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 PARRISH, J.V. Washington Public Power Supply System
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SUBJECT: Responds to NRC Bulletin 93-002, Suppl 1, "Debris Plugging of
 Emergency Core Cooling Suction Strainers."

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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June 17, 1994
G02-94-141

Docket No. 50-397

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
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Gentlemen:

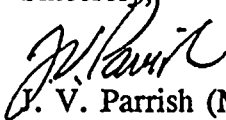
Subject: **WNP-2 OPERATING LICENSE NO. NPF-21
RESPONSE TO NRC BULLETIN 93-02, SUPPLEMENT 1,
"PLUGGING OF EMERGENCY CORE COOLING SUCTION
STRAINERS"**

- References:
- 1) NRC Bulletin 93-02, Supplement 1, dated February 18, 1994, "Debris Plugging of Emergency Core Cooling Suction Strainers"
 - 2) Letter GO2-94-088, dated April 19, 1994, PR Bemis (SS) to NRC, "Response to NRC Bulletin No. 93-02"

This letter completes the reporting requirements issued in NRC Bulletin 93-02 (NRCB 93-02), Supplement 1, "Debris Plugging of Emergency Core Cooling Suction Strainers." The bulletin describes the staff concerns related to the potential loss of the emergency core cooling systems (ECCS) due to suction strainer blockage following a loss of coolant accident (LOCA). Reference 2 provided the initial requested report, discussing compliance with requested actions and the schedule for implementation. The attachment to this letter revises that report to include the status of the interim actions.

Should you have any questions or desire additional information regarding this matter, please call me or P. R. Bemis at (509) 377-4027.

Sincerely,



J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

Attachments

cc: NRC Sr Resident Inspector - 927N
KE Perkins, Jr. - NRC RIV, Walnut Creek Field Office
NS Reynolds - Winston & Strawn

LJ Callan - NRC RIV
JW Clifford - NRR
DL Williams - BPA/399

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PDR ADDCK 05000397
Q PDR

JEL

STATE OF WASHINGTON)
COUNTY OF BENTON)

Subject: Response to NRC Bulletin 93-02
ECCS Suction Strainers

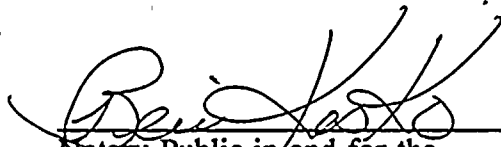
I. J. V. PARRISH, being duly sworn, subscribe to and say that I am the Assistant Managing Director, Operations for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE 17 June, 1994


J. V. Parrish, Assistant Managing Director
Operations

On this date personally appeared before me J. V. PARRISH, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 17 day of June 1994.


Notary Public in/and for the
STATE OF WASHINGTON

Residing at Kennelworth WA

My Commission Expires 4/28/98

ATTACHMENT

Action Requested

Provide training and briefing to apprise operators and other appropriate emergency response personnel of the information contained herein and in the referenced information notices regarding the potential for suppression pool strainer clogging.

Supply System Response

The licensed reactor operators are being trained to recognize the indications of potential strainer plugging and the appropriate mitigating and compensating actions. Training will also be provided to emergency response personnel assigned to certain positions in the Technical Support Center.

Operator and emergency response personnel training will be completed on May 15, 1994.

Status

The operator and emergency response personnel training was completed by May 6, 1994. The training included:

- the associated industry events;
- mitigating techniques and compensatory actions and;
- recognition of the indication of potential plugging.

Action Requested

Assure that the emergency operating procedures make the operator aware of possible indications of ECCS strainer clogging and provide guidance on mitigation.

Supply System Response

The WNP-2 EOPs were developed from the Boiling Water Reactor Owners Group (BWROG) Emergency Procedure Guidelines (EPGs). The EOPs are symptom-oriented procedures which address a full spectrum of initial plant conditions and postulated transients. The sources of water for injection to the reactor pressure vessel (RPV) include those systems used to control water level during normal plant operations, ECCS, and Reactor Core Isolation Cooling (RCIC) and alternate injection subsystems, such as the service water cross tie or the fire protection system. Although the EOPs prioritize use of the injection systems, they also permit the use of the various alternate systems upon entry to the RPV water level control procedure and in several EOP contingency procedures. Accordingly, changes to the EOPs are not required. The system operating procedures for ECCS and RCIC have been changed to include a precaution relative to the indications of potential strainer plugging. Techniques for mitigation are provided to the operator in training.

The system operating procedure changes have been completed. The training will be completed by May 15, 1994.

Status

The system operating procedures have been changed to provide guidance to the operators concerning ECCS strainer plugging. The operator training was provided during the License Operator Requalification Program cycle 94-2. This cycle was completed April 8, 1994.

Action Requested

Institute procedures and other measures to provide compensatory action to prevent, delay, or mitigate a loss of available NPSH margin under LOCA conditions.

Supply System Response

- Reduce ECCS Flow

WNP-2 ECCS systems are designed to provide the design basis flow rates into the RPV. For mitigation of an anticipated transient without a scram - instability event, a design change has been issued that will allow throttling of the ECCS injection valves. The EOPs require the operators to maintain adequate core cooling, permitting the operator to determine which sources provide the required flow. This design change is tentatively scheduled for implementation during the R9 refueling outage, scheduled for completion in July 1994. Completion of the plant modification will require that the appropriate procedure changes be made.

Status

The hardware changes to allow throttling of the injection valves were implemented during the R9 outage. The EOPs that will direct the operators to throttle the injection valves to mitigate an anticipated transient without a scram will be changed to reflect this modification. Operator training for this plant modification was completed June 10, 1994.

- Backflushing strainers using existing plant systems

As designed, WNP-2 does not have the ability to backflush strainers.

- Alternate water injection sources

The EOPs at WNP-2 permit the use of the following alternate injection water sources:

- a. High-Pressure Core system with suction from the Condensate Storage Tank
- b. Service Water cross tie with Residual Heat Removal loop "B"
- c. Control Rod Drive pumps
- d. ECCS system keep-fill pumps
- e. Condensate pumps from condenser hotwell
- f. Fire protection system

In addition, if the break location is above the top of the active fuel, it may be possible to establish long term cooling by using the shutdown cooling mode of the RHR System. The EOPs guide the operators to take the appropriate actions.

- Intermittent containment spraying

Containment sprays are not automatically initiated and are only manually initiated in accordance with the guidance provided by the BWROG EPG. The EOPs specify at which times and conditions the containment sprays should be initiated. They also specify the times and conditions to secure spraying.

- Other plant specific measures that assure availability of sufficient core and containment cooling

- a. Housekeeping and containment cleanliness

The WNP-2 suppression pool clean up system is used to remove impurities from the water in the pool. Water from the suppression pool is processed by the fuel pool cooling system filter/demineralizer.

Primary containment and suppression pool housekeeping measures were in place during R8 and will be continued in future plant outages to ensure that little or no debris exists in the suppression pool.

During the R8 outage, debris was removed from the suppression pool.

During the R9 (spring 94) outage, the Supply System will remove particulate matter that has collected in the suppression pool. This will remove a majority of corrosion products that could potentially combine with fibrous material during a LOCA to block the strainers.

Status

Divers vacuumed and cleaned the suppression pool during the R9 outage to remove particulate and other foreign material. An inspection will be performed to assure cleanliness prior to the final closeout of the containment. Foreign material exclusion controls will be established if any additional containment entries are required.

- b. Actions to maintain the integrity of piping inside containment

There is a very low potential that a pipe would fail in an instantaneous double ended guillotine break. It is much more probable that the pipe would leak for a period of time prior to complete separation of the pipe ends. The following is a summary of actions taken to detect and mitigate potential pipe breaks in the containment:

1. Intergranular stress corrosion cracking (IGSCC) has been experienced in BWRs. The Staff discussed the issue in Generic Letter (GL) 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping." The Supply System has responded to GL 88-01, and is taking the measures needed to achieve adequate levels of piping integrity and reliability. Implementation of the recommendations in GL 88-01 include stress improvement, augmented inspections, improved water chemistry, and enhanced leak detection requirements.
2. Design improvements to preclude failures in socket welded small bore vent, drain, and test valve connections.
3. Implementation of a program for monitoring wall thickness of large bore piping in the containment.
4. Periodic inservice examinations (ISI) in accordance with an approved ISI Program.

c. Detection of reactor coolant pressure boundary leakage

It is expected that the catastrophic failure of a pipe would be preceded by a period of leakage through a crack prior to complete separation of the pipe ends. The volume of fibrous debris generated by a small through wall pipe crack is anticipated to be very small. This volume of debris would not be expected to challenge the ECCS suction strainers.

The WNP-2 Technical Specifications limit the unidentified drywell leakage to 5 gpm, or to a 2 gpm increase within a 24 hour period. These limits were established to provide early indication of pressure boundary leaks and require the plant be shut down if the limits are exceeded.

The Technical Specifications also include requirements for the operability of the reactor coolant system leakage detection systems. These systems monitor primary containment atmospheric gaseous radioactivity, sump flow rates, and atmospheric particulate radioactivity in order to identify coolant pressure boundary leakage.