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Energy to Serve Your WorldSM

NL-06-0558

April 18, 2006

Docket No.: 50-321

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant – Unit 1
Licensee Event Report

Inadequate Procedure Results in Exceeding Secondary Containment Drawdown Time

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(i)(B), Southern Nuclear Operating Company is submitting the enclosed Licensee Event Report concerning an inadequate surveillance procedure acceptance criteria which resulted in exceeding the secondary containment drawdown time.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

A handwritten signature in black ink, appearing to read "H. L. Sumner, Jr.", written over a horizontal line.

H. L. Sumner, Jr.

HLS/OCV/daj

Enclosure: LER 1-2006-001

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. D. R. Madison, General Manager – Plant Hatch
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Hatch
Mr. D. S. Simpkins, Senior Resident Inspector – Hatch

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

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4. TITLE
Inadequate Surveillance Procedure Acceptance Criteria Resulted in Exceeding Secondary Containment Drawdown Time

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER(S)
02	17	2006	2006	001	0	04	18	2006	Edwin I. Hatch Plant - Unit 2	05000-366
									FACILITY NAME	DOCKET NUMBER(S)
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § : (Check all that apply)			
Mode 5	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)
0%	20-2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)
	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)	X 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	
FACILITY NAME Edwin I. Hatch / Kathy A. Underwood, Performance Analysis Supervisor	TELEPHONE NUMBER (include Area Code) (912) 537-5931

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

On 02/17/2006 at approximately 1200 EST, Unit 1 was in the Refuel mode and aligned to Secondary Containment Type C. At that time, it was determined that within the past three years of operation the plant had operated in Secondary Containment Type A with Technical Specification Surveillance Requirement (TS SR) 3.6.4.1.3 not met. TS SR 3.6.4.1.3 requires that Standby Gas Treatment (SGT) be capable of drawing the secondary containment down to at least 0.2 inches of water vacuum, within 120 seconds. The procedure used to perform this surveillance test allowed 120 seconds to accomplish this drawdown using an energized bus and did not account for the 12 second delay in SGT initiation during an LOSP due to the diesel generator start time. On 12/12/2001 a Secondary Containment Type A test required 115.8 seconds to drawdown the Refuel Zone. The plant operated in Type A Secondary Containment for approximately 757 days before this same test was performed on 3/8/2004 when 56.4 seconds were required to drawdown the Refuel Zone.

A review of the latest TS SR 3.6.4.1.3 tests was performed and determined that all of the Secondary Containment configurations for Types A, B1, and C were within the 120 seconds. This event was caused by an inadequate acceptance criteria in the surveillance test procedure. The surveillance test procedure did not account for the 12 second diesel generator start time during a Loss of Offsite Power event (LOSP). The surveillance procedure was revised to account for the 12 second diesel generator start time.

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

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
 Energy Industry Identification System codes appear in the text as (EIS Code XX).

DESCRIPTION OF EVENT

The secondary containment structure at Plant Hatch completely encloses the primary containment and those components that may be postulated to contain primary system fluid. This structure forms a control volume that serves to hold up and dilute the fission products. The secondary containment encompasses three separate zones: the Unit 1 reactor building (Zone I), the Unit 2 reactor building (Zone II), and the common refueling floor (Zone III). Type A Secondary Containment is applicable when these three zones are intact. Additionally, for Secondary Containment Type C, the secondary containment can be modified to exclude the Unit 1 reactor building (Zone I) provided the following requirements are met:

- a. Unit 1 is not conducting operations with a potential for draining the reactor vessel (OPDRV);
- b. All hatches separating Zone III from Zone I are closed and sealed; and
- c. At least one door in each access path separating Zone III from Zone I is closed.

Similarly, other zones can be excluded from the secondary containment OPERABILITY requirement during various plant operating conditions with the appropriate controls. For example, during Unit 2 shutdown operations Secondary Containment Types B1 or B2 allow containment to be modified to exclude the Unit 2 reactor building (Zone II):

- a. Unit 2 is not conducting operations with a potential for draining the reactor vessel (OPDRV);
- b. All hatches separating Zone III from Zone II are closed and sealed; and
- c. At least one door in each access path separating Zone III from Zone II is closed.

On 2/6/2006 a review of procedure 34SV-T22-001-0 by a Hatch Support Engineer in Corporate noted that the procedural acceptance criteria for confirming the Standby Gas Treatment (SGT, EIS Code BH) System's capability to satisfy Unit 1 and Unit 2 Technical Specifications Surveillance Requirement (TS SR) 3.6.4.1.3 did not factor in a Loss of Offsite Power (LOSP) event. The Unit 2 FSAR section 15.3.3.4.2.2 accident analysis indicates that the activity released to the environment during the 120 seconds of drawdown time to reach negative pressure in the reactor building (assumes an LOSP concurrent with the accident). A review of recent data packages was conducted at that time and it determined that the actual drawdown times were on the order of 45 to 65 seconds with one being as high as 98 seconds. All of these times contained sufficient margin for the assumption of a concurrent LOSP. A condition report was entered into the plant's corrective action program at that time.

On 02/17/2006 at approximately 1200 EST, Unit 1 was in the Refuel mode and aligned to Secondary Containment Type C. At that time a review of the condition report generated February 6, 2006 described

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above determined that within the past three years of operation the plant had operated in Secondary Containment Type A with Technical Specification Surveillance Requirement (TS SR) 3.6.4.1.3 not met. The plant's TS SR 3.6.4.1.3 requires that Standby Gas Treatment be capable of drawing the secondary containment down to at least 0.2 inches of water vacuum, within 120 seconds. The procedure used to perform this surveillance test did not account for the 12 seconds delay in SGT initiation in an LOSP due to the diesel generator start time. An example of not meeting TS SR 3.6.4.1.3 was determined to have occurred on 12/12/2001 when a Type A secondary containment test was performed that required 115.8 seconds to drawdown the refuel zone. Adding 12 seconds to this time to account for the diesel start time resulted in a total time of 127.8 seconds which exceeded the acceptance criteria of 120 seconds contained in the Technical Specifications.

For Type A secondary containment there are four combinations of SGT fans that are tested. Only one of these fan combinations failed the 120 second drawdown requirement. In this type containment, all three zones are intact. The Unit 1 reactor building and the Unit 2 reactor building required 100.7 (100.7 + 12 = 112.7) and 58.7 (58.7 + 12 = 70.7) seconds, respectively to accomplish the required drawdown. On 3/8/2004 the refuel zone test that exceeded the 120 seconds was retested and found to require 56.4 (56.4 + 12 = 68.4) seconds to accomplish the required drawdown value. During the 817 days between the failed test and the successful test the plant operated in Type A secondary containment approximately 757 days.

A review of surveillance procedure changes made during the time period between the failed test and the successful test was conducted. This review did not find any procedure changes that would explain the difference in surveillance test times. A similar review for this same time period was conducted for the maintenance history of the components required for Type A secondary containment for the refuel zone. This review did determine that the plant had a problem with water intrusion into the sensing lines of the transmitters for the refueling floor differential pressure instruments after heavy rains and winds. In July of 2003 an inverted guard was installed around the sensing lines to divert any water due to rain away from the sensing line openings. This action has improved the reliability of the refueling floor differential pressure transmitters used for the secondary containment tests.

On 2/9/2003 a test for Type B1 secondary containment required 114.3 (114.3 + 12 = 126.3) seconds to drawdown the refuel zone. The time required to drawdown the unit 1 reactor building was 93.6 (93.6 + 12 = 105.6) seconds. The Unit 2 reactor building zone is not a part of the Hatch secondary containment in Type B1. On 3/2/2003 this test was performed again and required 92 (92 + 12 = 104) seconds to drawdown the refuel zone. During the 21 days between the failed test and the successful test the plant operated in Type A secondary containment and did not use Type B1 containment. At the time of this test, Unit 1 was in Mode 1 (Power Operation), and Unit 2 in Mode 5 (Cold Shutdown/Refuel).

The requirement to assume a concurrent LOSP during the drawdown time was not stated in the Technical Specifications Bases but was contained in the plant's accident analysis in chapter 15 of the FSAR. A historical review of the procedure changes did not find where the assumption of a concurrent LOSP had ever been part of the surveillance procedure.

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

All of the most recent secondary containment tests were reviewed and found to be less than 108 seconds establishing sufficient margin to account for the diesel generator start time.

CAUSE OF EVENT

The surveillance procedure (34SV-T22-001-0 Secondary Containment Test) for ensuring compliance with the plant's Technical Specifications did not account for the 12 second diesel generator start times. This resulted in accepting surveillance tests that exceeded the overall drawdown time of 120 seconds contained in the plant's Technical Specifications.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(i)(B) because an event occurred in which the plant was in a condition which was prohibited by the plant's Technical Specifications. A three year period for the reportability review was used because NUREG 1022 Revision 2 notes that conditions that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material within three years of the date of discovery are reportable. This three year limitation does not apply to events where safety limits or limiting safety system settings are exceeded.

The plant's Technical Specification Surveillance Requirement TS SR 3.6.4.1.3 requires that Standby Gas Treatment (SGT) be capable of drawing the secondary containment down to at least 0.2 inches of water vacuum, within 120 seconds. The procedure used to perform this surveillance test did not account for the 12 seconds delay in SGT initiation in an LOSP due to the diesel generator start time.

The following is an evaluation of the dose impact from a longer drawdown time; specifically 120 seconds plus an assumed 2 seconds signal generation and processing time plus 12 seconds diesel start time for a total of 134 seconds from the initiation of the accident until the secondary containment air is being processed through the SGTS.

Design Input References:

1. BH1-M-V999-0040, Version 0, "Post-LOCA Control Room and Offsite Doses."
2. GE-NE-A13-00402, March 1998, "Extended Power Uprate Evaluation Report for Edwin I. Hatch Units 1 and 2, Radiological Impact."
3. HNP FSAR, Version 23D.
4. BH2-M-V999-0044, Version 0, "Post-LOCA Control Room and Offsite Doses."

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Evaluation:

The drawdown time for the Loss Of Coolant Accident (LOCA) is modeled in reference 2. In this model, a major portion of the total dose is due to releases during the period when the secondary containment is being drawn down to a negative pressure, prior to processing the secondary containment air through the SGTS filters and release through the main stack with elevated release point λ/Q_s (these are factors that account for atmospheric dilution).

The current LOCA offsite dose for a 120 second drawdown shown in FSAR Table 15.3-6 is 160.6 REM thyroid from containment leakage, 5.8 REM from the main stack and 49.2 REM from MSIV leakage. The containment leakage portions are taken from Ref. 1. As shown on Ref. 1 page 75, the drawdown contribution is 52.2 + 0.7 REM thyroid. Then the resultant thyroid dose from containment leakage would be

$(52.2 + 0.7) \text{ REM} \times 134\text{s}/120\text{s} + (160.6 - 52.9) \text{ REM} = 166.8 \text{ REM}$; and the total offsite dose is

$$166.8 + 5.8 + 49.2 = 221.8 \text{ REM},$$

which meets the 10 CFR 100.11 acceptance criteria of 300 REM and represents a minimal increase.

The control room thyroid dose shown in FSAR section 15.3.3.4.2.2 is 27.0 REM, of which 13.7 REM is from containment leakage (Ref. 1, p. 71), 0.26 REM from the main stack (Ref. 1, p128) and 13.5 REM from MSIV leakage (Ref. 1, p33 and Ref. 2, Table 4, Unit 1) with a drawdown time of 120 seconds. In the case of the control room there is significant "inertia" in the control room activity due to the relatively slow cleanup function of the recirculation filter compared to the volume of the control room (Ref. 2, Table 3)

$$(1 \text{ vol} / 2648 \text{ m}^3) \times (0.990 \text{ m}^3/\text{s}) \times 0.95 \approx 1.28 \text{ hr}^{-1}.$$

Five volume changes should clean up the initial activity from the drawdown period, so the containment leakage contribution for the first eight hours is used in estimating the impact of extended drawdown for Unit1:

$(2.9 + 0.4) \text{ REM} \times 134\text{s}/120\text{s} + (13.2 - 3.3) \text{ REM} = 13.58 \text{ REM}$; and the total thyroid dose is $13.58 + 0.26 + 13.5 = 27.3 \text{ REM}$, which meets the 30 REM limit, which is based upon GDC 19.

This evaluation is bounding with respect to Unit 2.

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Conclusion:

A bounding evaluation of extended drawdown modeling using 134 seconds until SGTS effectiveness results in offsite and control room doses meeting all acceptance criteria, and meeting the minimal increase limits of 10 CFR 50.59. Based upon this analysis, it is concluded that this event had no adverse impact on nuclear safety. The analysis is applicable to all power levels.

CORRECTIVE ACTIONS

The most recent secondary containment tests were reviewed and found to be less than 108 seconds establishing sufficient margin to account for the diesel generator start time.

Procedure 34SV-T22-001-0, Secondary Containment Test, was revised to account for the 12 second diesel start time during an LOSP. The new acceptance criteria is listed as 107 seconds to account for signal generation time as well as the diesel start time.

Both Unit 1 and Unit 2 Technical Specification Bases for TS SR 3.6.4.1.3 will be revised to state that this surveillance assumes a concurrent LOSP as part of the drawdown time. This revision will be completed by October 2006.

ADDITIONAL INFORMATION

Other Systems Affected: No systems other than those already mentioned in this report were affected by this event.

There were no Failed Components identified for this event.

Commitment Information: This report does not create any permanent licensing commitments.

Previous Similar Events: There were no previous similar events in the last two years in which an inadequate acceptance criteria in a surveillance procedure resulted in the plant being in a condition prohibited by the plant's Technical Specifications.