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Steven Vercelli  
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10 CFR 50.73

RGB-47922

December 31, 2018

Attn: Document Control Desk  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852-2738

Subject: Licensee Event Report 50-458 / 2018-09-00, "Inadvertent Initiation of Reactor Core Isolation Cooling due to Personnel Error"

River Bend Station, Unit 1  
NRC Docket No. 50-458  
Facility Operating License No. NPF-47

Dear Sir or Madam:

In accordance with 10 CFR 50.73, enclosed is the subject Licensee Event Report. This document contains no commitments. If you have any questions, please contact Mr. Tim Schenk at 225-381-4177.

Sincerely,



Kent Scott for S. Vercelli

SV/twf

Enclosure: Licensee Event Report 50-458 / 2018-009-00, "Inadvertent Initiation of Reactor Core Isolation Cooling due to Personnel Error".

cc: NRC Region IV Regional Administrator, w/o Enclosure  
NRC Senior Resident Inspector – River Bend Station, Unit 1  
Ji Young Wiley, Department of Environmental Quality, Office of Environmental Compliance, Radiological Emergency Planning and Response Section  
Public Utility Commission of Texas, Attn: PUC Filing Clerk  
NRC Project Manager

IEZZ  
NRR

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollect.Resource@nrc.gov](mailto:Infocollect.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NE0B-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.



# LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

<b>1. Facility Name</b> River Bend Station – Unit 1	<b>2. Docket Number</b> 05000 458	<b>3. Page</b> 1 OF 4
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**4. Title**  
Inadvertent Initiation of Reactor Core Isolation Cooling due to Personnel Error

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
11	02	2018	2018	009	00	12	31	18	NA	05000 NA
									Facility Name	Docket Number
									NA	05000 NA

**9. Operating Mode** **11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)**

<b>1</b>	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(f)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)

**10. Power Level**

<b>94</b>	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)		

**12. Licensee Contact for this LER**

<b>Licensee Contact</b> Tim Schenk, Manager – Regulatory Assurance	<b>Telephone Number (Include Area Code)</b> 225-381-4177
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**13. Complete One Line for each Component Failure Described in this Report**

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

**14. Supplemental Report Expected** **15. Expected Submission Date**

Yes (If yes, complete 15. Expected Submission Date)  No

Month	Day	Year
NA	NA	NA

**Abstract** (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)  
 On November 2, 2018 at 03:53 technicians were performing a Surveillance Test Procedure on the Reactor Core Isolation Cooling (RCIC) system with the reactor operating at 94% power. Improper completion of a procedure step caused an inadvertent initiation of the RCIC system. The initiation was recognized as inadvertent and was secured. The RCIC system was restored to a normal standby lineup. RCIC injected into the Reactor Pressure Vessel (RPV) for approximately 30 seconds. A two inch RPV level increase was observed. No change in feedwater temperature or reactor power was noted. The cause of the initiation was attributed to human error. This event was of minimal significance to the health and safety of the public.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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1. FACILITY NAME  River Bend Station – Unit 1	2. DOCKET NUMBER  05000- 458	3. LER NUMBER		
		YEAR 2018	SEQUENTIAL NUMBER 009	REV NO. 00

**NARRATIVE**

**BACKGROUND**

The Reactor Core Isolation Cooling (RCIC) [BN] system is designed to operate either automatically or manually following Reactor Pressure Vessel (RPV) (\*\*RCT\*\*) isolation accompanied by a loss of coolant flow from the Feedwater [SJ] system to provide adequate core cooling and control of RPV water level. Under these conditions, the High Pressure Core Spray (HPCS) [BG] and RCIC systems perform similar functions.

The RCIC system consists of a steam driven turbine (\*\*TRB\*\*) pump unit, piping, and valves to provide steam to the turbine, as well as piping and valves to transfer water from the suction source to the core via the Feedwater system piping. The steam supply to the turbine is piped from main steam line A, upstream of the inboard main steam line isolation valve.

The RCIC system is designed to provide core cooling for a wide range of reactor pressures, 150 psig to 1231 psig. Upon receipt of an initiation signal, the RCIC turbine accelerates to a specified speed. As the RCIC flow increases, the turbine control valve is automatically adjusted to maintain design flow.

**REPORTED CONDITION**

On November 2, 2018 at 03:53, with the reactor operating at 94% power, RCIC was inadvertently initiated and injected water into the RPV. At the time of initiation, plant technicians were performing a Surveillance Test which inserts a half initiation signal for RCIC by installing a test fixture in the start logic circuitry. The Surveillance Test Procedure (STP) was not correctly followed and the wrong test fixture was installed by the technicians. Installation of the incorrect test fixture inserted a half initiation from a channel of the start logic that was not part of the test procedure. The technicians then manually inserted a half initiation signal in accordance with the STP. The combination of the manual initiation signal and the signal created from the installation of the incorrect test fixture met the start logic requisite and the RCIC start sequence began. The Main Control Room staff recognized the initiation, validated the initiation to be inadvertent, and took actions per the appropriate abnormal operating procedure. RCIC was secured and restored to a normal standby lineup. RCIC injected into the RPV for approximately 30 seconds at a maximum rate of approximately 600 gallons per minute (gpm). A two inch RPV level increase was observed. No change in feedwater temperature or reactor power was noted.

**CAUSAL ANALYSIS**

This event was caused by incorrect performance of an STP. The technicians performing the test procedure failed to use proper verification practices in accordance with site procedures.

The STP clearly states to install the "Red A/B" test fixture. The "Green B/C" test fixture was installed instead despite distinct labeling attached to both test fixtures. Installation of the test fixture was identified as a critical step in the STP. Site Human Performance procedures require that a verification from a second person is performed on critical steps to ensure the action is completed correctly. Although the STP did not indicate the need for a verification, the Human Performance procedure requirement to perform the verification was still active.

**CORRECTIVE ACTION TO PREVENT RECURRENCE**

The following actions have been completed to prevent recurrence.

- An extent of condition was performed to identify any other STPs that do not require a verification before installing a test



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CONTINUATION SHEET**

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		YEAR 2018	SEQUENTIAL NUMBER 009	REV NO. 00

**NARRATIVE**

fixture with the potential to cause an Emergency Safety Function actuation.

- 100% oversight of work performed by the Maintenance Department was implemented pending completion of an evaluation of verification practices in the field. Immediate knowledge/performance gaps were closed through the remediation process.

The following actions have been assigned to prevent a recurrence of this event and are documented in the station's corrective action program.

- Revise the STPs identified in the extent of condition to add a verification requirement at the critical steps.
- Based on the results of the verification practices evaluation, perform a training needs analysis.
- Based on the results of the verification practices evaluation, determine appropriate measures to monitor verification practice performance.

**PREVIOUS OCCURRENCE EVALUATION**

**LER 2006-002**

On January 24, 2006, the HPCS was inadvertently initiated when technicians utilized an incorrect test lead fixture to monitor continuity of test jack pins while performing a surveillance test. The B/C test lead fixture was utilized vice the A/B test fixture.

**LER 2018-002**

On April 26, 2018, an inadvertent HPCS initiation occurred due to a pressure perturbation in RPV level instrumentation during a maintenance activity. An organizational false sense of security existed based on past successful on line completion of a Reactor Water Level STP. The mitigation strategy of this STP was used for the maintenance activity work package. This faulted mental model influenced inadequate risk recognition during the analysis, design, development, and implementation of solutions. As a result, the risk screening conducted was not adequate for the work performed. Work package instructions were not written in sufficient detail to preclude the event.

**SAFETY SIGNIFICANCE**

The Emergency Core Cooling Systems (ECCS) are designed, in conjunction with the primary and secondary containment, to limit the release of radioactive materials to the environment following a Loss of Coolant Accident (LOCA). The ECCS use two independent methods (flooding and spraying) to cool the core during a LOCA. The ECCS network is composed of the HPCS system, the Low Pressure Core Spray (LPCS) [BM] system, and the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) [BO] system. The ECCS also consists of the Automatic Depressurization System (ADS).

RCIC performs a similar function as HPCS. However, it is not considered to be part of the ECCS. No credit is taken in the safety analysis for the RCIC system, but it will maintain inventory and cool the core, while the Reactor Coolant System [AD] is still pressurized, following a RPV isolation.

This event had a negligible effect on key reactor plant parameters and all ECCS were operable for the duration of the event. Therefore this event is considered to be of minimal significance to the health and safety of the public.



# LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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		YEAR 2018	SEQUENTIAL NUMBER 009	REV NO. 00

### NARRATIVE

(NOTE: Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER are annotated as (\*\*XX\*\*) and [XX], respectively.)