Washington Public Power Supply System
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Docket 50-508

June 16, 1983
G03-83-481

Director of Nuclear Reactor Regulation
ATTN: Mr. G. W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
US Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NUCLEAR PROJECT 3
SUPPLEMENTAL INFORMATION ON CONFORMANCE
OF WNP-3 TO STANDARD REVIEW PLAN
(April-May 1983)

Reference: a) Letter #G03-82-1015, G. D. Bouchey to
J. D. Kerrigan, dated October 6, 1982.

b) Letter #G03-83-08, G. D. Bouchey to
G. W. Knighton, dated January 4, 1983.

Reference a) transmitted amendment #1 to the WNP-3 FSAR. This amendment contained the initial phase of the WNP-3 Review for conformance with the Standard Review Plan (SRP) NUREG-0800, required by 10CFR50.34(g).

In those cases where differences between the WNP-3 design criteria and the SRP acceptance criteria were identified in the initial Supply System review, a schedule was provided detailing when the bases would be presented for concluding that the WNP-3 design criteria are in compliance with the Commission Regulations.

Presented herewith is the material for which commitments were made for the months of April and May. Included are marked up FSAR pages to show the changes which will be incorporated into a subsequent amendment. In those cases where exception is taken to the SRP acceptance criteria a reference is provided to the FSAR section where further information is provided. If necessary, additional information will be added to the appropriate FSAR section indicated on the marked up FSAR pages.

In certain instances, following a detailed review, we have been able to conclude based on information presented in the FSAR that the WNP-3 design criteria do, in fact, conform to the SRP acceptance criteria. For these cases, with the exception of a change to the FSAR conformance review table (Table 1.8-3), no further change will be necessary.

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SUPPLEMENTAL INFORMATION ON CONFORMANCE OF WNP-3 TO STANDARD REVIEW PLAN
(April-May 1983)

Reference b) provided the Supply System's commitment to follow the guidance of Regulatory Guide 1.97, Rev. 2, with exceptions. The WNP-3 position on this Regulatory Guide as it pertains to detection of containment sump leakage must be changed as shown to accurately reflect our design.

If you require further information of clarification, the Supply System point of contact for this matter is Mr. K. W. Cook, Licensing Project Manager (206/482-4428 ext. 5436).

Sincerely,

GD Bouchey

G. D. Bouchey, Manager
Nuclear Safety and Regulatory Programs

AJM/ss

cc: D. J. Chin - Ebasco NYO
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SRP/ACCEPTANCE CRITERIA	COMPLIANCE YES	NO	N/A	REMARKS
11.5 Process And Effluent Radiological Monitoring Instrumentation And Sampling Systems Rev. 3 - July 1981				
ACCEPTANCE CRITERIA				
ETSB acceptance criteria for the process and effluent radiological monitoring instrumentation and sampling systems are based on meeting the relevant requirements of the following regulations:				
A. 10 CFR Part 20, §20.106 as it relates to radioactivity monitoring of effluents to unrestricted areas.	X			
B. General Design Criterion 60 as it relates to the radioactive waste management systems being designed to control release of radioactive materials to the environment.	X			
C. General Design Criteria 63 and 64 as they relate to the radioactive waste management systems being designed to monitor radiation levels and leakage.	X			(1) WNP-3 will comply with Regulatory Guide 1.97, with exceptions as noted in FSAR sections 11.5.2.4.1(e) & 12.3.4.2.3. 1.1
Specific criteria necessary to meet the relevant requirements of the Commission regulations identified above are:				
1. Provisions should be made for the instrumented monitoring or for the sampling and analyses of all normal and potential effluent pathways for release of radioactive materials to the environment to meet General Design Criterion 64	X			
To meet Criterion 64, the design of systems should meet the provisions of Regulatory Guide 1.21 (Position C and Appendix A) (Ref. 2), Regulatory Guide 1.97 (Position C and Table 1 or Table 2, as applicable) (Ref. 3), and Regulatory Guide 4.15 (Position C) (Ref. 4).			X See Remark (1) ~~and (2)~~	~~(1) Conformance to Regulatory Guide 1.97 is being implemented at this time. Existing instrumentation ranges are being expanded and new instruments and monitors are being purchased to meet the requirements of the subject Regulatory Guide.~~
a. The gaseous and liquid process streams or effluent release points should be monitored and sampled according to Tables 1 and 2.	X			
b. For both BWRs and PWRs, liquid wastes and confined volumes of gaseous waste should be sampled batchwise prior to release, in accordance with Regulatory Guide 1.21. Continuous gaseous effluent monitors are not required for open structures, such as PWR turbine buildings or atmospheric vents for liquid waste tanks containing treated or processed liquid waste and located outside of buildings. For liquid and gaseous effluents that cannot be practicably monitored or sampled batchwise, one of the following methods of representative sampling should be provided:	X			~~(2) Where differences exist between the WNP-3 design criteria and the acceptance criteria identified in this SRP, the bases for concluding that the WNP-3 design criteria are in compliance with the Commission's regulations will be provided by December 1982.~~
(1) A continuous proportioning sampling system with at least two sample collection tanks. The system should be designed to provide a fixed or measured flow ratio of the sample collected to the sampled stream discharge, or, alternatively			X See Remark ~~(2)~~ (2)	~~(2)~~ (2) Radiological monitoring and sampling of liquid and gaseous effluents is provided batchwise.
(2) A periodic automatic grab sampling system with at least two sample collection tanks. The system should be designed to			X See Remark ~~(2)~~	

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SRP/ACCEPTANCE CRITERIA	COMPLIANCE YES	NO	N/A	REMARKS
11.5 Process And Effluent Radiological Monitoring Instrumentation And Sampling Systems (Cont'd) Rev. 3 - July 1981				
collect a fixed volume of sample at a rate proportional to the measured flow in the sampled stream discharge.				
(3) Radioactive materials other than noble gases in gaseous effluents. A continuous sampling system with replaceable particulate filter and radioiodine adsorber. The system should be designed to automatically take samples at a fixed or measured flow ratio of the sample throughput to the sampled stream discharge.		X See Remark (1)		(1) Radiological monitoring and sampling of liquid and gaseous effluents is provided batchwise.
For intermittently operating effluent release points, the system should be designed to automatically take samples whenever there is flow in the effluent stream.	X			(2) WNP-3 will comply with Regulatory Guide 1.97 with exceptions as noted in FSAR Sections 11.5.2.4.1(e) & 12.3.4.2.2, 1.1
For all of the above samples, a periodic analysis frequency for the collected samples should be specified in the technical specifications.	X			
2. Provisions should be made for the instrumented monitoring of, or the periodic or continuous sampling and analysis of, radioactive waste process systems. To meet Criteria 60 and 63, as they relate to radioactive waste systems and detection of excessive radiation levels and initiation of appropriate safety actions, the design of systems should meet the guidelines of Appendix 11.5-A (this SRP section), Regulatory Guide 1.21 (Position C, as applicable), Regulatory Guide 1.97 (Position C and Table 1 or Table 2, as applicable), and Regulatory Guide 4.15 (Position C).		X ~~See Remarks (1) and (2)~~		see Remark (2) ~~(2) Where differences exist between the WNP-3 design criteria and the acceptance criteria identified in this SRP, the bases for concluding that the WNP-3 design criteria are in compliance with the Commission's regulations will be provided by December 1982.~~
a. Provisions should be made to assure representative sampling from radioactive process streams and tank contents. Recirculation pumps for liquid waste tanks (collection or sample test tanks) should be capable of recirculating at a rate of not less than two tank volumes in eight hours. For gaseous liquid process stream samples, provisions should be made for purging sample lines and for reducing plateout in sample lines. Provisions for gaseous sampling from ducts and stacks should be in agreement with ANSI N13.1. (Ref. 5)	X			
b. Where practicable, provisions should be made to collect samples from process waste streams at central sample stations to reduce leakage, spillage, and radiation exposures to operating personnel in accordance with SRP Section 9.3.2.	X			
c. Provisions should be made to purge and drain sample streams back to the system of origin or to an appropriate waste treatment system.	X			
3. Provisions should be made for administrative and procedural control, for necessary auxiliary or ancillary equipment, and for special features				

SRP/ACCEPTANCE CRITERIA	COMPLIANCE YES	NO	N/A	REMARKS
11.5 Process And Effluent Radiological Monitoring Instrumentation And Sampling Systems (Cont'd) Rev. 3 - July 1981				
for the instrumented radiological monitoring, sampling, and analysis of process and effluent streams. To meet Criterion 63 and Criterion 64, as they relate to radioactive waste process systems and effluent discharge paths, the design of systems and the implementation of administrative and procedural controls should meet the guidelines of Appendix 11.5-A (this SRP section), Regulatory Guide 1.21 (Position C) and Regulatory Guide 4.15 (Position C).		X		~~X See Remark (1)~~ ~~(1) Where differences exist between the WNP-3 design criteria and the acceptance criteria identified in this SRP, the bases for concluding that the WNP-3 design criteria are in compliance with the Commission's regulations will be provided by December 1982.~~
Instrumentation, sampling, and monitoring provisions should conform to the following:				
a. Sampling frequencies, required analyses, instrument alarm/trip setpoints, calibration and sensitivities, and provisions for preparing composite samples for low-level analyses should be in conformance with Regulatory Guides 1.21 and 4.15. Sampling frequencies and required analyses should be given in the plant technical specifications; these provisions will be reviewed at the OL stage.		X		~~X See Remark (1)~~ 1
b. Provisions should be made for the necessary instrumentation and facilities to perform gross beta-gamma and gross alpha measurements, isotopic analyses, and other routine analyses in conformance with Regulatory Guide 1.21.	X			
c. Provisions should be made to perform routine instrument calibration, maintenance, and inspections in conformance with guidelines of Regulatory Guide 4.15. The frequencies of such actions should be given in the plant technical specifications. The provisions will be reviewed at the OL stage. Provisions should also be made to replace or decontaminate monitors without opening the process system or losing the capability to isolate the effluent stream.		X		~~X See Remark (1)~~
d. Isolation valves, dampers, or diversion valves with automatic control features should fail in the closed or safe position. Setpoints for actuation of automatic control features initiating actuation of isolation valves, dampers, or diversion valves should be established in the plant technical specifications. Non-ESF instrumentation provisions for automatic termination or diversion of releases should conform to the design guidance contained in Appendix 11.5-A (this SRP section). ESF instrumentation provisions for automatic termination or diversion of releases are reviewed in SRP Section 7.6 by ICSB.	X			
4. Provisions should be made for the instrumented monitoring or sampling and analysis of identified gaseous effluent paths in the event of postulated accident releases. To meet Criterion 64, as it relates				

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This monitor is located on the 362.5 ft. level of the Reactor Auxiliary Building. It takes a sample of the water discharged from the gas stripper and returns it to the same line. Physically it is a fluid stream monitor as described in Subsection 11.5.2.3.2, and it requires a sample pump. In this case the microprocessor has been removed from the skid and placed on a nearby wall to protect it from possibly high radiation fields present near the skid.

The measured activity levels are automatically transmitted to the system computer where they are recorded and available for display through the system CRTs. If the activity exceeds pre-established setpoints an annunciation is made through the system CRTs and event typer. The receipt of these alarms will alert the operator so that additional radiation surveys, sampling and analysis can be effected in order to determine the cause of the problem. The alarm setpoints are to be set between the measured activity levels of the degasified reactor coolant and the maximum level of contamination permissible in this system. The setpoints may be adjusted continuously over the entire range of the monitor. The range of the monitor is from 10^{-4} to 10 μCi/cc which is the practical range of interest for normal power operation using a simple single detector radiation monitor.

e) CVCS Letdown Radiation Monitor

The CVCS letdown radiation monitor will alert operations personnel to an increase in the radioactive contamination of reactor coolant as quickly as possible.

insert 1

This monitor is located on the 373.5 ft. level of the Reactor Auxiliary Building. It receives a continuous sample of the CVCS letdown, in parallel with the boronometer and is upstream of the purification filter. System process travel time delays the sample for approximately two minutes delay to allow activation products with short half-lives, particularly N-16 to decay. Physically, it is a fluid stream monitor as described in Subsection 11.5.2.3.2, which does not require a sample pump. In addition, two modifications have been made, first the microprocessor has been removed from the skid and placed on a nearby wall to protect it from possibly high radiation fields present near the skid, and second a removable attenuator has been provided which may be manually placed between the sample volume and the detector. 2

The measured activity levels are automatically transmitted to the system computer where they are recorded and available for display through the system CRTs. If the activity exceeds pre-established setpoints, an annunciation is made through the system CRTs and event typer. The receipt of these alarms will alert the operator so that additional radiation surveys, sampling, and analysis can be performed in order to determine whether the increase of contamination is due to damage to the fuel cladding or due to some other cause such as a crud burst or iodine spiking. The level of the setpoints will have to be adjusted periodically during operation to allow for the gradual buildup of contamination in the reactor coolant. The setpoints may be adjusted continuously over the entire range of the monitor. The range of this 2

SCN 355 R1

Insert 1

This monitor will be used in lieu of the High Range Circulating Primary Coolant Monitor required by Regulatory Guide 1.97 Rev. 2 for the detection of fuel cladding failure. Regulatory Guide 1.97 recommends that Category 1 redundant detection systems be installed to measure this parameter. The recommended range is from 1/2 the Technical Specification limit up to 100 times the Technical Specification limit in Rads per hour. There is no instrument available to accomplish this, additionally instrumentation in this range would be saturated by N_{16}. Thus its capability would be unavailable until after shutdown.

There are four of these monitors. The sample points for two of them are located on the 362.5 ft. level of the Reactor Auxiliary Building. One of these samples air being exhausted from the north side and the other samples air being exhausted from the south side of the 335 ft. level. The other two sample points are located on the 390 ft. level of the Reactor Auxiliary Building. One of these samples air being exhausted from the north side and the other from the south side of the 335 ft. and 362.5 ft. levels. The air samples are withdrawn from the exhaust ducts through a multipoint isokinetic sampling nozzle array (per ANSI 13.1) from a point downstream of the confluence of the ducts carrying exhaust air from the area being monitored. In each case the sample is routed to a skid mounted radiation monitor that is located within a few feet of the sample point. The sample pump is mounted on the monitor skid. Physically this monitor is a two stage airborne monitor as described in Subsection 11.5.2.3.3.2 which uses a moving particulate filter.

The measured activity levels for both the particulate and gas channels are automatically transmitted to the system computer where they are recorded and available for display through the system's CRTs as described in Subsection 11.5.2. If the activity exceeds pre-established setpoints an annunciation is made through the system's CRTs and event logger.

The receipt of these alarms will alert the operator to the presence of an unusual level of airborne radioactivity coming from a paricular area so that additional surveys, sampling and equipment isolation can be effected in order to locate and control the source of the contamination. The setpoints may be adjusted over the entire range of the monitor. Additional information about this monitor may be found in Table 12.3.4-2.

12.3.4.2.3.1.2 Control Room Air Intake Radiation Monitor

The Control Room air intake radiation monitors provide plant operations personnel with measurements and records of the radioactive contamination of air entering the Control Room ventilation system. If the measured contamination exceeds pre-established limits these monitors produce a signal to automatically isolate the Control Room air intake and thereby protect the habitability of the Control Room.

These monitors are located in both the Control Room air intake plenums which are on the 442 ft. level of the Reactor Auxiliary Building. Refer to Figure 12.3-5a. There are a total of four monitors, two in each of the two plenums. The detector assembly for each monitor is mounted from the plenum ceiling and observes air downstream of the tornado missile protection but upstream of the intakes isolation valves louvers. This location permits the continued observation of the contamination of the outside air after the intake has been isolated. 1

Each Control Room air intake radiation monitor is similar to a refueling pool area radiation monitor (Subsection 11.5.2.4.1i) except for its detector assembly and some changes in its microprocessors software. A schematic diagram of one of these monitors is shown on Figure 12.3-32. These monitors are seismically qualified, Class 1E and powered in pairs from the A or B safety busses using the same bus as their respective air intake. 1

Insert 2

These monitors which can detect airborne radioactive material leaking from Containment will be used in lieu of the intermediate range Area Radiation Monitors recommended by Regulatory Guide 1.97 Rev. 2 for detection of a Containment Breach in areas with penetrations and hatches (Type C Variable). An increase in radiation levels in these areas would be due primarily to streaming through the penetration or direct shine from the containment caused by elevated exposure rates inside containment. Thus, any additional increase due to airborne radioactivity leaking from the containment would not be discriminated by the area radiation monitors suggested by Regulatory Guide 1.97 Rev. 2 from streaming or direct shine.

NUREG - 0800

NRC STANDARD REVIEW PLAN

SRP/ACCEPTANCE CRITERIA	COMPLIANCE YES	NO	N/A	REMARKS
10.3 Main Steam Supply System Rev. 2 - July 1981				
ACCEPTANCE CRITERIA				
Acceptability of the design of the MSSS, as described in the applicant's safety analysis report (SAR), is based on specific general design criteria and regulatory guides.				
The design of the MSSS is acceptable if the integrated design of the system is in accordance with the following criteria:				
1. General Design Criterion 2, as related to safety-related portions of the system being capable of withstanding the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, and floods, and the positions of the following:	X			
a. Regulatory Guide 1.29, as related to the seismic design classification of system components, Positions C.1.a, C.1.e, C.1.f, C.2, and C.3.	X			
b. Regulatory Guide 1.117, as related to the protection of structures, systems, and components important to safety from the effects of tornado missiles, Appendix Positions 2 and 4.	X			
2. General Design Criterion 4, with respect to safety-related portions of the system being capable of withstanding the effects of external missiles and internally generated missiles, pipe whip, and jet impingement forces associated with pipe breaks, and the position of Regulatory Guide 1.115 as related to the protection of structures, systems, and components important to safety from the effects of turbine missiles, Position C.1.	X			
3. General Design Criterion 5, as related to the capability of shared systems and components important to safety to perform required safety functions.		X see remark (1)		(1) There are no shared systems and components at WNP3.
4. General Design Criterion 34, as related to the system function of transferring residual and sensible heat from the reactor system in indirect cycle plants, and the following:	X			
a. The positions in Branch Technical Position RSB 5-1 as related to the design requirements for residual heat removal.	X			
b. Issue Number 1 of NUREG-0138 as related to credit being taken for all valves downstream of the main steam isolation valves (MSIV) to limit blowdown of a second steam generator in the event of a steam line break upstream of the MSIV.	~~see remark (2)~~ X see remark (2)			(2) ~~Where differences exist between the WNP-3 design criteria and the acceptance criteria identified in this SRP, the bases for concluding that the WNP-3 design criteria are in compliance with the Commission's regulations will be provided by March 1983.~~ NO Credit is being taken for the valves downstream of the MSIV's since they are not safety related and are located in a non seismic Category I structure.

1.8-409

Amendment No. 1, (10/82)

SCN 493

TABLE 1.8-3

NUREG - 0800

NRC STANDARD REVIEW PLAN

SRP/ACCEPTANCE CRITERIA	COMPLIANCE YES	NO	N/A	REMARKS
9.5.1 Fire Protection Program Rev. 3 - July 1981				
ACCEPTANCE CRITERIA				
The applicant's fire protection program is acceptable if it is in accordance with the following criteria:				
1. 10 CFR Part 50 §50.48, and General Design Criterion 3, as related to fire prevention, the design and operation of fire detection and protection systems, and administrative controls provided to protect safety-related structures, systems, and components of the reactor facility.			X See Remark (1)	(1) The design of WNP-3 is currently being evaluated against the requirements of 10CFR50.48 and BTP CMEB9.5-1 as part of the Safe Shutdown Analysis and Appendix R evaluation. The Fire Hazards Analysis will be submitted by October, 1983. 3
2. General Design Criterion 5, as related to fire protection for shared safety-related structures, systems, and components to assure the ability to perform their intended safety function.			X See Remark (2)	(2) There are no shared safety-related structures, systems or components at WNP 3.
The following specific criteria provide information, recommendations, and guidance and in general describe a basis acceptable to the staff that may be used to meet the requirements of §50.48, GDC 3 and 5:				
a. Branch Technical Position (BTP) CMEB 9.5-1 as it relates to the design provisions given to implement the fire protection program.			X See Remark (1)	
b. Regulatory Guide 1.78 as it relates to habitable areas such as the control room and to the use of specific fire extinguishing agents.	X			
c. Regulatory Guide 1.101, as it relates to fire protection emergency planning.	X			
9.5.2 Communication Systems Rev. 2 - July 1981				
ACCEPTANCE CRITERIA				
Acceptability of the design of the communication system, as described in the applicant's safety analysis report (SAR), is based in part on the degree of	X			

SCN386