

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No.: 50-397/91-17  
License No.: NPF-21  
Licensee: Washington Public Power Supply System  
P. O. Box 968  
3000 George Washington Way  
Richland, Washington 99352  
Facility Name: Washington Nuclear Project No. 2 (WNP-2)  
Inspection at: Region V, Walnut Creek, California  
Inspection Conduct: May 13 through June 10, 1991

Inspector:

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A. D. McQueen  
Emergency Preparedness Analyst

6/18/91  
Date Signed

Approved by:

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7/17/91  
Date Signed

Summary:

Areas Inspected: This inspection by a region-based inspector examined the submittal by the licensee of the Emergency Preparedness Implementing Procedure (EPIP) 13.1.1 titled "Classifying The Emergency." This EPIP implements the Emergency Action Level (EAL) classification system for WNP-2. During this inspection, portions of Inspection Procedures 82201 and 82701 were used.

Results: In the areas inspected, the licensee's emergency preparedness program appeared adequate to accomplish its objectives. Revision 12 to EPIP 13.1.1 appears consistent with previous versions approved by NRC Headquarters as meeting regulatory requirements. Specific elements of the review are discussed in the Inspection Report Details, paragraph 2 below. In some cases, the EALs have been made more conservative by changes.

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## INSPECTION DETAILS

1. Key Persons Contacted

D. E. Larson, Manager, Emergency Planning  
K. L. Farabaugh, Emergency Planning  
A. F. Klauss, Supervisor, Emergency Planning

2. Functional or Program Areas Inspected

The licensee program appears adequate to accomplish their objectives.

BACKGROUND: This revision of the WNP-2 EALs has evolved over three revisions from Revision 9 (generally the format and substance as originally approved by NRC Headquarters for this site) through this Revision 12. The most significant changes occurred between Revisions 9 and 10. These involved substantive format changes and some substance rewording. The EALs were reviewed in detail with the licensee by Region V principal Emergency Preparedness (EP) inspector for this site in January 1991 to enhance and improve the EALs and their new format. Comments by the inspector are documented in an inspection report (50-397/91-02) and referred to in the discussion below. Generally, the Revision 12 EALS appear to represent an improvement since Revision 9.

Several changes in Revision 12 to EPIP 13.1.1 were cosmetic and minor administrative in nature. These were each individually reviewed against the same items in Revision 11 and were found to have no substantive impact on site emergency preparedness. They were found acceptable and will not be further reviewed in this inspection report. Changes considered more substantial in nature are discussed below.

- a. CHANGE: (Page 5, Attachment 4.2) The former symptomatic initiating condition for declaration of an SAE Site/Area Emergency) is changed from greater than "HCTL:" (Heat Capacity Temperature Level) to greater than "PSPL" (Pressure Suppression Pressure Limit).

NRC Comment: The licensee explained telephonically on May 6, 1991, that the condition should never have read "HCTL" and that this change is made to correct this past error. As such, the change appears necessary to correct the EPIP.

- b. CHANGE: Page 6, Attachment 4.3) Criteria for declaring a General Emergency (GE) in the safety category "Plant Safety Barrier" is changed from "A loss of or high potential for loss of primary containment and significant failed fuel" to read:

Loss of two of the following barriers, and loss of, or high potential for loss of the third

- o Fuel Clad
- o Reactor Coolant Pressure Boundary
- o Containment

NRC Comment: This change appears specifically responsive to discussions between NRC and the licensee, which are detailed Region V inspection report 50-397/91-02 (dated February 21, 1991). The report indicated:

The procedure does not include guidance on the loss of fission product barriers. NUREG-0654 calls for a General Emergency (GE) in cases where any two barriers are lost and there is a potential for loss of the third. The fission product barriers consist of the reactor coolant system, fuel cladding, and containment.

Response - The licensee proposed to incorporate the safety barrier approach into Rev. 12 of 13.1.1. Rev. 12 was in draft form at the time of this inspection. This response was considered acceptable.

The change appears consistent with the specific wording in NUREG-0654 and an improvement over previous versions.

- c. CHANGE: (Page 6, Attachment 4.3) The SAE criteria for "Release of Radioactivity" has been changed from "A situation where a significant release of radioactive material has or could take place" to "...radioactive material could take place..."

NRC Comment: This appears to make the criteria more conservative and constitutes an improvement in the EPIP.

- d. CHANGE: (Page 6, Attachment 4.3) The GE criteria has been changed from "A situation where large amounts of radioactive material are being released" to read "A situation where significant amounts of radioactive material has or could be released in a short period of time."

NRC Comment: This EAL was discussed with the licensee during an emergency preparedness inspection as indicated in item b. above. Inspection report 50-397/91-02 indicates:

The situation based EAL at the GE classification, for a release of radioactive materials (on the situation based summary page, as opposed to the situation based example pages), does not capture the anticipatory intent of NUREG-0654, or the intent of the fission product barrier scheme. The 13.1.1 EAL waits until radioactive material is being released, rather than a situation where a release is imminent.



Response - The licensee proposed to modify the wording in Rev. 12 to bring the EAL more in-line with NUREG-0654. The proposed wording and the response were considered acceptable.

The EAL is worded similar to example 4 for a GE in NUREG-0654.

- e. CHANGE: (Page 9, Attachment 4.4) The SAE example criteria for Plant Safety Barrier, which formerly read:

Significant failed fuel (Defined in this specific context to mean approximately 1% cladding failure or 0.1% fuel melt as verified by reactor coolant sample analysis and evaluated per PPM 9.3.22; Core Damage Evaluation)

is changed to read:

Significant failed fuel (Defined in this specific context to mean approximately 1% cladding failure or 0.1% fuel melt. (Refer to PPM 9.3.22; Core Damage Evaluation).

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

The procedure requires that a post-accident sampling system (PASS) sample be analyzed to verify the existence of significant failed fuel (defined to mean 1% cladding failure or 0.1% fuel melt). This could delay classification of a Site area Emergency (SAE) or a GE by as much as three hours.

Response - The licensee proposed to delete the prerequisite to analyze a PASS sample in Rev. 12 of 13.1.1. This response was considered acceptable.

- f. CHANGE: (Page 9, Attachment 4.4) An example criteria for declaring a GE EAL in the Plant Safety Barrier category is added, and indicates:

Significant failed fuel and loss of, or high potential for loss of primary containment. Defined in this specific context to mean approximately 1% cladding failure or 0.1% fuel melt. (Refer to PPM 9.3.22; Core Damage Evaluation.)



NRC Comment: This change adds "loss of primary containment" to failed fuel as a criteria to upgrade from an SAE to GE. These examples appear to be more conservative and improvements over past versions.

- g. CHANGE: (Page 9, Attachment 4.4) An example criteria for declaring an SAE EAL in the Plant Safety Barrier category is added, and indicates:

Main steam line break outside containment without isolation.

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

There is no EAL to correspond to the NUREG-0654, SAE example for a steam line break outside containment without isolation.

Response - The licensee proposed to incorporate this example SAE into Rev. 12. This response was considered acceptable.

This change is an acceptable EAL addition in response to an NRC concern.

- h. CHANGE: (Page 9, Attachment 4.4) The GE example criteria for Plant Safety Barrier, which formerly read:

Loss of, or high potential for loss of, primary containment and significant failed fuel.  
(Defined in this specific context to mean approximately 1% cladding failure or 0.1% fuel melt as verified by reactor coolant sample analysis and evaluated per PPM 9.3.22; Core Damage Evaluation.)

is changed to read:

A loss of or high potential for loss of primary containment and significant failed fuel.

NRC Comment: While the deletion removes the definition for significant failed fuel, the definition already appears on this page. The change therefore appears cosmetic to eliminate redundancy.

- i. CHANGE: (Page 10; Attachment 4.4) The SAE example criteria for Plant Safety Level, which formerly read:

A flood that jeopardizes the plant safety





systems to the point of inadequate control of the plant.

is changed to read:

A flood that jeopardizes the plant safety systems to the point of losing the ability to mitigate release of radioactive material.

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

The situation based EAL at the SAE classification for a flood appears to describe a situation more severe than the corresponding NUREG-0654 example. The EAL in Rev. 11 (first incorporated into Rev. 10) calls for an SAE declaration for a "flood that jeopardizes the plant safety systems to the point of inadequate control of the plant." NUREG-0654 states that a flood greater than design levels would warrant the declaration of an SAE.

Response - The licensee proposed to modify the wording in Rev. 12 to eliminate use of the phrase "inadequate control of the plant," and to substitute the phrase "...losing the ability to mitigate a release of radioactive materials." This response was considered acceptable.

- j. CHANGE: (Page 11, Attachment 4.4) The SAE example criteria for Emergency Response Team Awareness Level, which formerly read:

Elevated hydrogen levels inside primary containment, coupled with oxygen concentrations sufficient to cause a potentially harmful pressure spike should the two gases ignite. (This requires engineering analysis in accordance with PPM 9.3.25; Containment Hydrogen Assessment).

is changed to read:

Elevated hydrogen levels inside primary containment, coupled with oxygen concentrations sufficient to cause a potentially harmful pressure spike should the two gases ignite. (Refer to PPM 9.3.25; Containment Hydrogen Assessment).



NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

Declaration of an SAE based on hydrogen levels inside primary containment could be delayed because 13.1.1 requires an engineering analysis in accordance with Plant Procedures Manual (PPM) 9.3.25, "Containment Hydrogen Assessment." This analysis could delay the classification.

Response - The licensee proposed to eliminate this as a requirement in Rev. 12. This response was considered acceptable.

As with items e and h above, an emergency classifier is driven to another document for guidance rather than having the criteria immediately at hand. PPM 9.3.25 directs the user to a computer program with log-on requirements for user name and password. The data must be entered, different outputs charted, more computer input and resulting data, and then interpretation and decision making. Therefore, in effect, a form of engineering analysis is still being required. The licensee pointed out that the procedure does not have to be completed to make the appropriate EAL decision and if the appropriate numbers are available, it is an improvement to add this reference. The licensee further indicated that the concentrations are variable and that PPM 9.3.25 contains a graph which allows for quick reference. The procedure is a responsibility of the Shift Technical Advisor (STA), and can be completed in five to ten minutes. This change appears acceptable in response to an NRC concern.

- k. CHANGE: (Page 11, Attachment 4.4) An example criteria for declaring an UE EAL in the Emergency Response Team Awareness Level category is added, which indicates:

A high energy release (e.g., pipe break, electrical fault, or explosion) that threatens the normal level of plant safety.

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

It should be noted that the draft of 13.1.1, Rev. 12, showed that the licensee was attempting to resolve some of the concerns previously identified by NRC. For example, minor formatting changes were initiated to make the procedure easier to use, and the fission product barrier concept was being incorporated. The draft contained some internal inconsistencies;



however, as indicated above, the licensee offered to initiate the changes necessary to bring the procedure in-line with NUREG-0654. The licensee had also taken the initiative to add a new UE EAL for conditions where high energy is released. Several other issues involving 13.1.1 were also discussed during this inspection.

The change is a licensee initiative and appears acceptable.

- l. CHANGE: (Page 11, Attachment 4.4) An example criteria for declaring an ALERT EAL in the Emergency Response Team Awareness Level category which formerly read:

An explosion causing plant damage that prevents or could prevent the operation of safety systems.

is changed to read:

A high energy release (e.g., pipe break, electrical fault, or explosion) causing plant damage that could prevent the operation of safety systems.

NRC Comment: See discussion at item k above. As indicated above, this licensee initiative appears to enhance the EPIP, compared to former versions.

- m. CHANGE: (Page 11, Attachment 4.4) An example criteria for declaring an SAE EAL in the Emergency Response Team Awareness Level category is added, which indicates:

A high energy release (e.g., pipe break, electrical fault, or explosion) that affects a safety system needed to mitigate release of radioactive material.

NRC Comment: See discussion at item k above. This addition is identical in nature.

- n. CHANGE: (Page 12, Attachment 4.4) An example criteria for declaring an UE EAL in the Emergency Response Team Awareness Level category which formerly read:

A fire within the power block, or within the protected area and affecting plant equipment, lasting more than 10 minutes.

is changed to read:



A fire within the power block, or within the protected area and potentially affecting plant equipment, lasting more than 10 minutes.

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

The situation based EAL for a fire at the Unusual Event (UE) classification appears to describe a condition that is more significant than the corresponding example in NUREG-0654. The EAL in Rev. 11 (first incorporated into Rev. 10) calls for a UE if there is a fire in the power block or protected area that lasts more than 10 minutes, and the fire is affecting plant equipment. NUREG-0654 states that a fire lasting more than 10 minutes warrants the declaration of a UE.

Response - The licensee proposed to add the word "potentially" before "affecting plant equipment." This response was considered acceptable.

Even though still less conservative than guidance in NUREG-0654, the criteria is an improvement over former versions. This change was considered acceptable in response to an NRC concern.

- o. CHANGE: (Page 12, Attachment 4.4) An example criteria for declaring an UE EAL in the Emergency Response Team Awareness Level category which formerly read:

Reactor scram initiated and more than one control rod not inserted past position 06.

is changed to read:

Reactor scram initiated and more than one control rod not inserted past position 00.

NRC Comment: The criteria appears more conservative in that control rods must be fully inserted. The licensee indicated telephonically on May 6, 1991, that the "06" designation was previously the sub-critical bank withdrawal positions. Calculations have been refined and the EAL is indicated as being now more conservative.

- p. CHANGE: (Page 12, Attachment 4.4) An example criteria for declaring an UE EAL in the Emergency Response Team Awareness Level category is added to indicate:



Unable to meet TSAS+ for Cold Shutdown as defined in LCO 3.4.9.2.

NRC Comment: The licensee has indicated that this EAL deals with shutdown cooling and is added to the EAL scheme to drive the operators to declaration of an appropriate EAL if they are unable to meet Technical Specifications (TS) requirements. The addition may therefore be considered a plan enhancement.

- q. CHANGE: (Page 12, Attachment 4.4) An example criteria for declaring an SAE EAL in the Security Action Level category which formerly read:

Confirmed sabotage in a vital area that affects the ability to adequately shutdown the plant.

is changed to read:

Confirmed sabotage in a vital area that affects physical control of the plant.

Additionally, the ALERT example for this category indicates:

Visual observation of unidentified or unauthorized persons in a vital or protected area with an intent to commit sabotage.

NRC Comment: Again, this change appears to be in direct response to discussion contained in Inspection Report 50-397/91-02, which indicated:

The situation based EAL at the SAE classification, for situations involving sabotage, appears to describe a condition that is more severe than the corresponding NUREG-0654 example. The EAL calls for an SAE declaration when there is "confirmed sabotage in the vital area that affects the ability to adequately shutdown the plant." NUREG-0654 states that an ongoing security compromise warrants the declaration of an SAE.

Response - The licensee proposed to modify the wording in Rev. 12 to bring the EAL more in-line with NUREG-0654. The proposed wording and the response were considered adequate.

NUREG-0654 verbiage is addressed in an adjacent EAL covering control of the plant. NUREG-0654 at the ALERT example indicates "Ongoing security compromise." The licensee EAL assumes an unidentified or unauthorized person in a vital or protected area with an intent to commit sabotage. It is not indicated how one



determines another's "intent to commit sabotage" by observation. This makes the EAL somewhat speculative. Nonetheless, the EAL appears to be an improvement over previous versions.

- r. CHANGE: (Page 14, Section I) As formerly read:

To aid the operator in the implementation of this procedure, the symptomatic initiating conditions have been computerized. When a symptomatic initiating condition has been exceeded, the Graphic Display System (GDS) will display the appropriate emergency classification and the basis for that classification.

is changed to read:

To aid the operator in the implementation of this procedure, certain symptomatic initiating conditions have been computerized. When those symptomatic initiating condition(s) have been exceeded, the Graphic Display System (GDS) will display the appropriate emergency classification and the basis for that classification.

NRC Comment: "Conditional" words have been added to indicate more selectivity in what will be displayed on the GDS. Such selectivity can be helpful in keeping "clutter" out of the system, so long as important and useful data is not excluded.

- s. CHANGE: (Page 15, Section I) A statement has been added to indicate "To aid in the use of Attachment 4.3, an extensive list of examples for each emergency action level is provided in Attachment 4.4."

NRC Comment: The change appears cosmetic with no substantive impact on emergency preparedness.

- t. CHANGE: (Page 20) As formerly read "Reactor pressure vessel greater than or equal to 1148 psig" is changed to read "Reactor pressure vessel greater than or equal to 1150 psig."

NRC Comment: This appears to be a minor administrative change. The licensee indicated telephonically on May 6, 1991, that the number was merely rounded to the nearest tenth since operators cannot read such a specific level of precision due to instrument scale increments. The change does not appear to degrade the EAL.

- u. CHANGE: (Page 21) As formerly read:

Power range monitoring system detects reactor power at greater than or equal to five percent, ten or more seconds after a scram.



Basis - Condition indicative of a failure to scram and, since the automatic protective action (i.e., full scram) did not occur, the safety limits are jeopardized.

is changed to read:

Power range monitoring system detects reactor power at greater than or equal to five percent, ten or more seconds after a reactor trip.

Basis - Condition indicative of a failure to shut down the reactor and; since the automatic protective action (i.e., full reactor trip) did not occur, the safety limits are jeopardized.

NRC Comment: The changes are cosmetic to reflect word preferences for the conditions referred to. The meaning and results appear the same.

- v. **CHANGE:** (Page 23) Several formatting changes are made on the page to reflect the new format for the EPIP.

NRC Comment: The changes were each individually reviewed against the same items in Revision 11, and were found to be cosmetic with no substantive impact on emergency preparedness.

3. Follow up on Previous Inspection Findings

(Closed) Followup Item (91-02-02)

As indicated in items 2. d, e, g, i, j, k, n, and q above, the licensee made changes as discussed with Region V. This review closes this Open Item.

4. Exit Interview.

The licensee was telephonically notified of the results of the Region V review of EPIP 13.1.1 on June 11, 1991, and was informed that the revision changes appeared acceptable for implementation.

