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NINE MILE POINT
NUCLEAR STATION

October 5, 2011

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 2; Docket No. 50-410

Licensee Event Report 2011-002, Reactor Shutdown due to Reactor Coolant System Unidentified Leakage Above Technical Specification Limits

In accordance with 10 CFR 50.73(a)(2)(i)(A), please find attached Licensee Event Report 2011-002, Reactor Shutdown due to Reactor Coolant System Unidentified Leakage Above Technical Specification Limits.

There are no regulatory commitments in this submittal.

Should you have questions regarding the information in this submittal, please contact John J. Dosa, Director Licensing, at (315) 349-5219.

Very truly yours,

FOR MARK FLAHERTY

MDF/RJC

Attachment: Licensee Event Report 2011-002, Reactor Shutdown due to Reactor Coolant System Unidentified Leakage Above Technical Specification Limits

cc:

NRC Project Manager
NRC Resident Inspector
NRC Regional Administrator

IE22
NRR

ATTACHMENT

LICENSEE EVENT REPORT 2011-002

REACTOR SHUTDOWN DUE TO UNIDENTIFIED REACTOR COOLANT SYSTEM LEAKAGE ABOVE TECHNICAL SPECIFICATION LIMITS

Nine Mile Point Nuclear Station, LLC
October 5, 2011

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), 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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE

Reactor Shutdown Due to Reactor Coolant System Unidentified Leakage Above Technical Specification Limits

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
									None	NA
08	06	2011	2011	002	00	10	05	2011	FACILITY NAME: None	DOCKET NUMBER: NA

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☒ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
John J. Dosa, Director Licensing	(315) 349-5219

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
X	AD	VLV	Anchor Darling	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
NA	NA	NA

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

At 0152 on August 6, 2011, the containment gaseous radiation monitors went into alarm and it was identified that Reactor Coolant System (RCS) unidentified leakage was increasing. At 0205, a Technical Specifications Condition was entered for RCS unidentified leakage increase above the specified limit. The RCS unidentified leakage peaked at 11.35 gpm, which resulted in an Unusual Event being declared due to reaching an Emergency Action Level (unidentified leakage greater than 10 gpm). At 0227, commenced lowering reactor power. Reactor power was reduced to 20% and, at 0941, the Reactor Protection System was manually actuated by placing the reactor mode switch in the Shutdown position. The unidentified leakage was due to a packing leak from the "A" RCS pump discharge blocking valve. The cause of the packing leak was determined to be vibration/turbulent flow that caused packing relaxation and failure. The valve packing was replaced, torqued and the gland follower nuts were secured in place. The packing for other similar valves was re-torqued and the gland follower nuts were secured in place.

A Preventive Maintenance Surveillance Test (PMST) activity will be created to re-torque the packing for RCS pump blocking valves every two years. Additionally, a modification will be implemented to install a live loading design on the RCS pump blocking valves in an upcoming outage.

There have been two other similar LERs involving RCS valve packing leakage: Nine Mile Point Unit 1 LER-2006-001 and Nine Mile Point Unit 2 LER-2001-007.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 2	05000410	2011	002	00	2 OF 5

NARRATIVE

I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS:

Prior to this event, Nine Mile Point Unit 2 (NMP2) was operating and stable at 100 percent power with no inoperable systems affecting this event.

B. EVENT:

At 0152 on August 6, 2011, the containment gaseous radiation monitors went into alarm and it was identified that Reactor Coolant System (RCS) unidentified leakage was increasing. At 0205, Technical Specification (TS) 3.4.5 Condition B was entered for an RCS unidentified leakage increase not within limit (increase greater than 2 gpm within the previous 24 hours). With either the unidentified leakage not reduced to within limit or the source of the unidentified leakage increase not identified within 4 hours, TS 3.4.5 Condition C requires the plant to be in Mode 3 within 12 hours and in Mode 4 within 36 hours. At 0227, power reduction commenced. At 0241, RCS unidentified leakage exceeded the 5 gpm unidentified leakage limit of TS 3.4.5. At 0317, RCS unidentified leakage peaked at 11.35 gpm, which resulted in Unusual Event being declared due to reaching an Emergency Action Limit (unidentified leakage greater than 10 gpm). Reactor power was reduced to 20% and, at 0941, the Reactor Protection System (RPS) was manually actuated by placing the reactor mode switch in the Shutdown position, scramming the plant. The Unusual Event was terminated at 1127.

Following the initial drywell entry, it was determined that the source of the leakage was from failed packing on Reactor Coolant Pump "A" discharge blocking valve 2RCS*MOV18A.

There was no impact on Nine Mile Point Unit 1 (NMP1) from this event.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

There were no inoperable components or systems that contributed to this event.

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES (note: all times are on August 6, 2011):

0152 - Containment gaseous radiation monitors went into alarm and RCS unidentified leakage was noted to be increasing.

0205 - Technical Specification 3.4.5 Condition B was entered for RCS unidentified leakage increase not within the limit of less than or equal to 2 gpm within the previous 24 hours.

0227 - Power reduction commenced.

0241 - The RCS unidentified leakage exceeded the 5 gpm unidentified leakage limit of TS 3.4.5.

0317 - RCS unidentified leakage rate peaked at 11.35 gpm.

0322 - An Unusual Event was declared per Emergency Action Level (EAL) 2.1.1 due to RCS unidentified leakage greater than 10 gpm.

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NARRATIVE

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES (cont.):

0606 - Reactor power was reduced to 55% and feedwater pump "B" was removed from service.

0941 - Reactor power was reduced to approximately 20% power and the reactor mode switch was placed in the Shutdown position.

1127 - The Unusual Event was terminated due to being in Mode 3, Hot Shutdown. Emergency Action Level 2.1.1 only applies in Modes 1 and 2.

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None.

F. METHOD OF DISCOVERY:

At 0152 on August 6, 2011, Operations noted that the containment gaseous radiation monitors went into alarm and the RCS unidentified leakage was increasing.

G. MAJOR OPERATOR ACTION:

When it was noted that the RCS unidentified leakage was rising, TS 3.4.5 Condition B was entered for RCS unidentified leakage increase not within the limit of less than or equal to 2 gpm within the previous 24 hours. Reactor power was lowered. The RCS unidentified leakage peaked at 11.35 gpm at which time an Unusual Event was declared due to reaching an Emergency Action Limit (unidentified leakage greater than 10 gpm). Reactor power was reduced to 20% and the RPS was manually actuated by placing the reactor mode switch in the Shutdown position.

H. SAFETY SYSTEM RESPONSES:

All safety systems responded per design. The Reactor Core Isolation Cooling (RCIC) system was started for pressure control. When the reactor water level reached level 8, the steam admission valve closed per design. There was no loss of offsite power to the onsite emergency buses and the Emergency Core Cooling Systems (ECCS) were available, but not called upon to support the safe shutdown of the reactor.

II. CAUSE OF THE EVENT:

The cause of the event falls under NUREG-1022 cause code X (Other). The cause of the RCS unidentified leakage was determined to be vibration/flow turbulence that reduced the packing stress of the RCS pump discharge blocking valve, 2RCS*MOV18A (unanticipated interaction of system or components). It was determined from torque values taken after the event that vibration and flow turbulence had caused the packing to relax and fail on 2RCS*MOV18A.

Prior to 2002, there had been reactor coolant blocking valve packing leak issues at NMP2. A root cause analysis performed in 2001 determined that the problem was caused by loss of gland stress due to packing ring extrusion into the leak-off port. Vibration was not listed as a cause or contributor. Based on the subsequent satisfactory

NARRATIVE

performance of the reactor cooling pump blocking valves, it was believed that the corrective actions from the 2001 analysis had been effective.

This event was entered into the NMPNS corrective action program (Condition Reports CR-2011-007143 and CR-2011-007171).

III. ANALYSIS OF THE EVENT:

This event involved "The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan" and "The initiation of any nuclear plant shutdown required by the plant's Technical Specifications." The notifications per 10 CFR 50.72(a)(1)(i) and 10 CFR 50.72(b)(2)(i) were completed on August 6, 2011, at 0405.

This event is reportable in accordance with 10 CFR 50.73 (a)(2)(i)(A), "The completion of any nuclear plant shutdown required by the plant's Technical Specifications."

There were no systems inoperable and no system failures related to this event. There were no actual safety consequences from this event. The leakage was from the blocking valve packing and was not indicative of RCS component wear. The leakage was contained within the drywell. The maximum leakage rate noted during this event was 11.35 gpm. Even if the packing had catastrophically failed, the leakage would still have been contained within the drywell and the plant would have been capable of reaching a safe shutdown condition. There were no system failures that prevented the safe shutdown of the plant. It is therefore concluded that even if a design basis accident had occurred concurrent with this event, all safety systems would have operated to safely mitigate the event. Based on the above considerations, the safety significance of this event is very low, and the event did not pose a threat to the health and safety of the public or plant personnel.

This event does not affect the NRC Regulatory Oversight Process (ROP) Index for Unplanned Scrams because the scram was taken as part of the normal shutdown procedure steps to meet the TS Required Action. This event increases the NRC Regulatory Oversight Process (ROP) Index for Unplanned Power Changes per 7000 Critical Hours from 0.8 to 1.62. The Green-to-White threshold value for this ROP indicator is greater than 6. As such, the event will not result in entry into the "Increased Regulatory (White) Response Band."

IV. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

1. The packing on 2RCS*MOV18A was replaced, torqued, and the gland follower nuts were secured in place.

2. The packing for the following valves was re-torqued and gland follower nuts were secured in place: 2RCS*MOV18B, and similar RCS pump suction blocking valves 2RCS*MOV10A and 2RCS*MOV10B.

During start-up, during the 900 pound inspection, no leaks were found at any of the four RCS blocking valves.

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B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

1. A Preventive Maintenance Surveillance Test (PMST) activity will be created to re-torque the packing for RCS pump suction and discharge blocking valves 2RCS*MOV18A(B) and 2RCS*MOV10A(B) every two years.

2. A modification will be implemented to install a live loading packing gland design on the Unit 2 pump discharge blocking valves, 2RCS*MOV18A(B), in an upcoming outage.

V. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

None

B. PREVIOUS LERs ON SIMILAR EVENTS:

There are two LERs that are similar to this one:

1. NMP1 LER-2006-001. On June 10, 2006, NMPNS commenced a planned downpower to perform a drywell entry to determine the cause of increased drywell leakage. The source of the increased leakage was determined to be the reactor coolant system drain valve packing. The cause of the packing leak was installation of incorrect packing in March 1997. The packing that was installed did not have the same diameter as the inside diameter of the stuffing box. During the shutdown, NMPNS replaced the packing in the leaking RCS pump drain valve.

2. NMP2 LER-2001-007. On December 15, 2001, NMPNS identified drywell floor drain leakage approaching the maximum limits of TS 3.4.5 Condition B for unidentified drywell leakage. The cause of the unidentified leakage was determined to be failed packing in a reactor coolant system discharge blocking valve, 2RCS*MOV18A. The corrective actions included repacking the valve to stop the leakage and retorquing the remaining similar valves in the RCS to protect against leakage. The primary cause of the packing failure was determined to be packing ring extrusion into the leak off port.

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 COMPONENT IDENTIFIER	IEEE 805 SYSTEM IDENTIFICATION	PART NUMBER
Reactor Coolant Blocking Valves	V	AD	24x20x24-900
Reactor Protection System	NA	JC	

D. SPECIAL COMMENTS:

None