Central Docket File

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R. C. DeYoung, Assistant Director for Pressurized Water Reactors, L

WASHINGTON PUBLIC POWER SUPPLY SYSTEM - WPPSS NO. 1 DRAFT Q1
QUESTIONS BY ACCIDENT ANALYSIS BRANCH

PLANT NAME: Washington Nuclear Project No. 1
LICENSING STAGE: CP
DOCKET NUMBER: 50-460
RESPONSIBLE BRANCH: PWR #3, T. Cox, LPM
REQUESTED COMPLETION DATE: November 30, 1973
REVIEW STATUS: Accident Analysis Branch Draft Q1 Complete

Enclosed are draft Q1 questions on Washington Public Power Supply System's Nuclear Project No. 1 (WPPSS #1). The questions were compiled by L. Soffer and will be modified as necessary after the scheduled site visit of December 17, 1973.

The applicant's response to our acceptance review question regarding tests to verify adequate mixing of the chemical additive with the containment spray water is inadequate. We have, therefore, included our position on this matter for transmittal to the applicant.

It should also be noted that four of our second acceptance review questions concerning control room ventilation and toxic gaseous releases have not as yet been answered.

Original signed by
H. R. Denton

Harold R. Denton, Assistant Director
for Site Safety
Directorate of Licensing

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Draft Q1 Questions

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Form AEC-318 (Rev. 9-53) AECM 0240 GPO 943 16 81468-1 445-678

WASHINGTON NUCLEAR PROJECT-1

DRAFT Q-1

Sect. 2.1.2.1 - EXCLUSION AREA CONTROL

Since the boundary of the one mile exclusion radius lies outside of the property leased from the Atomic Energy Commission, it is not clear on the record that WPPSS has the authority to determine all activities (as required by 10 CFR Part 100) within the exclusion boundary and outside of the leased property. Indicate the date a revised site lease with the Commission, as mentioned on page 2.1-4, will become effective and whether the new lease will give WPPSS this authority.

Sect. 2.1.2.2 - BOUNDARIES FOR ESTABLISHING EFFLUENT RELEASE LIMITS

Provide a map, as required by Section 2.1.2.2 of the Standard Format, showing the minimum distance from each effluent release point to the boundary of the restricted area.

Sect. 2.1.3 - POPULATION & POPULATION DISTRIBUTION

Provide a revised Figure 2.1-8, which shows the estimated 40 residents living between 5 and 10 miles of the site, as mentioned on page 2.1-7.

Sect. 2.2.1 - LOCATIONS & ROUTES

1. Discuss the transport of any hazardous freight such as volatile petroleum products, toxic gases, high explosives or radioactive materials on existing railroads within 5 miles of the site.

2. Figure 2.1-5 shows an area labeled as an "explosive storage area." Provide data (type of explosive and maximum quantity) on storage of any explosives in this area within 5 miles of the facility.

3. Discuss the possibility of increased barge traffic on the Columbia River past the site, in the event of creation of a nuclear park having other plants within 5 miles of WNP-1.

Sect. 2.2.3 - EVALUATIONS

1. Explain what the fuel oil in the two separate 100,000 gallon storage tanks shown on Figures 1.2-54 and 1.2-56 is used for. Discuss also the mode of oil transport to these tanks, frequency of re-supply and consequences of tank rupture, spillage, and fire.

2. In the event of rupture of the 200,000 gallon fuel oil tank, provide assurance that oil spillage will not run into the General Services Building. Discuss the mode of oil transport to this tank and the frequency of re-supply.

3. Figure 1.2-16 shows an additional underground fuel oil storage tank of 20,000 gallons. Explain what this fuel oil is used for.

4. Indicate the maximum quantity of propane stored on-site. Assuming various propane releases, and postulating the subsequent occurrence of immediate and delayed ignition events, provide your analysis of the possible effects on safety related features of the plant. Consider the effects of missiles generated by any explosion. State all your assumptions.

Sect. 6.2.3 - CONTAINMENT AIR PURIFICATION & CLEANUP SYSTEMS

1. The responses to Question 6.2 on Engineered Safety Features Air Filtration Systems do not address all the positions in Regulatory Guide 1.52. For each ESF air cleaning system state, in a tabular listing, how each compares with the positions found in Regulatory Guide 1.52. Reference to the text in the tabular listing for positions already explained is acceptable. For each position where an exception is taken, the exception should be explained in detail.

2. Your response to Question 6.5 states that, " . . . based on the above discussion, it is inconceivable that adequate mixing will not be obtained in the mixing chamber. Therefore no tests are required." (to demonstrate the capability of the system to deliver the proper mixing of sodium hydroxide and borated water to the containment spray headers). Your response also indicates that the pH values used in the system design are based on the work of Gallagher, et al (Nuclear Technology, 10, 406). However, the design of the system differs from that of the referenced article in both the range of pH values and in the method of additive mixing employed to achieve these

Sect. 6.2.3 - CONTAINMENT AIR PURIFICATION & CLEANUP SYSTEMS (Cont'd.)

pH values. It is our position, therefore, that verification, by test, of the capability of the system to deliver the appropriate mixture of borated water and spray additive is required. Our position is that if the spray additive mixing function of the proposed design is not testable, an alternative design, which is amenable to testing and calibration, should be provided. In this regard, provide a description of the pre-operational tests to be conducted on the existing or revised system to substantiate the mixing assumption.

3. Your response to Question 6.7 is incomplete. Supply the concentration of NaOH in the Sodium Hydroxide Tank and in the spray solution entering the containment under maximum and minimum NaOH flow conditions. Discuss the decomposition of NaOH exposed to air in the sodium hydroxide tank and state the reasons for not providing a nitrogen cover gas for this tank. State whether heaters are required for the tank to prevent precipitation in winter conditions.

4. Concerning the drop size data supplied in Figure 6.2-66, supply the following information:

   a. Source of data.

   b. Method of drop size measurement employed, including a discussion of the expected accuracy and repeatability of the data.

   c. The type of drop size spectrum obtained from this method, (i.e., spatial or temporal distribution), and the type of distribution used in the analysis.

   d. The method of selecting a representative section of the spray core. State whether the measured drop population covers the outermost region of the spray core, or whether a cross-section through the spray core was analyzed.

   e. The number of data points collected in comparison to a statistically meaningful sample.

Sect. 15.1.13 - LOSS OF COOLANT ACCIDENT

Provide a revised design basis accident case (including dose rates) due to a loss of coolant accident (LOCA) which makes use of the revised iodine fractions of Regulatory Guide 1.4 (91% elemental iodine, 4% organic iodides, 5% particulate iodine).

Sect. 15.1.X - HYDROGEN PURGE DOSE

Provide your analysis of the radiological consequences of a hydrogen gas purge following a LOCA assuming the recombiners are not functional. Clearly state all your assumptions such as meteorology, commencement of purge, purge rates and duration, and filtration.