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SUBJECT: Special Rept 88-024:on 880701-20.reactor containment temp
 greater than 150 F for more than 8 h.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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NRR/DEST/MEB 9H	1 1	NRR/DEST/MTB 9H	1 1
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 7										PAGE (3) 1 OF 0 6																														
TITLE (4) Special Report - Reactor Containment Temperature Greater Than 150°F For More Than Eight Hours																																																		
EVENT DATE (5)									LER NUMBER (6)									REPORT DATE (7)									OTHER FACILITIES INVOLVED (8)																							
MONTH			DAY			YEAR			YEAR			SEQUENTIAL NUMBER			REVISION NUMBER			MONTH			DAY			YEAR			FACILITY NAMES												DOCKET NUMBER(S)											
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OPERATING MODE (9) 1										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																																								
POWER LEVEL (10) 0 9 5										20.402(b)										20.405(c)										50.73(a)(2)(iv)										73.71(b)										
										20.405(a)(1)(i)										50.36(c)(1)										50.73(a)(2)(v)										73.71(c)										
										20.405(a)(1)(ii)										50.36(c)(2)										50.73(a)(2)(vi)										X OTHER (Specify in Abstract below and in Text, NRC Form 366A)										
										20.405(a)(1)(iii)										50.73(a)(2)(ii)										50.73(a)(2)(viii)(A)										Special Report										
										20.405(a)(1)(iv)										50.73(a)(2)(iii)										50.73(a)(2)(viii)(B)																				
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LICENSEE CONTACT FOR THIS LER (12)																																																		
NAME T. R. Wyrick, Compliance Engineer																				TELEPHONE NUMBER 5 0 9 3 7 7 1 2 1 5 8																														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																		
CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NPDs						CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NPDs																				
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 fifteen single-space typewritten lines) (16)

Technical Specification Section 3/4.7.8 requires preparation and submittal of a Special Report anytime an area temperature monitor listed in Table 3.7.8-1 exceeds the specified limit for more than 8 hours.

This Licensee Event Report satisfies this requirement for a period from July 1, 1988 to July 20, 1988, when a single Primary Containment Monitor, CMS-TE-39, intermittently exceeded the 150°F limit. The temperature exceeded the 150°F limit for approximately 275 hours, with the maximum temperature experienced being 154°F.

The abnormally high temperatures experienced were due to an increase of the average temperature of the cooling water supplied to the drywell air handling units. The temperature increase was apparently due to fouling of the Reactor Closed Cooling System heat exchangers which was observed by increasing flow through these heat exchangers. The electrical, mechanical, and structural equipment in the vicinity of CMS-TE-39 has been reviewed and there are no immediate problems or conditions. All equipment will remain qualified for both normal (including operation above 150°F) and accident conditions until the 1989 Spring outage.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES: 8/31/88

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Plant Conditions

- a) Power Level - 95% - 98.8%
- b) Plant Mode - 1

Event Description

For the time period between July 1, 1988 through July 20, 1988, a single Primary Containment Monitor, CMS-TE-39, intermittently exceeded the 150°F limit for more than 8 hours as specified in Technical Specification Section 3/4.7.8, Table 3.7.8-1. The temperature record for temperature monitor CMS-TE-39 for the period of July 1, 1988 through July 20, 1988 is included in Table 1. Temperature measurements were initially being recorded once each shift. In support of this report, tabulation of measurements every two hours was initiated. The temperature exceeded the 150°F limit for approximately 275 hours, with the maximum temperature experienced being 154°F.

The abnormally high temperatures experienced were due to an increase of the average temperature of the cooling water supplied to the drywell air handling units. This temperature increase was apparently due to fouling of the Reactor Closed Cooling System heat exchangers and was observed by increasing flow through these heat exchangers.

Immediate Corrective Action

In an effort to increase cooling to the drywell, Reactor Closed Cooling Water System (RCC) valve lineup and flow paths were verified, non-critical RCC loads were shed and a third RCC pump was started.

Further EvaluationEquipment

In the general vicinity of the area temperature monitor, safety-related equipment includes: Electrical penetrations, acoustical monitor sensors and charge converters, main steam relief valves and their associated air operators, air valves and solenoid valves.

On July 20, 1988, while lifting MSRV's to reseal them the acoustical monitors associated with relief valves 1B and 1C failed to operate properly. Corrective action compensated for the degraded signal from 1C and it was returned to operable status. Alternative means exist for relief valve position or leakage indication. Compliance with the associated Technical Specification is being documented independently.

Accident Conditions

Following a loss of coolant accident condition, the drywell region of the containment is predicted to experience a temperature of 340°F for 6 hours, with decreasing but elevated temperatures thereafter. The above equipment is qualified to function under such conditions.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Environmental Qualification of Electrical Equipment

All safety-related electrical equipment in the vicinity of temperature element CMS-TE-39 has been reviewed. With respect to thermal aging, the most sensitive components are the Solenoid Pilot Valves on the Main Steam Relief Valves. All other safety-related equipment in the vicinity of the area temperature monitor was determined to be less sensitive to ambient temperature.

The solenoid valves on the Main Steam Relief Valves (MSRV) are Crosby Valve Co. [model IMF-2] which were installed in the plant prior to obtaining the initial Operating License. The solenoid valves have a qualified life of 6.4 years at 150°F. Thermal aging was the limiting factor in establishing the solenoid valves' qualified life. In establishing qualified life of equipment in containment, the design base abnormal temperature of 150°F is used. Generally, margin would be expected between 150°F and the actual long term average ambient. This margin would qualitatively account for uncertainties in establishing equipment service temperature such as chimney effects from a nearby pipe, conduction through mounting fixtures, and thermal radiation.

As of July 21, 1988, WNP-2 has been critical 26,570 hours, or slightly over 3 years, since receiving an Operating License. The assumed equipment service temperature for this period has been 150°F. When WNP-2 has not been critical, the equipment has been at substantially lower temperatures, on the order of 100°F. Two years at 100°F is equivalent to 0.2 year at 150°F. The solenoid valves' remaining 3.2 years of life at 150°F is sufficient to maintain the solenoid valves operable even if the equipment temperature were to become 185°F for the remaining 9 months until the next scheduled refueling outage.

The solenoid valves have sufficient qualified life with margin, to operate until the next scheduled refueling outage, and, they are capable of performing their intended safety-related function throughout the occurrence of a postulated design basis accident LOCA and Post-LOCA.

As part of the investigation of high area temperature, relief valve tail pipe temperatures were investigated. Tail pipe temperatures of up to 240°F were measured using temperature elements installed to monitor for relief valve leakage. The acoustical monitor transducers and associated cable assemblies were evaluated for qualified life at 150°F, similar to other equipment in containment. The transducers are mounted directly on the tailpipes, the element sensitive to temperature is the cable assembly. Recognition of the elevated tail pipe temperatures in establishing service temperature for the transducer cable assemblies will adversely effect the qualified life of the cable assemblies. This documentation deficiency problem has been documented by a separate Non Conformance Report. Evaluation of the qualified life of the acoustical monitors and associated cables indicates that adequate qualified life exists to reach the next scheduled refueling outage, even if the acoustical monitor cables experience 210°F for the entire period of actual operation from initial fuel load (1983) until the next scheduled refueling. These cable assemblies will be scheduled for replacement based on reevaluation of qualified life.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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EXPIRES: 8/31/88

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

In summary, the operable electrical equipment in the region of the temperature monitor which exceeded the temperature limit has the capability to remain operable until at least the next scheduled refueling outage, even if similar temperature excursions are experienced in the future.

Environmental Qualification of Mechanical Equipment

The materials in safety-related mechanical equipment in the vicinity of the area monitor which exceeded the 150°F limit would not be adversely effected by the temperature exceeding 150°F for a significant period of time and remained operable throughout the period. Qualified life would also not be effected significantly.

Structural Materials

The temperature effects on structural materials in general have been considered for concrete and steel inside containment. Potentially the two primary effects would be loss of strength and increased stresses due to differential movement of structural members. Secondary effects would include degradation of the shielding properties of concrete. For temperatures in the range of 150°F the effect on concrete and steel (including mild steel and high strength bolting) is minimal, less than 10% reduction in strength. Therefore, a change in temperature of 10 to 15°F in this temperature range would have a negligible effect on strength. In the same manner, increased stresses due to possible increase in differential movement would be negligible compared to the magnitude of the allowable stresses. Effects on shielding properties of concrete would be negligible.

Further Corrective Action

At least two techniques are available for improving the basis for establishing equipment service temperatures, surveys when the containment can be entered and the reactor system is at temperature and pressure and monitoring while the plant is at power. Such techniques will be applied in the future to improve the basis for service temperature of equipment in containment.

Repeated periods when the area temperature limit for containment will be exceeded may occur in the coming period of high makeup water temperature and high ambient air temperatures. Subsequent Special Reports will be issued at 30 day intervals, if required, in compliance with the Technical Specification requirement.

It is necessary to complete documentation modifications to the qualification file for acoustical monitors and schedule acoustical monitor cable assemblies for replacement at the required interval based on the revised evaluation.

Safety Significance

The equipment in the vicinity of CMS-TE-39 has the capability to remain operable until at least the next scheduled refueling outage, even if similar temperature excursions are experienced in the future. Additionally, the equipment can experience future temperature excursions above 150°F, but not exceeding 160°F, for extended periods and remain within the bounds of this technical evaluation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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

Similiar Events

LERs 84-034 and 85-018 documented events in which area temperature Technical Specification limits were exceeded.

EIIS InformationText ReferenceEIIS Reference

	System	Component
Primary Containment Monitor (CMS-TE-39)	IK	TE
Reactor Closed Cooling System	WBA	- - - - -
Solenoid Valves/Main Steam Relief Valves (MSRV)	MS	RV

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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

TABLE 1

CMS-TE-39 AREA TEMPERATURE MONITOR

TEMPERATURE, DEGREES FAHRENHEIT

TIME/DATE	7/01	7/02	7/03	7/04	7/05	7/06	7/07	7/08	7/09	7/10
0000		152	148	148	150	150	150	151	152	153
0200						150	150	151	151	153
0400						149	150	151	151	153
0600							150	151	151	152
0800		151	148	147	149	150	151	151	151	152
1000							151	151	151	152
1200							151	152	151	152
1400							151	153	152	152
1600	150	152	148	148	150	149	151	152	152	152
1800							151	152	152	153
2000					150	150	151	152	151	153
2200					150		151	152	152	153

	7/11	7/12	7/13	7/14	7/15	7/16	7/17	7/18	7/19	7/20
0000	153	153	152	152	150	149	149	149	148	151
0200	153	153	152	152	150	149	149	149		150
0400	153	152	152	152	150	149	149	149		150
0600	153	152	151	152	150	148	149	148		150
0800	153	152	151	151	150	148	148	148	148	147
1000	153	153	151	151	149	147	147			146
1200	153	153	151	150	148	148	147			145
1400	153	153	151	149	148	148	147			146
1600	154	153	151	149	148	148	148	148	150	147
1800	154	152	151	149	149	-	148			
2000	153	152	151	150	149	148	149			
2200	153	153	151	150	149	148	149			

NOTE: Blanks indicate temperature readings not taken.

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

Docket No. 50-397

August 2, 1988

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 88-024

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-024 for the WNP-2 Plant. This report is submitted in response to the report requirements of Technical Specification Section 3/4.7.8 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

This Special Report satisfies this requirement for a period from July 1, 1988 to July 20, 1988 when a single primary containment monitor, CMS-TE-39, intermittently exceeded the 150°F limit.

Very truly yours,

C.M. Powers

C.M. Powers (M/D 927M)
WNP-2 Plant Manager

CMP:lg

Enclosure:
Licensee Event Report No. 88-024

cc: Mr. John B. Martin, NRC - Region V
Mr. C.J. Bosted, NRC Site (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D.L. Williams, BPA (M/D 399)

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