Entergy

Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775

RBG-47661

March 7, 2016

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

Subject: Licensee Event Report 50-458 / 2016-002-00
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

RBF1-16-0028

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. Joseph Clark at 225-381-4177.

Sincerely,

Sergio Vazquez
Director – Engineering

Enclosure

cc: U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Blvd.
Arlington, TX 76011-4511

IE22
NRR

NRC Sr. Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

INPO
(via ICES reporting)

Central Records Clerk
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin, TX 78711-3326

Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
Ji Young Wiley
P.O. Box 4312
Baton Rouge, LA 70821-4312

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Automatic Reactor Scram and Division 2 Primary Containment Isolation Due to Offsite Grid Electrical Transient

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
										05000
1	9	2016	2016	- 002	- 00	03	07	2016	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Joseph A. Clark, Manager - Regulatory Assurance	(225) 381-4177

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
(na)									

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

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

On January 9, 2016, at approximately 2:37 a.m. CST, with the plant operating at 100 percent power, an automatic reactor scram occurred concurrent with the closure of all main steam isolation valves (MSIVs). That action was the result of an electrical transient caused by a phase-to-phase fault on a nearby 230kV transmission line. The transient caused a momentary decrease in the voltage on both reactor protection system busses, which also power the MSIV control solenoids. The Division 2 primary containment isolation logic was also actuated, causing the Division 2 valves in balance-of-plant systems to close. Both divisions of the standby gas treatment system automatically started due to the shutdown of the normal annulus pressure control system. Both reactor recirculation pumps downshifted to slow speed. The company's transmission department investigated the event. Although no definite source of the fault was found, it was concluded that a lightning strike likely caused the transient. The fault occurred on a 230kV transmission line approximately three miles from the station. The fault lasted for 5.4 cycles before it was isolated by automatic breaker action, and caused the voltage on the switchgear supplying the RPS busses to decrease to approximately 34 percent of normal. This transient was sufficient to trip the scram solenoids and the MSIV solenoids. No plant parameter limits requiring the automatic actuation of any of the emergency core cooling systems or the emergency diesel generators were exceeded. This event, thus, was of minimal significance to the health and safety of the public. This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv) as an actuation of the reactor protection system and the primary containment isolation logic.

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NARRATIVE

REPORTED CONDITION

On January 9, 2016, at approximately 2:37 a.m. CST, with the plant operating at 100 percent power, an automatic reactor scram occurred concurrent with the closure of all main steam isolation valves (MSIVs). That action was the result of an electrical transient caused by a phase-to-phase fault on a nearby 230kV transmission line. The transient caused a momentary decrease in the voltage on both reactor protection system busses, which also power the MSIV control solenoids. The Division 2 primary containment isolation logic was also actuated, causing the Division 2 valves in balance-of-plant systems to close. Both divisions of the standby gas treatment system [BH] automatically started due to the shutdown of the normal annulus pressure control system. Both reactor recirculation [AD] pumps downshifted to slow speed.

The initial upward swell of reactor water level caused all three reactor feedwater pumps to trip. Reactor feedwater pump "C" was restarted approximately eight minutes after the scram.

Following the first automatic actuations of the reactor safety-relief valves (SRVs), operators controlled reactor pressure with intermittent manual opening of selected SRVs. After reactor parameters were stabilized, the MSIVs on the "D" main steam line were opened at approximately 4:29 a.m. to re-establish automatic pressure control.

The Division 1 and 2 reactor protection system (RPS) busses were on their alternate power supplies (i.e., offsite power) at the time of the event. No safety-related systems were out of service at the time. No plant parameter limits requiring the automatic actuation of any of the emergency core cooling systems or the emergency diesel generators were exceeded.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as the actuation of the reactor protection system [JC] and the primary containment isolation logic [JM].

INVESTIGATION and CAUSAL ANALYSIS

The company's transmission department investigated the event. Although no definite source of the fault was found, it was concluded that a lightning strike likely caused the transient. The fault occurred on a 230kV transmission line approximately three miles from the station. The fault lasted for 5.4 cycles before it was isolated by automatic breaker action, and caused the voltage on the switchgear supplying the RPS busses to decrease to approximately 34 percent of normal. This transient was sufficient to trip the scram solenoids and the MSIV solenoids.

CORRECTIVE ACTIONS TO PREVENT RECURRENCE

As of January 17, both divisions of the RPS system were running on their normal power sources (i.e., in-plant switchgear).

PREVIOUS OCCURRENCE EVALUATION

No reactor scrams resulting from grid transients have occurred at River Bend Station in the last three years.

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NARRATIVE

SAFETY SIGNFICANCE

The response of the plant was bounded by the corresponding section of the Updated Safety Analysis Report. No safety-related systems were out of service at the time of the event. No plant parameter limits requiring the automatic actuation of any of the emergency core cooling systems or the emergency diesel generators were exceeded. This event, thus, was of minimal significance to the health and safety of the public.

(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.)