Entergy

Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61
P. O. Box 220
St. Francisville, LA 70775
Tel 225 336 6225
Fax 225 635 5068

Rick J. King
Director
Nuclear Safety Assurance

March 2, 2000

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

Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Licensee Event Report 50-458/99-015-01

File Nos. G9.5, G9.25.1.3

RBG-45274
RBF1-00-0033

Ladies and Gentlemen:

In accordance with 10 CFR 50.73, enclosed is Revision 1 of the subject Licensee Event Report.

Sincerely,

RJK/DLM
Attachment
Enclosure

IE22

cc: U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

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

INPO Records Center
E-Mail

Mr. Jim Calloway
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin, TX 78711-3326

Mr. Prosanta Chowdhury
Program Manager – Surveillance Division
Louisiana DEQ
Office of Radiological Emergency Planning & Response
P. O. Box 82215
Baton Rouge, LA 70884-2215

Attachment 1

Commitment Identification Form
Subject: LER 99-015-01

RBG-45274
RBF1-00-0033
Date: March 2, 2000

COMMITMENT	ONE TIME ACTION	CONTINUING COMPLIANCE
The affected design documents will be corrected.	X	
This occurrence will be discussed with selected Operations and Engineering personnel, workweek managers and maintenance coordinators to increase their awareness and sensitivity to similar issues.	X	

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

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
River Bend Station	05000458	1 of 5

TITLE (4)
Residual Heat Removal 'C' and Reactor Core Isolation Cooling Operability affected by an unsealed wall penetration between their rooms in the Auxiliary Building

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
										05000
12	09	1999	1999	--015--	01	03	02	2000	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING	1
POWER LEVEL (10)	100

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)
	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)	X	50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
D. N. Lorfing, Supervisor – Licensing	225-381-4157

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED	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)

On December 10, 1999, with the plant in Mode 1 at full power, an unsealed penetration in the wall between the Residual Heat Removal (RHR) (*BO*) 'C' and Reactor Core Isolation Cooling (RCIC) (*BN*) rooms in the Auxiliary Building (AB) was determined to impact operability. The condition resulted in the declaration of RHR 'C' and RCIC as inoperable. The open penetration has existed since initial plant startup in 1985. The condition is reportable according to 10 CFR 50.73(a)(2)(vii) due to a single fault causing a train in multiple systems to become inoperable and according to 10 CFR 50.73 (a)(2)(i)(B) as operation prohibited by Technical Specifications.

The subject penetration was sealed. RHR 'C' and RCIC were declared operable after completion of this work. The root cause was determined to be inadequate design documentation

RCIC and one train of RHR were potentially impacted by the reported unsealed penetration. Other emergency core cooling systems, including the other two trains of RHR, were not affected. Except for the moderate energy line cracks (MELC) and high energy line breaks (HELB) scenarios, the ability of RHR 'C' and RCIC to respond to other postulated plant events was not impaired.

REPORTED CONDITION

On December 10, 1999, with the plant in Mode 1 at full power, an unsealed penetration in the wall between the Residual Heat Removal (RHR) (*BO*) 'C' and Reactor Core Isolation Cooling (RCIC) (*BN*) rooms in the Auxiliary Building (AB) was determined to impact operability. Based on a review of the design bases for the wall at that location, a conclusion was made that the penetration required a watertight seal to protect equipment from design basis internal flooding (postulated from moderate energy line cracks (MELC) and high energy line breaks (HELB)) in the other room. The condition resulted in the declaration of RHR 'C' and RCIC as inoperable. The open penetration has existed since initial plant startup in 1985. The condition is reportable according to 10 CFR 50.73(a)(2)(vii) due to a single fault causing a train in multiple systems to become inoperable and according to 10 CFR 50.73 (a)(2)(i)(B) as operation prohibited by Technical Specifications.

BACKGROUND

The RHR 'C' and the RCIC rooms are located adjacent to one another on the 70-foot elevation of the AB. The subject penetration is a 4-inch diameter hole through the 2-foot thick AB wall approximately 5 feet above the floor. Two non-safety related instrumentation lines are routed through the penetration.

The RCIC system is designed to operate either automatically or manually following reactor pressure vessel (RPV) isolation accompanied by a loss of coolant from the feedwater 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.

RHR 'C' is one train of the Low Pressure Coolant Injection (LPCI) (*BO*) emergency core cooling system (ECCS). LPCI is one operating mode of RHR. LPCI is designed to provide coolant inventory makeup to the reactor core only when the reactor vessel pressure is low and can therefore, supply makeup for large breaks as well. Following a small break and ADS initiation, LPCI provides coolant inventory makeup.

INVESTIGATION

On December 9, 1999, while reviewing plant records for a Quality Assurance (QA) Audit, an auditor questioned why a maintenance action item (MAI) for the subject penetration had been open since May 1998. The QA auditor inquired about the penetration seal with respect to the existence of a watertight door directly above it. The auditor questioned why the penetration required no seal while the door had a specified seal type.

The open penetration has existed since 1985 and was initially discovered in May 1998. A review found that a low priority was placed on the MAI because the wall was (correctly) established as a non-fire rated wall and an applicable design basis summary drawing listed the penetration seal type as "NONE", i.e., no seal required. Consequently, no limiting condition for operation (LCO) was generated and no condition report (CR) was written at the time of initiation of the MAI.

During 1999, Engineering personnel evaluated the subject penetration to verify that the design configuration was correct. Based on the design documentation evidence on the summary drawing, no further action appeared necessary. The impact on operability was not recognized until December 1999.

On December 10, 1999, design engineering personnel determined that the subject penetration should be sealed and initiated a CR. The Shift Superintendent declared both RHR 'C' and RCIC inoperable based on the effects of MELC/HELB flooding considerations. Reviews for other plant hazards (fire, radiological hazards, temperature, humidity) identified no other immediate operability issues associated with the missing seal.

The subject penetration was sealed. On December 11, 1999, RHR 'C' and RCIC were declared operable after completion of this work.

A review of all AB sleeve tab drawings was performed. The penetration sleeves were reviewed to determine which were classified as requiring no seal and then, those penetrations were reviewed to determine whether that designation was correct. Penetrations with incorrect designations were investigated further to determine the design requirements and that the plant configuration is appropriate. No further deficiencies in plant configuration were noted.

ROOT CAUSE

The root cause was determined to be inadequate design documentation. The inadequate drawing was determined to have been affected by inadequate review of a design change issued in October 1985 prior to the plant commencing commercial operation.

CORRECTIVE ACTIONS

The subject penetration was sealed. On December 11, 1999, RHR 'C' and RCIC were declared operable after completion of this work.

The affected design documents will be corrected.

A review of all AB sleeve tab drawings was performed. The penetration sleeves were reviewed to determine which were classified as requiring no seal and then, those penetrations were reviewed to determine whether that designation was correct. Penetrations with incorrect designations were investigated further to determine the design requirements and that the plant configuration is appropriate. No further deficiencies in plant configuration were noted.

This occurrence will be discussed with selected Operations and Engineering personnel, workweek managers and maintenance coordinators to increase their awareness and sensitivity to similar issues.

SAFETY EVALUATION

RCIC and one train of RHR were potentially impacted by the reported unsealed penetration. Other emergency core cooling systems, including the other two trains of RHR, were not affected. Except for the MELC and HELB scenarios, the ability of RHR 'C' and RCIC to respond to other postulated plant events was not impaired.

Low Pressure Coolant Injection, Train C (LPCI C), is one of the operational modes of RHR C. LPCI system along with the other Emergency Core Cooling (ECCS) systems (High Pressure Core Spray (HPCS) (*BG*), Automatic Depressurization System (ADS), and Low Pressure Core Spray (LPCS) (*BM*) are designed to mitigate the consequences of a loss of coolant accident given a single active failure. Note that RCIC is not listed in any of the combinations.

The purpose of the RCIC system is to prevent the reactor fuel from overheating during the following conditions:

1. Should the vessel be isolated and maintained in hot standby condition,
2. Should the vessel be isolated and accompanied by loss of coolant flow from the reactor feedwater system,
3. Should a complete plant shutdown under loss of normal feedwater system be started before the reactor is depressurized to a level where a shutdown coolant system can be placed into operation, or
4. Should a design basis control drop accident occur, the RCIC system can be used in conjunction with the HPCS system and together meet the single failure criteria in mitigating the consequences of this event. (The RCIC system is an Engineered Safety Function (ESF) feature for this event).

RCIC is the redundant system for High Pressure Core Spray (HPCS) for the control rod drop accident. Therefore, RCIC and HPCS are mechanically separated. The open penetration between RHR 'C' and RCIC does not violate the mechanical separation between RCIC and HPCS. Therefore, there was no loss of the high-pressure injection safety function due to the open penetration.

Although RHR 'C' and RCIC are not credited together in any design basis accident, both systems are credited for a MELC. In the RBS MELC analysis, there are three safe shutdown paths given a MELC in either RHR "C" or RCIC. With the open penetration between the cubicles, a MELC in either cubicle could flood both, thereby failing both RHR 'C' and RCIC. Failure of both RHR 'C' and RCIC would leave two independent shutdown paths and the plant could still be safely shutdown.

For a HELB, an assumption is made that all offsite power is lost. However, RCIC is not credited for a HELB. Therefore, failure of both RHR 'C and RCIC does not affect the ability of the plant to safely shutdown.

Since RHR 'C' and RCIC are not required to mitigate the consequences of any accident together and since the plant can be safely shutdown during a MELC or HELB, there was no safety impact due to declaring both systems inoperable.

Additionally, an evaluation of the core damage frequency (CDF) using EOOS determined that removal of RCIC changed the plant safety index (PSI) from 10 to 9.3, assuming all other systems fully operable. The removal of RHR 'C' with or without RCIC did not change the PSI.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
River Bend Station	05000458	1999	-- 015 --	01	5 OF 5

PREVIOUS OCCURRENCE EVALUATION

A review of previous licensee event reports for the past six years found no events with similar impact or cause.

The Energy Industry Identification System (EIIS) component/system number is indicated by a parenthesis after the affected component/system. (Example: (*XX*))