

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No.: 50-397/86-29

Docket No.: 50-397

Licensee: Washington Public Power Supply System
P. O. Box 968
Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site near Richland, Washington

Inspection Conducted: September 22-26, 1986

Inspector: Phillip Qualls 10/7/86
P. M. Qualls, Reactor Inspector Date Signed

Approved by: Phillip Qualls FOR 10/7/86
P. H. Johnson, Chief Date Signed
Reactor Projects Section 3

Summary:

Inspection on September 22-26, 1986 (50-397/86-29)

Areas Inspected: Routine inspection by a regional inspector of outstanding items on the Open Items List. During this inspection, Inspection Procedures 30703, 62704, 90712, 92700, 92701, and 93703 were utilized for guidance.

Results: No violations or deviations were identified.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 10

THE HARMONIC OSCILLATOR

1. THE CLASSICAL HARMONIC OSCILLATOR

Consider a particle of mass m moving in a potential

$V(x) = \frac{1}{2}kx^2$

The equation of motion is

$m\ddot{x} = -kx$

The general solution is

$x(t) = A \cos(\omega t) + B \sin(\omega t)$

where $\omega = \sqrt{k/m}$

The energy of the oscillator is

$E = \frac{1}{2}m\dot{x}^2 + \frac{1}{2}kx^2$

which is constant in time.

The period of oscillation is

$T = 2\pi/\omega$

The amplitude of oscillation is

$A = \sqrt{2E/k}$

The phase constant is

$\phi = \tan^{-1}(B/A)$

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DETAILS

1. Persons Contacted

- *C. Powers, WNP-2 Plant Manager
- *J. Baker, WNP-2 Assistant Plant Manager
- *P. Powell, Licensing Manager
- *S. Washington, Compliance Engineer
- *B. Mertens, QA Compliance Engineer
- C. Egan, Senior Fire Protection Engineer

*Attended Exit Meeting on September 22, 1986.

In addition, other members of licensee staff was contacted during the course of the inspection.

2. Licensee Action on Previous Findings

a. (50-397/85-11-01) (Closed) - NSAG Members Onsite

The licensee has obtained Amendment 18 to their Technical Specifications which incorporates the NSAG review process discussed in this item. This item is closed.

b. (50-397/85-11-05) (Open) - Vendor Files

Licensee action on this item is incomplete. A licensee employee is evaluating the proper actions to take. This item is open.

c. (50-397/83-39-12) (Closed) - Fire Pump Test Sequence

Licensee actions to correct this item appear adequate. The sequence tests were conducted during the Spring of 1986 outage and the pumps started in the proper sequence. This item is closed.

3. Generic Letter Followup

a. (GL-85-22) (Closed) - Potential for Loss of Post-LOCA Recirculation Capability Due to Debris Blockage

The licensee evaluated the potential problem described in Generic Letter 85-22 to determine the applicability at WNP-2. The licensee determined that the potential did not exist at WNP-2 for the following reasons:

- o Pipe insulation is enclosed in metal coverings;
- o The ECCS suction pumping requirements are less than 8000 gpm;
- o The NPSH margins are acceptable; and
- o The debris screens are not significantly smaller than the 100 square foot area specified in the generic letter.

This item is closed.

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1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the work done in each of the various departments.

2. The second part of the report deals with the financial position of the country and the progress of the work during the year. It is followed by a detailed account of the work done in each of the various departments.

3. The third part of the report deals with the administrative and legal aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

4. The fourth part of the report deals with the social and economic aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

5. The fifth part of the report deals with the cultural and educational aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

6. The sixth part of the report deals with the health and medical aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

7. The seventh part of the report deals with the scientific and technical aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

8. The eighth part of the report deals with the military and defense aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

9. The ninth part of the report deals with the foreign relations and international aspects of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

10. The tenth part of the report deals with the general conclusions and recommendations of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

4. Information Notice Followup

The inspector reviewed licensee followup of the following Information Notices:

a. IN-84-70 (Open) - Water Level Instrumentation With a Common Reference Leg

The licensee staff evaluated the Information Notice and recommended actions for concurrence on October 18, 1985. As of September 24, 1986, their file had no record that the recommended actions had been reviewed or taken. This item is open.

b. IN-84-83 (Closed) - Various Battery Problems

The licensee evaluated this Notice and changed Procedure 10.25.5.7.C.3.C to incorporate the Notice information. This item is closed.

c. IN-85-23 (Open) - Inadequate Surveillance and Post-modification Testing

The licensee received this notice in April 1985. It appeared from the file that initial review was assigned in December 1985 and reassigned in August 1986. At the time of the inspection, it appeared that the licensee had not completed his initial appraisal of the notice. This item is open.

d. IN-85-66 (Open) - As-Built Construction Drawing Discrepancies

This notice was received by the licensee in September of 1985. Internal action was assigned in October 1985. No record was in the plant file of completion of the internal action. This item is open.

e. IN-85-74 (Open) - Station Battery Problems

The licensee reviewed this notice and determined that a number of actions needed to be taken. At the time of the inspection, all aspects had been addressed with the exception of writing procedures. This item is open.

At the exit meeting, the inspector discussed with the licensee the need to review Information Notices and other operating event reports promptly to alert themselves to potential problems that has existed at other facilities and to allow themselves an opportunity to prevent the occurrence of similar problems at their site. The licensee stated that they were already taking actions to improve their review of operating event reports.

5. IE Bulletin Followup

a. Bulletin 86-01 (Closed) - Minimum Flow Logic That Could Disable RHR Pumps

The licensee responded to the bulletin in a letter to Region V dated May 30, 1986. The letter states that the bulletin was not of

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual and automated processes. The goal is to ensure that the information gathered is both reliable and comprehensive.

The third part of the report focuses on the results of the analysis. It shows a clear trend of increasing activity over the period studied. This suggests that the measures implemented are having a positive impact on the overall performance.

Finally, the document concludes with a series of recommendations for future work. It suggests that further research should be conducted to explore the long-term effects of the current strategies. Additionally, it recommends regular audits to ensure that the data remains accurate and up-to-date.

concern for WNP-2 since each RHR System has its own minimum flow valve and return line. With this design, the bulletin requires no further actions. This item is closed.

6. LER Review

Based on in-office review in accordance with IE Manual Chapter 90712, the following LERs are closed:

85-06, 85-09, 85-10, 85-12, 85-17, 85-18, 85-33, 85-51, 85-52, 85-53, 85-54, 85-56, 85-60, 85-62, 85-63, 86-11, 86-13, 86-14, 86-15, 86-16, 86-17, 86-18, 86-22, and 86-24.

LER 85-16 is closed based on satisfactory completion of the corrective actions identified in the LER.

LER 86-26 discusses an ESF trip of the RWCU system. Their corrective action to change the calibration method of the system electronic summer was reviewed by the inspector. No change in the Technical Specification setpoint was indicated. LER 86-26 is closed.

7. Plant Tour

- The inspector noted a significant improvement in plant cleanliness and in control of combustibile materials.
- The inspector identified no material problems in the plant.
- The inspector observed no health physics problems during his walkthrough.
- The inspector identified to the licensee at the exit meeting that he observed two electrical cabinets open with no warning tape barrier which could present a personnel hazard.
- The inspector observed some tools and drawings stored inside of two different low voltage communications cabinets even though it appeared that adequate lockers to store tools were nearby in the room.

No violations or deviations were identified during the plant walkthrough.

8. Exit Meeting

An exit meeting was held on September 22, 1986. The items listed were discussed at that time.

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