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 Document Control Branch (Document Control Desk)

SUBJECT: Application for amend to license NPF-21, adding footnote to
 TS Table 4.3.7.5-1, "Accident Monitoring Instrumentation
 SRS," exempting channel calibr of safety/relief valve
 position indicators from Spec 4.0.4 for 24 h.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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December 6, 1993
G02-93-281

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21
REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

Reference: Letter GO2-93-180, dated July 9, 1993, JV Parrish (SS) to NRC, "Request for Amendment to the Facility Operating License and Technical Specifications to Increase Licensed Power Level from 3323 MWt to 3486 MWt with Extended Load Line Limit and a Change in Safety Relief Valve Setpoint Tolerance"

In accordance with the Code of Federal Regulations, Title 10 Parts 50.90 and 2.101, the Supply System hereby submits a request for amendment to the WNP-2 Technical Specifications. Specifically, the Supply System is requesting that a footnote be added to Specification Table 4.3.7.5-1, Accident Monitoring Instrumentation Surveillance Requirements, exempting the CHANNEL CALIBRATION of Safety/Relief Valve Position Indicators (VPIs) from the requirements of Specification 4.0.4. for 24 hours. Presently, without exemption from 4.0.4, the VPI surveillance requires VPI removal from the MSRV or operation of the MSRV without sufficient steam back pressure to reduce a potential for valve damage. Removal and stroking of the VPI separate from the MSRV has a potential for damaging the VPI on reassembly. Additionally, removal, stroking and reassembly of the VPI increases plant staff exposure with no significant increase in overall plant safety. An exemption to 4.0.4 provides an appropriate method of testing the VPIs in place, avoids increased plant staff exposure and avoids testing conditions potentially damaging to plant equipment. As discussed below, exemption would allow the completion of the CHANNEL FUNCTIONAL TEST to be delayed until plant parameters are established that allow the test to be conducted with less potential for damaging plant equipment.

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**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

Performance of the test opens the Main Steam Relief Valves (MSRV) which, without sufficient steam back pressure, exposes the valve to a potential slamming effect on closure. The exemption to Specification 4.0.4 would also establish consistency with the other surveillance requirements for the MSRVs and VPI.

In addition, the Supply System is requesting that the footnote applicable to surveillance requirements 4.4.2.b, Safety/Relief Valves and 4.5.1.e.3.b), Emergency Core Cooling Systems (ECCS)-Operating, be revised to allow 24 hours for the completion of the required surveillance testing. All three tests require the MSRVs to be opened. (Alternatively, the VPI test can be performed separate from the MSRVs but this method has the significant drawbacks discussed above). After the plant has reached adequate steam pressure to perform the test a 12-hour clock begins simultaneously for each test. Each test can be accomplished within the specified 12 hours, however, the performance of a test to satisfy all three requirements requires more than 12 hours. The performance of three separate tests would take more than 12 hours and would require additional cycling of the MSRVs, while increasing the heat load to the suppression pool and the potential for valve seat damage.

Presently, the footnotes allow the exemption to Specification 4.0.4 until 12 hours after there is adequate reactor steam pressure to perform the test. This submittal requests a 24 hour exemption to Specification 4.0.4. A revision to the Bases for each section is also included in this amendment request, clarifying the plant parameters necessary to perform the test. Because opening an MSRV can cause a significant pressure transient, reactor power must be at a level such that the bypass valves can maintain reactor pressure. At WNP-2, these conditions are assured when reactor power is $\geq 10\%$ of Rated Thermal Power.

The surveillance requirement for CHANNEL CALIBRATION (which includes a CHANNEL FUNCTIONAL TEST) for the MSRV position indication instrumentation is located in two places in Technical Specifications: Accident Monitoring (page 3/4 3-74) and Safety Relief Valves (page 3/4 4-7a). The requirements for the MSRVs are in two locations: Safety Relief Valves (page 3/4 4-7) and ECCS (page 3/4 5-5). Section 3.4.2.b) requires that four MSRVs (with appropriate setpoints) be OPERABLE at thermal power below 25% in MODES 1, 2, and 3. At least 12 are required prior to exceeding 25% thermal power by 3.4.2.a). Section 3.5.1 requires that the ADS (with seven MSRVs) be OPERABLE after reactor pressure exceeds 128 psi. However, the surveillance requirements in these two sections allow an exemption to 4.0.4, until 12 hours after there is adequate steam pressure to perform the test. The CHANNEL FUNCTIONAL for the MSRV position indication must be performed while opening the MSRV. To prevent valve damage, the MSRV is not allowed to be opened until there is adequate steam pressure. As stated above, adequate plant parameters to support completion of the test are reached at about 10% thermal power.

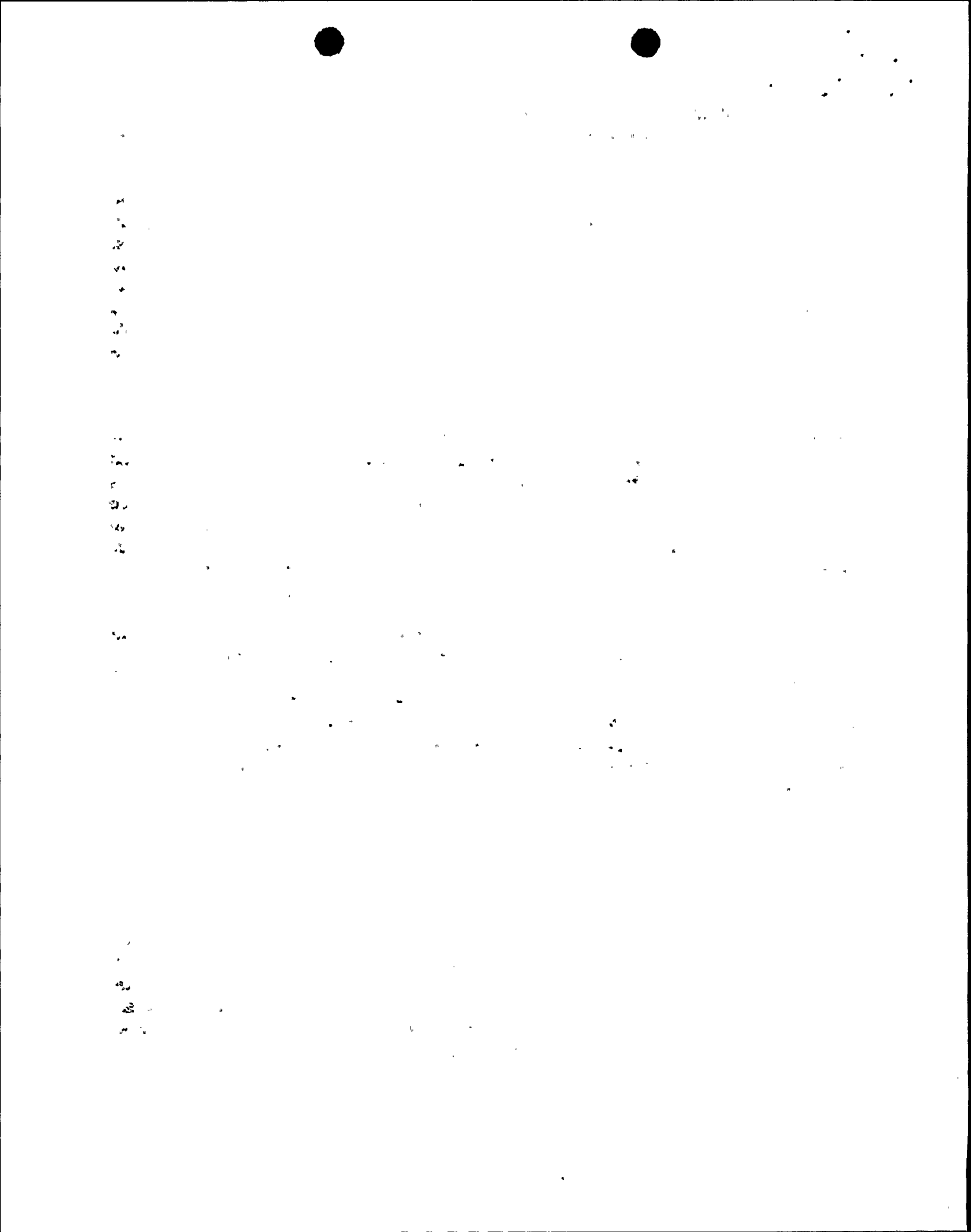
**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

There are three sections of Technical Specifications that require that the MSRVs be opened to assure equipment OPERABILITY. Two of those, 4.4.2.b) and 4.5.1.e.3.b, allow a 4.0.4 exemption, which allows a MODE change prior to completion of the required surveillances. The third one, 4.3.7.5 instrument 10, does not allow the exemption. Therefore, prior to entering MODE 1 or 2, each MSRV is required to have at least one OPERABLE position indicator. The test, to assure OPERABILITY, cannot be performed until reactor power is about 10% of rated thermal power (MODE 1). However, the VPI can be removed from the MSRV and tested separately. Again this has significant ALARA and reassembly concerns.

The required surveillance frequency for the valve position indication CHANNEL CALIBRATION, is 18 months. In order to meet the surveillance frequency, the CHANNEL FUNCTIONAL portion of the test could be performed annually, during the shutdown process for the refueling outage, satisfying the surveillance requirement, assuring OPERABILITY, and restarting the 18 month clock. However, most of the position indication instrumentation is subject to some amount of maintenance during the outage, which may require post maintenance testing to confirm OPERABILITY. In order to satisfy the Accident Monitoring Technical Specification, the CHANNEL FUNCTIONAL must be completed prior to entering MODE 2, but the test cannot be physically performed until the reactor is in MODE 1, at about 10% power. Failure to perform this testing prior to entering MODE 2, is a violation of Technical Specification 3/4.3.7.5. Because two sections of the Technical Specifications allow the Specification 4.0.4 exemption, it has been erroneously assumed that the exemption was allowed for the Accident Monitoring Instrumentation section also. This situation was documented and reported to the NRC in LER 93-020.

Further, each MSRV must be opened for the CHANNEL FUNCTIONAL TEST. However, the plant does not have adequate parameters (steam pressure and conditions to sustain adequate steam pressure) to successfully perform the required number of valve openings with continued plant operation until about 10% thermal power. The footnote states "the provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor pressure is adequate to perform the test." Because the parameters for successful test performance must consider more than steam pressure, there has been an inconsistency in starting the clock for this activity. This confusion results in the potential for completing the required surveillance after expiration of the 12 hour clock.

This situation has the potential to reoccur at each refueling outage. MSRV and MSRV position indication testing can be done in MODE 1 prior to shutdown for a refueling outage. However, maintenance is normally scheduled on a majority of the 18 MSRVs and valve position indication instrumentation. Any maintenance then requires an operability evaluation, and in most cases post maintenance testing to establish OPERABILITY of the valve position indication. Further, any MSRV maintenance requires valve cycling to reestablish operation of the valve at the proper reactor pressure setpoint. All these testing requirements at the completion of a maintenance



**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

period combine to make MSRV and MSRV position indication testing a significant plant operation. Without the requested Technical Specification change creating consistency and allowing modes changes and thereby establishing adequate parameters for testing, prior to the performance of surveillance testing, the plant will continually be faced with the potential for damaging the MSRVs. Further, the time allowed for the exemption to Specification 4.0.4 should be increased for all three surveillance requirements in order to allow a safe and deliberate completion of the required surveillances. The 12 hour clock has the potential to cause plant activities to be rushed in order to meet a deadline and avoid violating the Technical Specifications. An undue concern for the 12 hour limit has the potential for distracting the Operator from other plant activities.

The MSRVs provide vessel over pressure protection, provide the ability to rapidly depressurize the reactor vessel in the event of an accident, and a flow path for an alternate method of decay heat removal. Technical Specifications also require a manual reactor scram in the event that an MSRV is open for more than 2 minutes, in order to preserve the heat removal capacity of the suppression pool. The position indication instrumentation, installed in compliance with Item II.D.3 of NUREG-0737, provides information concerning valve status to the Reactor Operator. Other plant parameters indicative of an open MSRV, such as suppression pool temperature, tail pipe temperature, or change in indicated steam flow, are also available to the Operator.

There are two reasons for which the surveillance tests contained in Technical Specifications might be performed: 1) to meet the required surveillance frequency or 2) to assure OPERABILITY following maintenance. As discussed in the Bases section, "Surveillance Requirement (SR) Applicability" of the recently issued Improved Technical Specifications, NUREG-1433 "post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed." This is the situation for the MSRV position indication. The surveillance may be performed during normal plant operation, but if maintenance is performed on the equipment during an outage, the CHANNEL FUNCTIONAL TEST cannot be performed, without subjecting the MSRVs to the possibility of being damaged, until the plant returns to normal operation ($\geq 10\%$ power). The Supply System has not yet implemented the Improved Technical Specifications, but the philosophy discussed above is sound and can be implemented in the current Technical Specifications by requesting an amendment to 3/4.3.7.5. Therefore the surveillance requirement for the CHANNEL CALIBRATION of the safety/relief valve position indications should be exempt from the requirements of 4.0.4 until adequate steam pressure, in MODE 1, is available to safely operate the valves.

**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

Although no credit is taken for Operator action as a result of MSR/V position indication alarm and annunciation, the alarm does provide indication of an open MSR/V well before the suppression pool reaches the temperatures assumed in the accident analysis.

The Supply System has two diverse systems installed that satisfy the requirements of LCO 3.3.7.5 for Safety/Relief Valve Position Indication. They are the Acoustic Monitors and the Valve Stem Position Monitor. The CHANNEL FUNCTIONAL TEST can be performed for each system without lifting the MSR/Vs. The two methods of testing are significantly different and are discussed separately. However, the Supply System does not believe the methods provide adequate assurance of OPERABILITY.

ACOUSTIC MONITOR:

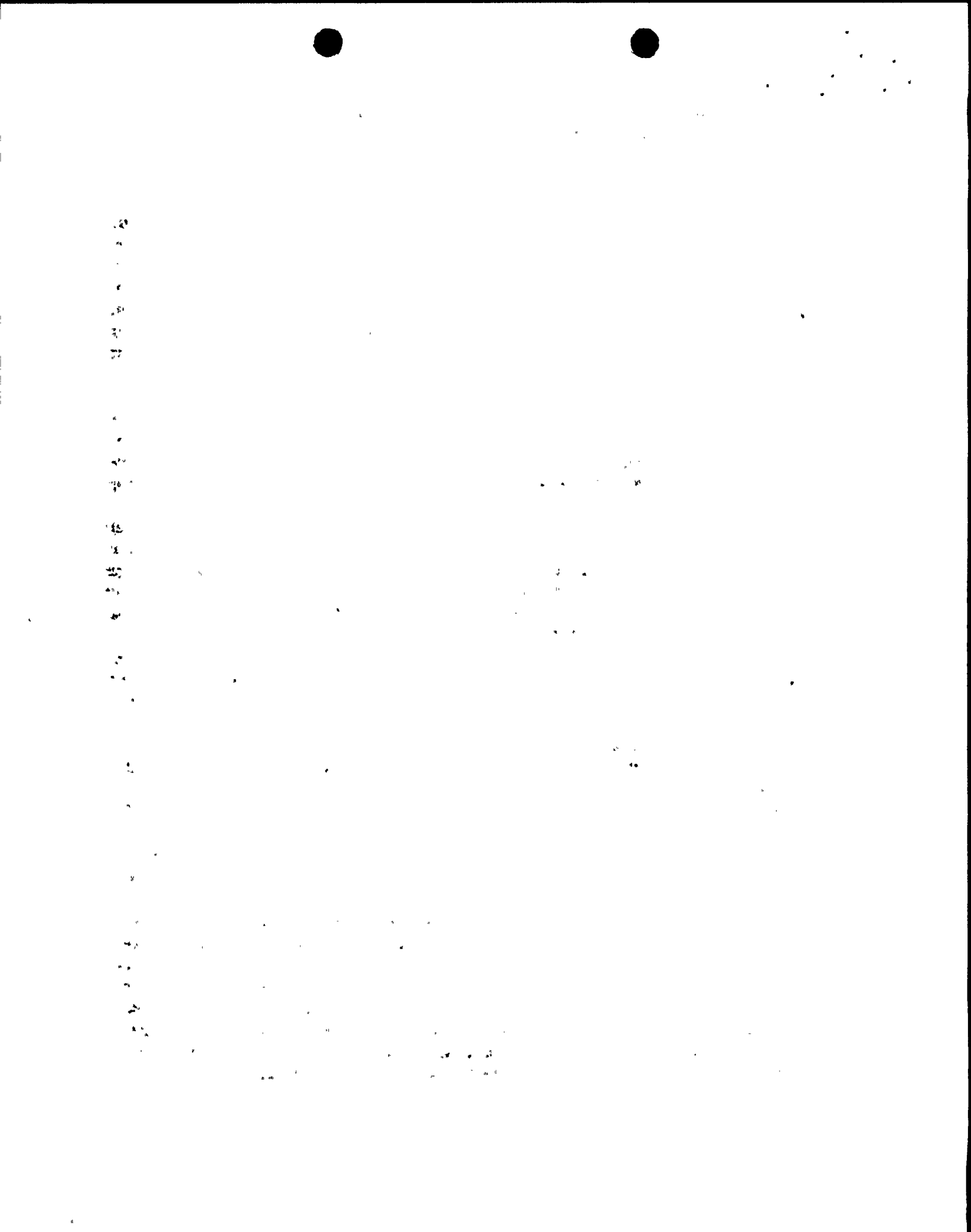
The CHANNEL FUNCTIONAL TEST on the acoustic monitoring valve position indication system can be completed without opening the valves. It is possible to inject a signal into the input of the Charge Amplifier and monitor the alarms and indications, then check the cable from the Charge Amplifier input back to the Accelerometer. The Charge Amplifiers are located in the Drywell which due to the necessity for test personnel to wear protective clothing in the Drywell, provides added difficulty to performing the test with sophisticated equipment.

The risk in this method is that if the system is disassembled for testing and then reassembled after the test. There is a potential for a problem to occur that will not be detected because the system is not tested from end to end. The best method of calibrating the system is with actual steam flow through the valve since the characteristics of each valve, tail pipe, accelerometer location is unique and each responds differently to full steam flow.

VPI (Stem Position Monitor):

It is possible to perform a CHANNEL FUNCTIONAL test by removing the LVDTs and stroking them. The risk associated with this is that the LVDTs may get bumped and damaged in the process of either testing or reattachment to the MSR/Vs. The condition could go undetected until the valve was opened and if the LVDT stuck an erroneous "valve open" indication would be provided after valve closure.

The MSR/V Post Maintenance operability testing is now performed by lifting the valves. Initially, the valves were lifted with no steam under the seats. Significant valve seat damage has occurred. Also lifting of the MSR/Vs while cold imposes high stresses on the actuation components of the valve. Although the valve is designed to perform under these conditions it is not desirable to place high stresses on the valve when it is not necessary. The test was



**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

changed to require a pressure of 900 psi or greater under the valve seats. The ability to test at this pressure implies that reactor power must be able to maintain pressure while the valve is opened and be sustained for a series of valve openings. These conditions are satisfied at about 10% thermal power. As stated above, the valves can be opened cold, but damage will occur if the valve is allowed to close unrestricted. To prevent damage on a cold test requires either inserting a plug with an orifice into the actuator exhaust or valving off the air supply and bleeding off the accumulator air slowly. In either case the system has been temporarily modified and no testing other than an actual valve manipulation can be performed upon reassembly to demonstrate its return to an OPERABLE condition.

The Supply System has evaluated the proposed Technical Specification change to defer the Channel Functional testing until appropriate conditions are established and determined that it does not represent a significant hazards consideration because it does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated because no credit is taken for MSRV position indication functioning in the initiation or mitigation of any analyzed accident. The inoperability of valve position indication does not affect the manual or automatic actuation of the MSRVs. The analysis for an inadvertent opening of an SRV (FSAR 15.1.4) assumes the alarm function of other plant parameters to alert the Operator to the need to initiate suppression pool cooling. Therefore, because MSRV position indication is not identified in the WNP-2 safety analysis the inoperability of the position indication cannot increase the probability or consequences of a previously evaluated accident.
- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated because MSRV operation remains unaffected. No new mode of operation of any equipment results from the delay of the CHANNEL FUNCTIONAL surveillance. Sufficient diverse indication remains available to adequately determine if an MSRV is inadvertently open, therefore this change will not result in a failure to determine the need for suppression pool cooling. This change will not create the possibility of a new or different kind of accident from any accident previously evaluated.
- 3) Involve a significant reduction in a margin of safety because the Operator has other diverse indications available to indicate the need to initiate suppression pool cooling. Because no credit is taken for MSRV position indication in the WNP-2 safety analysis the loss of MSRV position will not adversely affect the Operator's ability to respond to the event as analyzed. The surveillance testing of the MSRVs requires that the valves be opened at a time when adequate pressure is available to conduct the testing. Delaying the test of the position indication will delete the need for an additional and potentially damaging test of the valves. Delaying the test until plant parameters can support the testing acts as an enhancement to plant safety. Therefore, this change does not involve a significant reduction in a margin of safety.

**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

The Supply System has evaluated the proposed change to increase the allowed testing time for all three surveillances [4.5.1.e.3.b), 4.4.2.b and 4.3.7.5-1, instrument 10] from 12 hours to 24 hours and determined that it does not represent a significant hazards consideration because it does not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated because the change represents a 12 hour interval in which the position indication could be inoperable and as discussed above the MSRV position indication is not credited with mitigation or initiation of any accident in the WNP-2 safety analysis. Hence an additional 12 hours in which MSRV position indication could be inoperable can not increase the probability or consequences of a previously evaluated accident. Again, as stated above, the inoperability of valve position indication does not affect the manual or automatic actuation of the MSRVs. The analysis for an inadvertent opening of an SRV (FSAR 15.1.4) assumes the alarm function of other plant parameters to alert the Operator to the need to initiate suppression pool cooling. Therefore another 12 hours in which MSRV position indication could be inoperable does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Surveillance 4.5.1.e.3.b verifies the operability of the Automatic Depressurization System (ADS) valves. The 12 hour increase in which an inoperable ADS valve would go undetected and be unable to perform does not involve a significant increase in the probability or consequences of an accident previously evaluated because the extended 12 hour duration represents an insignificant increase in probability that an event requiring ADS mitigation could occur over 24 hours as compared to 12 hours. At present, if for some reason the testing is not completed in less than 12 hours the exemption to Specification 4.0.4 would be voided and exit from the Operational Condition would be required. Re-entry into the Operational Condition to complete the testing would then be necessary. The total time for the testing under the 12 hour allowance compared to a 24 hour allowance would be the same, however, the manipulation of the plant out of and back into the necessary Operational Condition would be avoided. The probability of a previously evaluated accident occurring would be the same in both cases (the same amount of time in testing will be used). However, the exposure of the Plant to an accident due to unnecessary maneuvering through Operational Conditions is increased under the present Technical Specifications if for some reason the testing cannot be completed within 12 hours. Adequate testing under controlled, disciplined conditions will require the same amount of time whether or not a 12 or 24 hour allowance is provided to the operator. Allowing 24 hours removes an arbitrary concern from the operator. There is no change in the probability that an MSRV valve could stick open due to the time extension. Nor do the consequences of a valve sticking open increase as a

**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

result of the extended time period. As stated above, other plant alarms are credited with alerting the Operator to the off-normal condition. Therefore the 12 hour extension does not increase the probability or consequences of a previously analyzed accident with respect to the inoperability of an MSRV/ADS valve.

Also as shown in the SAFER/GESTR-LOCA Loss of Coolant Accident Analysis submitted with the referenced Technical Specification change request, two inoperable ADS valves do not have significant impact on the LOCA analysis at rated power. Therefore the impact of an ADS valve being inoperable for the increased 12 hour duration is bounded by the SAFER/GESTR-LOCA analysis at full rated power and does not have a significant impact on the consequences of a previously evaluated accident.

- 2) Create the possibility of a new or different kind of accident from any accident previously evaluated because no new mode of operation of any equipment results from the delay of the surveillance for an additional 12 hours. Therefore this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.
- 3) Involve a significant reduction in a margin of safety because the Operator has other diverse indications available to indicate the need to initiate suppression pool cooling should an ADS valve remain open. And because testing will require the same amount of time whether or not a 12 or 24 hour exemption to 4.0.4 for testing is provided, the probability of having an ADS valve inoperable during the test and being unaware of it is the same. From the standpoint of ADS operability testing, the amount of time necessary to conduct the testing remains constant. Therefore, considering that a 12 hour exemption could expire (leading to plant maneuvering out of, and into, Operational Conditions to satisfy the Technical Specifications) the margin of safety created by testing the ADS valves under a 12 hour exemption to 4.0.4 is not impacted by extending the test an extra 12 hours to allow for a more deliberate approach to the testing. Testing under a less constraining schedule could contribute to safer testing conditions. Because no credit is taken for MSRV position indication in the WNP-2 safety analysis the loss of MSRV position will not adversely affect the Operator's ability to respond to the event as analyzed. The surveillance testing of the MSRVs requires that the valves be opened at a time when adequate pressure is available to conduct the testing. Delaying the test until plant parameters can support the testing acts as an enhancement to plant safety. Further an additional 12 hours allows the Operators to conduct the test deliberately without undue pressure to meet a deadline. A more deliberate and cautious approach to the testing will enhance the Operator's ability to observe and respond better to all aspects of plant operation during the testing. This is also an enhancement to plant safety. Therefore, for the reasons above, this change does not involve a significant reduction in a margin of safety.

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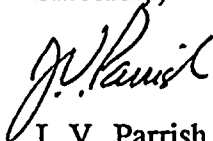
**REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS
FOR MAIN STEAM RELIEF VALVE POSITION INDICATION**

As discussed above, the Supply System concludes that these changes do not involve a significant hazards consideration, nor is there a potential for a significant change in the types or significant increase in the amount of any effluents that may be released offsite, nor does the change involve a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(C)(9) and therefore, per 10 CFR 51.22(b), an environmental assessment of these changes is not required.

This Technical Specification change request has been reviewed and approved by the WNP-2 Plant Operations Committee and the Supply System Corporate Nuclear Safety Review Board. In accordance with 10 CFR 50.91, the State of Washington has been provided a copy of this letter.

As stated, this situation has the potential for reoccurring at each refueling outage. The next refueling outage is scheduled to commence April 15, 1994. Accordingly, to avoid the potential conflicts in OPERABILITY, post-maintenance testing and Technical Specification requirements described above, approval of this request is necessary within 30 days after the start of the outage.

Sincerely,



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

Attachments

cc: BH Faulkenberry - NRC RV
NS Reynolds - Winston & Strawn
JW Clifford - NRC
DL Williams - BPA/399
NRC Site Inspector - 901A
W Bishop - EFSEC

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Request for Amend to TS for Main
Steam Relief Valve Position Indication

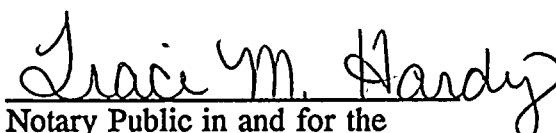
I. J. V. PARRISH, being duly sworn, subscribe to and say that I am the Assistant Managing Director, Operations for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge,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

DATE 6 December, 1993


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 6th day of December 1993.


Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennewick, WA

My Commission Expires 8/9/95

County of Benton