included in the final improved Technical Specifications submittal and the USAR will be revised accordingly. The T.S. amendments will be effective upon the implementation of the improved Technical Specifications. In the event that some or all of the STPs are revised for use prior to implementation of the T. S. amendments, ANSI N510-1975 will be incorporated into the applicable procedures as an interim measure.
- EOI will review the Technical Section Procedures for non-safety related filter train charcoal adsorber tests and initiate improvements, as necessary.

Existing corrective actions to address procedure adequacy and STP adequacy with respect to Technical Specifications are as follows:

1. Entergy Operations, Inc. has initiated interim actions as a part of the procedure upgrade project (PUP) as described in a July 6, 1994 letter to the NRC (RBG-40699). This plan includes the formation of an interim procedures group and an assessment to determine which procedures require near-term improvement using reportable events, among other things, as inputs. Revision of these high priority procedures on an expedited schedule using improved processes began in July 1994.
2. A comprehensive procedure improvement initiative is included in the Long-Term Performance Improvement Plan, submitted to the NRC on March 28, 1994 (RBG-40428). This initiative includes improving procedure quality and usability, improving administrative controls, streamlining and enhancing the procedure maintenance and change process, and establishing effective information management systems.
3. The review of Technical Specifications and STPs described above is a comprehensive effort to ensure that the Technical Specifications requirements are properly implemented in the STPs. This review is ongoing and resulted in the identification of this event.

Safety Assessment

The affected equipment was successfully retested using the 8000 ppb requirement and the 20% tolerance. This confirms that the affected equipment was capable of performing its safety functions during the period of time that the December 1993 and January 1994 surveillance tests were credited for operability of the systems.

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EOI has confidence that the previous STP performances that did not meet the ANSI standard specifications had no impact on the ability of the charcoal filtration trains to perform their design functions. The 8000 ppb minimum upstream injection concentration and the 20000 ppb upper limit were specified in the ANSI standards when the state of the art technology used gas chromatography techniques. The modern Halide detectors at River Bend Station are capable of measuring gas concentrations at much lower levels than 8000 ppb. The older technology also had very slow response times compared to the equipment used at River Bend Station. This slow response time of the older technology combined with the potential for saturation of the charcoal was the reason for the upper limit used in the 1975 ANSI standard. The latest standard, ASME N510-1989 has neither a minimum or a maximum concentration limit. Similarly, the +/- 20 percent tolerance originated when the instrumentation alternately took samples upstream and downstream. The Halide detectors at River Bend Station sample in real time; therefore, the variance has no effect on the test results. However, this tolerance does exist in ASME N510-1989. While some of the previous STP failures were performed by contract personnel, it is likely that the equipment used by these contractors was also of modern design, since this equipment has been in wide use since River Bend Station was licensed.

NOTE: Energy Industry Identification System Codes are identified in the text as (*XX*).