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July 10, 1991



Docket No. 50-348

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

Joseph M. Farley Nuclear Plant - Unit 1
Licensee Event Report No. LER 91-002-00

Gentlemen:

Joseph M. Farley Nuclear Plant, Unit 1, Licensee Event Report No. LER 91-002-00 is being voluntarily submitted. If you have any questions, please advise.

Respectfully submitted,


J. D. Woodard

JDW/BHW:map 0297

Enclosure

cc: Mr. S. D. Ebnetter
Mr. G. F. Maxwell

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Joseph M. Farley Nuclear Plant - Unit 1										DOCKET NUMBER (2) 05000348				PAGE (3) 1 of 5		
TITLE (4) Temporary Strainers Found In The Suction Piping Of The 1B And 1C Charging Pumps																
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)						
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES				DOCKET NUMBER(S)			
04	08	91	91	002	00	07	10	91					05000			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)														
6		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)		
POWER LEVEL		000				20.405(a)(1)(i)				50.36(c)(1)				73.71(c)		
		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				X OTHER (Specify in		
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				Abstract below)		
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)				Voluntary		
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME D. N. Morey, General Manager - Nuclear Plant										TELEPHONE NUMBER AREA CODE 205 899-5156						
COMPLETE ONE LINE FOR EACH FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NRPDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NRPDS						
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO						

ABSTRACT (16)

While repairing a leaking flange on the suction of the 1C charging pump, a temporary strainer was found installed in the pump suction piping. This strainer was not in accordance with plant design and should not have been installed. All charging pumps on both units were inspected and a similar strainer was found installed in the suction piping of the 1B charging pump.

The strainers have been removed from the suctions of the 1B and 1C charging pumps.

An evaluation of the effect of these strainers was performed. This evaluation determined that there is no evidence that the temporary strainers would have prevented the fulfillment of the safety function of the charging pumps.

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TEXT

Plant and System Identification

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System codes are identified in the text as [XX].

Summary of Event

While repairing a leaking flange on the suction of the 1C charging pump, a temporary strainer was found installed in the pump suction piping. This strainer was not in accordance with plant design and should not have been installed. All charging pumps on both units were inspected and a similar strainer was found installed in the suction piping of the 1B charging pump.

Description of Event

On 4-8-91, Unit 1 was shut down for a refueling outage and the fuel had been removed from the reactor vessel. Work was in progress on a leaking flange on the spool piece at the suction of the 1C charging pump [BQ]. During the work, Maintenance personnel discovered that a temporary strainer was installed in the charging pump suction line.

The strainer was removed from a spool piece in the pump suction line. The other charging pumps on both units were checked for the presence of suction strainers. A similar strainer was found in the suction piping of the 1B charging pump. No other strainers were found.

The temporary strainers were conical in shape and were made of stainless steel mesh. They were found to be in good condition with no appreciable fouling. The strainers were not adversely affecting pump performance as evidenced by successful inservice testing. When installed, these strainers are relatively small and unobtrusive. They fit in the suction spool piece of the charging pump suction line and the spool piece is covered by insulation. Thus, they are very difficult to identify after installation.

An intensive record search has been performed but it has not been possible to determine when the conical strainers were installed. No documentation was found regarding installation of conical strainers. The strainers used during startup of both units were basket strainers. The basket strainers are large and are installed in place of the spool pieces. They would be quite obvious if they were installed. Only three charging pump basket strainers were purchased. The basket strainers were installed in and removed from both FNP units during startup.

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TEXT

During the early phase of plant operation, it was necessary to change pump rotating assemblies. Such work was typically performed in accordance with the pump technical manual and under the direction of a vendor technical representative. The technical manual for the charging pumps recommends installation of a temporary strainer in the pump suction until the system is considered clean. However, no records can be found of installing conical strainers and maintenance personnel that were involved with the repairs 10 to 12 years ago do not recall installing strainers in the suction.

FNP's response to Information Notice 85-96, "Temporary Strainers Left Installed In Pump Suction Piping," has been reviewed. The response (dated 9-25-86) noted that a walkdown had been performed early in plant life to ensure that all temporary strainers had been removed. The thinking at that time appears to have been that the basket strainers were used during startup and that it would be obvious if they were still installed. This walkdown took credit for having the pumps apart and looking up the suction line. The thought was that if a strainer was installed other than the basket strainer, it would be in the pump suction. Hence, this walkdown did not identify the presence of these conical strainers.

An evaluation of the effect of the conical strainers was performed. This evaluation determined that there is no evidence that the conical strainers would have prevented the fulfillment of the safety function of the charging pumps.

Cause of Event

This event was most likely caused by inadequate planning and inadequate documentation of work performed on the charging pumps. It appears that the temporary strainers were installed during construction, startup or the early phase of plant operation.

Corrective Action

The strainers have been removed from the suctions of the 1B and 1C charging pumps. The other charging pumps and other ESF pumps on both units have been checked to ensure that strainers are not installed in the pump suctions or suction spool pieces.

The current planning and documentation of the work process is more extensive as compared to that which existed during the early phase of plant operation. Documentation requirements exist currently which would prevent recurrence of this type of event.

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Reportability Analysis and Safety Assessment

This event is being reported voluntarily. The strainers have had no detectable effect on the charging pumps' performance. The pumps have met all surveillance test and Inservice Inspection Plan requirements. Further, the 1A charging pump did not have a suction strainer installed and was capable of performing its safety related function. The 1A charging pump was available for service for the vast majority of the time.

This event has been evaluated for its effect on the capability of the charging pumps to perform their safety function. It was concluded that the temporary strainers would have had a minimal effect on charging pump performance during normal operation and during the injection phase of a LOCA. During these types of operation, the charging pumps take suction from clean water sources which are free of debris that could foul the strainers. The additional pressure drop through the strainer at 650 gpm (the maximum expected post-LOCA flow rate for a charging pump) is believed to be relatively small (3 psi or less). This additional pressure loss can be offset by existing NPSH margin and removal of calculational conservatism.

During the recirculation phase of a LOCA, it can be postulated that some debris would have been trapped by the temporary strainers. However, the flow area of the conical strainer is more than three times the flow area of the suction pipe. The large flow area would have minimized the effect of the strainer on charging pump suction flow. Further, any clogging of the strainer would be expected to be a gradual process.

Before debris could have reached the strainer, it would have had to pass through the containment sump suction screens and the residual heat removal pumps prior to reaching the strainers. The amount of debris that would be caught in the strainers would be minimized because:

Materials used in the construction of containment were chosen to minimize the presence of small debris in the post-LOCA sump.

Containment is inspected in accordance with Technical Specifications after each outage for cleanliness.

In addition, the post-LOCA containment sumps are designed so that:

The containment sump suction screens limit particles which enter the pump suction lines to less than one-quarter inch in size.

The containment sump inlet piping is above the floor elevation. This would limit the amount of debris which entered the pump suction piping.

The containment sumps are designed to yield low fluid approach velocities in the vicinity of the sumps to promote settling out of debris.

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Further, the charging pumps are not required to operate in the recirculation mode for all LOCA scenarios. A small break LOCA of four inches and above results in reactor coolant system (RCS) depressurization to the point where the residual heat removal system can inject to the RCS prior to initiation of recirculation. For a one inch small break LOCA, operator action to perform post-LOCA cooldown will result in the RCS reaching cold shutdown before it is necessary to enter the recirculation phase of operation. Thus, charging pump operation in the recirculation mode is only required for a short period of time (approximately two and one-half hours) during post-LOCA cooldown for a narrow range of break sizes (one to four inches).

The health and safety of the public were not affected by the presence of the strainers in the suction piping of the 1B and 1C charging pumps.

Additional Information

This event would not have been more severe if it had occurred under different operating conditions.

No components failed during this event.

No similar LERs have been submitted by FNP.