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February 23, 2000



Docket Nos.: 50-348  
50-364

NEL-00-0053

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

Joseph M. Farley Nuclear Plant  
Licensee Event Report 2000-001  
Non-Conservative Main Steam Line Break Offsite Dose Calculation

Ladies and Gentlemen:

Joseph M. Farley Nuclear Plant - Unit 1 and 2 Licensee Event Report (LER) No. 2000-001 is being submitted voluntarily. There is one NRC commitment in the LER. When available; SNC will review the recommendations of a Westinghouse Nuclear Safety Advisory Letter (NSAL) for applicability and further corrective actions as appropriate.

If you have any questions, please advise.

Respectfully submitted,

A handwritten signature in cursive script that reads "Dave Morey".

Dave Morey

EWC/maf ler200001.doc  
Attachment

Handwritten initials "JED" in a cursive script.

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U. S. Nuclear Regulatory Commission

cc: Southern Nuclear Operating Company  
Mr. L. M. Stinson, General Manager – Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.  
Mr. L. M. Padovan, Licensing Project Manager – Farley

U. S. Nuclear Regulatory Commission, Region II  
Mr. L. A. Reyes, Regional Administrator  
Mr. T. P. Johnson, Senior Resident Inspector – Farley

<b>NRC FORM 366</b> (6-1998)				<b>U.S. NUCLEAR REGULATORY COMMISSION</b>				<b>APPROVED OMB NO. 3150-0104 EXPIRES: 06/30/2001</b> Estimated burden per response to comply with this mandatory information 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.										
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)										<b>FACILITY NAME (1)</b>  Joseph M. Farley Nuclear Plant - Unit 1			<b>DOCKET NUMBER (2)</b>  0 5 0 0 0 3 4 8			<b>PAGE (3)</b>  1 OF 4		
<b>TITLE (4)</b> Non-Conservative Main Steam Line Break Offsite Dose Calculation																		
<b>EVENT DATE (5)</b> MONTH DAY YEAR			<b>LER NUMBER (6)</b> YEAR SEQUENTIAL NUMBER REVISION NUMBER			<b>REPORT DATE (7)</b> MONTH DAY YEAR			<b>OTHER FACILITIES INVOLVED (8)</b>									
0 2   19   1999			2 0 0 0   0 0 1   0 0			0 2   23   2000			FACILITY NAME Joseph M. Farley Unit 2		DOCKET NUMBER 0 5 0 0 0 3 6 4							
FACILITY NAME Joseph M. Farley Unit 2			DOCKET NUMBER 0 5 0 0 0															
<b>OPERATING MODE (9)</b> 1		<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)</b>																
<b>POWER LEVEL (10)</b> 1 0 0		<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)			<input type="checkbox"/> 50.73(a)(2)(viii)							
		<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)			<input type="checkbox"/> 50.73(a)(2)(x)							
		<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 20.2033(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 73.71							
		<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 20.2033(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iv)			<input checked="" type="checkbox"/> OTHER							
		<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(1)			<input type="checkbox"/> 50.73(a)(2)(v)			Specify in Abstract below							
		<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(vii)			or in NRC Form 366A							
<b>LICENSEE CONTACT FOR THIS LER (12)</b>										<b>TELEPHONE NUMBER (include area code)</b>								
NAME L. M. Stinson, General Manager Nuclear Plant										3 3 4 - 8 9 9 - 5 1 5 6								
<b>COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)</b>																		
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX								
<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>								<b>EXPECTED SUBMISSION DATE (15)</b>		MONTH	DAY	YEAR						
YES (If yes, complete EXPECTED SUBMISSION DATE)								<input checked="" type="checkbox"/> NO										
<b>ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)</b>																		
<p>On February 19, 1999, it was determined that the limiting main steam line break (MSLB) offsite dose analysis for Farley Nuclear Plant (FNP) Units 1 and 2 may have assumed a non-conservative value for letdown flowrate which affected the iodine source term (dose equivalent iodine or DEI) used in the analysis. This event is being reported voluntarily. This condition was discovered due to evaluation of a similar condition discovered at Beaver Valley and reported on a Nuclear Network entry dated February 9, 1999. The cause of the non-conservatism was that the dose calculation assumed flows lower than the actual flows of the letdown system. This discrepancy between the assumed and actual flow rates resulted in a non-conservative offsite dose calculation such that with postulated worst case operating conditions and a postulated MSLB, offsite dose limits may have been exceeded. Reactor coolant system (RCS) DEI was below worst case postulated conditions. On February 19, 1999, a correction factor was applied to the measured DEI to ensure that the current TS limit and MSLB offsite dose analysis assumptions would remain bounding with respect to increased letdown flow rates.</p> <p>On February 4, 2000, Southern Company Services determined that use of a nominal flowrate does represent a non-conservatism in the FNP dose analyses. SNC is currently considering a number of options such as revising the accident analyses, reducing steam generator alternate repair criteria allowable leakage, or requesting a TS change to the DEI limit. This event does not represent a Safety System Functional Failure.</p>																		

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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Joseph M. Farley Nuclear Plant - Unit 1	05000348	2000	001	00	2	OF	4

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

Westinghouse -- Pressurized Water Reactor  
Energy Industry Identification Codes are identified in the text as [XX].

Description of Event

On February 19, 1999, it was determined that the limiting main steam line break (MSLB) offsite dose analysis for Farley Nuclear Plant (FNP) Units 1 and 2 may have assumed a non-conservative value for letdown flowrate which affected the source term used in the analysis. This event is being reported voluntarily. The cause of the non-conservative assumption was that the dose calculation assumed a nominal letdown flowrate of 60 gpm while the actual flowrates of the letdown system were approximately 130 gpm. This discrepancy between the assumed and actual flow rates resulted in a non-conservative offsite dose calculation such that with postulated worst case operating conditions and a postulated MSLB, offsite dose limits (based on a small fraction of the 10 CFR 100 limits) might have been exceeded. Reactor coolant system (RCS) dose equivalent iodine (DEI) was below worst case postulated conditions. In addition, on February 19, 1999, a normalization factor was applied to the measured DEI to ensure that the current TS limit and MSLB offsite dose analysis assumptions would be bounding with respect to increased letdown flow rates.

Letdown flow removes iodine from the reactor coolant system due to demineralizer cleanup. The methodology for calculation of accident dose assumes that the iodine inventory held in the fuel rods is released at 500 times the normal appearance rate in the RCS. It is assumed that the increased release rate of the iodine inventory inside the fuels rods begins upon initiation of an accident. Therefore, cleanup of activity from the RCS, more than assumed in the dose calculation, results in an apparent reduced source term. As a result, the dose calculations for a MSLB at FNP may have been non-conservative. The MSLB event is the limiting postulated accident for offsite dose at FNP due to steam generator alternate repair criteria (SG ARC) in place.

The original MSLB offsite dose analyses performed by Westinghouse assumed a nominal 60 gpm letdown flow rate, while the plant has operated at a higher value of approximately 130 gpm. Following discovery of this issue, Westinghouse was asked to confirm the appropriateness of using the nominal letdown flowrate versus actual letdown flowrate. SNC has confirmed that Westinghouse is currently evaluating this issue for industry applicability and is expected to issue a Nuclear Safety Advisory Letter (NSAL) in the near future. When the NSAL is issued, SNC will review it for additional applicability and appropriate corrective actions. On February 4, 2000, Southern Company Services (SCS) determined that use of a nominal flowrate does represent a non-conservatism in the FNP dose analyses. SNC is currently considering a number of options such as revising the accident analyses, reducing SG ARC allowable leakage, or requesting a TS change to the DEI limit. This event does not represent a Safety System Functional Failure.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

Cause of Event

The cause of the non-conservatism was that the dose calculation assumed a letdown flow lower than the actual flows of the letdown system. This discrepancy between the assumed and actual flow rates resulted in a non-conservative offsite dose calculation such that with postulated worst case operating conditions and a postulated MSLB, offsite dose limits might have been exceeded.

The letdown flow assumed in the offsite dose calculation model is thought to be a hold over from initial design values. The current offsite dose model for FNP was developed by SCS based on assumptions from the original Westinghouse model.

Safety Assessment

This condition was not safety significant. A review of the measured DEI values for the previous two year period was done, and at no time during that period was the DEI, normalized to actual letdown flow rates, greater than Technical Specification limits. Therefore, the calculated offsite dose value for a postulated MSLB event would have remained within limits.

No MSLB event has occurred at FNP.

This event does not represent a Safety System Functional Failure.

The health and safety of the public were not affected by this event.

Corrective Action

As a conservative measure, a factor to normalize measured DEI to the actual letdown flow was calculated and placed into plant procedures in February 1999. A further review for other potential non-conservative assumptions discussed in a draft NSAL was done. No other non-conservative assumptions were identified in the FNP model.

An additional review and refinement of the letdown normalization factor was done, and the results were placed in plant procedures on February 11, 2000.

When the Westinghouse NSAL is released, an additional review will be performed and appropriate further corrective actions will be taken. SNC is currently considering a number of options such as revising the accident analyses, reducing SG ARC allowable leakage, or requesting a TS change to the DEI limit.

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Additional Information

No other FNP LERs addressing non-conservative calculation assumptions have been submitted within the past two years.

Beaver Valley submitted LER 50/334 99-002 for a similar condition.