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ACCESSION NBR: 8810040074 DOC. DATE: 88/09/22 NOTARIZED: NO DOCKET #  
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 AUTH. NAME AUTHOR AFFILIATION  
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-028-00: on 880823, excessive plant heatup/cooldown rates caused by program inadequacy.

W/8 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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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 5
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TITLE (4)  
Excessive Plant Heatup/Cooldown Rates Caused By Program Inadequacy

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)
0 8	2 3	8 8	8 8	0 2 8	0 0	0 9	2 2	8 8			0 5 0 0 0

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 3	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)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)								
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)								
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)									
NAME S.L. Washington, Compliance Engineer								TELEPHONE NUMBER 5 0 9 3 7 7 - 2 0 8 0	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)								EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO											

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On August 23, 1988 a Plant Compliance Engineer, while reviewing a Plant Nonconformance Report (NCR), determined that on February 20-21, 1987 and June 19, 1987 the Plant Technical Specification heatup/cooldown limit of 100°F in any one hour period had been exceeded. The root cause of this event is programmatic in that procedures and policies did not specify a more conservative administrative limit for the heatup or cooldown rate to prevent exceeding the technical specification limit. The effect of the programmatic failure was that two of three possible violations of the heatup/cooldown limit noted in a Plant Quality Assurance (QA) Surveillance (2-88-018) were investigated and were determined to be reportable per 10CFR50.73 (a)(2)(i)(B). These events were being investigated as the result of concerns raised by the NRC Resident Inspector.

On February 20-21, 1987, during a Plant cooldown, the Reactor coolant temperature decrease for the period between 2315 hours and 0015 hours was 115.3°F as determined by the conversion of reactor pressure to saturation temperature using steam tables. The Control Room Operator (CRO) performing the technical specification surveillance procedure recorded the cooldown for the same period as 99°F. The reason for this difference can not be determined. This event is a violation of the Plant Technical Specification. A review of the technical specification surveillance data for a Plant heatup on June 19, 1987 shows that the actual heatup for the period between 1600 hours and 1700 hours was 102.7°F. The value reported in the surveillance for this period is 100°F. It appears that the CRO made an error when converting reactor pressure to saturation temperature using the steams tables.

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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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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Abstract (cont'd)

There were no immediate mitigating corrective actions at the time of these events due to their not being recognized at the time of occurrence.

The two major corrective actions to prevent recurrence are: Plant procedures are being modified to administratively restrict the heatup/cooldown rate to 20°F in any 15 minute period and 80°F in any one hour period, and a real-time computerized heatup/cooldown trend display has been added to the Control Room Process Computer System.

The QA Surveillance was completed and issued on April 29, 1988; however, the reportability of the events was not determined until August 23, 1988. The following corrective actions address this issue:

- o A Plant QA procedure will be revised to include a requirement to review any identified surveillance deficiency to determine if an NCR is required, 2) Train Licensing and Assurance personnel on plant problem reporting requirements. 3) Implement efficiency improvement within the Plant Compliance Group, and 4) Plant Operations will emphasize effective reviews of QA surveillance deficiencies.

There is no adverse safety significance associated with these events as the heatup and cooldown rates are bounded by a previously-reviewed Plant event.

Plant Conditions

- a) Power Level - 93%
- b) Plant Mode - 1 (Power Operation)

Event Description

On August 23, 1988 a Plant Compliance Engineer, while reviewing a Plant Nonconformance Report (NCR), determined that on February 20-21, 1987 and June 19, 1987 the Technical Specification heatup/cooldown limit of 100°F in any one hour period was exceeded.

The Plant Compliance Engineer was reviewing the NCR because of concerns expressed by the NRC Resident Inspector. A Plant Quality Assurance (QA) Engineer between March 24, 1988 and April 5, 1988 performed a Quality Assurance Surveillance (2-88-018) of compliance to Technical Specification 3/4.4.6.1. During performance of the surveillance he noted three instances where using instrumentation different from that used by the Control Room Operator (CRO) the 100°F heatup/cooldown rate was possibly exceeded. The QA surveillance was reviewed by a Plant Operations Licensed Senior Reactor Operator. Plant Operations responded to the surveillance on June 23, 1988, and three corrective actions were specified. Two of the corrective actions were to revise plant procedures to limit (to approximately 80°F per hour) the heatup/cooldown rate by using the turbine pressure control system which is effective at pressures greater than 125 psig. The third corrective action was to develop a computer program which will trend the heatup/cooldown rate for Plant Operators.

## 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)

On June 27, 1988 while starting up the 100°F per hour heatup rate was exceeded. This event is not reportable because all technical specification action requirements were met. At the time of the event, only one procedure revision had been completed; however, since Reactor pressure was less than 125 psig during the event, these changes would not have prevented the event. After the June 27, 1988 event, the NRC Resident Inspector raised the issue of the reportability of the events reported in the QA Surveillance and the ineffectiveness of the corrective actions taken in response to the QA surveillance. These issues are being responded to in the Supply System response to Notices of Violation 88-021-01 and 88-021-02. On July 5, 1988 the Plant QA Engineer initiated an NCR, and on August 23, 1988 a Compliance Engineer determined that two of the events were reportable.

On February 20-21, 1987 a Plant cooldown was in progress. A review of the cooldown surveillance data shows that Plant Operators used the Reactor Recirculation System (RRC) suction loop temperature to determine the hourly cooldown rate. The Plant procedure specifies that the Reactor temperature is to be calculated using Reactor pressure and steam tables when the Reactor coolant temperature is greater than 212°F. The procedure allows the use of the RRC suction temperatures, if subcooling is less than 15°F as it was in the operating region of this event. Between 2315 hours on February 20, 1987 and 0015 hours on February 21, 1987 the surveillance (Reactor Pressure Vessel) RPV System Temperature/Pressure Log shows that Reactor pressure decreased from 255 psig to 45 psig. Using steam tables to convert the pressure to temperature gives 407.4°F at 2315 hours and 292.4°F at 0015 hours which is a one hour temperature change of 115.3°F. The recirculation suction temperature strip chart record shows temperature changes of 110°F and 112°F for this same period. The CRO performing the surveillance using the temperature meter associated with the chart recorder, logged the temperature as 405°F at 2315 hours and 306°F giving a temperature change of 99°F. The reason for these differences can not now be reconciled but it does appear that the 100°F in any one hour period cooldown limit was exceeded. This event was a violation of Plant Technical Specifications.

A second cooldown incident identified in the QA Surveillance Report occurred on June 21, 1987. The QA Engineer reported in the surveillance that the RRC suction temperature strip chart recorder showed that between 0820 and 0920 a temperature change of 102°F on one channel and 105°F on the other channel occurred. The surveillance data recorded by the CRO shows hourly temperature decreases of 83°F between 0800 and 0900 hours and 96°F between 0830 and 0930 hours; however if the rate between 0830 and 0900 is doubled, it gives a rate of 108°F per hour. These temperatures were calculated by converting Reactor Pressure to temperature using the steam tables. The surveillance procedure specifies that pressure be used when the reactor coolant temperature is above 212°F and the hourly cooldown rates indicate temperatures stayed within limits; therefore, this event should not be considered a violation of the Plant technical specification. The purpose of including this incident in the surveillance report was to point out that measuring and calculating the temperature decrease at half hour intervals may not be frequent enough to prevent an excessive cooldown/heatup rate in any one hour period as required by the Plant Technical Specification.

## 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)

The third incident occurred on June 19, 1987 during a Plant heatup. At the time of the event the monitored instrumentation was transitioned from RRC suction temperature to temperature determined from Reactor pressure. At 1600 hours the RRC suction temperature was recorded as 195°F and at 1700 hours the Reactor pressure was recorded as 50 psig which when converted to temperature is 297.6°F which gives a 102.7°F temperature rise. The surveillance data sheet shows the 50 psig conversion to temperature as 295°F giving a heatup rate of 100°F. It would appear that this was a conversion error. This is a technical specification violation.

Immediate Corrective Actions

There were no immediate mitigating actions associated with any of the above events since they were not recognized at the time of occurrence.

Further Evaluation and Corrective Action

## A. Further Evaluation

This event is reportable per 10CFR50.73 (2)(2)(i)(B). On two separate occasions the Plant exceeded the 100°F in any one hour period Technical Specification heatup/cooldown limit.

There were no structures, systems, or components inoperable prior to this event which contributed to the event.

The root cause of this event is a program inadequacy. Procedures and policies did not specify a more conservative administrative limit for the heatup or cooldown rate to prevent exceeding the technical specification limit.

The Plant Problem Procedure (PPM 1.3.12) requires a Plant Nonconformance Report (NCR) to be initiated for all potentially reportable events. Contributing factors associated with this event include: The Plant QA Engineer who performed the surveillance, while recognizing the potential reportability of the event, did not initiate an NCR until July 5, 1988 because the policy of Plant QA at the time was to not issue NCRs for problems documented in a QA surveillance report. The surveillance was reviewed and responded to by Plant Operations without recognizing the potential reportability of the information. The reportability review of the NCR by Plant Compliance was delayed due to competing workload priorities.

B. Corrective Actions

1. The "Plant Cold Startup Procedure" (PPM 3.1.2); "Normal Shutdown to Cold Shutdown" PPM (3.2.1); "Normal Shutdown to Hot Shutdown" PPM (3.2.2); and Plant Technical Specification Surveillance Procedure "RPV (Reactor Pressure Vessel) Temperature/Pressure Log" (PPM 7.4.4.6.1.1) will be revised to administratively limit the heatup/cooldown to 20°F in any 15 minute period and 80°F in any one hour period.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

2. A heatup and cooldown trending program has been added to the Plant status display as part of the Control Room Process Computer System. The program graphically displays the actual heatup/cooldown rate in relation to 80°F/hr reference lines. In addition, the program provides a heatup/cooldown rate based on the temperature change for the previous 15, 30, and 45 minute periods, and an alarm function whenever the actual or a projected rate exceeds the 80°F per hour limit.
3. Plant QA procedure PQA-03 "Conduct of QA Surveillances" will be revised to provide direction to evaluate surveillance deficiency findings against Plant problem reporting requirements.
4. The Plant QA Manager will review this event with Licensing and Assurance personnel and discuss their responsibilities regarding Plant problem (NCR) report initiation.
5. A review of the Plant Compliance organization has been completed. Several methods of improving the efficiency of the group have been identified and will be implemented.
6. Plant Operations management will emphasize to its staff the need for increased awareness and the need for effective reviews of QA Surveillance deficiencies.

Safety Significance

There is no adverse safety significance associated with this event. The heatup/cooldown hourly rate was previously reviewed for a Plant event (not reportable because all technical specification action requirements were met) in June 1984 in which the heatup rate for a one hour period was 133°F. The two events described in this LER are bounded by this previous review which determined that the Reactor Pressure Vessel was acceptable for continued service. This event had no effect on the health and safety of the Public or Plant personnel.

Similar Events

None

EIIS InformationText ReferenceEIIS Reference

Reactor  
Reactor Recirculation System (RRC)  
Reactor Pressure Vessel (RPV)  
RRC Suction Temperature Strip Chart Recorder

System	Component
AC	- - - - -
AD	- - - - -
AC	- - - - -
AD	TR

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

September 22, 1988

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

Subject: NUCLEAR PLANT NO. 2  
LICENSEE EVENT REPORT NO. 88-028

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-028 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Very truly yours,



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

CMP:sm

Enclosure:

Licensee Event Report No. 88-028

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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