ENERGY NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

January 10, 2002
GO2-02-003

Docket No. 50-397

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

Gentlemen:

Subject: **COLUMBIA GENERATING STATION, OPERATING LICENSE NPF-21; REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS FOR EXTENSION OF INTERVAL FROM 18 TO 24 MONTHS FOR SELECTED SURVEILLANCE REQUIREMENTS**

Reference: Generic Letter 91-04, dated April 2, 1991, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle"

Pursuant to the Code of Federal Regulations, Title 10, Parts 2.101, 50.59, and 50.90, Energy Northwest hereby requests an amendment to the Columbia Generating Station Operating License. This request for amendment to the Columbia Generating Station Technical Specifications proposes an extension of the intervals for the following Surveillance Requirements (SRs) from 18 to 24 months:

SR 3.3.1.1.10, Function 5 of Table 3.3.1.1-1, Reactor Protection System (RPS) Actuation on Main Steam Isolation Valve Closure.

SR 3.3.2.1.6, Function 2 of Table 3.3.2.1-1, Verification that Rod Worth Minimizer is not bypassed when Thermal Power is less than or equal to 10% Rated Thermal Power.

SR 3.3.3.1.3, Function 7 of Table 3.3.3.1-1, Post Accident Monitoring Instrumentation, Primary Containment Isolation Valve Position.

SR 3.3.8.2.2.a, b, and c, RPS Electric Power Monitoring, Overvoltage, Undervoltage, and Underfrequency Channel Calibration.

SR 3.3.8.2.3, RPS Electric Power Monitoring System Functional Test.

It is Energy Northwest's intention to implement a 24-month fuel cycle at Columbia Generating Station. This Technical Specification amendment request is submitted to request an extension of SR interval from 18 to 24 months for surveillance testing activities that are performed during refueling outages when the plant is shutdown. Testing to meet the subject SRs was performed during the R-15 refueling outage and is not due to be performed again until December 2002.

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Guidance is provided in the referenced letter for evaluating surveillance interval extension to accommodate a 24-month fuel cycle. After evaluation of the subject SRs in accordance with the guidance of Generic Letter (GL) 91-04, Energy Northwest has determined there is no effect on safe operation of Columbia Generating Station posed by implementation of the requested interval extensions.

Additional information is attached to this letter to comprise Energy Northwest's submittal of the Technical Specification amendment request. Attachment 1 is a description of the proposed changes, the basis for their acceptability, and a discussion of the applicable GL 91-04 criteria for each proposed SR extension. Attachment 2 is a description of the instrument drift analysis performed to support the interval extension. Attachment 3 is a list of instruments susceptible to instrument drift that perform functions within the scope of the subject SRs. Attachment 4 provides an evaluation of the proposed changes pursuant to 10 CFR 50.92(c) and concludes the proposed changes do not result in a significant hazards consideration. Attachment 5 provides an Environmental Assessment Applicability review and concludes the proposed changes meet the eligibility criteria for a categorical exclusion as set forth in 10 CFR 51.22(c)(9). Therefore, an environmental assessment of the proposed changes is not required. Attachment 6 provides marked up affected pages from the Technical Specifications. Included for your information are the proposed Technical Specification Bases changes. Attachment 7 contains the typed Technical Specification pages as proposed by this amendment request.

This request has been approved by the Columbia Generating Station Plant Operations Committee and reviewed by the Energy Northwest Corporate Nuclear Safety Review Board. Pursuant to 10 CFR 50.91(b), the State of Washington has been provided a copy of this letter.

Should you have any questions or desire additional information regarding this matter, please call Mr. RN Sherman at (509) 377-8616.

Respectfully,

RL Webring
Vice President, Operations Support/PIO
Mail Drop PE08

Attachments

cc: EW Merschoff - NRC - RIV
JS Cushing - NRC - NRR
JO Luce - EFSEC
NRC Sr. Resident Inspector - 988C
DL Williams - BPA/1399
TC Poindexter - Winston & Strawn

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Request for Amendment,
Technical Specification
Surveillance Interval Extension

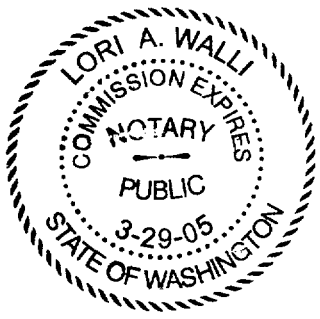
I, RL Webring, being duly sworn, subscribe to and say that I am the Vice President, Operations Support/PIO, for ENERGY NORTHWEST, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief that the statements made in it are true.

DATE 1/10/02 2002

RL Webring
Vice President, Operations Support/PIO

On this date personally appeared before me RL Webring, 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 10 day of January 2002



Lori A. Walli
Notary Public in and for the
STATE OF WASHINGTON

Residing at W. Richland

My Commission expires 3-29-05

Summary of Proposed Changes

This license amendment request is made to revise the Columbia Generating Station Technical Specifications to extend the interval of the following Surveillance Requirements (SR) from 18 months to 24 months:

SR 3.3.1.1.10, Function 5 of Table 3.3.1.1-1, Reactor Protection System (RPS) Actuation on Main Steam Isolation Valve (MSIV) Closure.

SR 3.3.2.1.6, Function 2 of Table 3.3.2.1-1, Verification that Rod Worth Minimizer (RWM) is not bypassed when Thermal Power is less than or equal to 10% Rated Thermal Power.

SR 3.3.3.1.3, Function 7 of Table 3.3.3.1-1, Post Accident Monitoring Instrumentation, Primary Containment Isolation Valve Position.

SR 3.3.8.2.2.a, b, and c, RPS Electric Power Monitoring, Overvoltage, Undervoltage, and Underfrequency Channel Calibration.

SR 3.3.8.2.3, RPS Electric Power Monitoring System Functional Test.

This attachment contains an evaluation of the proposed Technical Specification revisions in accordance with the guidance provided in NRC Generic Letter (GL) 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

Basis for the Acceptability of the Proposed Changes

SR 3.3.1.1.10 Channel Calibration (Table 3.3.1.1-1 Function 5), RPS Actuation on MSIV Closure

This RPS instrumentation SR requires performance of a Channel Calibration of the instrumentation that initiates an automatic reactor shutdown (scram) if 3 out of 4 main steam lines become isolated. This SR is required for mode 1 operation and verifies the channel responds to MSIV closure within the necessary range and accuracy. This RPS function prevents fuel damage and limits system pressure by initiating a scram prior to a significant reduction in steam flow, thereby reducing the severity of a reactor pressure transient caused by MSIV closure.

The MSIV closure signals are initiated from position switches located on the MSIVs. There are two switches on each of the 8 MSIVs. The logic for this Function is arranged so that

either the inboard or outboard MSIV on at least three of the 4 main steam lines must close for the scram to occur. The logic scheme for this function is illustrated in figure 7.2-9 of the Columbia Generating Station Final Safety Analysis Report (FSAR).

The devices that sense MSIV closure are limit switches manufactured by NAMCO. MSIV stem movement directly actuates these switches and the switch contacts are integral to the RPS logic circuits. These limit switches are passive bi-state devices whose physical position relative to the MSIV is fixed. Because these devices are not susceptible to setpoint drift, instrument errors caused by drift were not considered in the setpoint analysis for the RPS MSIV closure. Furthermore, reliability of each position switch is demonstrated quarterly during mode 1 operations by performance of a Channel Functional Test to meet the requirements of SR 3.3.1.1.8.

Generic Letter 91-04 contains three criteria for evaluating SR interval extensions for equipment that is not susceptible to instrument drift. The following is a description of the GL 91-04 criteria applicable to extension of SR 3.3.1.1.10 for Function 5 of Table 3.3.1.1-1 followed by the Columbia Generating Station specific evaluation.

GL 91-04 Criterion 1

The evaluation for surveillance interval extension to accommodate a 24-month fuel cycle should support a conclusion that the effect on safety is small.

Columbia Generating Station evaluation

The RPS actuation on MSIV closure function employs redundant electrical and mechanical components so that no single component failure can prevent the function from occurring. Each of the eight MSIVs has two limit switches that sense closure. Additionally, performance of the quarterly functional test required by SR 3.3.1.1.8 during power operations will detect component failure and verify this RPS function is operable. Extending the 18-month SR interval to 24 months will not affect the degree of reliability ensured by redundant components and quarterly Channel Functional Testing. Therefore, the impact on plant safety of SR interval extension is small.

GL 91-04 Criterion 2

Historical plant maintenance and surveillance data should support the conclusion that the impact on plant safety of SR interval extension is small.

Columbia Generating Station evaluation

Historical maintenance records and 18-month Channel Calibration surveillance test results were examined for the MSIV position switches. The surveillance data for the last 8 years indicates that no setpoint adjustments have been required during the performance of the 18-month Channel Calibration SR. Maintenance records show one switch failure during the period which was unrelated to the surveillance interval. The historical maintenance and surveillance data validate the conclusion that the impact on plant safety of extending the SR interval to the bounding 30-month period is small.

GL 91-04 Criterion 3

Assumptions in the plant licensing basis will not be invalidated on the basis of performing any surveillance at the bounding interval limit provided to accommodate a 24-month fuel cycle.

Columbia Generating Station evaluation

The Columbia Generating Station licensing basis has been reviewed for the proposed surveillance interval extension. This review considered the bounding surveillance interval of 30 months with application of SR 3.0.2. No assumptions were found in the licensing basis documents regarding the surveillance interval of MSIV closure function for RPS logic. No licensing basis changes other than those described herein, are necessary to implement the requested SR interval extensions and the Columbia Generating Station licensing basis is not invalidated by the proposed changes.

SR 3.3.2.1.6, Function 2 of Control Rod Block Instrumentation Table 3.3.2.1-1, Verify that the RWM is not bypassed when Thermal Power is less than or equal to 10% Rated Thermal Power.

The RWM generates control rod withdraw and insert block signals in order to maintain specified rod patterns during startup and shutdown. Only specified control rod movement sequences and relative rod positions are permitted by the RWM when it is enabled. These specified sequences effectively limit the amount and rate of reactivity increase during a Control Rod Drop Accident. At Columbia Generating Station the RWM is enabled when rated thermal power is less than or equal to 17%, conservatively bounding the (10%) value specified in the SR. At higher thermal power levels, the RWM is bypassed because the effect on the overall power distribution due to the motion of a single control rod becomes insignificant due to increasing voids in the core.

SR 3.3.2.1.6 for Function 2 of Table 3.3.2.1-1 requires verification that the RWM is automatically unbypassed when rated thermal power is 10% or less. The thermal power signal to the RWM is derived from main steam line flow measured by four Rosemount model 1151DP7E22 transmitters. Two redundant General Electric (GE) programmable logic controllers (PLCs) that generate the bypass signal to the RWM process these signals. Because the PLCs are of a digital design, they perform their function using discreet digitized data bits and are not susceptible to instrument drift. The Rosemount transmitters are analog devices with inherent drift characteristics. The transmitter drift has been evaluated against the criteria in enclosure 2 of GL 91-04. These projected 30-month transmitter drift values do not exceed the drift allowance provided in the current setpoint analysis. Because the RWM bypass function is accomplished by equipment that is susceptible to instrument drift as well as equipment that is not susceptible to equipment drift, the applicable GL 91-04 criteria are evaluated as follows.

The following three GL 91-04 criteria are applicable to the GE PLCs that generate the RWM bypass signal which are not susceptible to instrument drift:

GL 91-04 Criterion 1

The evaluation for surveillance interval extension to accommodate a 24-month fuel cycle should support a conclusion that the effect on safety is small.

Columbia Generating Station evaluation

The main steam flow analog to digital conversion and the digital output to the RWM functions are accomplished by three devices within the PLC. These devices are an analog input system, a central processing unit, and an output module. The accuracy associated with each device is +/- 0.02%. The analog to digital input device continually self-calibrates and field calibration is not normally required. The central processing unit sums the four steam line flow signals and compares the total steam flow value to a preset value to generate the RWM bypass signal to the output module. This signal processing function occurs simultaneously in two redundant PLCs. If a failure occurs in one PLC, the backup PLC takes control of the automatic RWM bypass function. Alternatively, the Columbia Generating Station Technical Specifications allow this SR to be met by manually placing the RWM in a non-bypassed condition. The use of redundant, highly reliable, electronic components and the ability to perform the function manually justify a conclusion that the effect on safety of the SR interval extension to 24 months is small.

GL 91-04 Criterion 2

Historical plant maintenance and surveillance data should support the conclusion that the impact on plant safety of the SR interval extension is small.

Columbia Generating Station Evaluation

Maintenance and surveillance test data collected since the GE PLCs were installed in 1995 was reviewed. The surveillance test results show that there were no failures of either PLC and the surveillance tests have always met their acceptance criteria. These historical records support the conclusion that the impact of the SR interval extension on plant safety is small.

GL 91-04 Criterion 3

Assumptions in the plant licensing basis will not be invalidated on the basis of performing any surveillance at the bounding interval limit provided to accommodate a 24-month fuel cycle.

Columbia Generating Station Evaluation

A search of the licensing basis documents for Columbia Generating Station was performed to determine if the extension of the surveillance interval for SR 3.3.2.1.6 to a 24 month interval would invalidate any assumptions in the Columbia Generating Station licensing basis. No Channel Calibration interval references for the automatic RWM bypass function were found in this search. The proposed SR interval extension has no impact on any assumption made in the Columbia Generating Station licensing basis.

The following criteria from Enclosure 2 of GL 91-04 are applicable to the Rosemount model 1151DP7E22 transmitters because they are susceptible to instrument drift. These transmitters provide steam flow signals to the PLCs. The transmitters in this analysis are identical with respect to make, model, range, and application.

GL 91-04 Enclosure 2 Criterion 1

Confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

Columbia Generating Station Evaluation

A review of as-found and as-left surveillance data for the four Rosemount transmitters over a 12-year period found no data outside of expected parameters. Only two failures have occurred in 15 years of operation. One was a failure of the transmitter internal electronics and the second was a failure of a zero-adjust potentiometer. The transmitters were replaced in each of these instances. Historical surveillance "as-found" test data indicates there have been no instances of instrument drift beyond expected limits. The consistent operational performance history of these instruments supports extension of the SR interval from 18 to 24 months.

GL 91-04 Enclosure 2 Criterion 2

Confirm that the values of drift for each instrument type and application have been determined with high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

Columbia Generating Station Evaluation

Historical as-found and as-left calibration data spanning a 12-year period was used in the drift analysis. These empirical drift values were clustered around the mean value and bounded by an approximately normal distribution. Based on the sample size, a 95/95 tolerance factor of 2.67 was obtained and used to determine the tolerance interval of the projected instrument drift. This means that there is a 95% level of confidence that 95% of future as-found data will be within the projected drift values. Use of the 95/95 tolerance factor as the desired level of confidence ensures that the values of drift calculated for the instruments that provide signals for the RWM bypass function have been determined with high probability and a high degree of confidence. A summary of the methodology and assumptions used to determine the rate of instrument drift with time is detailed in attachment 2.

GL 91-04 Enclosure 2 Criterion 3

Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type and application that performs a safety function. Provide a list of the channels by TS section that identifies these instrument applications.

Columbia Generating Station Evaluation

Historical as-found and as-left calibration data spanning a 12-year period was used in the drift analysis. These empirical drift values were clustered around the mean value and bounded by an approximately normal distribution. Based on the sample size, a 95/95-tolerance factor of 2.67 was obtained and used to determine the tolerance interval of the projected instrument drift. A projection of instrument drift at the cardinal data point nearest the RWM bypass setpoint over the proposed maximum calibration time interval (30 months) was performed. The data was ordered from low to high time interval. These intervals were examined and several natural breaks (according to time interval) were observed. The data was then separated into groups according to these breaks and the mean and standard deviation for each group was determined. These values were then plotted against the median value of time interval for each group. The mean values were scattered with no apparent relationship. The standard deviations were also scattered but not as widely. A straight line (representing time dependent drift) was fit to the data and a correlation of this line to the data was obtained. From the plot of standard deviation to time interval, the correlation of data to the straight-line fit was poor. This indicates that a poor relationship exists between the value of standard deviation of percent drift and calibration time interval. Therefore, there is no apparent time dependency associated with the data that would indicate an increase in the magnitude of drift over the longer calibration interval requested herein. In this manner of analysis, the values of drift for the instruments that provide signals used for the RWM bypass function have been determined with high probability and a high degree of confidence for the bounding 30-month calibration interval. A list of channels that identifies the instrument applications used to meet the requirements of SR 3.3.2.1.6 is contained in Attachment 3.

GL 91-04 Enclosure 2 Criterion 4

Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed TS changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded.

Columbia Generating Station Evaluation

The projected instrument drift for a 30-month period was determined to be a minimum value of -1.42% and a maximum value of 1.18% of calibrated span. These values are bounded by the drift value (+/-1.6%) assumed in the current setpoint analysis. It is not necessary to revise any assumption in the current safety analysis in order to implement the proposed SR

interval extension because the projected values of drift over a 30-month interval for these instruments do not exceed the allowance for instrument drift in the current Columbia Generating Station setpoint analysis.

GL 91-04 Enclosure 2 Criterion 5

Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation.

Columbia Generating Station Evaluation

The projected instrument error due to drift over a 30-month interval determined for the instruments that are calibrated in accordance with SR 3.3.2.1.6 is bounded by the current setpoint analysis. Implementation of the proposed extended SR interval will not affect the ability of the instruments to function within the necessary range and accuracy for bypassing the RWM at the required setpoint. Additionally, the RWM is not considered to be required for safe shutdown of the plant as described in section 7.4 of the Columbia Generating Station FSAR.

GL 91-04 Enclosure 2 Criterion 6

Confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibration.

Columbia Generating Station Evaluation

The projected instrument error due to drift over a 30-month interval determined for the instruments that are calibrated in accordance with SR 3.3.2.1.6 is bounded by the drift value currently assumed in the Columbia Generating Station setpoint and safety analysis. For this reason, it has not been necessary to revise setpoints, safety analyses, or make changes to acceptance criteria in surveillance procedures to accommodate the proposed SR interval extension.

GL 91-04 Enclosure 2 Criterion 7

Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift.

Columbia Generating Station Evaluation

Surveillance test data of instruments whose calibration intervals are approved to be extended to 24 months will be monitored to determine if projected drift values are exceeded. As-found and as-left data from calibration procedures will be compiled to evaluate the effect of increased surveillance intervals on instrument drift. The purpose of this program is to validate the projected values of drift with the empirical data gathered during surveillance testing in order to detect instrument drift in excess of that used to justify this surveillance interval extension request.

SR 3.3.3.1.3 Post Accident Monitoring Channel Calibration; Table 3.3.3.1-1 Function 7 Penetration Flow Path, Primary Containment Isolation Valve (PCIV) Position

Post Accident Monitoring (PAM) instruments display plant variables that provide information to control room operators following a postulated accident. The instruments that monitor these variables are classified as Category I in accordance with Regulatory Guide 1.97. PCIV position indicators display the isolation status of primary containment penetration flow paths to aid operators in assessing primary containment integrity following an accident.

PCIV position indication is accomplished by a position sensing limit switch affixed to each PCIV that controls the state of indicating lights in the control room. These limit switches are passive bi-state devices that are mechanically actuated by the PCIV. Instrument errors caused by drift were not considered in the setpoint analysis for the PCIV indication function because these devices are not susceptible to instrument drift.

The following GL 91-04 criteria apply to justify the surveillance interval extension because the PAM PCIV position indicating function is not susceptible to instrument drift.

GL 91-04 Criterion 1

The evaluation for surveillance interval extension to accommodate a 24-month fuel cycle should support a conclusion that the effect on safety is small.

Columbia Generating Station evaluation

SR 3.3.3.1.3 for PCIV position requires performance of a Channel Calibration to ensure the Valve Position Indication (VPI) features on automatic PCIVs respond within the necessary range and accuracy. Channel Calibration of PCIV position indication is performed by verifying control room indication is consistent with local observation of valve position or independent process indications such as flow or pressure. Most (72%) of the PCIVs subject to

SR 3.3.3.1.3 Function 7 are also tested to meet quarterly exercise or stroke time testing requirements of the Inservice Testing (IST) program. This quarterly testing will detect failure of the VPI circuitry because during the test, the position indicating lamps in the control room are observed to change state in response to valve manipulation. The remaining PCIVs are not tested quarterly because manipulating these valves during power operation presents challenges to plant operation, equipment, and/or personnel. These valves are only manipulated during cold shutdown conditions.

A precedent for a 24-month calibration of valve position indicators exists in ASME/ANSI Operations and Maintenance Standards Manual (OMa-1988) section 4.1. This standard establishes inservice testing requirements for valves, and states, "Valves with remote position indicators shall be observed locally at least once every two years to verify that valve operation is accurately indicated." PCIVs at Columbia Generating Station are calibrated in accordance with this 2-year inservice testing requirement which is redundant to SR 3.3.3.1.3 Function 7. Performance of more frequent quarterly IST testing that verifies the PCIV VPI function sufficiently justifies the extension of this SR interval. This ensures availability of PCIV position indication that control room operators need to determine the isolation status of primary containment penetration flow paths during or after a postulated accident. Therefore, the impact on safety of the proposed SR interval extension is small.

GL 91-04 Criterion 2

Historical plant maintenance and surveillance data should support the conclusion that the impact on plant safety of SR interval extension is small.

Columbia Generating Station Evaluation

A review of the surveillance test data for SR 3.3.3.1.3 Function 7 for the past eight years found five instances of failure to meet procedure acceptance criteria for valve-open indication. These failures were determined to be attributable to overly conservative procedure acceptance criteria. Additionally, Regulatory Guide 1.97 only requires closed or not closed indication for PCIV position indicators. No failures were found during a review of the quarterly surveillance records that incidentally verify the function of PCIV position indicators.

Review of the surveillance and maintenance history of the PCIVs demonstrates that there are no failures that would invalidate the conclusion that the impact, on safety function due to the proposed surveillance interval extension is small.

GL 91-04 Criterion 3

Assumptions in the plant licensing basis will not be invalidated on the basis of performing any surveillance at the bounding interval limit provided to accommodate a 24-month fuel cycle.

Columbia Generating Station Evaluation

The Columbia Generating Station licensing basis has been reviewed for assumptions pertaining to the surveillance interval for calibration of PCIV position indicators. This review has verified that no licensing basis document changes other than those requested, are necessary to implement the requested interval change to SR 3.3.3.1.3 for Function 7 of Table 3.3.3.1-1 and that the Columbia Generating Station licensing basis is not invalidated by the proposed changes.

SR 3.3.8.2.2.a, b, and c RPS Electric power monitoring Channel Calibration and SR 3.3.8.2.3 RPS Electric power monitoring System Functional Test

The purpose of the Reactor Protection System (RPS) electric power monitoring system is to protect the loads connected to the RPS bus from the effects of sustained abnormal voltage and frequency conditions by isolating the bus from its power source. Some of the essential equipment powered from the RPS busses is the RPS Logic, scram solenoids, and isolation valve relay logic.

Two Electrical Protection Assemblies (EPAs) are installed between each power source and the RPS busses to provide redundant isolation protection. Each EPA consists of a circuit breaker with a trip coil. Trip logic and sensors within the EPAs detect abnormal voltage and low frequency conditions in the outputs of the RPS power sources and actuate the trip coil after a time delay to open circuit breakers and disconnect the respective RPS bus from the errant power source.

Channel Calibration SR 3.3.8.2.2 is performed to verify and adjust if necessary the proper function of the trip cards to detect undervoltage, overvoltage, and underfrequency on the RPS bus and trip the EPA circuit breaker after a preset time delay. Surveillance activities performed to meet the System Functional Test SR 3.3.8.2.3 envelop those performed to meet SR 3.3.8.2.2 and provide complete testing of the safety function. For this reason, and because the same test procedure is performed to meet both SRs, the same justification for extension is applied herein to both of these SR intervals

Simulated signals are applied to the sensors and the EPA circuit breakers are tripped open to meet the requirements of SR 3.3.8.2.2 and SR 3.3.8.2.3. As discussed in GL 91-09 "Modification of Surveillance Interval for the Electric Protective Assemblies in Power

Supplies for the Reactor Protection System", this functional test initiates a half scram when the respective RPS bus is de-energized. Other plants of similar design to Columbia Generating Station have experienced problems resetting the half scram condition and have experienced inadvertent scrams and valve group isolations that present challenges to safety systems. The current 18-month surveillance Frequency plus the 25% SR 3.0.2 extension allows only 22.5 months between test performances. Extension of SR 3.3.8.2.2 and 3.3.8.2.3 to 24 months will eliminate potential challenges to steady state operations posed by performing this surveillance testing during power operations. The staff has concluded in GL 91-09 that the benefit to safety of reducing the frequency of performing this test during power operations more than offsets the risk to safety from changing the surveillance interval to allow testing only when the plant is shutdown.

Instrument drift was considered in the abnormal voltage and frequency as well as the time delay setpoint analysis for the EPA trip cards and the following criteria from Enclosure 2 of GL 91-04 apply to extension of SR 3.3.8.2.2 and SR 3.3.8.2.3. The components in this analysis are identical with respect to make, model, range, and application.

GL 91-04 Enclosure 2 Criterion 1

Confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

Columbia Generating Station Evaluation

A review of as-found and as-left surveillance test data spanning an eleven year period indicates the setpoint values for Overvoltage (OV), Undervoltage (UV), Underfrequency (UF) and their associated Time Delays (TD) have not exceeded expected parameters. A maintenance history review indicated two instances of circuit card failures for the RPS EPAs. One failure of the circuit card for RPS-EPA-3E occurred in April 1996 and a second card failure for RPS-EPA-3C in August 1999. Analysis of these failures determined that they were random in nature, not related to instrument drift, and can be considered rare. The reliable performance of the EPA circuit breakers as indicated by surveillance and maintenance history supports the justification for extension of these SR intervals to 24 months.

GL 91-04 Enclosure 2 Criterion 2

Confirm that the values of drift for each instrument type and application have been determined with high probability and a high degree of confidence. Provide a summary of the

methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

Columbia Generating Station Evaluation

Historical as-found and as-left surveillance test data spanning an eleven-year period for the OV, UV, UF, and TD setpoints was compiled for the drift analysis of RPS EPAs. An outlier test, described in attachment 2, found 4 possible outlier data points that were subsequently removed from the data pool. The drift values in all four data pools were clustered about the mean value and bounded by an approximately normal distribution. The following table illustrates attributes of the analyses for each data pool.

	OV	UV	UF	TD
Sample size	69	70	69	177
95/95 Tolerance Factor	2.3	2.3	2.3	2.16
Outliers	1	0	1	2
Tolerance Interval	1.18 to -1.23	1.13 to -1.27	0.1 to -0.1	0.123 to -0.124

Based on the sample size, a 95/95 tolerance factor was obtained for each of the data pools and used to determine the tolerance intervals of the projected instrument drift. This means that there is a 95% level of confidence that 95% of future as found data will be within the projected drift values. Use of the 95/95 tolerance factor as the desired level of confidence ensures that the values of drift for EPA breaker trip cards have been determined with high probability and a high degree of confidence. A summary of the methodology and assumptions used to determine the rate of instrument drift with time is detailed in Attachment 2.

GL 91-04 Enclosure 2 Criterion 3

Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type and application that performs a safety function. Provide a list of the channels by TS section that identifies these instrument applications.

Columbia Generating Station Evaluation

Historical as-found and as-left surveillance test data spanning an eleven-year period for the OV, UV, UF, and TD setpoints was compiled for the drift analysis of RPS EPAs. An outlier test, described in attachment 2, found 4 possible outlier data points that were subsequently

removed from the data pool. The drift values in all four data pools were clustered about the mean value and bounded by an approximately normal distribution. Based on the sample size, a 95/95 tolerance factor was obtained and used to determine the tolerance interval of the projected instrument drift. The pools of data for OV, UV, UF, and TD were then divided into bins according to calibration interval. The mean and standard deviation were calculated for each bin. The standard deviations were then plotted with respect to time interval so that trends in changing standard deviation of drift over time could be discerned. Straight lines (representing time dependent drift) were then fit to the data and the correlation of the line to the data was assessed. Results from this analysis showed that for all time intervals there was low to very low correlation indicating little to no time dependent drift in the data. Additionally, the tolerance interval was superimposed over the instrument drift data graphs. This revealed many instances where the time between calibration adjustments was greater than 30 months and the instrument drift remained within the tolerance interval. This method of analysis and resultant data demonstrate that the values of drift for the EPA breaker trip cards have been determined with high probability and a high degree of confidence for the bounding 30-month interval. A list of channels that identifies the instrument applications used to meet the requirements of SR 3.3.8.2.2 and 3.3.8.2.3 is contained in Attachment 3.

GL 91-04 Enclosure 2 Criterion 4

Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed TS changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded.

Columbia Generating Station Evaluation

The projected instrument drift for a 30-month period was determined to be a minimum value of -1.23v and a maximum value of +1.18v for OV, a minimum value of -1.27v and a maximum value of +1.13v for UV, and a minimum value of -0.1 Hz and a maximum value of +0.1 Hz of calibrated span for UF. The projected instrument drift for a 30-month period for the time delay feature of the EPA breakers is -0.124 sec. and +0.123 sec. The drift values assumed in their respective setpoint analyses bound all of these projected drift values. It is not necessary to revise any EPA breaker setpoints or safety analysis assumptions to implement the proposed SR interval extension because the projected values of drift over a 30-month interval for these instruments does not exceed the allowance for instrument drift in the current Columbia Generating Station setpoint and safety analyses.

GL 91-04 Enclosure 2 Criterion 5

Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation.

Columbia Generating Station Evaluation

The projected instrument error due to drift over a 30-month interval for the instruments that are calibrated in accordance with SR 3.3.8.2.2 and SR 3.3.8.2.3 is bounded by the current setpoint analysis. Implementation of the proposed extended SR intervals will not affect their ability to monitor RPS Electric power and de-energize the RPS bus when monitored variables exceed the required parameters. Additionally, a reactor scram from the RPS electric power monitoring system is not a function required for safe plant shutdown as described in section 7.4 of the Columbia Generating Station FSAR.

GL 91-04 Enclosure 2 Criterion 6

Confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibration.

Columbia Generating Station Evaluation

The projected instrument error due to drift over a 30-month interval determined for the instruments that are calibrated in accordance with SR 3.3.8.2.2 and SR 3.3.8.2.3 are bounded by the drift values currently assumed in the Columbia Generating Station setpoint and safety analysis. For this reason, it is not necessary to revise any setpoints, safety analyses, or make changes to plant surveillance procedures in order to accommodate the proposed SR interval extension.

GL 91-04 Enclosure 2 Criterion 7

Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift.

Columbia Generating Station Evaluation

Surveillance test data of instruments whose calibration intervals are approved to be extended to 24 months will be monitored to determine if projected drift values are exceeded. As-found and as-left data from calibration procedures will be compiled to evaluate the effect of increased

surveillance intervals on instrument drift. The purpose of this program is to validate the projected values of drift with the empirical data gathered during surveillance testing in order to detect instrument drift in excess of that used to justify the surveillance interval extension.

DRIFT ANALYSIS METHODOLOGY

An evaluation of instrument performance was conducted at Columbia Generating Station to support extended surveillance testing intervals for transition to a 24-month fuel cycle. The analysis provided an understanding of the instruments' expected behavior by evaluating past performance and established a technical basis for extending the calibration intervals. The instrument drift analysis was conducted in accordance with Electric Power Research Institute (EPRI) publication TR-103335-R1 "Guidelines for Instrument Calibration Extension/Reduction-Revision 1." This attachment summarizes the methodology and assumptions used to determine the rate of instrument drift over time for instrumentation that is calibrated to meet the requirements of SR 3.3.1.1.10 Function 5, SR 3.3.8.2.2, and SR 3.3.8.2.3.

Raw data collection

Historical as-found and as-left calibration data was obtained from previously performed surveillance procedures archived in plant records. This raw data for the analysis consisted of two types:

1) Instrument specific calibration data in which the calibration of the instrument is confirmed at cardinal data points over the entire calibrated span.

2) Surveillance test data in which the actuation of the instrument is confirmed at a specific setpoint by applying the test input directly to the instrument.

This data was grouped according to functionally equivalent instruments. These groups consist of data for instruments with similar design and performance characteristics combined to form a single population for analysis purposes. A comparison of the grouped data was performed to determine that the mean and standard deviations of the samples were essentially the same. This was done to verify that the samples are from the same population and can be pooled for analysis.

Data formatting for ease of analysis

The collected data was entered into a Microsoft Excel spreadsheet capable of performing statistical functions to facilitate further analysis and data manipulation.

The following information was added to the spreadsheet for each instrument:

Instrument EPN

Dates of the calibration data
Time interval between calibrations
Calibrated span (or desired setpoint)
Engineering units

Normalization and initial statistics

The values of instrument drift between calibrations were calculated by subtracting the "as found" value from the "as left" value from the previous calibration. If the data was taken at cardinal points over a calibrated span, this drift value was normalized (divided by the calibrated span and expressed as a percentage of calibrated span). This part of the analysis develops the raw data for the drift analysis.

Validation of the raw data

The raw data was evaluated for the presence of outliers that may adversely affect the results of the drift analysis. Valid outliers were then excluded from the analysis and statistics recalculated without them. Presence of outliers in this analysis was determined by the "T-test". The algorithm used in this test is detailed in section 7.2 of EPRI publication TR-103335-R1. Some outliers were identified on the basis of being a "gross deviation" in accordance with section 2.1 of the American Society for Testing and Materials standard E178-1989 "Standard Practice for Dealing With Outlying Observations".

Validation of assumption of Normality

The most useful statistical methods for analyzing calibration data assume the data is normally distributed. The calculations for tolerance interval and outlier test assume the data is distributed normally. In this drift analysis, normality was assessed using the X^2 (Chi squared), probability plot, and coverage analysis methods. These normality assessment techniques are detailed in Appendix C of EPRI publication TR-103335-R1.

Determination of predicted bounds for drift based on the initial analysis

Performance predictions assume that a given portion of a population is not expected to drift beyond a certain value. This predicted instrument drift is determined using a tolerance factor based sample size and the level of confidence desired for the prediction. These tolerance factors are presented in Table 6-1 of EPRI publication TR-103335-R1. For this analysis, 95/95 tolerance factors were chosen. This means that there is a 95% level of confidence that 95% of future data will be within the calculated tolerance interval. The tolerance interval for the data set is calculated by multiplying the sample standard deviation by the tolerance factor. EPRI research supports the use of the 95/95 tolerance factors for safety related instruments.

Time-dependent drift analysis

The objective of this portion of the drift analysis is to detect time-dependent drift in the standard deviations of drift of a group of instruments. The presence of time dependent drift would mean increased instrument inaccuracy over a longer calibration interval. This portion of the drift analysis was accomplished by first separating the drift data into groups or bins based on calibration interval and calculating the standard deviation of the data in each bin. The standard deviations were then graphed such that trends in standard deviation with respect to time could be identified. The Excel statistics program was used to fit linear trend lines to the data. The slopes of these trend lines indicated little to no correlation between instrument drift and calibration interval for all of the instrument groups analyzed.

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS FOR EXTENSION OF INTERVAL FROM 18 TO 24 MONTHS FOR SELECTED SURVEILLANCE REQUIREMENTS

Attachment 3

This attachment contains a list of channels by Technical Specification section and identifies the instrument application as required by criterion 3 of Enclosure 2 in Generic Letter 91-04.

DRIFT ANALYSIS SCOPE

Requirement	EPN	Manufacturer	Model
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3A	GE Nuclear	147D8652G007
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3C	GE Nuclear	147D8652G007
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3B	GE Nuclear	147D8652G007
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3D	GE Nuclear	147D8652G007
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3E	GE Nuclear	147D8652G007
SR3.3.8.2.2 SR3.3.8.2.3	RPS-EPA-3F	GE Nuclear	147D8652G007
SR 3.3.2.1.6	RFW-DPT-803A	Rosemount	1151DP7E22
SR 3.3.2.1.6	RFW-DPT-803B	Rosemount	1151DP7E22
SR 3.3.2.1.6	RFW-DPT-803C	Rosemount	1151DP7E22
SR 3.3.2.1.6	RFW-DPT 803D	Rosemount	1151DP7E22

10 CFR 50.92 Evaluation

Summary of Proposed Change

This license amendment request is made to revise the Energy Northwest Technical Specifications to extend the interval of following Surveillance Requirements (SRs) from 18 to 24 months:

SR 3.3.1.1.10, Function 5 of Table 3.3.1.1-1, Reactor Protection System (RPS) Actuation on Main Steam Isolation Valve Closure.

SR 3.3.2.1.6, Function 2 of Table 3.3.2.1-1, Verification that Rod Worth Minimizer is not bypassed when Thermal Power is less than or equal to 10% Reactor Thermal Power.

SR 3.3.3.1.3, Function 7 of Table 3.3.3.1-1, Post Accident Monitoring Instrumentation, Primary Containment Isolation Valve Position.

SR 3.3.8.2.2.a, b, and c, RPS Electric Power Monitoring, Overvoltage, Undervoltage, and Underfrequency Channel Calibration.

SR 3.3.8.2.3, RPS Electric Power Monitoring System Functional Test.

The proposed changes to the subject Technical Specification SRs were evaluated in accordance with the guidance provided in NRC Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

No Significant Hazards Consideration Determination

Energy Northwest has evaluated the proposed change to the Technical Specifications using the criteria established in 10 CFR 50.92(c) and has determined that it does not represent a significant hazards consideration as described below:

- **The operation of Columbia Generating Station in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.**

  The extension of the intervals to 24 months for the subject SRs does not impact the ability of any of the equipment to function as assumed in the Columbia Generating Station accident analysis. None of the equipment within the scope of analysis for this TS amendment request performs a function in any of the systems required for safe shutdown as described in section 7.4 of the Columbia Generating Station FSAR. Historical maintenance and surveillance data as well as projected instrument drift indicate the proposed amendment will not affect performance or reliability of the equipment tested to meet the requirements of these SRs.

Therefore, the extension of the surveillance intervals does not involve a significant increase in the probability or consequences of an accident previously evaluated.

- **The operation of Columbia Generating Station in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.**

  An event related to surveillance testing Frequency or instruments drifting beyond Allowable Values is not postulated in the Columbia Generating Station accident analysis. None of the analyses performed for this amendment request indicate an increase in the probability of equipment failure resulting from the surveillance interval extension. Because all of the equipment related to the proposed SR interval extensions is expected to function normally during the longer intervals, extending the subject SRs does not introduce any new accident initiators.

  Therefore, the operation of Columbia Generating Station in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- **The operation of Columbia Generating Station in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.**

  The proposed amendment to the Technical Specifications will extend the intervals at which testing is performed to meet the requirements of the selected SRs. The overall effect of the extensions on safety is small due to other more frequent testing that is performed on the same equipment, projected instrument drift that is bounded by the current setpoint analysis, or the existence of redundant mechanical or electrical components. Reviews of historical surveillance and maintenance records indicate there is no evidence of time-related failures. The proposed amendment does not impact the performance of any system, structure, or component relied upon for accident mitigation. The proposed surveillance interval extensions do not impact any safety analysis assumptions or results.

  Therefore, operation of Columbia Generating Station in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.

Environmental Assessment Applicability Review

Energy Northwest has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21.

The proposed change meets the criteria for categorical exclusion as provided for in 10 CFR 51.22(c)(9). The change request does not pose a significant hazards consideration nor does it involve an increase in the amounts, or a change in the types, of any effluent that may be released off-site.

Furthermore, this proposed request does not involve an increase in individual or cumulative occupational exposure.

Marked-Up Version of Technical Specifications Surveillance Requirements and Technical Specification Bases

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.10	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	18 MONTHS FOR FUNCTIONS 1 THROUGH 4, 6, 7, AND 9 THROUGH 11 ~~18 months for Functions 1 through 7 and 9 through 11~~ AND 24 months for ~~Function 8~~ FUNCTIONS 5 AND 8
SR 3.3.1.1.11	Verify the APRM Flow Biased Simulated Thermal Power–High Function time constant is $\leq$ 7 seconds.	18 months
SR 3.3.1.1.12	Verify Turbine Throttle Valve–Closure, and Turbine Governor Valve Fast Closure Trip Oil Pressure–Low Functions are not bypassed when THERMAL POWER is $\geq$ 30% RTP.	18 months
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is ≤ 10% RTP.	~~18~~ 24 months
SR 3.3.2.1.7	----------NOTE---------- Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. ---------- Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. These SRs apply to each Function in Table 3.3.3.1-1.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel(s) in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION for Function 8.	92 days
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for Functions 1, 2, 4, 5, ~~0~~, 9, and 10.	18 months
SR 3.3.3.1.4	Perform CHANNEL CALIBRATION for Functions ~~3 and 8.~~ 3, 6 AND 7.	24 months

SURVEILLANCE REQUIREMENTS

----------NOTE----------
When an RPS electric power monitoring assembly is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the other RPS electric power monitoring assembly for the associated power supply maintains trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.2.1	----------NOTE---------- Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for $\geq$ 24 hours. ---------- Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage $\leq$ 133.8 V, with time delay $\leq$ 3.46 seconds; b. Undervoltage $\geq$ 110.8 V, with time delay $\leq$ 3.46 seconds; and c. Underfrequency $\geq$ 57 Hz, with time delay $\leq$ 3.46 seconds.	~~18~~ 24 months
SR 3.3.8.2.3	Perform a system functional test.	~~18~~ 24 months

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.9 and SR 3.3.1.1.10 (continued)

calorimetric calibration (SR 3.3.1.1.2) and the 1130 MWD/T LPRM calibration against the TIPs (SR 3.3.1.1.7). A second Note is provided that requires the APRM and IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 APRM and IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or moveable links. This Note allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR. The Frequency of SR 3.3.1.1.9 is based upon the assumption of a 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. The Frequency of SR 3.3.1.1.10 is based on the assumption of a 18 month calibration interval for Functions 1 through 7 and Functions 9 through 11 in the determination of the magnitude of equipment drift in the setpoint analysis.

AN 18 MONTH CALIBRATION INTERVAL FOR FUNCTIONS 1 THROUGH 4, 6, 7 AND 9 THROUGH 11 IN THE

A Frequency of 24 months is assumed for Function 8 because the TIV position switches are not susceptible to instrument drift.

FUNCTIONS 5 AND 8 BECAUSE THE POSITION SWITCHES THAT PERFORM THESE FUNCTIONS ARE NOT SUSCEPTABLE TO INSTRUMENT DRIFT.

SR 3.3.1.1.11

The Average Power Range Monitor Flow Biased Simulated Thermal Power—High Function uses an electronic filter circuit to generate a signal proportional to the core THERMAL POWER from the APRM neutron flux signal. This filter circuit is representative of the fuel heat transfer dynamics that produce the relationship between the neutron flux and the core THERMAL POWER. The filter time constant must be verified to ensure that the channel is accurately reflecting the desired parameter.

The Frequency of 18 months is based on engineering judgment and reliability of the components.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.4 (continued)

they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7. The 92 day Frequency is based on the actual trip setpoint methodology utilized for these channels.

SR 3.3.2.1.5

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

As noted, neutron detectors are excluded from the CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7.

The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.2.1.6

The RWM is automatically bypassed when power is above a specified value. The power level is determined from a steam flow signal. The automatic bypass setpoint must be verified periodically to be > 10% RTP. If the RWM low power setpoint is nonconservative, then the RWM is considered inoperable. Alternately, the low power setpoint channel can be placed in the conservative condition (nonbypass). If placed in the nonbypassed condition, the SR is met and the RWM is not considered inoperable. The Frequency is based on the trip setpoint methodology utilized for the low power setpoint channel.

INSTRUMENT DRIFT ANALYSIS AND

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.1.2, SR 3.3.3.1.3, and SR 3.3.3.1.4

A CHANNEL CALIBRATION is performed every 92 days for Function 8, every 18 months for Functions 1, 2, 4, 5, (7) 9, and 10, and every 24 months for Functions (3 and 6) CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. The test verifies that the channel responds to the measured parameter with the necessary range and accuracy. For Function 6, the CHANNEL CALIBRATION shall consist of an electronic calibration of the channel, excluding the detector, for range decades $\geq$ 10 R/hour and a one point calibration check of the detector with an installed or portable gamma source for range decades $<$ 10 R/hour. The 92 day, 18 month, and 24 month Frequencies are based on operating experience and engineering judgment.

3, 6, AND 7.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.

2. NRC Safety Evaluation Report, "Washington Public Power Supply System, Nuclear Project No. 2, Conformance to Regulatory Guide 1.97," dated March 23, 1988.

3. 10 CFR 50.36(c)(2)(ii).

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.2.1

A CHANNEL FUNCTIONAL TEST is performed on each overvoltage, undervoltage, and underfrequency channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The CHANNEL FUNCTIONAL TEST is only required to be performed while the plant is in a condition in which the loss of the RPS bus will not jeopardize operation (the design of the system is such that the power source must be removed from service to conduct the Surveillance). In addition, if the plant will be shutdown in MODE 4 or 5 for an extended period of time it is acceptable to postpone the Surveillance until the plant is ready to go back to MODE 2 or 3. Performance of the SR immediately after shutdown would jeopardize the reliability of shutdown cooling during a time of high decay heat load. However, prior to restart it is reasonable to perform the surveillance to provide further assurance of the operability of equipment before returning to MODE 1. The 24 hours is intended to indicate an outage of sufficient duration to allow for scheduling and proper performance of the Surveillance if it has not been performed in the last 184 days. The 184 day Frequency and the Note in the Surveillance are based on guidance provided in Generic Letter 91-09 (Ref. 3).

SR 3.3.8.2.2

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations, consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of ~~an 18~~ A 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.2.3

Performance of a system functional test demonstrates a required system actuation (simulated or actual) signal. The logic of the system will automatically trip open the associated power monitoring assembly circuit breaker. Only one signal per power monitoring assembly is required to be tested. This Surveillance overlaps with the CHANNEL CALIBRATION to provide complete testing of the safety function. The system functional test of the Class 1E circuit breakers is included as part of this test to provide complete testing of the safety function. If the breakers are incapable of operating, the associated electric power monitoring assembly would be inoperable.

THE 24-MONTH FREQUENCY IS BASED ON INSTRUMENT DRIFT ANALYSIS

The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. FSAR, Section 8.3.1.1.6.

2. 10 CFR 50.36(c)(2)(ii).

3. NRC Generic Letter 91-09, "Modification of Surveillance Interval for the Electric Protective Assemblies in Power Supplies for the Reactor Protection System."

Replacement Pages for Technical Specifications

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.10	----------NOTES---------- 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL CALIBRATION.	18 months for Functions 1 through 4, 6, 7, and 9 through 11 AND 24 months for Functions 5 and 8
SR 3.3.1.1.11	Verify the APRM Flow Biased Simulated Thermal Power – High Function time constant is $\leq$ 7 seconds.	18 months
SR 3.3.1.1.12	Verify Turbine Throttle Valve – Closure, and Turbine Governor Valve Fast Closure Trip Oil Pressure – Low Functions are not bypassed when THERMAL POWER is $\geq$ 30% RTP.	18 months
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.15	----------NOTES---------- 1. Neutron detectors are excluded. 2. Channel sensors for Functions 3 and 4 are excluded. 3. For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. ---------- Verify the RPS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is $\leq$ 10% RTP.	24 months
SR 3.3.2.1.7	----------NOTE---------- Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. ---------- Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Upscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.5	$\leq$ 0.58W + 51% RTP
b. Inop	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4	NA
c. Downscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.5	$\geq$ 3% RTP
2. Rod Worth Minimizer	1(b), 2(b)	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.6 SR 3.3.2.1.8	NA
3. Reactor Mode Switch – Shutdown Position	(c)	2	SR 3.3.2.1.7	NA

(a) THERMAL POWER $\geq$ 30% RTP and no peripheral control rod selected.

(b) With THERMAL POWER $\leq$ 10% RTP.

(c) Reactor mode switch in the shutdown position.

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. These SRs apply to each Function in Table 3.3.3.1-1.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel(s) in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION for Function 8.	92 days
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for Functions 1, 2, 4, 5, 9, and 10.	18 months
SR 3.3.3.1.4	Perform CHANNEL CALIBRATION for Functions 3, 6, and 7.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1.	Reactor Vessel Pressure	2	E
2.	Reactor Vessel Water Level		
	a. -150 inches to +60 inches	2	E
	b. -310 inches to -110 inches	2	E
3.	Suppression Pool Water Level		
	a. -25 inches to +25 inches	2	E
	b. 2 ft to 52 ft	2	E
4.	Suppression Chamber Pressure	2	E
5.	Drywell Pressure		
	a. -5 psig to +3 psig	2	E
	b. 0 psig to 25 psig	2	E
	c. 0 psig to 180 psig	2	E
6.	Primary Containment Area Radiation	2	F
7.	PCIV Position	2 per penetration flow path [a][b]	E
8.	Drywell H_2 Analyzer	2	E
9.	Drywell O_2 Analyzer	2	E
10.	ECCS Pump Room Flood Level	5	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

SURVEILLANCE REQUIREMENTS

----------NOTE----------
When an RPS electric power monitoring assembly is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the other RPS electric power monitoring assembly for the associated power supply maintains trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.2.1	----------NOTE---------- Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for $\geq$ 24 hours. ---------- Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage $\leq$ 133.8 V, with time delay $\leq$ 3.46 seconds; b. Undervoltage $\geq$ 110.8 V, with time delay $\leq$ 3.46 seconds; and c. Underfrequency $\geq$ 57 Hz, with time delay $\leq$ 3.46 seconds.	24 months
SR 3.3.8.2.3	Perform a system functional test.	24 months