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FACIL: 50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C      05000261  
AUTH. NAME      AUTHOR AFFILIATION  
CROOK, R.D.      Carolina Power & Light Co.  
PEARSON, M.P.      Carolina Power & Light Co.  
RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 93-011-00: on 930927, noted existence of minor leakage through CB equipment hatch seal. Caused by procedural inadequacy. Procedure CM-603 revised to ensure proper installation during plant refueling integrity. W/931027 ltr.

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Carolina Power & Light Company  
Robinson Nuclear Plant  
PO Box 790  
Hartsville SC 29550

October 27, 1993

Robinson File No: 13510C

Serial: RNP/93-2712  
(10CFR50.73)

United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
DOCKET NO. 50-261  
LICENSE NO. DPR-23  
LICENSEE EVENT REPORT NO. 93-011-00

Gentlemen:

The enclosed Licensee Event Report (LER), is submitted in accordance with 10 CFR 50.73 and NUREG 1022, Supplements No. 1 and 2.

Very truly yours,

Marc P. Pearson  
General Manager  
H. B. Robinson S. E. Plant

RDC:lst  
Enclosure

c: Mr. S. D. Ebnetter  
Mr. W. T. Orders  
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9311020181 931027  
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NRC FORM 366  
(5-92)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104  
EXPIRES 5/31/95

**LICENSEE EVENT REPORT (LER)**

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

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) **H. B. ROBINSON, UNIT NO. 2**

DOCKET NUMBER (2)  
**05000 261**

PAGE (3)  
**1 OF 5**

**TITLE (4) Potential for Uncontrolled Release Due to Equipment Hatch Seal Leak During Refueling**

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
09	27	93	93	-- 011 --	00	10	27	93	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
		<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER
		<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)			

**LICENSEE CONTACT FOR THIS LER (12)**

NAME  
**R. D. Crook, Regulatory Affairs**

TELEPHONE NUMBER (Include Area Code)  
**(803) 383-1179**

**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

**SUPPLEMENTAL REPORT EXPECTED (14)**

YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On September 27, 1993, H. B. Robinson Unit 2 was in cold shutdown condition for a scheduled refueling outage. At 1130 hours, licensee Operations personnel were notified of the existence of minor leakage through the Containment Building Equipment Hatch seal. Technical Specification 3.8.1.a states that the Equipment Hatch must be properly closed for refueling operations. Full core offload had been completed on September 27 at 1120 hours. However, reasonable evidence existed to believe that the leak path existed during fuel movement operations.

The cause of this event is attributed to procedural inadequacy. Procedures for interim Equipment Hatch installation did not provide bolt torquing or sequencing requirements.

The NRC was notified of this event via the ENS on September 27, 1993, at 1521 hours as a condition that alone could have prevented the fulfillment of the safety function of the structures or systems needed to control the release of radioactive material.

NRC FORM 366A  
(5-92)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104  
EXPIRES 5/31/95LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
H. B. Robinson, Unit No. 2	05000261	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		93	-- 011 --	00	

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

I. DESCRIPTION OF EVENT

On September 27, 1993, H. B. Robinson Unit 2 was in cold shutdown condition for a scheduled refueling outage. At approximately 1030 hours, licensee Technical Support personnel were requested to check the adequacy of the Containment Building Equipment Hatch seals due to a question raised by the NRC site resident inspector. The containment Equipment Hatch is provided with a double gasketed sealed flange and a bolted equipment door. Provisions are made to continuously pressurize the innerspace between the double gasket seals during plant operation. The request to check the seals was prompted by evidence that the hatch was drawing air into the Containment Building with the purge fans in operation. Upon inspection, airflow was visually verified to be in the area of tie bolt Number 18 (approximately the 05:00 position). At 1130 hours, licensee Operations personnel were notified of the existence of minor leakage.

Technical Specification 3.6.1 requires that containment integrity (the Equipment Hatch properly closed and sealed) is required for plant operations. Plant Procedure CM-603 is used for Equipment Hatch installation to meet containment integrity requirements. For refueling operations, Technical Specification 3.8.1.a states only that the Equipment Hatch be properly closed. Refueling integrity was required between September 23, 1993, at 0600 hours through September 27, 1993, at 1120 hours. Procedure OMM-033, which was developed in response to recommendations set out in NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management", provides administrative guidance for Equipment Hatch installation for containment closure purposes. No procedure existed to implement the intent of OMM-033 relative to Equipment Hatch installation. Although refueling operations had been completed on September 27, 1993, at 1120 hours with a full core offload, reasonable evidence existed to believe that the leak path existed during fuel movement operations.

The NRC was notified of this event via the ENS on September 27, 1993, at 1521 hours as a condition that alone could have prevented the fulfillment of the safety function of the structures or systems needed to control the release of radioactive material.

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H. B. Robinson, Unit No. 2	05000261	93	-- 011 --	00	3 OF 5

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II. CAUSE OF EVENT

The cause of this event is attributed to the lack of adequate procedural controls for interim installation of the Equipment Hatch during an outage and the lack of a basis for the limitations of pressure requirements associated with Containment closure. Procedure OMM-033, which provides administrative guidance for installation of the hatch for Containment Closure/Refueling Integrity, did not provide hatch bolt torque and sequence necessary for hatch sealing. Although OMM-033 was not directly utilized for the interim installation, the hatch had been installed snug tight with the understanding that should Containment Closure be required, tightening the hatch bolts to withstand 19 psia would occur. Causal factors contributing to this event include numerous procedures and other documents that provide definitions of containment integrity and installation and reinstallation instructions.

III. ANALYSIS OF EVENT

This leakage through the hatch had no adverse impact on plant safety. During the time the hatch was leaking the safety significance is bounded by the following two conditions:

- The time frame when the Reactor Coolant System (RCS) was reduced to zero inches (flange level) and the Reactor Vessel Head was being removed and placed in the head storage area;
- The time frame that fuel movement was occurring, including the lift of the upper internals.

The time period associated with the reactor vessel head lift has the RCS water level reduced to the level of the vessel flange. In this condition, the fuel is in the normal core location and cannot be lifted out when only moving the reactor vessel head. The major vulnerability created by this configuration is a loss of core cooling. The vulnerability is associated with the time to boil due to the reduced water level in the vessel. In this condition, the possibility for pressurizing the Containment Vessel due to the boil off from the water/steam in the core exists. The fuel damage from this transient comes from further reduction in water level due to the boil off if makeup capability is not recovered in a reasonable time period. This is minimized by maintaining the dual train of core makeup available and functional. During the time that the Equipment Hatch seal leakage existed, both trains of makeup were available. Therefore, multiple failures would be required to lead to the pressurization of the containment vessel with the associated fuel damage.

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III. ANALYSIS OF EVENT (Continued)

The time period associated with the actual fuel movement involves having the Containment Vessel cavity full of water. The major vulnerability shifts from a loss of cooling event to a fuel damage event due to fuel movement. The amount of water in the cavity greatly increases the time to boil under a loss of makeup event. In this period, the possibility for fuel damage increases due to the physical movement of the fuel from the reactor vessel to the spent fuel pit. Fuel damage due to dropping, tipping over, etc. could lead to the release of fission products to the Containment atmosphere. However, no driver exists for the pressurization needed to cause the containment to leak outward.

This report is submitted pursuant to 10 CFR 50.73(a)2)(v).

IV. CORRECTIVE ACTIONS

Upon discovery of this event, attempts were made to eliminate the leakage by tightening the tie bolts at the point of leakage. These attempts were not successful. Following completion of refueling activities, the Equipment Hatch was removed and the seals and flange surfaces were inspected. The results of the inspection revealed that the seals and seating surfaces were in generally good condition. One of the seals was intact, and only minor damage was noted on the other.

Adverse Condition Report 93-173 was initiated to document this condition and to facilitate a root cause investigation. The evaluation was completed on October 27, 1993.

Procedure CM-603 was revised to ensure proper installation during any plant mode requiring containment or refueling integrity. Engineering Evaluation 93-140 was written to address torque values and sequencing requirements. On October 12, 1993, one seal was replaced in accordance with Procedure CM-603.

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V. ADDITIONAL INFORMATION

## A. Previous Similar Events

None

## B. Failed Component Information

None