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 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 93-010-03: on 930609, condition of non-compliance w/TS identified as part of TS surveillance improvement project. TS surveillance improvement project revised & broadened scope of surveillance procedure verification program. W/930714 ltr.

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July 14, 1993  
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Docket No. 50-397

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U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 93-010-03**

Transmitted herewith is Licensee Event Report No. 93-010-03 for the WNP-2 Plant. This revision is submitted in response to the report requirements of 10CFR50.73 and discusses two additional reportable items discovered by the ongoing Technical Specification Surveillance Improvement Project.

Sincerely,



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

JVP/KBL/jd  
Enclosure

cc: Mr. B. H. Faulkenberry, NRC - Region V  
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# LICENSEE EVENT REPORT (LER)

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Washington Nuclear Plant - Unit 2

DOCKET NUMBER (2)

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TITLE (4)

## TECHNICAL SPECIFICATION SURVEILLANCE IMPROVEMENT PROJECT IDENTIFICATION OF NONCONFORMING CONDITIONS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBERS(S)		
0	6	09	93	010	03	07	14	93		05000		
										05000		

OPERATING MODE (9) 4 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10) 0   0   0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(C)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 77.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.73(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
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<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
K. B. Lewis, Licensing Engineer	
	AREA CODE
	5   0   9   3   7   7   -   4   1   4   5

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ABSTRACT (16)

On March 4, 1993, a condition of non-compliance with WNP-2 Technical Specifications was identified as part of a Technical Specification Surveillance Improvement Project (TSSIP). This two year project was recommended by a Supply System Quality Action Team formed as a corrective action of LER 91-013-02. The TSSIP revises and broadens the scope of the Surveillance Procedure Verification Program completed in May 1991.

A total of eight reportable problems identified by this process are described in this LER. All eight items relate to failure of procedures to fully implement WNP-2 Technical Specification surveillance requirements. This LER reports the initial findings of the TSSIP surveillance procedure review process. Based upon previous experience with the Surveillance Procedure Verification Program, it is likely that additional reportable items will be identified. A supplement to this LER will be submitted as necessary to describe future reportable items.

Immediate and further corrective actions include, but are not limited to, entering Technical Specification Action Statements, additional testing, Plant Procedure changes, Technical Specification changes, and design changes.

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### ABSTRACT (Contd)

The root causes for these events include less than adequate barriers and controls for program changes, and less than adequate test procedures, directives/requirements, and design. The general root cause has been determined to be less than adequate management control of the Surveillance Test Program.

The safety significance of each item and the whole surveillance program was evaluated, and it has been concluded that this event had potential safety significance.

### Plant Conditions

Power Level - 0%

Plant Mode - 4 (Cold Shutdown)

### Event Description

On March 4, 1993, a condition of non-compliance with WNP-2 Technical Specifications was identified as part of a Technical Specification Surveillance Improvement Project (TSSIP). This is a two year project recommended by a Supply System Quality Action Team formed as a corrective action of LER 91-013-02. The TSSIP is staffed by Contract Engineers and Supply System employees, and revises and broadens the scope of the Surveillance Procedure Verification Program completed in May 1991.

The previous Surveillance Procedure Verification Program was a five week Technical Specification surveillance implementation review. This was a limited scope review that compared Technical Specification surveillance requirements with information obtainable from the Scheduled Maintenance System (SMS) data base. The surveillance procedures were reviewed for purpose, but not content or methodology. Approximately 145 discrepancies were identified during the review.

In contrast to the previous review, the TSSIP review is an in-depth technical review of the surveillance procedures to ensure they meet Technical Specification surveillance requirements. The review criteria includes proper test methodology, procedure consistency, technical accuracy, and reference bases for all acceptance criteria. The goals of the project are to assure:

1. That all related procedures required to be performed to satisfy Technical Specification surveillance requirements are referenced (listed) and explained in the Purpose section of the procedure.
2. That any prerequisites and special conditions required to assure Technical Specification compliance are stated in the procedure.

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3. That all procedure acceptance criteria satisfy the Technical Specification surveillance requirements, and all acceptance criteria have reference bases.
4. That procedure steps associated with assuring Technical Specification acceptance criteria are met and identified.
5. That all numerical values, setpoints, tolerances, calculations, graphs, figures, and tables included or referenced in the procedure are consistent with values specified in Technical Specifications.
6. That the procedure tests the entire channel, including sensor, indicators, alarms, and trip functions as applicable.
7. That the procedure performance frequency meets Technical Specification requirements.
8. That the procedure satisfies the applicable Technical Specification surveillance requirements and meets the intent of the Technical Specification Bases.

Any potential deficiencies will be evaluated for validity and necessary follow-up actions.

A total of eight reportable problems identified by this process are described in this LER. All eight items relate to failure of procedures to fully implement WNP-2 Technical Specification surveillance requirements. This LER reports the initial findings of the TSSIP surveillance procedure review process. The project was initiated November 1, 1992, and is scheduled to continue through April 1994. Based upon previous experience with the Surveillance Procedure Verification Program, it is likely that additional reportable items will be identified. A supplement to this LER will be submitted as necessary to describe future reportable items.

This LER is written with each item discussed as a separately numbered paragraph under the major headings of Specific Event Description, Immediate Corrective Action, Further Evaluation, Specific Further Corrective Action, and Specific Safety Significance. A general discussion of all items is found under the major headings of General Event Description, above, and General Further Corrective Actions, General Safety Significance, and Similar Events, below.

Specific Event Description

1. End-Of-Cycle Recirculation Pump Trip

Surveillance Requirement 4.3.4.2.3 requires the End-Of-Cycle (EOC) Recirculation Pump Trip (RPT) circuit breakers to be tested at least once per 60 months to demonstrate that arc suppression time is less than or equal to 83 milli-seconds. Technical Specification Surveillance (TSS)

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7.4.3.4.2.3.3A, "EOC-RPT Breaker Arc Suppression Time RPT-3B/RPT-4A," and TSS 7.4.3.4.2.3.3B, "EOC-RPT Breaker Arc Suppression Time RPT-3A/RPT-4B," were used to perform this test. However, a review of these procedures discovered that they actuate Trip Coil 1 (TC-1) for EOC-RPT circuit breaker arc suppression response time testing, and not Trip Coil 2 (TC-2). TC-2 performs the actual EOC-RPT breaker trip safety function, whereas, TC-1 performs the normal and Anticipated Transient Without Scram (ATWS) RPT breaker trip functions. Since the electrical and mechanical characteristics of TC-2 could vary from that of TC-1, the test methodology is inadequate to assure the RPT breaker trip and arc suppression response time meets the surveillance requirement. Consequently, inadequate surveillance procedures caused the Plant to violate Technical Specification 4.0.3 by not satisfactorily completing the surveillance requirements within the allowed interval.

Technical Specifications 3.0.1 and 3.0.4 were violated when reactor power was increased to 30% without meeting the operational condition surveillance requirements, and by not entering Technical Specification Action Statement (TSAS) 3.3.4.2.e.

2. Turbine Governor Valve - Fast Closure

Surveillance Requirement 4.3.4.2.1 requires the EOC-RPT Turbine Governor Valve - Fast Closure system instrumentation to be demonstrated operable by the performance of a monthly Channel Functional Test (CFT) and a Channel Calibration (CC) every 18 months in accordance with Table 4.3.4.2.1-1.2. TSS 7.4.3.1.1.20, "RPS and EOC Recirc Pump Trip - TGV Fast Closure Channel A - CFT/CC," and TSS 7.4.3.1.1.78, "RPS and EOC Recirc Pump Trip -TGV Fast Closure Channel B - CFT/CC," were used to perform the CFT and CC. However, a review of these procedures discovered that they direct that certain safety-related function verification steps in the CFT not be performed, and marked "N/A" (Not Applicable), when reactor power is less than 30%. When these portions of the CFT were not completed, the CFT did not meet the surveillance requirements.

This also results in the CC not meeting the surveillance requirements because it takes credit for satisfactory completion of the CFT. WNP-2 Technical Specification definitions require a CC to include a CFT. Consequently, inadequate surveillance procedures caused the Plant to violate Technical Specification 3.0.3 by not satisfactorily completing the surveillance requirements within the allowed interval. Technical Specifications 3.0.1 and 3.0.4 were violated when reactor power was increased to 30% without meeting the operational condition surveillance requirements, and by not entering TSAS 3.3.4.2.e.

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3. Turbine Throttle Valve - Closure

Surveillance Requirement 4.3.4.2.1 requires the EOC-RPT Turbine Throttle Valve - Closure system instrumentation to be demonstrated operable by the performance of a monthly CFT in accordance with Table 4.3.4.2.1-1.1. TSS 7.4.3.8.2.1, "Monthly Turbine Valve Tests," was used to perform this test. However, a review of the procedure discovered that it allows that certain safety-related function verification steps not be performed, and marked "N/A," if either Reactor Recirculation (RRC) pump is not in 60 Hertz operation. The RRC pumps are normally in 15 Hertz operation at a reactor power level less than 30%. When these portions of the CFT were not completed, the CFT did not meet the surveillance requirement. Consequently, an inadequate surveillance procedure caused the Plant to violate Technical Specification 4.0.3 by not satisfactorily completing the surveillance requirements within the allowed interval. Technical Specifications 3.0.1 and 3.0.4 were violated when reactor power was increased to 30% without meeting the operational condition surveillance requirements, and by not entering TSAS 3:3.4.2.e.

4. EOC-RPT System Instrumentation

Surveillance Requirement 4.3.4.2.1 requires the EOC-RPT Turbine Governor Valve - Fast Closure system instrumentation to be demonstrated operable by the performance of a CC every 18 months in accordance with Table 4.3.4.2.1-1.2. The system logic is dependent on the proper operation of pressure switches MS-PS-3A, 3B, 3C and 3D, which sense main turbine first stage pressure and enable the EOC-RPT logic at reactor power levels greater than or equal to 30%. Although these pressure switches are part of the EOC-RPT system instrumentation, no procedures were developed to meet the CC surveillance requirements. The Preventive Maintenance (PM) Program includes these pressure switches, and instrument calibrations were performed at approximately 18 month intervals. However, WNP-2 Technical Specification definitions require that a CC include a CFT.

There is no assurance that acceptable CFTs were performed following each calibration. Consequently, the lack of adequate surveillance procedures caused the Plant to violate Technical Specification 4.0.3 by not satisfactorily completing the surveillance requirements within the allowed interval. Technical Specifications 3.0.1 and 3.0.4 were violated when reactor power was increased to 30% without meeting the operational condition surveillance requirements, and by not entering TSAS 3.3.4.2.e.

5. IRM Negative Voltage Power Supply Not Tested

On April 14, 1993, Technical Specification Surveillance Review personnel determined that all Intermediate Range Monitors (IRMs) were inoperable. Personnel attributed the inoperability to a lack of a Logic System Functional Test (LSFT) of the negative-voltage-low IRM inoperative trip function. This trip function is provided with each IRM channel. The Reactor Manual Control

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System (RMCS) uses IRM inoperative trip signals to generate rod blocks, and the Reactor Protection System (RPS) uses these same inoperative trip signals to generate scrams. Technical Specification 4.3.1.2 requires "LSFTs and simulated automatic operation of all channels shall be performed at least once per 18 months". An LSFT is defined as "a test of all logic components, i.e., all relays and contacts, all trip units, solid state logic elements, etc, of a logic circuit, from sensor through and including the actuated device, to verify OPERABILITY. The LSFT may be performed by any series of sequential, overlapping or total system steps such that the entire logic system is tested".

6. Source Range Monitor (SRM) Channel Count Rate

On May 7, 1993, during the annual Maintenance and Refueling Outage, Technical Specification Surveillance Review personnel identified that there was a high probability that Surveillance Requirement 4.9.2.c.1 for SRM channel count rate verification was not being met. No surveillance procedure existed to assure compliance. The surveillance requirement is applicable prior to control rod withdrawal in Operational Condition 5 (Mode 5), and requires that each SRM channel be demonstrated operable by verifying that the channel count rate is at least 0.7 cps, provided the signal-to-noise ratio is greater than or equal to 20. Otherwise, the count rate must be greater than or equal to 3 cps, provided the signal-to-noise ratio is greater than or equal to 2. Plant Operators have been trained that if no specific procedural requirements exist for an activity required by Technical Specifications, the activity may be documented in the Reactor Operator's Log for compliance. However, a review of typical Mode 5 Reactor Operator's Log entries for control rod withdrawals in fueled control cells found no SRM channel count rate entries prior to the rod withdrawals. Since no evidence of consistent compliance with the surveillance requirement was found, WNP-2 has violated Technical Specification 4.0.3 in the past by not satisfactorily completing the surveillance requirement within the allowed interval.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

On June 9, 1993, with the plant in Mode 4 (Cold Shutdown), TSSIP personnel discovered a problem involving Main Steam system pressure switches MS-PS-20A, B, C, and D which provide MSIV Closure Trip Bypass signals to the Reactor Protection System (RPS). Bypass logic requires reactor pressure to be less than 1037 psig as sensed by these pressure switches and the reactor MODE switch not to be in RUN. Increasing pressure opens the switch contacts which removes the bypass; conversely, decreasing pressure closes the switch contacts, which completes the bypass logic when the reactor MODE switch is not in RUN. In accordance with Technical Specifications Table 3.3.1-1, the trip must not be bypassed at 1037 psig or greater. Contrary to Table 3.3.1-1, TSSIP personnel determined that Instrument System Test Procedures 10.27.2 and 10.27.25 directed cognizant personnel to verify that the pressure switches opened at 1037 +/- 6 psig; thus, the switches have reclosed at a pressure greater than 1037 psig and bypassed the trip function when not permitted by the Technical Specifications.



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8. Main Control Room Remote-Intake Radiation Monitor

On June 12, 1993, with the plant in Mode 4 (Cold Shutdown), TSSIP personnel discovered a problem involving main control room remote-intake radiation monitors WOA-RIS-31A(B) & 32A(B). These monitors monitor for radiation in the two divisional remote-air intakes to the main control room. Upon detection of a preset value of radiation, the monitors alarm the condition in the main control room and alert control personnel to isolate the affected intake. TSSIP personnel determined that Health Physics/Chemistry Shift Channel Checks procedure 7.1.1 was not in compliance with Technical Specification Definition 1.6, CHANNEL CHECK, in that "comparison of channel indications and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter" were not being performed.

Immediate Corrective Action

Immediate corrective actions were initiated for each item discovered during the TSSIP procedure reviews. They are enumerated below in paragraphs corresponding to the event description above:

1. End-Of-Cycle Recirculation Pump Trip

EOC-RPT System Channels A and B were declared inoperable and Technical Specification Action Statement (TSAS) 3.3.4.2.e was entered at 1932 hours on March 4, 1993. Reactor power was reduced to 92% and the Minimum Critical Power Ratio (MCPR) was demonstrated to be less than the MCPR Limit at 2008 hours. Continued power operation was thereby authorized by the TSAS.

2. Turbine Governor Valve - Fast Closure

No immediate corrective action was required as Turbine Governor Valve EOC-RPT System Channels A and B were in compliance with Surveillance Requirement 4.3.4.2.1 at the time of event discovery on March 9, 1993. TSS 7.4.3.1.1.20 and TSS 7.4.3.1.1.78 were satisfactorily completed at a reactor power level greater than 30% on February 19, 1993, and February 20, 1993, respectively.

3. Turbine Throttle Valve - Closure

No immediate corrective action was required as Turbine Throttle Valve EOC-RPT System Channels A and B were in compliance with Surveillance Requirement 4.3.4.2.1 at the time of event discovery on March 9, 1993. TSS 7.4.3.8.2.1 was satisfactorily completed at a reactor power level greater than 30%, with both RRC pumps in 60 Hertz operation, on March 6, 1993.

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4. EOC-RPT System Instrumentation

No immediate corrective action was required as Turbine Governor Valve EOC-RPT System Channels A and B were in compliance with Surveillance Requirement 4.3.4.2.1 at the time of event discovery on March 9, 1993. Pressure switches MS-PS-3A, 3B, 3C and 3D were all found to have been calibrated within the last 18 months. TSS 7.4.3.1.1.20 and TSS 7.4.3.1.1.78 meet the CFT requirements when performed at a reactor power level greater than or equal to 30%. As previously stated, they were satisfactorily completed on February 19, 1993, and February 20, 1993, respectively.

5. IRM Negative Voltage Power Supply Not Tested

No immediate corrective action was required, because the IRMs were already deemed inoperable at the time Technical Specification Surveillance Review personnel discovered the IRM inoperability problem. The IRMs are normally declared inoperable in Mode 1, as associated Channel Functional Test (CFT) surveillances cannot be performed during this mode of operation.

6. Source Range Monitor (SRM) Channel Count Rate

Procedure deviations were prepared and incorporated into Fuel Handling Procedure PPM 6.3.2, "Fuel Shuffling and/or Offloading and Reloading," and Surveillance Procedure PPM 7.4.9.1, "Refuel Interlocks," to specify requirements to demonstrate adequate SRM channel count rate and signal-to-noise ratio prior to control rod withdrawal. These procedures govern activities that are imminent during the ongoing Refueling Outage, and that may require control rod withdrawal.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

No immediate corrective action was required for the MSIV closure trip bypass problem because the reactor MODE switch was in the SHUTDOWN position and reactor pressure was below 1037 psig.

8. Main Control Room Remote-Intake Radiation Monitor

No immediate corrective action was required for the main control room remote-intake monitor problem, because this problem was discovered during Mode 4 of operation, and during this mode, the remote-intake monitors are not required to be operable.

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### Further Evaluation and Corrective Action

#### Further Evaluation

These events are reportable under 10CFR50.73(a)(2)(i)(B) as "Any operation or condition prohibited by the plant's Technical Specifications . . . ," and under 10CFR50.73(a)(2)(vii)(D) as "Any event where a single cause or condition caused . . . two independent trains or channels to become inoperable in a single system designed to . . . Mitigate the consequences of an accident."

There were no structures, components, or systems that were inoperable before the start of these events that contributed to the events.

Further evaluations were performed on each of the items discovered during the TSSIP procedure reviews. They are enumerated below in paragraphs corresponding to the event description above:

#### 1. End-Of-Cycle Recirculation Pump Trip

In accordance with 10CFR50.72(b)(1)(ii)(B), this item was reported to the NRC Operations Center via the Emergency Notification System (ENS) at 2026 hours on March 4, 1993, as "Any event or condition during operation that . . . results in the nuclear power plant being . . . In a condition that is outside the design basis of the plant . . .". TSS 7.4.3.4.2.3.3A and TSS 7.4.3.4.2.3.3B were developed and approved on February 19, 1992, as a corrective action of LER 91-013-02. The previous surveillance procedure did not include the RPT-4A and RPT-4B circuit breakers in EOC-RPT breaker arc suppression response time surveillance testing.

The Surveillance Procedure Verification Program reviews did not identify the need to perform the response time testing using TC-2. Consequently, the LER did not include it as a corrective action.

#### 2. Turbine Governor Valve - Fast Closure

An investigation of TSS 7.4.3.1.1.20 and TSS 7.4.3.1.1.78 found that they were originally only the 18 month CC procedures. The monthly CFTs were conducted using TSS 7.4.3.1.1.19 and TSS 7.4.3.1.1.71. The CFT procedures met Surveillance Requirement 4.3.4.2.1 until they were revised on December 7, 1984. This revision added directions to mark certain status light and annunciator verification steps "N/A" when reactor power was less than 30%. The conditional steps were added in response to comments from the field, because the steps could not be performed as written.

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They were being marked "N/A" by the field performers, with an explanation in the Comments section of the procedures. It was apparently not realized that the steps being marked "N/A" in the field, and now being made conditional, were required to verify RPS relay contact functional status. They were, therefore, critical to the satisfactory completion of the CFT surveillance requirements. When the CFT and CC were incorporated into Revision 5 of TSS 7.4.3.1.1.20 and TSS 7.4.3.1.1.78 on January 27, 1988, these conditional steps were carried over.

3. Turbine Throttle Valve - Closure

An investigation of TSS 7.4.3.8.2.1 found that the Note, allowing certain throttle valve position status light verification steps to be marked "N/A," was first added to Revision 5 of the procedure on April 15, 1987. Before this time, the procedure met Surveillance Requirement 4.3.4.2.1. The reason for the revision was given that 15 Hertz RRC pump operation causes an abnormal light configuration. The Revision 10 Note further clarifies this by stating that "If either RRC pump is not in 60 Hertz operation, the . . . [turbine throttle valve position] . . . indicating lights will be extremely dim and monitoring of their status is difficult." However, based upon a review of previous procedure performances, there was no indication that the field performers had difficulty determining the light status. Apparently, the indicating lights are difficult, but possible, to use for throttle valve position status during 15 Hertz RRC pump operation. It was apparently not realized that the steps being made conditional were required to verify RPS relay contact functional status, and therefore, critical to the satisfactory completion of the CFT surveillance requirement.

4. EOC-RPT System Instrumentation

A review of the Scheduled Maintenance System (SMS) data base for pressure switches MS-PS-3A, 3B, 3C and 3D found they were being calibrated at approximately 18 month intervals under the PM Program. The pressure switch PM cards were recently revised to perform the calibrations in accordance with Plant Procedures PPM 10.27.53, "Main Turbine First Stage Pressure Switch Calibration Div 1," and PPM 10.27.54, "Main Turbine First Stage Pressure Switch Calibration Div 2." These procedures were developed and approved on March 18, 1993, to perform the pressure switch Ccs every 24 months. They do not, however, reference Surveillance Requirement 4.3.4.2.1, nor do they meet the 18 Month CC surveillance interval requirement of Table 4.3.4.2.1-1.2. It is assumed that the failure to develop CC surveillance procedures for these pressure switches was due to an oversight during the initial procedure preparation process.

5. IRM Negative Voltage Power Supply Not Tested

General Electric Service Information Letter (GE SIL) 445, dated September 10, 1986, identified a blown fuse event at Monticello in which all positive and negative IRM fuses connected to the associated negative-voltage bus were blown by a power surge. After replacing all the positive fuses,

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the IRMs appeared to be operating normally. But, because the negative-side fuses were not replaced, continued loss of the negative power supply prevented the IRMs from processing flux signals, and thus generating related IRM scram functions.

By design, the loss of the IRM's negative voltage supply was not annunciated, so the loss of the power supply, as well as the inability for the IRMs to generate scram functions remained undetected. The blown, negative-side fuses were detected later during IRM surveillance testing.

In response to this design error, the Supply System modified the IRM and Source Range Monitoring (SRM) systems in June of 1987 to include a voltage sensing relay to detect the loss of the negative voltage supply, and upon loss of the negative voltage supply, generate IRM inoperative rod block and scram signals.

On April 14, 1993, TSSIP personnel discovered that related IRM LSFT requirements were considered, but deemed not necessary, during the design modification process. Further investigation revealed that the negative-voltage-low inoperative trips added to the SRM drawers had not been LSFT'd since their installation, either. However, these SRM inoperative trips are not required to be LSFT'd by Technical Specifications.

#### 6. Source Range Monitor (SRM) Channel Count Rate

According to Surveillance Requirement 4.9.2.c, SRM channel count rate verification must be performed prior to control rod withdrawal while in Mode 5. However, the surveillance requirement was never included in any WNP-2 fuel handling and refueling activity procedures to assure compliance. This failure to include the requirement in appropriate procedures was due to an oversight during the initial procedure preparation process.

Investigation of this event also identified related issues that should be addressed, they are described below:

- a. Surveillance Requirements 4.3.7.6.c and 4.9.2.c both specify the channel count rate requirements for SRM channel operability. However, the requirements are not consistent. Technical Specifications Amendment No. 102 was issued on April 10, 1992, to change the SRM count rates and associated signal-to-noise ratios of Surveillance Requirement 4.9.2.c to the more conservative values recommended by General Electric (GE) in Service Information Letter (SIL) 478. The applicability of the SIL to Surveillance Requirement 4.3.7.6.c was apparently overlooked during Supply System's internal review of the amendment request.

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- b. Although Surveillance Requirement 4.9.2.c does not specifically establish a requirement for surveillance of signal-to-noise ratio, Surveillance Procedure PPM 7.4.9.2, "SRM Signal-To-Noise Ratio," was issued on May 15, 1993, to verify the signal-to-noise ratio at least once per 7 days while in Mode 5. This is the SRM CFT frequency as specified in Surveillance Requirement 4.9.2.b.
- c. Currently, the Channel Check requirement of Surveillance Requirement 4.9.2.a.1 is being satisfied by Surveillance Procedure PPM 7.0.2, "Shift and Daily Instrument Checks (Mode - 5)." The procedure simply verifies that each SRM channel meets the count rate requirements of Surveillance Requirement 4.9.2.c. However, as defined by WNP-2 Technical Specifications, a Channel Check should include a comparison of channel indications. To accomplish this, each channel count rate indication should be read, recorded, and compared against the acceptance criteria, the other channel indications and previous readings. This methodology would provide information and trendable data that could be a valuable aid in the early detection of increases in count rates, reduced signal-to-noise ratios, instrument errors and channel failures.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

Further evaluation of the MSIV closure trip bypass problem determined that associated Instrument Master Data Sheets, as well as related Instrument System Test Procedures were not in compliance with Technical Specifications Table 3.3.1-1.

8. Main Control Room Remote-Intake Radiation Monitor

With respect to the main control room remote-intake radiation monitors, it was subsequently determined that three Health Physics/Chemistry Shift Channel Check procedures needed revision or clarification to be in agreement with Technical Specification Definition 1.6.

General Root Cause

Five general root causes were identified by the Surveillance Procedure Verification Program in 1991, and remain valid for this review. They are described below:

- 1. Procedures Less Than Adequate (LTA) - Surveillance procedures developed during the startup period that do not fully implement the requirements.
- 2. Change Management LTA - Procedure revisions, procedure deviations or plant changes that introduced errors into the Technical Specification Surveillance Program.

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3. Directives/Requirements LTA - Technical Specifications were accepted at the time of startup that could not be complied with because of hardware restraints. These issues were recognized at the time, but were not adequately documented or resolved.
4. Design LTA - Plant design does not meet Technical Specification surveillance requirements.
5. Programmatic Controls LTA - Plant Procedures do not provide adequate control of the Surveillance Testing Program.

#### Specific Root Cause

Root causes were determined for each item discovered during the TSSIP procedure reviews. They are enumerated below in paragraphs corresponding to the event description above:

1. End-Of-Cycle Recirculation Pump Trip

The root cause for the failure to properly test the EOC-RPT circuit breaker trip response time was Procedures LTA.

2. Turbine Governor Valve - Fast Closure

The root cause for the failure of the CFT and CC to meet the surveillance requirements was Change Management LTA.

3. Turbine Throttle Valve - Closure

The root cause for the failure of the CFT to meet the surveillance requirement was Change Management LTA:

4. EOC-RPT System Instrumentation

The root cause for the lack of CFT and CC surveillance procedures for the EOC-RPT related main turbine pressure switches was Procedures LTA.

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5. IRM Negative Voltage Power Supply Not Tested

The root cause for the IRM and SRM negative-voltage-low inoperative trip functions not being LSFT'd was Change Management LTA; during the design change process, cognizant personnel considered surveillance testing of the IRM's negative-voltage-low inoperative trips, but deemed the testing unnecessary. Additionally, applicable revisions to the FSAR were not identified during the design change process.

6. Source Range Monitor (SRM) Channel Count Rate

The root cause for the lack of procedural requirements to meet Surveillance Requirement 4.9.2.c.1 was Procedures LTA.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

The root cause for the MSIV closure trip bypass problem was Procedures LTA.

8. Main Control Room Remote-Intake Monitor

The root cause for the main control room remote-intake radiation monitor problem was Procedures LTA.

General Further Corrective Action

Following the completion of the Surveillance Procedure Verification Program in 1991, the Supply System recognized that the high number of specific items of Technical Specification non-compliance was indicative of a broader programmatic issue. The five general root causes were reviewed to determine Technical Specification Surveillance Testing Program corrective actions. The results of the review are as follows:

For the Procedures LTA and Change Management LTA root causes, the following two actions were taken:

1. PPM 1.2.6, "PPM Evaluation Program," was revised on September 9, 1992, to strengthen the Technical Specification surveillance procedure verification process.
2. PPM 10.1.5, "Scheduled Maintenance System (SMS)," was revised on January 11, 1993, to include specific signoffs for SMS changes to Technical Specification surveillance requirements.
3. Appropriate plant procedures will be revised by August 1, 1993, to assign central "ownership" of the Surveillance Testing Program within the Technical Staff Department. Future surveillance procedures, and non-editorial changes and revisions to the existing surveillance procedures will



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receive a Technical Specifications compliance review by the TSSIP staff.

The TSSIP is already underway to methodically review surveillance procedures by applicable Technical Specification. Procedures received prior to their scheduled review date will be screened for significant problems, but will not receive a detailed review until scheduled by the TSSIP staff.

For the Programmatic Controls LTA root cause, the WNP-2 Technical Specification Surveillance Testing Program was reviewed by a Quality Action Team (QAT), the Supply System formal problem solving process. The QAT completed their review and presented their findings and recommendations to Plant Management on April 17, 1992. The TSSIP, which discovered the items reported in this LER, is one of the QAT recommended actions being implemented.

There were no programmatic corrective actions applicable to the Directives/Requirements LTA and Design LTA root causes since the problems occurred before Plant startup, while under administrative controls that are no longer in affect. These root causes will be addressed on an individual basis by specific corrective actions.

#### Specific Further Corrective Action

##### 1. End-Of-Cycle Recirculation Pump Trip

TSS 7.4.3.4.2.3.3A and TSS 7.4.3.4.2.3.3B have been revised to test the RPT-3A, 3B, 4A and 4B breaker trip time response using TC-2.

##### 2. Turbine Governor Valve - Fast Closure

TSS 7.4.3.1.1.20 and TSS 7.4.3.1.1.78 have been revised to meet the CFT and CC surveillance requirements of Table 4.3.4.2.1-1.2 when reactor power is less than 30%, as well as, greater than or equal to 30%.

##### 3. Turbine Throttle Valve - Closure

TSS 7.4.3.8.2.1 has been revised to meet the CFT surveillance requirement of Table 4.3.4.2.1-1.1 when reactor power is less than 30%, as well as, greater than or equal to 30%.

##### 4. EOC-RPT System Instrumentation

Procedures have been revised or developed to meet the CFT and CC surveillance requirements of Table 4.3.4.2.1-1.2 for pressure switches MS-PS-3A, 3B, 3C and 3D.

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5. IRM Negative Voltage Power Supply Not Tested

- a. On May 2, 1993, RPS Surveillance procedure 7.4.3.1.2.1 was changed to LSFT the voltage sensing relay that initiates the negative-voltage-low IRM inoperative trip. The relay functioned as designed.
- b. The applicable surveillance has been revised or developed to LSFT the negative-voltage-low SRM inoperative trip. This was completed before the RPS Shorting Links were removed.
- c. An FSAR change notice will be prepared by July 31, 1993, to reflect the negative-voltage-low inoperative trip as being part of the IRM and SRM trip circuitry.

6. Source Range Monitor (SRM) Channel Count Rate

- a. Surveillance Procedure PPM 7.4.9.2, "SRM Signal-To-Noise Ratio," was issued on May 15, 1993, to verify the signal-to-noise ratio at least once per 7 days while in Mode 5.
- b. A Technical Specification Change Request was initiated on September 2, 1992, to make Surveillance Requirement 4.3.7.6.c consistent with GE SIL 478.
- c. Initiate a change to the Technical Specification Bases for 3/4.3.7.6 and 3/4.9.2 by August 1, 1993, documenting a signal-to-noise ratio measurement frequency that satisfies SRM surveillance requirements.
- d. Develop a Mode 5 SRM Channel Check surveillance procedure by August 1, 1993, that records and compares SRM channel indications in accordance with the requirements defined in Technical Specifications. Also, assure consistent procedural compliance methodology for Modes 1, 2, 3 and 4.
- e. Review applicable Plant Operating and Surveillance Procedures by August 1, 1993, to assure adequate procedural compliance with Surveillance Requirement 4.3.7.6.c in Modes 2, 3 and 4.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

- a. On June 14, 1993, an Instrument Setpoint Change Request was approved to change the MSIV closure trip bypass setpoint to comply with Technical Specifications Table 3.3.1-1.
- b. Instrument System Test Procedures 10.27.2 and 10.27.25 were deviated to achieve compliance with Table 3.3.1-1 on June 15, 1993.

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c. Maintenance Work Request AP4166 was performed to recalibrate the pressure switches on June 15, 1993.

8. Main Control Room Remote-Intake Radiation Monitor

- a. On June 14, 1993, the Chemistry Supervisor issued Standing Order #80 which directs cognizant personnel to "compare the readings from WOA-RIS-31A to WOA-RIS-31B and the readings from WOA-RIS-32A to WOA-RIS-32B". Results of these readings are being documented on Health Physics/Chemistry Shift Channel Check procedure 7.1.1.
- b. Health Physics/Chemistry Shift Channel Check procedure 7.1.1 will be changed to incorporate Standing Order #80 by July 30, 1993.

General Safety Significance

The Supply System regards the programmatic aspects of these items as an important issue that had potential safety significance. The General Corrective Actions listed above are defined to prevent recurrence of Technical Specification non-compliance problems in the future.

Specific Safety Significance

The Safety Significance was determined for each of the items discovered during the TSSIP procedure reviews. They are enumerated below in paragraphs corresponding to the event description above:

1. End-Of-Cycle Recirculation Pump Trip

A review of circuit breaker test procedures found that EOC-RPT breaker testing is inadequate to assure the RPT breaker trip and arc suppression response time meets the surveillance requirement. All breaker testing is performed by actuating TC-1. No procedures were found in the SMS data base that verify the characteristics of TC-2, which performs the EOC-RPT breaker trip safety function. The characteristics of TC-2 are assumed to be similar to TC-1 based upon previous operation of the EOC-RPT breaker trips during actual events. However, the breaker arc suppression response times using TC-2 have not been accurately measured to ensure they are within the Plant design basis.

Consequently, this item was determined to have had potential safety significance. Both EOC-RPT system channels were declared inoperable and the Plant remained in an LCO until corrective actions for this item were completed. See "Specific Further Corrective Actions" section for completed actions.

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2. Turbine Governor Valve - Fast Closure

The EOC-RPT Turbine Governor Valve - Fast Closure system instrumentation CFTs are performed monthly and satisfy Surveillance Requirement 4.3.4.2.1 when at a reactor power level greater than or equal to 30%. The EOC-RPT safety function is automatically bypassed at a reactor power level of less than 30%. Worst case, the longest period of operation in a non-compliance condition was 30 days. This fact, combined with the testing that was performed and the redundancy of the associated instrumentation, provides a high degree of confidence that the system could perform its safety function. Accordingly, this item was determined to have had no safety significance.

3. Turbine Throttle Valve - Closure

The EOC-RPT Turbine Throttle Valve - Closure system instrumentation CFT is performed monthly and satisfies Surveillance Requirement 4.3.4.2.1 when both RRC pumps are in 60 Hertz operation. The RRC pumps are normally in 60 Hertz operation at a reactor power level greater than or equal to 30%. The EOC-RPT safety function is automatically bypassed at a reactor power level of less than 30%. Worst case, the longest period of operation in a non-compliance condition was 30 days. This fact, combined with the testing that was performed and the redundancy of the associated instrumentation, provides a high degree of confidence that the system could perform its safety function. Accordingly, this item was determined to have had no safety significance.

4. EOC-RPT System Instrumentation

Pressure switches MS-PS-3A, 3B, 3C and 3D were being calibrated approximately every 18 months by the PM Program to assure proper setpoint. The EOC-RPT Turbine Governor Valve - Fast Closure system instrumentation CFTs are performed monthly and satisfy Surveillance Requirement 4.3.4.2.1 when performed at a reactor power level greater than or equal to 30%. The pressure switches do not have an EOC-RPT safety function at a reactor power level of less than 30%, but serve only as an automatic logic bypass. Worst case, the longest period of operation in a Technical Specification non-compliance condition was 30 days. This fact, combined with the testing that was performed and the redundancy of the associated instrumentation, provides a high degree of confidence that the system could perform its safety function. Accordingly, this item was determined to have had no safety significance.

5. IRM Negative Voltage Power Supply Not Tested

Plant Modification Request (PMR) 02-86-0204 added negative-voltage-low inoperative trips to each IRM and SRM chassis. Operability testing conducted during the design change process demonstrated that all installed trips functioned as designed. The Supply System has no knowledge that these IRM trips have been inoperable, other than from a lack of LSFT testing, since the time of

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the modification. During this period of time, these IRM inoperative trips have never been challenged to perform their function, therefore, there is no safety significance associated with this event.

6. Source Range Monitor (SRM) Channel Count Rate

The Surveillance Requirement 4.9.2.c.1 SRM channel count rate verification noncompliance applied only to the "Prior to control rod withdrawal . . ." frequency. Plant Operators at WNP-2 performed the count rate verifications while in Mode 5 at eight hour shift intervals in accordance with Surveillance Procedure PPM 7.0.2. As a result, the longest period of noncompliance with the surveillance requirement was approximately eight hours. In addition, the SRM count rate verification information, and the instrument calibration and test data do not show a high incidence of failure. Thus, the short intervals of noncompliance, the repetitive SRM channel verifications and testing that were performed, and the associated instrument channel redundancy combine to provide a high degree of confidence that the system could perform its safety function. Accordingly, this item was determined to have had no safety significance.

7. Main Steam Isolation Valve (MSIV) Closure Trip Bypass

Setting the MSIV closure-trip-bypass pressure switch setpoint slightly higher than 1037 psig would have resulted in a very brief delay of the reactor scram on MSIV closure. However, this trip is redundant to the reactor high pressure trip of 1037 psig, which can not be bypassed by the reactor MODE switch. Additional protection is provided by the Main Steam Safety Relief valves, which provide electrical and mechanical overpressure relief of the reactor pressure vessel. Therefore, the safety significance associated with this event is negligible.

8. Main Control Room Remote-Intake Radiation Monitor

The main control room remote-intake radiation monitors were deemed to be technically inoperable due to less than adequate channel check procedures. However, there was no reason to believe that these monitors were unable to perform associated functions; therefore, the safety significance associated with this event is negligible.

Similar Events

LER 91-013 reported a total of 12 items of non-compliance with WNP-2 Technical Specifications. Following final submittal of the LER in August 1991, four additional LERs were submitted reporting similar events of non-compliance with Technical Specifications. LER 91-031 reported that IRM Control Rod Block Upscale and Downscale Trip surveillance procedures did not meet the CC surveillance requirements as defined by Technical Specifications. LER 92-004 reported that scram discharge volume

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scram and control rod block level instrumentation procedures did not meet the CFT surveillance requirements as defined by Technical Specifications. LER 92-035 reported that the scram discharge volume vent and drain valves surveillance procedure did not accurately measure stroke time as required by Technical Specifications. LER 92-040 reported that the monthly High Pressure Core Spray (HPCS) diesel generator surveillance procedure did not measure start and load times as required by Technical Specifications.

The TSSIP was initiated to ensure compliance with WNP-2 Technical Specifications through improvement of the Technical Specification Surveillance Testing Program. This LER reports items relating to previous program deficiencies, and is a direct result of the TSSIP implementation.

EIIS Information

Text Reference

EIIS Reference

System      Component

Reactor Protection System (RPS)	JC	---
Reactor Recirculation (RRC) Pump	AD	P
RRC Circuit Breaker RPT-3A, 3B, 4A, 4B	AD	BKR
Turbine Governor Valve	TA	V
Turbine Throttle Valve	TA	V
Main Turbine	TA	TRB
Main Steam (MS) Pressure Switch 3A, 3B, 3C, 3D	SB	PS
Intermediate Range Monitoring System (IRM)	IG	---
Source Range Monitoring System (SRM)	IG	---
Main Steam Isolation Valve (MSIV)	SB	V
Remote-Intake Radiation Monitor	IL	RE
Main Steam System (MS)	SB	---
MS-PS-32A(B, C, D)	SB	PS
WOA-RIS-31A(B), 32A(B)	VH	RIS
Main Steam Safety Relief Valves (MSRV)	MS	V