



L-2013-250
10 CFR § 50.73
August 19, 2013

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

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2013-008-00
Through-Wall Leak in 3A CCW Pump Threaded Fitting Caused Pump to be
Inoperable Longer than AOT

The attached Licensee Event Report 05000250/2013-008-00 is submitted in accordance with
10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the Technical Specifications.

If there are any questions, please call Mr. Robert J. Tomonto at 305-246-7327.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Michael Kiley', is written over a horizontal line.

Michael Kiley
Vice President
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

JEZZ
NRC

1. FACILITY NAME Turkey Point Unit 3 2. DOCKET NUMBER 05000250 3. PAGE 1 of 4

4. TITLE Through-Wall Leak in 3A CCW Pump Threaded Fitting Caused Pump to be Inoperable Longer than AOT

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
6	19	2013	2013	008	00	8	19	2013	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)										
	<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)							
10. POWER LEVEL 100	<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)0	<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
 NAME Paul F. Czaya TELEPHONE NUMBER (Include Area Code) 305-246-7150

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

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

15. EXPECTED SUBMISSION DATE MONTH DAY YEAR

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

On June 7, 2013, with the Unit 3 reactor at 100% power, leakage at a threaded vent line connection on the 3A Component Cooling Water (CCW) pump casing was identified. A condition report and work request were initiated. By June 19, 2013, the leakage had increased from approximately 100 drops per minute to a steady stream and the pump was removed from service and isolated for repair. Examination of the 3/4 inch nipple removed from the pump casing revealed a through-wall flaw whose length exceeded structural integrity requirements. The pump was determined to be inoperable from intial observation of leakage on June 7. This 12 day period exceeded the allowed outage time permitted by the Technical Specifications and the attendant shutdown actions were not met. The cause of the fitting flaw is high cycle fatigue. Corrective actions include: 1) Repair the threaded connection, and 2) Modify the design to increase margin. Safety significance is considered to be low because the other two CCW pumps were available and capable of being powered by independent power supplies. The CCW safety function is accomplished with one pump operating.

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NARRATIVE

DESCRIPTION OF THE EVENT

On June 7, 2013 at approximately 1655 hours, with the Unit 3 reactor [AC, RCT] in Mode 1 at 100% rated thermal power, Operations personnel reported leakage from a 3/4 inch threaded pipe nipple [PSF] on the 3A Component Cooling Water (CCW) pump [CC, P] casing vent line to valve 3-703Q [CC, P, VTV]. Visual inspection revealed leakage at approximately 100 drops per minute (dpm) and reported as thread leakage because it was emanating from the area of thread engagement to the pump casing. A condition report and work request were generated to repair the leak.

On June 15, 2013, an Operations field operator noted an increase in leakage. The field operator notified control room staff that leakage had increased from approximately 100 dpm to approximately 200-300 dpm. Control room staff decided to swap the running 3A CCW pump to the 3B CCW pump. The 3B CCW pump was then started and the 3A CCW pump was stopped. After the CCW pump swap the field operator reported to the control room that the 3A CCW pump casing vent leakage was now spraying. The Shift Technical Advisor inspected the leakage and reported the spray was not large and was well within the makeup capability of the system. The increased leakage was assumed to be due to a slightly higher pressure at the vent line with the pump secured. Operations personnel initiated preparations to isolate the 3A CCW pump to support repair of the leaking vent line.

On June 19, 2013, the NRC Senior Resident Inspector questioned the Shift Manager regarding the potential for through-wall leakage at the vent line. After further visual inspection by Operations and Engineering personnel, it was determined that the possibility of a through-wall leak could not be eliminated. The 3A CCW pump was declared inoperable and isolated. The threaded vent line nipple was removed for evaluation and repair. Initial examination of the pipe nipple revealed a through-wall flaw approximately 7/8 inch long at the valley of the sixth thread. The vent line nipple was replaced and the 3A CCW pump was returned to service on June 23, 2013.

A past operability review determined that the 3A CCW pump was inoperable from the time the leak was first reported on June 7, 2013 because of the small margin between the actual flaw length of 0.875 inch and the maximum allowable length of 0.903 inch in conjunction with a pump mission time of 30 days.

The Technical Specification (TS) allowed outage time (AOT) during the period June 7, 2013 to June 19, 2013 was exceeded and the attendant shutdown actions were not met. Therefore, this event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS. For the purpose of starting the 60-day clock for reporting, the date of discovery is June 19, 2013 because the condition affecting the structural integrity of the 3A CCW pump vent line was not recognized until that time.

CAUSE OF THE EVENT

The cause of fitting failure is high cycle fatigue due to stress risers at the threaded connection to the pump casing.

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ANALYSIS OF THE EVENT

Background

CCW circulates through engineered safety features (ESF) heat loads during accident conditions to support ESF equipment cooling, reactor heat removal and containment heat removal. CCW is required to maintain safe shutdown (hot standby) at any time, including loss of offsite power and plant fires. CCW is also required to achieve and maintain safe (cold) shutdown during fires requiring control room evacuation, remove spent fuel pool heat, and remove plant heat loads required to support all normal operating modes.

Analysis

The leak at the 3A CCW pump vent line was documented on June 7, 2013 in condition reports 1880602 and 1880576. The immediate operability screening concluded that the low leakage rate did not affect system operation. The leak was observed and assumed to be thread leakage where the pipe nipple is installed in the pump casing. Because leakage at threaded connections is occasionally experienced and mostly attributable to thread leakage and not through-wall leakage, station staff including Operations, Engineering and condition report reviewers did not consider the possibility of a through-wall leak.

The vent line fitting was removed and examined to determine the cause of the leakage. Initial examination of the pipe nipple revealed a through-wall flaw approximately 7/8 inch long at the valley of the sixth thread. Subsequent examination determined the flaw to be in excess of the length required to assure structural integrity. The failure mode was determined to be high cycle fatigue.

The 3A CCW pump vent line fitting with the service-induced flaw was installed in 2012. New vent lines were installed on all Unit 3 and 4 CCW pump casings to improve venting effectiveness. The design will be modified to increase margin for vibration effects.

Reportability

TS Limiting Condition for Operation (LCO) 3.7.2 requires three CCW pumps to be operable in Modes 1-4. If one CCW pump is inoperable, then the AOT is 30 days if both remaining pumps are powered by independent sources. If the remaining two CCW pumps are not powered from independent sources, then the AOT is 72 hours. During the 12 day period June 7, 2013 to June 19, 2013, with the 3A CCW pump inoperable, both the 3B and 3C CCW pumps were powered from the same safety bus and were not independently powered, and so the 72 hour AOT applied. Therefore, the TS LCO, AOT and shutdown Actions were not met and a condition prohibited by the TS existed reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

ANALYSIS OF SAFETY SIGNIFICANCE

The through-wall flaw in the 3A CCW pump vent fitting was determined to impact structural integrity and would not allow the pump to perform its safety function for its mission time of 30 days. Therefore, the 3A

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CCW pump was inoperable during the 12-day period that leakage was evident and monitored prior to removal of the pump from service and repair.

During the 12-day period, the 3B and 3C CCW pumps were available to perform the safety function of the CCW system. While the 3B and 3C CCW pumps were aligned to the 3B 4160V safety bus, the capability existed to power the 3C CCW pump from the 3A 4160V safety bus should the need have arisen restoring the provision for independent power supplies. Only one CCW pump in operation is needed to remove design basis heat loads. Therefore, the CCW system remained functional with redundant capability to perform the required safety function and so the safety significance is considered to be low.

CORRECTIVE ACTIONS

Corrective actions include the following:

1. The leaking fitting on the 3A CCW pump was replaced.
2. Replace similar Schedule 40 CCW pump vent line fittings with Schedule 80 fittings.
3. Perform formal evaluations of existing leaks in threaded connections in Class 1, 2 and 3 systems.
4. Modify the design to increase margin for vibration effects.

ADDITIONAL INFORMATION

EIIS Codes are shown in the format [IEEE system identifier, component function identifier, second component function identifier (if appropriate)].

FAILED COMPONENTS IDENTIFIED: None

PREVIOUS SIMILAR EVENTS: None