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**NUCLEAR REGULATORY COMMISSION**  
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DATE OF MEETING

06/26/2000

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Docket Number(s)	<u>50-397</u>
Plant/Facility Name	<u>WNP-2/ Energy Northwest</u>
TAC Number(s) (if available)	<u>N/A</u>
Reference Meeting Notice	<u>2000-0625</u>
Purpose of Meeting (copy from meeting notice)	<u>Discussion of proposed license amendment to modify</u> <u>technical specifications for a 24 month fuel cycle</u> <u>surveillance interval.</u>

NAME OF PERSON WHO ISSUED MEETING NOTICE

Jack Cushing

TITLE

Project Manager

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PDIV-4

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# GL 91-04 Surveillance Interval Extension Equipment Summary

SR #	Function	Equipment	3 Non-Drift Criteria			7 Drift Criteria						
			Small Effect on Safety	Reliable History	LBD Conflict	Acceptable Inst. Drift History	95/95 Tolerance Interval	Time Dependent Drift	30 Month Drift Bounds Spt Analysis	Effect on Safe Shutdown	Procedure Changes req'd	Drift Monitored
3.3.1.1.10	RPS Actuation on MSIV Closure Channel Calibration	NAMCO Limit Switches	Yes	Yes	No							
3.3.2.1.6	Rod Worth Minimizer not Bypassed when LE 10% RTP Verification	Programmable Logic Controllers	Yes	Yes	No							
		Rosemount Transmitters				Yes	Yes	No	Yes	No	No	Yes
3.3.3.1.3	Post Accident Monitoring PCIV Position Indication	Limit Switches	Yes	Yes	No							
3.3.8.2.2 & 3.3.8.2.3	RPS Electric Power Monitor Channel Calibration	Electrical Protection Assemblies Trip Cards				Yes	Yes	No	Yes	No	No	Yes
3.6.1.8.3	Main Steam Leakage Control System System Functional Test	Valves, Blowers, Heaters	Yes	Yes	No							
		Agastat Time Delay Relays				Yes	Yes	No	Yes	No	No	Yes

# 24 Month fuel cycle Surveillance Program Changes at WNP-2

- Transition to a 24 month fuel cycle requires extension of 18 month SR intervals for surveillance tests that require the plant to be in a cold shutdown condition
- Most 18 month surveillances can be performed safely during power operations thus reducing outage scope
- WNP-2 requires extension of 6 SR's to accommodate a 24 month fuel cycle

# 18 month Surveillance Requirements proposed to be extended:

- RPS instrumentation - Main Steam Isolation Valve closure Channel Calibration
- Rod Worth Minimizer - not bypassed at LE 10 % RTP - verification
- PAM Instrumentation - PCIIV position indication - Channel Calibration
- RPS power monitor - Channel Calibration
- RPS power monitor - Logic System Functional Test
- Main Steam Leakage Control - System Functional Test

# GL 91-04 Justification for extending SR intervals

The staff has found that the effect of interval extension on safety is small because:

- Safety systems use redundant mechanical and electrical components
- Other surveillances are performed more frequently during plant operation that confirm these systems can perform their safety function

# Criteria for evaluating the effects of SR interval extension

GL 91-04 establishes 2 sets of criteria to be addressed when requesting SR interval Extensions

- 3 Criteria are applicable to surveillances performed on equipment for which instrument drift is not a consideration
- 7 Criteria are applicable to surveillances performed on instrumentation for which errors due to instrument drift over the calibration interval were considered in the safety system setpoint analysis and/or the plant safety analysis.

### 3 Criteria for justifying extension of surveillance intervals for equipment not susceptible to drift

1. Evaluate the effect on safety of the interval extension. The evaluation should support a conclusion that the effect on safety is small
2. Confirm historical maintenance and surveillance records support the conclusion that the effect on safety is small
3. Confirm that performance of the extended surveillance at the bounding 30 month interval allowed by SR 3.0.2 does not invalidate any assumptions in the plant licensing basis

# 7 Criteria for justifying extension of surveillance intervals for equipment susceptible to instrument drift

1. Confirm that historical instrument drift has rarely exceeded acceptable limits
2. Confirm the projected values of drift have been determined with a 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
3. Confirm the projected values of drift have been determined with a high probability and a high degree of confidence for the bounding 30 month interval and provide a list of channels by TS section identifying the instrument applications

# 7 Instrument drift criteria

cont'd

4. Confirm that a comparison of the projected instrument drift errors has been made with the values of drift assumed in the current setpoint analysis. Revise setpoints in TS and/or the safety analysis to accommodate a larger drift error
  
5. Confirm that the values of projected drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation
  
6. Confirm all conditions and assumptions of the setpoint analysis have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures

# 7 Instrument drift criteria

cont'd

7. Provide a summary description of the program for monitoring and assessing the effects of increased surveillance intervals on instrument drift and its effect on safety

# Program to Monitor and Assess effects of increased surveillance intervals on instrument drift

- Problem Report initiated if “As Found” surveillance data exceeds calculated setting tolerance
- Cause for exceeding the tolerance is determined
- Instances of surveillance data exceeding calculated setting tolerances is entered into a database and is trendable
- This provides a tool to validate the values of projected drift over the extended surveillance interval with empirical data

# Drift Analysis

- Performed to predict instrument drift over a longer calibration interval
- EPRI TR-103335 “Guidelines for Instrument Calibration Extension/Reduction Programs”
- Drift analyses were performed on Rosemount transmitters, EPA breaker trip cards, and MSLC time delay relays

# Drift Analysis Methodology

- Raw Data Collection
  - Historical “As Found” and “As Left” calibration data from archived surveillance tests
- Data formatted for ease of analysis
  - Raw data was entered into a Microsoft Excel spreadsheet format in order to apply statistical functions
- Raw Data validated
  - T-test for detecting outliers in raw data
  - Assumption of a normal distribution validated
- Historical drift values calculated
  - Difference between As left and As Found calibration test data
  - Mean and standard deviation for historical drift values are determined

# Drift Analysis Methodology cont'd

- Determination of predicted drift over a 30 month period
  - 95/95 tolerance interval based on sample size is used to determine the number of standard deviations that 95% of the future test data should fall within
- Regression Analysis was performed to detect time dependency
  - looks for a correlation between magnitude of drift and time

# SR 3.3.1.1.10 RPS Actuation on MSIV closure, Channel Calibration Non-drift Criteria

- The design of this equipment features redundant components and other quarterly functional testing verifies proper function, therefore the effect on safety is small.
- Historical Maintenance and Surveillance records indicate reliable performance
- No LBD assumptions are invalidated by extension of this SR interval

## SR 3.3.2.1.6 Rod Worth Minimizer not bypassed at LE 10% RTP

- Both sets of criteria are applicable to this SR because some instruments that perform this function are susceptible to drift and some are not
  - No drift is considered for Programmable Logic Controllers because of the digital design
  - Drift is considered in Rosemount transmitter calculations

# Programmable Logic Controllers

## Non-Drift Criteria

- Incorporate redundancy in their design and SR 3.3.2.1.6 can be met by manually unbypassing the RWM, therefore effect on safety is small
- No failures in Historical maintenance or Surveillance data
- No LBD assumptions related to SR interval

# Rosemount transmitters

## Drift Criteria

- Two non-drift related failures in 15 years
- Projected drift calculated using a 95/95 tolerance interval
- Regression analysis shows no time dependency associated with drift history
- Projected drift based on historical data is bounded by the drift assumption in the current setpoint calculation
- RWM not required for safe shutdown
- Safety analysis and procedures are not impacted by interval extension
- Transmitters are included in the drift monitoring program

# SR 3.3.3.1.3 Post Accident Monitoring PCIIV position indication Non-Drift Criteria

- Function of the position indication of 72% of the valves covered by this SR is verified quarterly during testing to meet IST program requirements. Relief from the quarterly IST testing for the remaining valves was justified because they present challenges to plant operation, equipment, and/or personnel if cycled at power
- Surveillance history indicates reliable performance
- No LBD assumptions are invalidated by extension of this interval

## SR 3.3.8.2.2 RPS Electric power monitoring Channel Calibration and SR 3.3.8.2.3 Logic System Functional Test

- Historical records show only two operational failures and procedure acceptance criteria has not been exceeded
- Projected drift calculated using a 95/95 tolerance interval
- Regression analysis shows no time dependency associated with drift history
- Projected drift based on historical data is bounded by the drift assumption in the current setpoint calculation
- EPA breakers are not required for safe shutdown
- Safety analysis and procedures are not impacted by interval extension
- EPA trip cards are included in the drift monitoring program

## SR 3.6.1.8.3 Main Steam Isolation Valve Leakage Control System Functional Test

- This test involves setpoint verifications as well as functional testing, therefore both sets of GL 91-04 criteria are applicable to this SR
  - The balance of the test verifies proper function of equipment that is not susceptible to drift
  - Setpoint calculations for Time Delay Relays consider drift

# Functional testing aspect of SR 3.6.1.3.8

## Non-Drift Criteria

- MSLC System incorporates redundant mechanical and electrical components and other testing that verifies proper function of the system components is performed more frequently
- Historical Maintenance and surveillance data show three failures since plant startup; none of these were related to the System Functional Test surveillance interval
- No LBD assumptions are invalidated by extension of this interval

# Time Delay Relays associated with SR

## 3.6.1.8.3

### Drift Criteria

- Historical records show 7 failures to meet procedural acceptance criteria in the last nine years out of 104 relay tests
- Projected drift calculated using a 95/95 tolerance interval
- Regression analysis shows no time dependency associated with drift history
- Projected drift based on historical data is bounded by the drift assumption in the current setpoint calculation
- MSLC System is not required for safe shutdown
- Safety analysis and procedures are not impacted by interval extension
- TDR's are included in the drift monitoring program