OCT 20 1972

Docket No. 50-286

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

REQUEST FOR ADDITIONAL INFORMATION FOR THE INDIAN POINT NUCLEAR GENERATING UNIT 3, DOCKET NO. 50-286

Plant Name: Indian Point Nuclear Generating Unit 3
Licensing Stage: OL
Docket Number: 50-286
Responsible Branch/Project Leader: PWR#1/H.Specter
Requested Completion Date: October 20, 1972
Applicant's Response Date: January 19, 1973
Description of Response: Request for Additional Information
Review Status: Awaiting information

The enclosed request for additional information for Indian Point Unit 3 operating license review has been prepared by the Containment Systems Branch after having reviewed the applicable portions of the FSAR.

The major problem areas, as reflected by the enclosure, are the lack of containment pressure response analyses using all energy sources and the lack of an analysis of hydrogen production and generation following the DBA based on Safety Guide 7.

R. Vallmer
for Robert L. Tedesco, Assistant Director
for Containment Safety
Directorate of Licensing

Enclosure:
As stated

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Docket File (50-286)
L Reading
L:CS Reading
L:CSB Reading

Docket File

OFFICE ▶	L:CSB	L:CSB	L:CS		Memo
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DATE ▶	10-20-72	10/20/72	10/20/72		

INDIAN POINT NUCLEAR GENERATING UNIT 3

DOCKET NO. 50-286

REQUEST FOR ADDITIONAL INFORMATION

5.1 Provide a P&I drawing of the post-accident containment venting system.

5.2 Safety Guide 7, "Control of Combustible Gas Concentrations In Containment Following a Loss-of-Coolant Accident", includes a statement which states that "...reactors should have the installed capability for a controlled purge of the containment atmosphere through appropriate fission product removal systems." Discuss how this will be accomplished in the Indian Point 3 plant, and provide the results of an analysis of the radiological consequences of purging the containment.

5.3 Discuss the bases, from a functional standpoint, for the selection of containment isolation valves, including valve type, actuator, and closure time, and the required level of reliability.

6.1. Section 6.1.1 identifies the General Design Criteria common to all engineered safety features and discusses how plant design satisfies each criterion. The discussion accompanying General Design Criterion 4 (see p. 6.1-7) addresses the dual functions of plant systems and, components, whereas General Design Criterion 4 is concerned with the sharing of systems or components between reactor facilities. Therefore, discuss the extent of sharing of Indian Point 3 containment systems or components between reactor facilities at the Indian Point site.

6.2 Specify the ordinates for the NPSH curves on Figures 6 2-2, 6.2-3, and 6.2-4.

6.3 Discuss more fully the function of the timer associated with the containment spray system. What delay time is involved?

6.4 With respect to the carbon filter high temperature detection and dousing systems (containment air recirculation cooling and filtration system), provide the following information:

a. Specify the number of temperature switches provided in each carbon filter assembly;

b. Provide a drawing of a carbon filter assembly showing the distribution of the temperature switches and the arrangement of the dousing system nozzles; and

c. Discuss the provisions for filtering the water supplied to the dousing system from the containment spray system to prevent nozzle clogging.

6.5 Discuss the design provisions to assure that the air supply ductwork of the containment air recirculation cooling and filtration system remains intact following a postulated design basis loss-of-coolant accident.

6.6 Provide a P&I drawing of the post-accident containment atmosphere sampling system.

6.7 Provide an analysis of hydrogen production and accumulation in the containment following the design basis accident based on the parameter values listed in Table 1 of Safety Guide 7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident." Include in your analysis the effect of galvanized metal corrosion.

14.2 Since river water will be circulated through the fan coolers and since they will be used under both normal and accident conditions, discuss your plans for periodically verifying that the fan cooler heat removal capability does not degrade below that assumed in the containment integrity evaluation.

14.3 Provide the following information regarding the analysis of containment pressure transients. Explain all assumptions used in the analysis. Assumptions should be conservative with respect to the calculation of containment pressures.

a. For the spectrum of reactor coolant system pipe ruptures considered in the containment pressure transient analyses, specify the assumed locations of the postulated breaks. Include containment pressure transient analyses of various postulated loss-of-coolant accidents. A double-ended break of the largest reactor outlet pipe and double-ended breaks of the reactor coolant pump suction and discharge pipe should be included. Smaller pipe breaks should also be analyzed and should be selected to be representative of the spectrum of break sizes for both inlet and outlet reactor coolant pipes. Assume the containment spray system is the only engineered safeguard available to reduce the containment pressure; consider all delays in bringing the system into operation, e.g., the time to reach the containment pressure actuation signal, the delay time for equipment activation, and the time it takes the system to deliver rated flow to the containment. The analyses should be extended through the blowdown, reflood and post-reflood phases of the accidents.

b. Discuss in detail the calculational model that is used to describe the core reflood phase of a loss-of-coolant accident, following initial blowdown. Include discussions of the method used to calculate post-blowdown steam production and the steam venting rate to the containment, the assumed energy sources (such as core stored and decay energy, thick and thin metal stored energy, and steam generator stored energy, and the manner in which these energy sources are factored into the analysis.

14.4 Provide the following information with regard to the containment internal structures differential pressure analyses:

a. With respect to the analytical model used to predict the pressure buildup within a compartment, specify the time steps used in the analyses;

b. Discuss the results of the analyses performed for each compartment, including the maximum absolute and differential pressures attained, and the magnitude of the jet forces on the compartment walls; and

c. Discuss the structural design capability of each compartment to withstand the differential pressure and jet forces resulting from postulated loss-of-coolant accidents.

14.5 Listed below is the information that is needed to allow us to perform an independent assessment of the containment pressure transient analyses. Provide the following information:

a. The normal temperature of the water in the refueling water storage tank.

b. A curve of fan cooler performance showing energy removal rate as a function of containment atmosphere temperature.

c. The heat transfer area of a residual heat exchanger.

d. The average temperature of the primary coolant water under normal operating conditions.

e. A table of mass release to the Containment (lb/sec) and enthalpy of the mass (Btu/lb) as functions of time throughout the blowdown and reflood phases of the postulated loss-of-coolant accidents resulting in the highest calculated containment pressures for both the hot leg and cold leg.

f. A table of mass release to the containment (lb/sec) and enthalpy of the mass (Btu/lb) as a function of time throughout the postulated steam line break accident.

g. Curves of structural heat transfer coefficient as a function of time for the loss-of-coolant accidents identified in item (e) and the steam line break accident identified in item (f).