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 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe      05000397  
 AUTH. NAME      AUTHOR AFFILIATION  
 SORESEN, G. C.      Washington Public Power Supply System  
 RECIP. NAME      RECIPIENT AFFILIATION  
 SCHWENCER, A.      Licensing Branch 2

SUBJECT: Forwards addl info re emergency classification sys &  
 emergency action levels, per NRC 831005 request. Due to plant  
 design, not possible to quantify primary coolant leakage in  
 excess of Tech Spec limits.

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Enclosed for the Bureau are two copies of a report on the results of a study of the feasibility of establishing a new national monument in the State of Alaska. The report was prepared by the Alaska Department of Natural Resources and the Bureau of Land Management.

Very truly yours,  
[illegible]  
Director, Bureau of Land Management

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## Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

October 31, 1983  
G02-83-997

Docket No. 50-397

Director of Nuclear Reactor Regulation  
Attention: Mr. A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Schwencer:

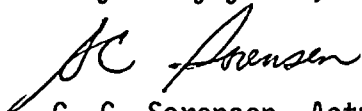
Subject: NUCLEAR PROJECT NO. 2  
EMERGENCY PLANNING PROGRAM;  
ADDITIONAL INFORMATION

Reference: Letter, A. Schwencer (NRC) to D. W. Mazur (SS),  
same subject, dated October 5, 1983

The reference provided comments on the WNP-2 Emergency Classification System and Emergency Action Levels (EALs) and requested a response by October 28, 1983. Attached is the Supply System's response.

Should you have any further questions, please contact Mr. P. L. Powell, Manager, WNP-2 Licensing.

Very truly yours,



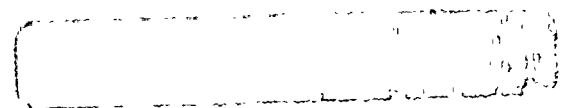
G. C. Sorensen, Acting Manager  
Nuclear Safety & Regulatory Programs

PLP/tmh  
Attachment

cc: R Auluck - NRC  
WS Chin - BPA  
AD Toth - NRC Site

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## ATTACHMENT

### NRC Comment

As a result of the EAL review, it was noted that Section 6 of the Emergency Plan (EP) dealing with classification should be reviewed and modified by the licensee to make it consistent with EPIP 13.1.1 for the following reasons:

- a) The EP discusses and categorizes the initiating conditions based on NUREG-0696 "Safety Groups" of reactivity control, core cooling parameters, coolant system integrity, containment integrity, and radioactivity control. No mention is made of these "groups" in the EPIP section.

### WNP-2 Response

The EALs are categorized by "Safety Groups" in Attachment D, Basis for the Classification Methodology. Further subgrouping in the guidance and summary portions of the procedure would impede efficient classification of an emergency.

- b) The EP and EPIP do not include NUREG-0654 Appendix 1 class description statements as concerning radioactive material releases for Unusual Event, or class description statements concerning amounts of releases related to EPA Protective Action Guidelines (PAG) for Alert, Site Area Emergency, nor General Emergency.

### WNP-2 Response

EPA Protective Action Guidelines have been added to the EALs with conservative modifications to promote prompt classification of an emergency, eg: 50 mR/hr for 1/2 hour at the site boundary is modified to 50 mR/hr at the site boundary.

- c) EP Tables 6-1 through 6-4, WNP-2 Initiating Conditions cross reference for Unusual Event, Alert, Site Area Emergency, and General Emergency respectively contain numerous inaccuracies such as EP paragraphs listed in the table that are not included in the plan, and EP paragraphs listed that do not correspond to the NUREG-0654 condition. If such a cross-reference table is to be used, cross-reference to the corresponding EPIP paragraph would be much more valuable to the user.

### WNP-2 Response

The EP cross reference tables will be deleted.

- d) Numerous example initiating conditions of NUREG-0654 Appendix 1 are omitted or listed as "later" by the licensee.

### WNP-2 Response

Example initiating conditions will be deleted from the Emergency Plan.



## UNUSUAL EVENT

### NRC Comment

Initiating Condition 2 - Radiological effluent technical specification exceeded. The licensee has listed their EAL as "...in excess of Technical Specification limits are verified by sample analysis." The licensee should consider deleting the modifier "as verified by sample analysis" since such analysis may inhibit the timeliness of classification and notification.

### WNP-2 Response

PPM 13.1.1 will be revised to reflect this request.

### NRC Comment

Initiating Condition 7 - Loss of offsite power or loss of onsite AC power capability. The loss of offsite power is of itself not a limiting condition, but the loss of onsite AC power capability is a Technical Specification LCO. The licensee should list as an example under Situation Based Initiating Conditions (Unusual Event) loss of onsite AC power capability to call attention to the seriousness of the condition.

### WNP-2 Response

The WNP-2 methodology is such that this type of example is adequately covered by reference to Technical Specification limiting conditions for operation.

### NRC Comment

Initiating Condition 8 - Loss of containment integrity requiring shutdown by technical specifications. Although this example would be covered by the licensee's general statement of "Any plant condition requiring plant shutdown as a result of exceeding the LCO and associated action items...", the licensee should list this condition as an example under Situation Based Initiating Conditions (Unusual Event).

### WNP-2 Response

PPM 13.1.1 will be revised to reflect this request.

### NRC Comment

Initiating Condition 13.b - 50 year flood or low water, ... The licensee has listed "Floods (river pumphouse in danger of inundation)". The licensee should change this condition to read "...in danger of inundation as observed" or "river rising to \_\_\_\_\_ feet if reported by appropriate monitoring agencies."

### WNP-2 Response

PPM 13.1.1 will be revised to reflect "...in danger of inundation as observed".



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#### NRC Comment

Initiating Condition 14.a - Aircraft crash onsite or unusual aircraft activity over facility. The licensee should change listed equivalent to read "Aircraft crash or unusual aircraft activity over facility, or train derailment onsite (if safety-related equipment is affected, see higher classification)".

#### WNP-2 Response

PPM 13.1.1 will be revised to reflect the intent of this request.

#### ALERT

#### NRC Comment

Initiating Condition 5 - Primary coolant rate greater than 50 gpm. Proposed EAL sets address this example initiating condition only indirectly, for example, "Situations where a release of radioactive material warrants...". The licensee should prepare two EAL sets that include losses outside containment and primary coolant losses inside containment, but perhaps measured outside of containment.

#### WNP-2 Response

Due to the design of WNP-2, it is not possible to quantify primary coolant leakage in excess of the Technical Specification limits. If Technical Specification limits of 5 gpm unidentified leakage or 25 gpm total leakage averaged over any 24-hour period are exceeded and cannot be reduced in 4 hours, the action statement requires plant shutdown. If this leakage persists, an Unusual Event is declared. The EAL used to detect further degradation of reactor coolant leakage, i.e., Alert level, is low reactor water level. As previously stated, our emergency classification scheme uses primary safety parameters with sound engineering bases as EALs, not arbitrary setpoints as is the case with this example of 50 gpm leakage. To include this "Example" EAL into our scheme is not only not possible, but is arbitrary and conflicts with the engineering bases used at WNP-2.

It should also be noted that the makeup capacity of a BWR is in excess of 28,000 gpm. A setpoint of 50 gpm leakage is insignificant when compared to this. Also in addition to reactor water level as the primary safety parameters such as drywell temperature and pressure also serve to indicate an escalating accident condition.

#### NRC Comment

Initiating Condition 6 - Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials. Proposed EAL sets address this example initiating condition only indirectly, for example, "Situations where a release of radioactive materials warrants...". The licensee should prepare two EAL sets that include, for example, alarm with indication on recorder of increase of 1000x alarm setpoint on area radiation monitoring system or...in airborne contamination.

### WNP-2 Response

Due to the wide variety of normal readings and alarm setpoints on the area radiation monitors, an arbitrary limit of 1000x does not necessarily accomplish the purpose for declaring an Alert. The same is true for airborne contamination. For this "Example" EAL, we evaluated the definition and purpose of the Alert classification and determined the primary concern to be release of radioactive material from the plant, not in-plant radiation control incidents, i.e., if a condition exists within the plant whereby radiation is excessively high, it represents a threat to the plant personnel and is, thus, an Unusual Event. If the condition worsens and radioactive material is released from the plant, then the purpose of the Alert condition is met. (Refer to NUREG-0654, Appendix I.) This "Example" EAL is more appropriately covered by Item B.2.c of PPM 13.1.1, which states:

"Situations where a release of radioactive material warrants offsite response or personnel to perform offsite monitoring, but does not require any protective actions. Examples include the following:

- "(1) Measured or calculated site boundary whole body dose rates greater than or equal to 0.5 mR/hr or 2.5 mRem/hr thyroid."
- "(2) Standby Service Water System high radiation level and inability to isolate."

### NRC Comment

Initiating Condition 19 - Other plant conditions exist that warrant precautionary activation of Technical Support Center and placing near-site Emergency Operations Facility and other key emergency personnel on standby. The licensee has erroneously included in "Situation Based Initiating Conditions (Site Area Emergency)", paragraph 2.c, page 13.1.1-12 "Any plant condition that ...warrants the activation of the Technical Support Center (TSC), Operations Support Center, and Emergency Operations Facility for the purpose of...". In addition to correcting this wording appropriate for Site Area Emergency, the licensee should change the wording of the listed initiating condition "...warrant the use of additional personnel for accident assessment and in-plant response" to agree with NUREG-0654, Appendix I.

### WNP-2 Response

For Site Area Emergency PPM 13.1.1 will be changed to add the missing words where appropriate. For an alert condition refer to PPM 13.1.1, Section B.2.b and B.2.c for the instructions corresponding to initiating condition 19. Our commitment here exceeds the examples in NUREG-0654, Appendix I.



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NRC Comment

Initiating Condition 20 - Evacuation of Control Room anticipated or required with control of shutdown systems established from local stations. The licensee has listed "Control Room evacuation", and should re-insert the word "anticipated" to achieve a satisfactory EAL.

WNP-2 Response

PPM 13.1.1 will be revised to reflect this request.

SITE AREA EMERGENCY

NRC Comment

Initiating Condition 2 - Degraded core with possible loss of coolable geometry. The EAL set should be enhanced by considering the suggestions of NUREG-0818.

WNP-2 Response

NUREG-0818 was used in the development of PPM 13.1.1; however, as noted in NUREG-0818, pages 111 and 112, the BWR design does not readily lend itself to detecting loss of coolable geometry. Also, contrary to a PWR, the BWR design is such that core cooling due to natural convection is always sustained with a minimum amount of water by an internal recirculation path. This certainly does not eliminate the possibility of loss of coolable geometry, but does lessen it. The suggested EALs in NUREG-0818 for detecting this situation were considered by WNP-2 when evaluating core damage; however, since they are not quantifiable, prescribing an EAL is virtually impossible.

NRC Comment

Initiating Condition 13.a - Effluent monitors detect levels corresponding to greater than 50 mR/hr for 1/2 hour or greater than 50 mR/hr whole body for two minutes at the site boundary for adverse meteorology. The licensee should revise the listed EAL to comply with the NUREG-0654 Appendix I initiating condition. Initiating conditions 13.b and c should be similarly incorporated.

WNP-2 Response

PPM 13.1.1 will be revised to include these EALs. It should be noted, however, that instantaneous dose rate EALs will be used rather than an integrated dose or specific dose for an allotted time. The EAL will then be evaluated (as all of them are) and a determination made on proper emergency classification. This is to account for those situations where a spurious EAL may be reached.

GENERAL EMERGENCY

NRC Comment

Initiating Conditions 1.a and b - Effluent monitors detect (or dose rates are projected based on other plant parameters) levels corresponding to 1 Rem/hr whole body or 5 Rem/hr thyroid at the site boundary under actual meteorological conditions. The licensee should modify the listed condition to correlate with NUREG-0654 Appendix I initiating condition.



#### WNP-2 Response

PPM 13.1.1 will be revised to reflect this request. See answer to C.2 above.

#### PROTECTIVE ACTION DECISION MAKING EALs

##### NRC Comment

General Emergency Initiating Condition 4 - Other plant condition. The licensee addressed this initiating condition as "Any major event that could cause a degradation of plant safety such that the release of large amounts of radioactive material in a short period of time is possible." Protective action decision by offsite officials for a General Emergency was not included in the EALs. A review of EPIP 13.14.2, Process for Determining Protective Action Recommendations, showed the flow chart to be absent.

##### WNP-2 Response

EPIP 13.14.2 has been revised to incorporate the flow chart, and in concert with 13.1.1, adequately addresses this concern.

#### PLANNING STANDARD D - EVALUATION CRITERIA

##### NRC Comment

The initiating conditions shall include the example conditions found in Appendix 1 and all postulated accidents in the Final Safety Analysis Report (FSAR) for the nuclear facility.

The following initiating conditions were not addressed by the licensee:

Unusual Event 9 (loss of engineered safety feature), 11, 14.e.  
Alert 7, 8, 12, 14, 16, 17.a, 18.b, 18.e.  
Site Area Emergency 6, 7, 10, 12, 14, 15.c, 16, 18.  
General Emergency 3, 7.

##### WNP-2 Response

The above comment does not delineate if this is a deficiency or not; however, the Supply System methodology does address each of these "Example Initiating Conditions". The following information provides the history and bases behind PPM 13.1.1.

With the lessons learned from the TMI-2 accident firmly in mind, the Supply System has accepted the challenge to not just meet the regulatory requirements, but to provide creative, meaningful solutions to safety concerns.

With this philosophy in mind, the Supply System determined to provide an emergency classification methodology that is realistic, functional, and meets the intent of NUREG-0654. The Supply System reviewed the rationale for each emergency class and the many examples given. From this review, it became obvious that the examples listed in Appendix I of NUREG-0654

were events and not symptoms and, thus, could not include all safety concerns. Furthermore, the Supply System recognized that they were only examples and not requirements. Therefore, the Supply System set about to meet the intent of this new classification scheme by incorporating what was learned from the BWR Owners' Group about Emergency Operating Procedures; namely, that the use of safety parameters in a symptom-based methodology is a much more functional approach than an event-based methodology. (Refer to Supplement 1 to NUREG-0737.)

Several man-months of analysis and application of symptom-based Emergency Action Levels (EALs) to the problem of emergency classification lead to completion of the WNP-2 Procedure PPM 13.1.1, "Classifying the Emergency".

Unlike the examples in Appendix 1 to NUREG-0654, every symptomatic EAL in PPM 13.1.1 has stated a basis. (Refer to Attachment D of PPM 13.1.1.) These parameters are a result of extensive accident analysis by General Electric and the BWR Owners' Group performed after the TMI-2 accident. The culmination of this work resulted in Emergency Procedure Guidelines which identified key parameters whose status define the level of safety of the plant regardless of the event.

The advantages of a symptom-based methodology for accident response, i.e., Emergency Operating Procedures, became obvious and then mandatory in Supplement 1 to NUREG-0737. It also became obvious to the Supply System that this methodology should be extended to include the Safety Parameter Display System and, furthermore, the Emergency Classification. In doing so, the Operations personnel will be trained to use a consistent philosophy of symptom-oriented accident response, accident analysis, and accident classification.

In addition to the symptom-based EALs in PPM 13.1.1, it also became evident that it is virtually impossible to pre-define a symptomatic initiating condition for every conceivable abnormal situation. Therefore, a second methodology was incorporated to accommodate those plant conditions which cannot be quantitatively defined. This second method uses a set of guidelines in the form of definitions and example situations. It is qualitative in nature and, thus, requires more judgment in the classification process.

With the combination of the two methodologies, the Supply System has developed a very realistic and workable procedure that fully meets the intent of NUREG-0654.