UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

December 14, 2000

Mr. J. V. Parrish (Mail Drop 1023)
Chief Executive Officer
Energy Northwest
P.O. Box 968
Richland, Washington 99352-0968

SUBJECT: WNP-2 INSPECTION REPORT NO. 50-397/00-14

Dear Mr. Parrish:

From October 8 through November 18, 2000, the NRC completed a safety inspection at the WNP-2 facility. The enclosed report presents the results of this inspection. The inspection results were discussed with you and other members of your staff on November 20, 2000.

The inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspectors examined a selection of procedures and representative records, observed activities, and conducted interviews with personnel.

Based on the results of these inspections, two issues were evaluated under the significance determination process and were determined to be of very low safety significance (green). The issues involved a failure to implement adequate design controls for Division I and II standby service water system freeze protection and an inadequate operability justification for safety-related breaker operation. These issues have been entered into your corrective action program and are discussed in the summary of findings and in the body of the attached inspection report. The first issue involved a violation of NRC requirements; however, because of its very low safety significance, this violation is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy. If you contest the violation or the significance of this noncited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the WNP-2 facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

William B. Jones, Chief
Project Branch E
Division of Reactor Projects

Docket No.: 50-397
License No.: NPF-21

Enclosure:
NRC Inspection Report No.
50-397/00-14

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WNP Site Secretary **(LEF1)**
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-397
License No.:	NPF-21
Report No.:	50-397/00-14
Licensee:	Energy Northwest
Facility:	WNP-2
Location:	Richland, Washington
Dates:	October 8 through November 18, 2000
Inspectors:	G. D. Replogle, Senior Resident Inspector, Project Branch E, DRP J. P. Rodriguez, Resident Inspector, Project Branch E, DRP
Approved By:	William B. Jones, Chief, Project Branch E, Division of Reactor Projects

ATTACHMENTS:

Attachment 1: Supplemental Information

Attachment 2: NRC's Revised Reactor Oversight Program

SUMMARY OF FINDINGS

WNP-2
NRC Inspection Report 50-397/00-14

IR 05000597-00-14; on 10/8-11/18/2000; Energy Northwest; WNP-2 facility. Resident Report; Adverse Weather; Operability Evaluations.

The inspection was conducted by two resident inspectors during a 6-week period from October 8 through November 18, 2000. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the significance determination process in Inspection Manual Chapter 0609.

Cornerstone: Mitigating Systems

- Green. The inspectors identified that the licensee failed to adequately consider the actual piping configuration and design conditions for the Division I and II standby service water system when designing and implementing an adverse weather related modification. As a result, controls were inadequate to ensure that water in the piping would not freeze during extreme cold weather conditions. The inspectors identified a violation of 10 CFR Part 50, Appendix B, Criterion III (Design Control) for this issue. This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy. The problem is in the licensee's corrective action program as Problem Evaluation Request 200-2016.

  The inspectors determined that the issue had very low risk significance. This was based on the low frequency of an initiating event occurring that would require mitigation using the standby service water system, concurrent with the discharge lines freezing (Section 1R01).

- Green. The inspectors identified that, following an age related breaker failure, the licensee had inadequate justification for determining operability of the remaining risk significant breakers. The licensee initially verified 10 percent of the antipump relays (the failed subcomponent) and did not have a basis for the small sample size. The licensee subsequently checked the remaining vulnerable risk significant breakers. The licensee identified two additional degraded, but operable, units. This issue did not result in a violation of NRC requirements because, due to the inspectors' intervention, appropriate actions were taken in a reasonable time frame.

  The inspectors determined that the above issue had very low risk significance because the remaining risk significant breakers were determined to be operable. However, this finding is a cross-cutting issue related to problem identified and resolution (Section 1R15).

Report Details

Summary of Plant Status:

Operators maintained reactor power at essentially 100 percent for the inspection period.

1 REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors reviewed the design features and procedures for the condensate storage and standby service water systems to ensure that the features and procedures provided adequate adverse weather (extreme cold) protection for the mitigating systems.

The inspectors reviewed the following documents during this inspection:

- Final Safety Analysis Report
- Procedure 3.1.9, "Cold Weather Operations," Revision 5
- Procedure 2.4.5, "Standby Service Water System," Revision 41
- Procedure 2.8.6, "Condensate Storage and Transfer System," Revision 16
- Procedure 2.10.4, "Diesel Generator and Cable Cooling HVAC [heating ventilation and air conditioning]," Revision 19
- NRC Inspection and Enforcement Bulletin 79-24, "Frozen Lines," dated September 27, 1979
- NRC Information Notice 96-36, "Degradation of Cooling Water Systems due to Icing," dated June 12, 1996
- NRC Engineering Evaluation Report AEOD/E97-03, "Nuclear Power Plant Cold Weather Problems and Protective Measures," dated December 1997
- Problem Evaluation Request 296-0880, Standby Service Water Spray Ponds Frozen Over, dated December 30, 1996
- Design Change 90-0279-0A-803, Siphon Line for Low Point Standby Service Water Discharge Piping, dated October 1991 and implemented May 1997
- Calculation ME-02-91-14, Freezing Rate of Standby Service Water System Piping Run, dated March 1991

- Calculation 5.20.15, Addressed adequacy of reactor core isolation cooling system net positive suction head following condensate piping failure, dated November 1981

- Calculation 5.19.13, Addressed adequacy of high pressure core spray system net positive suction head following condensate piping failure, dated November 1981

b. Issues and Findings

Division III Standby Service Water and Condensate Storage System Heat Trace Circuits

The inspectors identified that the licensee did not adequately test heat trace circuits associated with the condensate storage and Division III standby service water piping.

The licensee designed the heat trace circuits to modulate as needed to maintain piping temperatures above 40°F. A local low temperature light comes on at 35°F and a separate light indicates a loss of circuit continuity. During cold weather operations, operators check the status of indicating lights and ensure that the lights are not burnt out. No testing is performed to verify that the system is actually working per the design or that system trouble alarms and indications initiate when required.

The more significant piping runs include: (1) the condensate storage tank piping to the hotwell; (2) the common condensate line to the high pressure core spray and reactor core isolation cooling systems; and (3) the Division III standby service water discharge piping to the spray pond. Freezing of the hotwell supply line would isolate the condensate storage tank from the hotwell, a condition that would not permit plant operation for a significant period. Freezing of the condensate supply to the high pressure core spray and reactor core isolation cooling systems would isolate the systems from the condensate storage tank. Freezing of the Division III standby service water discharge piping would affect the Division III diesel generator and the high pressure core spray system room cooler. Freezing of the condensate storage line, with the high pressure core spray system aligned to the condensate storage tank, could result in failure of the high pressure core spray system. The licensee classified the Division III standby service water system heat trace circuits as safety-related and the condensate storage system heat trace circuits as nonsafety-related (the condensate storage system is a nonsafety-related system).

The inspectors identified that the licensee did not have adequate justification for the nonsafety-related status of the condensate storage system heat trace circuits. The licensee classified the condensate storage system heat trace circuits as nonsafety-related because the high pressure core spray and reactor core isolation cooling suction paths swap to the suppression pool on a condensate storage tank low level signal. The licensee did not have calculations or other documents that demonstrated that the systems could adequately perform this function with a frozen condensate supply line (assuming the failure of the nonsafety-related heat trace circuits). With this condition,

the pumps' suction pressures would drop significantly during initial operation. The reactor core isolation cooling system could trip on low pump suction pressure; however, the licensee did not know the consequences of operating the high pressure core spray system pump without adequate net positive suction head. The licensee planned to perform additional calculations or provide additional justification for the nonsafety-related status.

These issues are unresolved pending further NRC review of the heat trace circuits' operability and the licensee's justification for the condensate storage system heat trace circuits nonsafety-related classification (URI 50-397/00014-01).

Division I and II Standby Service Water System Piping

Each Division I and II standby service water system discharge piping run exits its service water building and traverses to the standby service water pond. Each length of piping is about 100 feet long and is mounted outside and above ground. Upon securing a service water pump, the discharge piping drains to the pond, except for the first 10 feet (immediately exiting the pump house) which was installed too low to gravity drain through the normal piping pathway. This short length of piping is insulated, except for a 30-inch section that is adjacent to the pump house.

Prior to May 1997, during cold weather operations, operators manually drained the low piping sections every 4 hours to ensure adequate cold weather protection. In May 1997, the licensee implemented Design Change 90-0279-0A-803, which installed a siphon line on these piping sections to automatically drain the piping following system operation. However, the piping could not completely drain through this pathway and remained about half full. Procedure 2.4.5, "Standby Service Water System," Revision 41, required operators to wait at least 8 hours following system operation and then drain the remaining water from the lines. Engineers performed Calculation ME-02-91-14 and considered the 8-hour waiting time acceptable because the subject lines would take about 5 days to freeze solid.

The inspectors identified that Calculation ME-02-91-14 failed to adequately consider the actual piping configuration and design conditions, so the licensee did not have adequate justification for waiting 8 hours before completely draining the discharge lines during cold weather. The calculation assumed that insulation covered all of the exposed piping (containing water) and inappropriately neglected the 30-inch length of piping that was not insulated. The insulation reduced the heat transfer rate by a factor of about 10 in the calculation. Second, the calculation neglected the effects of ambient air in the downstream piping. Cold outside air displaces the water inside the pipe during draining. The remaining water in the pipe would lose a significant amount of heat to this frigid air. The formation of a partial ice plug in the pipe could result in appreciable pipe blockage in a downstream elbow in the event the system was actuated and the ice plug became dislodged.

The Final Safety Analysis Report described the worst case design outside conditions as -27°F. The inspectors did not consider the system inoperable at this time because

outside temperatures do not approach the worst case temperatures at this time of year. As a short-term corrective measure, the licensee changed Procedure 2.4.5 to require draining of the subject standby service water lines shortly after system operation.

The failure to adequately consider the actual design conditions in Calculation ME-02-91-14 and Design Change 90-0279-0A-803, for the standby service water system, is a violation of 10 CFR Part 50, Appendix B, Criterion III (Design Control). This criterion requires the licensee to establish design control measures for verifying or checking the adequacy of design, such as by the performance of design reviews. In this instance, the design reviews were inadequate in that Division I and II standby service system water pipe insulation and established operator compensatory actions did not ensure that the pipes would not become blocked with ice during design basis low ambient low temperatures. This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy. The problem is in the licensee's corrective action program as Problem Evaluation Request 200-2016 (NCV 50-397/00014-02).

The inspectors determined that the issue had very low risk significance. This was based on the low frequency of an initiating event occurring that would require mitigation using the standby service water system, concurrent with the discharge lines freezing. In addition, extreme cold temperatures were not experienced at WNP-2 since the modification was implemented in 1997. Accordingly, this issue is characterized as a green finding.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors performed the routine quarterly fire protection inspection. The inspectors observed the functionality and material condition of the fire protection equipment, detection systems, and passive protection features. The inspectors also verified proper controls for combustible materials and ignition sources. The Final Safety Analysis Report was utilized as criteria for this inspection. The inspection included the following areas:

- Low pressure core spray pump room, Elevations 422 and 444 Area R-8
- Division 1 electrical equipment rooms, Elevation 467 (Battery Charger Room 1 and RPS Room 1) Area RC-4
- Battery Room 1, Elevation 467 Area RC-5
- Battery Room 2, Elevation 467 Area RC-6
- Division 2 electrical equipment rooms, Elevation 467 (Battery Charger Room 2 and RPS Room 2) Area RC-7
- Remote shutdown room, Elevation 467 Area RC-9

b. Issues and Findings

No findings of significance were identified.

1R06 Flood Protection

a. Inspection Scope

The inspectors verified that the licensee's flooding mitigation plans and equipment were consistent with the licensee's design requirements and risk analysis assumptions. The inspectors reviewed the licensee's flood protection measures against those listed in the Final Safety Analysis Report. The following plant areas were reviewed during this inspection:

- High pressure core spray pump room
- Low pressure core spray pump room
- Reactor core isolation cooling system pump room
- Residual heat removal pump Rooms A, B, and C
- Control rod drive system pump room

b. Issues and Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the following work prioritization, risk evaluation, and control activities to evaluate the effectiveness of licensee risk management efforts:

- Emergent low pressure core spray system work, following the system minimum flow valve failure

- Division I standby service water system maintenance, which involved declaring the Division I emergency diesel generator and the low pressure core spray system inoperable at the same time

- Division I standby liquid control system maintenance

b. Issues and Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed an operability evaluation addressing the effects of bi-stable core flow on the reactor recirculation control system. The inspectors verified that the licensee properly justified operability and that other components/systems remained available such that no unrecognized increase in risk had occurred. The following document was reviewed during this inspection:

- Problem Evaluation Request 200-1946, "Unexplained Step Changes in Reactor Recirculation Loop A Flow," dated November 6, 2000

The inspectors also performed additional inspection necessary to close Unresolved Item 50-397/00012-02 concerning poor corrective actions for safety-related breakers.

b. Issues and Findings

(Closed) Unresolved Item 50-397/00012-02: Poor corrective actions for safety-related breakers. The inspectors had identified that, following the age-related failure of a risk significant breaker, the licensee had inadequate justification for operability of the remaining breakers. The licensee had only checked the antipump relays (the failed subcomponent) on 10 percent of the remain safety-related breakers. The licensee had not developed a basis for limiting their review to 10 percent of the breaker population. The antipump relays in each of the breakers have to operate during undervoltage conditions and normal testing, and operations does not demonstrate relay operability. The licensee had found, as a result of the original antipump relay, that oxidation on the relay contacts had the potential to affect breaker operability during undervoltage conditions.

The inspectors identified a concern that the limited breaker testing did not address potential age related failures, due to antipump relay contact oxidation, in the remaining breaker population that was not tested. In response to the inspector's concerns, the licensee increased the sample size to 100 percent of the potentially affected safety-related breakers. The subsequent inspections identified two additional degraded, but operable, antipump relays. Corrective actions were taken to clean or replace the relays. The licensee's additional measures were determined to be acceptable. This issue did not result in a violation of NRC requirements because there was not an appreciable delay in testing the remaining antipump breaker relays. The inspectors determined that the licensee's action to perform the additional testing was, in part, a result of the inspectors' involvement in this issue.

The inspectors determined that the above issue had very low risk significance because the licensee experienced no additional breaker failures following the initial failure. However, the inspectors considered this finding a cross-cutting issue related to problem identified and resolution.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors evaluated the following postmaintenance test to determine whether the test confirmed equipment operability:

- Low pressure core spray system minimum flow valve postmaintenance testing following the valve failure

The following documents were reviewed as part of this inspection:

- Problem Evaluation Request 200-1766, low pressure core spray system minimum flow Valve LPCS-MO-11 failure
- Procedure TSP-CONT-C803, “Flow Makeup Leak Rate Testing,” Revision 2
- Procedure OSP-LPCS/IST-Q702, “Low Pressure Core Spray SystemOperability Test,” Revision 7
- Work Order 01019861, “LPCS-MO-11, Baseline Testing,” November 12, 2000

b. Issues and Findings

No findings of significance were identified.

1R51 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors independently calculated the following performance indicator data by reviewing operator logs, corrective action program records, and monthly operating reports:

- Unplanned scrams
- Scrams with loss of normal heat removal
- Safety system functional failures

The inspectors compared their calculated results to the licensee's data to ensure that the submitted information was accurate.

b. Issues and Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

The inspectors identified a cross-cutting finding involving poor problem resolution following a safety-related breaker failure. See Section 1R15 of this report.

4OA5 Other

.1 (Closed) Licensee Event Report 50-397/2000-002-00: Failure to comply with Technical Specification Bases description of a channel check. This licensee event report was a minor issue and was closed.

.2 (Closed) Inspector Followup Item 50-397/990009-04: Adverse trend related to Technical Specification fidelity issues. The inspector reviewed this item and determined that no further action was required.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. J. Parrish, Chief Executive Officer, and other members of licensee management on November 20, 2000. The licensee acknowledged the inspection results. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

Attachment 1

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Parrish, Chief Executive Officer
D. Atkinson, Manager, Engineering
R. Brownlee, Engineer, Licensing
D. Coleman, Manager, Regulatory Affairs
D. Feldman, Manager, Operations
P. Inserra, Manager, Licensing
T. Messersmith, Corporate Emergency Preparedness, Safety and Health Officer
A. Mouncer, Vice President and General Counsel
W. Oxenford, Plant General Manager
D. Poirier, Maintenance Manager
G. Smith, Vice President - Generation
R. Webring, Vice President - Operation Support

ITEMS OPENED AND CLOSED

Items Opened, Closed, and Discussed During this Inspection

Opened

50-397/00014-01	URI	Potential heat trace circuit problems (1R01).

Opened and Closed During this Inspection

50-397/00014-02	NCV	Inadequate design control to prevent standby service water pipe freezing

Previous Items Closed

50-397/00012-02	URI	Poor corrective actions following a safety-related breaker failure
50-397/99009-04	IFI	Adverse trend related to Technical Specification fidelity issues
50-397/2000-02-00	LER	Failure to comply with Technical Specification Bases description of a channel check

Previous Items Discussed

None

ATTACHMENT 2

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.