

Dennis R. Madison
Vice President - Hatch

**Southern Nuclear
Operating Company, Inc.**
Plant Edwin I. Hatch
11028 Hatch Parkway North
Baxley, Georgia 31513
Tel 912.537.5859
Fax 912.366.2077



June 18, 2009

Docket No.: 50-321

NL-09-0987

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

Edwin I. Hatch Nuclear Plant
Licensee Event Report
MSIV Closed Outside of the Allowable
Time Due to Loss of Oil in Actuator

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 (LER) concerning main Stream Isolation Valve closure outside of the allowable time due to a loss of oil in the valve actuator.

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

Sincerely,

A handwritten signature in black ink that reads "Dennis R. Madison".

D. R. Madison
Vice President – Hatch

DRM/MJK/

Enclosure: LER 1-2009-002

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Ms. P. M. Marino, Vice President – Engineering
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Hatch
Mr. J. A. Hickey, Senior Resident Inspector – Hatch

LICENSEE EVENT REPORT (LER)

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.

1. FACILITY NAME Edwin I. Hatch Nuclear Plant Unit 1	2. DOCKET NUMBER 05000 321	3. PAGE 1 OF 5
---	--------------------------------------	--------------------------

4. TITLE
MSIV Closed Outside of the Allowable Time due to Loss of Oil in Actuator

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
05	04	2009	2009	- 002 -	0	06	18	2009		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 3	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)																																				
10. POWER LEVEL 000	<table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> 20.2201(b)</td> <td><input type="checkbox"/> 20.2203(a)(3)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(C)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)</td> </tr> <tr> <td><input type="checkbox"/> 20.2201(d)</td> <td><input type="checkbox"/> 20.2203(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(1)</td> <td><input type="checkbox"/> 20.2203(a)(4)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(i)</td> <td><input type="checkbox"/> 50.36(c)(1)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(ii)</td> <td><input type="checkbox"/> 50.36(c)(1)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iv)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(x)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iii)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(A)</td> <td><input type="checkbox"/> 73.71(a)(4)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iv)</td> <td><input type="checkbox"/> 50.46(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(B)</td> <td><input type="checkbox"/> 73.71(a)(5)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(C)</td> <td><input type="checkbox"/> OTHER</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(vi)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(D)</td> <td style="font-size: small;">Specify in Abstract below or in NRC Form 366A</td> </tr> </table>	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)	<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)(C)	<input type="checkbox"/> OTHER	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)																																		
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)																																		
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)																																		
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)																																		
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)																																		
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)																																		
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)																																		
<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)(C)	<input type="checkbox"/> OTHER																																		
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 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 Underwood, Performance Improvement Supervisor	TELEPHONE NUMBER (Include Area Code) 912-537-5931
--	---

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
D	SB	SHV	A585	YES					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE MONTH: DAY: YEAR:
---	---

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

On May 4, 2009 at 851 EDT, Unit 1 was in hot shutdown, Mode 3. Stroke time testing of the inboard Main Steam Line Isolation Valve (MSIV), 1B21-F022B, failed to meet both the procedural minimum limit, and the Technical Specification minimum limit of greater than or equal to three seconds. The valve closed in 1.53 seconds.

A Work Order was generated to determine the cause of the failure. Upon investigation, it was found there was no oil in the actuator due to a leak at a fitting on the actuator. The oil provides a dampening effect for the valve closure and the absence of oil allowed the valve to close faster than desired. The oil leak originated from a 3/4 inch NPT port on the dashpot cylinder. The cause of the leak is attributed to degradation of the Teflon tape applied as a thread sealant.

Corrective actions consist of removing, cleaning and reassembling fittings to the port using Loctite 5772 in place of the Teflon tape. In addition, the procedure for actuator dashpot reassembly has been revised to require use of the Loctite 5772 sealant. In addition to improve reliability of all threaded fittings for the MSIV actuators the procedure has been revised to require cleaning and the application of new Loctite 5772 sealant any time threaded connections are removed from the actuator.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Edwin I. Hatch Nuclear Plant Unit 1	05000321	2009	- 002	- 0	2	OF 5

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 (EIIIS Code XX).

DESCRIPTION OF EVENT

On May 4, 2009 at 851 EDT, Unit 1 was in hot shutdown, Mode 3. Stroke time testing of the inboard Main Steam Line Isolation Valve (MSIV) (EIIIS Code SB), 1B21-F022B, failed to meet both the procedural minimum limit, and the Technical Specification minimum limit of greater than or equal to three seconds. The valve closed in 1.53 seconds. A Work Order was initiated to identify and repair the cause of the failure. Once the failure mechanism was identified it was repaired. In addition inspection of the other MSIV's on both Unit 1 and Unit 2 was performed. This inspection determined that a similar condition does not exist on any of the other MSIV's.

CAUSE OF EVENT

This event was caused by the loss of oil in the actuator due to a leak at a fitting on the actuator. The oil provides a dampening effect for the valve closure and the absence of oil allowed the valve to close faster than desired. The oil leak originated from a 3/4 inch NPT port on the dashpot cylinder. The cause of the leak is attributed to degradation of the Teflon tape applied as a thread sealant.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(i)(B) because a condition prohibited by the Technical Specification existed. Specifically, the 'B' inboard MSIV closed faster than the limit established by the plant's Technical Specifications.

The MSIV's have a specific stroke time listed in the Technical Specification. This acceptable closing time range is intended to perform a dual function. First to close and perform a primary containment (EIIIS Code NH) isolation function with a maximum closure time which limits the release of radiological products. Second the associated minimum closure time reduces vessel peak pressure and protects against fuel damage. In this event one MSIV closed faster than the minimum time stated in the Technical Specification. An evaluation of the effect of this quicker valve response was performed and is summarized below.

Hatch Core Analysis has performed an evaluation of the MSIV closure event for Hatch-1 Cycle 24 in which one MSIV closes faster than the minimum allowable time required by Technical Specification (TS) SR 3.6.1.3.6. The approach taken in this evaluation was to model one MSIV closing in the as-measured time of 1.53 seconds and the remaining valves closing in the minimum allowable Technical Specification time of 3.0 seconds, and then run applicable reload licensing calculations.

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Edwin I. Hatch Nuclear Plant Unit 1	05000321	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3	OF 5
		2009	- 002	- 0		

This analysis was performed using GNF's NRC-approved ODYN BWR transient simulation code which models the short-term plant response to pressurization events. ODYN's plant model is based on one average steamline. To account for the two valve closure times, the function of valve area versus time after the closure signal was weighted to reflect one valve closing faster than the remaining valves.

The MSIV fast closure with direct scram on valve position (MSIVD) and the MSIV fast closure with flux scram (MSIVF) events were analyzed. The assumptions listed below are common to both the MSIVD and MSIVF results.

1. 1 MSIV closes in 1.53 seconds and the remaining valves close in 3.0 seconds.
2. The smallest throat diameter (4.905 in) was used for all SRVs.
3. A conservative axial power shape was used for all test cases. This assumption results in a top-peaked power shape at the end of cycle which retards the effect of the reactor scram.
4. The reactor is operating at either 105% of rated core flow, which is the maximum allowable core flow at rated power, or at 92.9% of rated core flow, which is the minimum licensed core flow at rated power.
5. 1 of the 11 SRVs is assumed to be out of service.

The MSIVD event with all MSIVs closing in 3 seconds is classified as a non-limiting Anticipated Operational Occurrence (AOO) in the FSAR, but it was analyzed to verify it did not become a limiting event due to the faster MSIV closure time. The MSIVD results presented in this document are based on the following additional assumptions:

1. The initial reactor dome pressure is at the nominal, rated value of 1045 psig.
2. The MSIV closure event occurs at 100% of rated thermal power.
3. All control rods insert at the COLR Option B scram speeds. Note: These scram speeds have always been met for Plant Hatch.
4. Credit is taken for the direct scram on the MSIV safety-grade valve position switches.

The MSIVF event is used to evaluate compliance with the 1325 psig Reactor Coolant System (EIS Code AD) Pressure Safety Limit (Technical Specification 2.1.2) during the worst anticipated reactor vessel over pressurization event. The Tech Spec Safety Limit is evaluated at the top of the reactor vessel in the steam dome and the value is conservatively selected to ensure the 1375 psig ASME Boiler and Pressure Vessel Code overpressure limit is not violated at the bottom of the reactor vessel. The following additional assumptions are made for the MSIVF event:

1. The direct scram from the valve position switches fails; therefore, the scram is delayed until the APRM system's high neutron flux scram signal is reached.
2. The initial reactor dome pressure is at the maximum value of 1058 psig as specified in Tech Spec SR 3.4.10.1.
3. The MSIV closure event occurs at a reactor power level (100.5%) which is slightly greater than rated power at the very end of cycle when there are no control rods in the

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE		
Edwin I. Hatch Nuclear Plant Unit 1	05000321	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4	OF	5
		2009	- 002	- 0			

instrument uncertainties.

4. COLR Option A scram speeds are used. These are equivalent to the Tech Spec limits for TS 3.1.4.

The results of this analysis are given in Table 1.

The peak dome and vessel pressures remained below their limits of 1325 psig and 1375 psig, respectively, for all cases. The direct scram improves margin to the overpressure limits because the neutron flux and ultimately the thermal power decrease much sooner than in the flux scram case. Also, the scram speed was faster for the MSIVD event since it used the Option B scram speeds.

Specified acceptable fuel design limits (SAFDLs) were checked for the MSIVD event since it is classified as an AOO in the Plant Hatch FSAR. The ΔCPR results were not calculated by OLYN for the MSIVD cases because the peak fuel surface heat flux does not rise above its initial value. Therefore, there was no effect on the Operating Limit MCPR values. Also, as a result of no increase in heat flux, the fuel rod thermal and mechanical overpower were insignificant and well below the allowable limits.

The SAFDLs are not applicable to the MSIVF event because it is classified as a special event that is used to conservatively evaluate compliance with the ASME Boiler & Pressure Vessel over pressurization limit for the reactor pressure vessel.

Based on this analysis, the faster (1.53 sec) closure of one MSIV would have no discernable affect on the response of the fuel or peak pressure relative to the 3 second TS values. In fact, the peak pressures of the MSIVF cases were only marginally higher than the results of the Hatch-1 Cycle 24 reload licensing analysis (Table 2).

Table 1 – MSIV Transient Results

Event	Flow Condition	Peak Heat Flux % initial ref	OLMCPR B	OLMCPR A	Peak Dome Pressure (psig)	Peak Vessel Pressure (psig)	TOP	MOP
MSIVD	ICF	100.03	no effect	no effect	1205.1	1244.9	0.0	7.6
MSIVD	MELLLA	100.02	no effect	no effect	1201.0	1236.3	0.2	0.2
MSIVF	ICF	128.92	N/A	N/A	1292.9	1329.3	N/A	N/A
MSIVF	MELLLA	127.13	N/A	N/A	1293.0	1326.2	N/A	N/A

OLMCPR : Operating Limit Minimum Critical Power Ratio (Option A/B Scram Speeds)
 TOP : Thermal Overpower
 MOP : Mechanical Overpower

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE		
Edwin J. Hatch Nuclear Plant Unit 1	05000321	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5	OF	5
		2009	- 002	- 0			

Table 2 – MSIV Results from H1C24 Reload Licensing Analysis

Event	Flow Condition	Peak Dome Pressure (psig)	Peak Vessel Pressure (psig)
MSIVF	ICF	1291	1328
MSIVF	MELLLA	1292	1324

CORRECTIVE ACTIONS

The leaking fitting was removed, cleaned and reassembled using Loctite 5772 in place of the Teflon tape. The oil was replaced and functional testing was satisfactorily performed.

Procedures 52SV-B21-001-1 and 52SV-B21-001-2, MSIV Limit Switch Response and Component Inspection/Repair, for actuator dashpot reassembly have been revised to require use of the Loctite 5772 sealant. In addition to improve reliability of all threaded fittings for the MSIV actuators the procedure has been revised to require cleaning and the application of new Loctite 5772 sealant any time threaded connections are removed from the actuator.

ADDITIONAL INFORMATION

Other Systems Affected: None

Failed Components Information:

Master Parts List Number: 1B21-F022B
 Manufacturer: Atwood & Morrill Co.
 Model Number: VPF279221
 Type: Valve, Shutoff
 Manufacturer Code: A585

EIIS System Code: SB
 Reportable to EPIX: Yes
 Root Cause Code: D
 EIIS Component Code: SHV

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

Previous Similar Events:

There are no similar events within the past two years in which an MSIV stroke time tested outside of the time specified in the Technical Specifications.