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Constellation Nuclear

Nine Mile Point Nuclear Station

A Member of the Constellation Energy Group

February 13, 2002
NMP2L 2049

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Subject: ***Licensee Event Report 01-007, "Manual Reactor Scram Due to Unidentified Drywell Leakage"***

Gentlemen:

In accordance with 10 CFR 50.73(a)(2)(i)(A) and 10 CFR 50.73(a)(2)(iv)(A), we are submitting Licensee Event Report 01-007, "Manual Reactor Scram Due to Unidentified Drywell Leakage."

Very truly yours,

Michael F. Peckham
Unit 2 Plant General Manager

MFP/IAA/cld
Attachment

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Records Management

IE22

NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point, Unit 2	05000410	1 OF 4

TITLE (4)
Manual Reactor Scram Due to Unidentified Drywell Leakage

EVENT DATE (5) MO	DAY	YEAR	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REV NO	REPORT DATE (7) MO	DAY	YEAR	OTHER FACILITIES INVOLVED (8) FACILITY NAME	DOCKET NUMBER
12	15	2001	2001	007	00	02	13	2002	N/A	05000
									N/A	05000

OPERATING MODE (9)	1
POWER LEVEL (10)	060

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

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

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Bruce W. O'Brien, Manager Unit 2 Maintenance	315-349-4767

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	AD	ISV	Anchor/ Darling Co.	Y	X	SJ	LCV	Valtek Inc	N

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

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

On December 15, 2001, with Nine Mile Point Unit 2 (NMP2) at approximately 100 percent power, Nine Mile Point Nuclear Station, LLC (NMPNS) identified drywell floor drain leakage approaching the maximum limits of Technical Specification (TS) 3.4.5 for unidentified drywell leakage. Plant shutdown was commenced before reaching any of the limits of TS 3.4.5. Additionally, a strategy was developed to manually scram the reactor if leakage increased to 4 gallons per minute (gpm). With leakage continuing to rise above TS 3.4.5 limits, the applicable limiting conditions for operation (LCOs) were entered. At 2046 hours, with reactor core thermal power at approximately 60 percent, a manual reactor scram was initiated after the leak rate exceeded 4 gpm.

The cause of the drywell leakage was determined to be failed packing in a gate valve in the reactor coolant (recirculation) system (RCS). The primary purpose of this valve is to isolate the RCS pump for maintenance. The immediate corrective actions included repacking the valve to stop the leakage and retorquing the remaining similar valves in the RCS to protect against leakage. Plant restart and reactor criticality occurred on December 17, 2001.

The primary cause of the packing failure was determined to be inadequate torque specification from the packing program that is used on the affected valve and three other gate valves in the RCS. By the end of the next refueling outage (Spring 2002), all four gate valves will be repacked with a new type of packing having improved performance characteristics.

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

I. Description of Event

On December 15, 2001, at 0432 hours, with Nine Mile Point Unit 2 (NMP2) at approximately 100 percent power, radiation alarms were received on drywell particulate radiation monitors, 2CMS*CAB10A-2 and 2CMS*CAB10B-2. At 0505 hours, drywell floor drain leakage rate was observed to rise from 0.22 gallons per minute (gpm) to 0.4 gpm. The leakage rate remained the same until approximately 1700 hours, when it rose to 1.67 gpm. Chemistry samples taken from the drywell floor drain tank indicated the presence of short-lived radioisotopes indicative of leakage of reactor coolant.

Limiting Condition for Operation (LCO) 3.4.5.b. of Technical Specification (TS) 3.4.5, RCS Operational LEAKAGE, restricts the maximum unidentified leakage from the reactor coolant (recirculation) system (RCS) to 5 gpm in Modes 1, 2, and 3, while LCO 3.4.5.d. restricts the maximum increase in unidentified leakage within the previous 24 hour period in Mode 1 to 2 gpm. If either of these limits is exceeded, Actions A and B of TS 3.4.5 require the leakage to be reduced to within the limit within 4 hours, and if this condition is not met, Action C requires the plant to be in Mode 3 within 12 hours and in Mode 4 within 36 hours.

At 1745 hours, it was decided to commence an orderly plant shutdown due to the adverse trend in primary containment (drywell) parameters. At 1800 hours, the control room staff commenced shift turnover while continuing to monitor drywell leakage. The control room staff was briefed relative to the pending shutdown and a strategy was developed for actions to be taken in the event that the leakage continued to rise. The strategy developed was to remove the unit from service via a controlled shutdown, and to initiate a manual scram if the leak rate reached four (4) gpm. At 1900 hours, with the leak rate at 1.87 gpm, an orderly plant shutdown was commenced. The plant shutdown was commenced before reaching any of the leakage limits specified in TS LCO 3.4.5. At 1919 hours, upon noticing a leakage rate of 2.27 gpm (greater than allowed by LCO 3.4.5.d), TS 3.4.5 Action B was entered. At 2040 hours, it was identified that drywell floor drain leak rate had risen in a step change to 5.87 gpm (greater than allowed by LCO 3.4.5.b), and, therefore, TS 3.4.5 Action A was entered. At 2046 hours on December 15, 2001, with reactor core thermal power at approximately 60 percent, the reactor was scrammed by placing the mode switch in shutdown. The systems associated with the scram functioned as required, with one exception: valve 2FWS-LV55B (high-pressure low-flow) in the feedwater system, which was being utilized post-scram for reactor water level control, failed to open automatically or manually following the securing of the associated feedwater pump 2FWS-P1B. Reactor water level was then controlled with low-pressure low-flow bypass valve 2CNM-LV137, in accordance with the applicable plant procedure. Following the scram, the drywell floor drain leakage trended downward during plant depressurization and compliance with LCO 3.4.5 leakage limits was restored. At 2053 hours on December 15, 2001, TS Action A associated with the 5 gpm leakage rate limit was exited. At 2149 hours on that same day, TS Action B associated with the 2 gpm leakage rate increase limit was exited.

An inspection of the drywell identified packing leakage from gate valve 2RCS*MOV18A in the RCS as the cause of the drywell leakage. The immediate corrective actions consisted of repacking valve 2RCS*MOV18A to stop the leakage, checking three other similar gate valves in the RCS for leakage (no leaks found), and re-torquing the packing gland nut on all four gate valves as a precautionary measure. The failure of valve 2FWS-LV55B was traced to a malfunctioning positioner and lockup assembly. This assembly was replaced and the valve tested satisfactorily.

Plant restart and reactor criticality occurred on December 17, 2001.

II. Cause of Event

The cause of this event was determined to be the failure of packing on valve 2RCS*MOV18A. The primary cause of the packing failure was determined to be inadequate gland stress specified from the packing program that is being used on the four gate valves since Spring 1998. A secondary cause was several heatup and cooldown cycles that occurred since the valve was last repacked (in Spring 1998), which would tend to loosen the packing.

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

III. Analysis of Event

This event is reportable in accordance with 10CFR50.73(a)(2)(iv)(A), which requires a report for any event or condition that resulted in manual actuation of the reactor protection system, including reactor scram. Additionally, this event is reportable according to 50.73(a)(2)(i)(A), which requires a report for the completion of any plant shutdown required by the plant TS.

The RCS takes suction on the reactor pressure vessel (RPV) and discharges back to the RPV. Each of the two RCS pumps, 2RCS*P1A and P1B, has a 24 inch Anchor Darling gate valve, 2RCS*MOV10A and 10B, respectively, on the suction side, and a 24 inch Anchor Darling gate valve, 2RCS*MOV18A and 18B, respectively, on the discharge side. These valves are open during normal plant operation and their primary purpose is to isolate the RCS pump for maintenance.

During Refueling Outage Number 6 in Spring 1998, the stuffing boxes/packing glands for all four valves were modified from a three tier gland assembly to a single packing gland (simpler arrangement). These four valves were also then repacked using the Chesterton packing program. This program specified an inadequate gland stress, and this deficiency was not identified until the causal analysis for the current event was performed.

In September 2000, an inspection during a planned plant outage identified a packing leak of about 20 drops per minute from valve 2RCS*MOV18A. Subsequent inspections identified no leakage, and, therefore, this situation was accepted as is. During a planned outage in March 2001, the packing leak was noted again. The corrective action attempted was to manually back seat the valve, which did not change the leakage rate. However, subsequent inspections again indicated that the leakage had stopped. Based on this, it was concluded that the packing would not leak further as the plant heated up and resumed power operation. Thus, an opportunity was missed to generate an Action Request for valve repair during the next available outage. Later, in July 2001, an Action Request was initiated for repacking valve 2RCS*MOV18A during Refueling Outage Number 8 (RFO8) in Spring 2002, and this item was added to the RFO8 work scope.

The December 15, 2001, plant shutdown was commenced before reaching any of the leakage limits specified in TS LCO 3.4.5, the systems associated with the scram performed as required with the exception of valve 2FWS-LV55B, no release of drywell leakage to the outside environment occurred, the drywell inspection did not identify any other leaking valves, and the leakage problem was corrected prior to plant restart. The failure of valve 2FWS-LV55B to operate post scram did not significantly impact the ability to control reactor water level post scram.

Nine Mile Point Nuclear Station, LLC performed a probabilistic risk analysis for the manual scram event and determined that it is not risk significant per NRC guidance.

IV. Corrective Actions

1. Valve 2RCS*MOV18A was repacked to stop the leakage.
2. Valves 2RCS*MOV10A, 2RCS*MOV10B, and 2RCS*MOV18B were checked for leakage (no leaks found).
3. The packing gland nut on all four of the above valves was retorqued as a precautionary measure.
4. The malfunctioning positioner and lockup assembly in valve 2FWS-LV55B was replaced and the valve tested satisfactorily.
5. By the end of RFO8, all four of the above valves will be repacked with a new type of packing having improved performance characteristics.

V . Additional Information

1. Failed Components:

   a) A 24-inch gate valve, 2RCS*MOV18A, manufactured by Anchor Darling, used to isolate RCS pump 2RCS*P1A for maintenance.

   b) An automatic level control valve, 2FWS-LV55B, manufactured by Valtek, Inc., used to control reactor water level during low power operation.

2. Previous similar events:

   a) Licensee Event Report (LER) 97-06 documents an event where NMP2 experienced a rapid rise in unidentified drywell leakage at 95 percent power. As a result, the reactor was placed in cold shutdown. This particular problem was traced to a leaking flexible hose that served as the drain line to a flow control valve in the RCS.

   b) In December 1998, a packing leak was noted on 2RCS*MOV18B. This valve was, therefore, repacked during Refueling Outage Number 7 in Spring 2000. (This event did not result in a LER.)

3. Identification of components referred to in this LER:

Components	IEEE 805 System ID	IEEE 803A Function
Reactor Coolant (Recirculation) System	AD	N/A
Reactor Protection System	JC	N/A
Feedwater System	SJ	N/A
Control Rod Drive System	AA	N/A
Radiation Monitoring System	IL	N/A
Leak Monitoring System	IJ	N/A
Valve	AD	FCV, ISV
Valve	SJ	LCV
Pump	AD	P
Control Rod	AA	ROD
Radiation Monitors	IL	MON
Alarms (Radiation)	IL	RA
Reactor Pressure Vessel	AD	RPV
Switch	JC	HS
Drain	IJ, AD	DRN