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JUL 12 1972

Docket No. 50-286

Consolidated Edison of New York, Inc.
ATTN: Mr. William J. Cahill, Jr.
Vice President
4 Irving Place
New York, New York 10003

Gentlemen:

As a result of our continuing review of your application for an operating license for the Indian Point Nuclear Generating Unit No. 3, we find that we need additional information to complete our evaluation. The specific information required is listed in the enclosure.

In order to maintain our licensing review schedule we will need a completely adequate response by August 25, 1972. Please inform us within seven (7) days after receipt of this letter of your confirmation of the schedule or the date you will be able to meet. If you cannot meet our specified date or if your reply is not fully responsive to our requests, it is highly likely that the overall schedule for completing the licensing review for this project will have to be extended. Since reassignment of the staff's efforts will require completion of the new assignment prior to returning to this project, the extent of extension will most likely be greater than the extent of delay in your response.

Please contact us if you desire any discussion or clarification of the material requested.

Sincerely,

Original Signed by
R. C. DeYoung

R. C. DeYoung, Assistant Director
for Pressurized Water Reactors
Directorate of Licensing

Enclosure:
Request for Additional Information

cc: listed on page two

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SURNAME ▶	CJHale:cls	DBVassallo	RCDeYoung			
DATE ▶	7/6/72	6/ /72	7/11/72			

Form AEC-318 (Rev. 9-53) AECM 0240 U. S. GOVERNMENT PRINTING OFFICE : 1970 O - 405-346

LeBeouf, Lamb, Leiby & MacRae
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1821 Jefferson Street, N. W.
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Consolidated Edison of New York, Inc.
ATTN: Mr. John Grob, Jr.
4 Irving Place
New York, New York 10003

REQUEST FOR ADDITIONAL INFORMATION
CONSOLIDATED EDISON OF NEW YORK INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

9.0 AUXILIARY AND EMERGENCY SYSTEMS

9.11 Regarding the Chemical and Volume Control System (CVCS):

9.11.1 Provide design and operational data for the components in the CVCS including: (1) the letdown nonregenerative heat exchanger (Tables 9.2-3 and 9.3-4) and describe the safety significance of the shell-side and tube-side operating pressures, and the function and sensitivity of the radioactivity monitors on the shell-side cooling water; (2) the Boric Acid Blender (Table 9.2-3), and the code to which it is designed and fabricated; and (3) the Batching Tank (Table 9.2-3) describing the steam jacket of the Batching Tank separately if the design codes differ between tank and jacket.

9.11.2 Describe the automatic and manual control features of the hydrogen supply to the CVCS Volume Control Tank, the amount to be supplied, and the logic of pressure control.

9.11.3 Describe the normal ratio of hydrogen to water vapor, and the means by which a flammable concentration in the CVCS Volume Control tanks and in the pressure relief piping to Holdup Tank No. 2 is prevented.

9.11.4 Describe the precautions taken while venting gases from CVCS Holdup Tank No. 2 to the Waste Disposal System and the method of controlling the percentage of hydrogen in the vented gases.

9.11.5 Provide the design requirements for the resin retention screens and Johnson screens in the CVCS coolant purification system mixed-bed, and cation-bed demineralizers. Delineate the differential pressure requirements for the fully clogged retention screen. Describe the precautions and plans for clean-up of the downstream filters should resins be released through the retention screen, including the design considerations that would minimize personnel exposure during transfer and handling.

9.11.6 Describe the design and operation of the gas stripper boric acid evaporator package including handling of concentrated boric acid, liquid waste, and solids. Provide a Process and Instrumentation Diagram (P&ID) of this package and the component design data for the instrumentaion, components, and controls.

9.11.7 Describe the method of heating that is provided in close tolerance areas of the canned rotor type boric acid transfer pumps to prevent binding from boric acid crystals.

9.11.8 Regarding the thermal cycle design of the CVCS regenerative heat exchanger (2000 step changes from 130°F to 552°F), define the term step change, and explain the design considerations that minimize the effect of this service condition. Describe the in-service inspection program planned to verify equipment condition.

9.11.9 Provide an evaluation of the consequence of CVCS mixed-bed demineralizer shell failure occurring prior to flushing and recharging. Assume maximum permissable radioactive contamination of the unit and describe the methods for draining liquids, collecting resins, and minimizing personnel exposure.

9.12 Regarding the Component Cooling Loop (CCL):

9.12.1 Indicate on a P&ID those portions of the CCL that have a designated emergency function.

9.12.2 There is carbon steel material, austenitic stainless steel and other equivalent corrosion resistant materials found in the CCL. Describe the corrosion inhibitors used in this loop, the provisions taken to prevent galvanic action, the pH control, and provisions for clean-up should the loop become contaminated.

9.13 Explain how Coolant Sampling System operations can be accomplished in the event of failure of the air supply to the diaphragm operated sampling valves inside the containment (Figure 9.4-1) concurrent with a LOCA.

9.14 Regarding the Fuel Handling System (FHS):

9.14.1 Provide an evaluation of the FHS design with respect to AEC Safety Guide No. 13, Fuel Storage Facility Design Basis. Point out areas of agreement with the guide, and in the case of differences provide the basis regarding acceptability of the present design.

9.14.2 Provide the design bases of the FHS new and spent fuel storage racks that assure the proper fuel can only be inserted into the proper rack and the seismic design of these racks.

9.14.3 Describe the modes of failure considered in the design of the spent fuel cask crane and containment crane such as breaking of cables and lifting slings, sheared shafts and keys, stripped gear teeth, and brake failures. Also discuss the limitations and control that will exist in handling objects over an open reactor vessel.

9.14.4 Provide a drawing and detailed description of the restraints between FHS handling cranes, bridge and trolley structures, and their respective rails.

9.14.5 Regarding the statement on Page 9.5-11 of the SAR that, " . . . under normal conditions it will be impossible to carry any object over the spent fuel storage area with either the 40 ton or 5 ton hook of the fuel storage building crane," describe the mechanical stops and the control of their use, and discuss the "abnormal conditions" that would permit movement of the building crane over the spent fuel storage area.

9.14.6 Describe the applicable codes and standards used in the design, fabrication, installation, and testing of the FHS crane, rails, supporting structures, bridge, trolley, hoists, cables, lifting hooks, special handling fixtures, and slings. List the design load rating, preoperational test load, maximum operating loads, and test loads that will be used throughout the life of the facility. Specify the seismic design of this equipment.

9.14.7 Assuming the maximum drop height, discuss, with the aid of drawings where appropriate, the consequences of dropping:

(1) the reactor vessel head on to the open reactor vessel; and

(2) the plenum or upper core barrel assembly into an open reactor vessel.

9.15 Regarding the Service Water System (SWS):

9.15.1 Provide a heat balance diagram of the normal and emergency load requirements on the SWS.

9.15.2 Provide an evaluation of the SWS design with respect to AEC Safety Guide No. 27, Ultimate Heat Sink. Point out areas of agreement with the guide, and in the case of differences, provide the basis regarding acceptability of the present design.

9.16 Regarding the Fire Protection System (FPS):

9.16.1 Reference should be made to the specific portions of the Nuclear Energy Property Insurance Association and National Underwriters Codes or Standards to which the FPS has been designed.

9.16.2 Describe the FPS detection features provided for the control room, the area below the operating level of the turbine-generator, and the facility ventilation systems. Describe the fire extinguishment methods used in the relay room, cable spreading room, and for cable tray runs.

9.16.3 Describe the FPS construction features, i.e., fire barrier walls, automatic fire doors, use of noncombustible material, spatial separation, that have been used to minimize the potential for fires and their propagation.

9.16.4 Discuss the accessibility, with respect to radiation and toxic combustion products, to areas that rely on manual fire protection, and identify these areas.

9.16.5 Discuss the design considerations that were evaluated for extending the FPS from Unit 1 to Unit 3, and include a single failure analysis for this system.

9.16.6 Describe the basis for the sizing of the two 1500 gpm FPS pumps with respect to supplying the maximum sprinkler/deluge demand plus simultaneous hose and hydrant demands. Also provide the characteristic curves of the fire pumps.

9.16.7 Describe how the design of the FPS assures that the normal or accidental operation of the system does not cause an unsafe condition (i.e., flooding of safety related equipment).

9.16.8 Describe the capability of the facility drainage system to control and store FPS sprinkler/deluge output that may become radioactively contaminated.

9.17 For all tanks that contain gas under pressure, i.e., nitrogen, hydrogen, oxygen, air, and carbon dioxide, provide the following: the design and operating pressure; the maximum pressure of the gas supply; the location of the tank; the maximum total energy released if the tank should rupture; the possibility of the tank or parts of the tank to act as a missile; and the protective measures taken to prevent the loss of function of adjacent essential equipment.

9.18 Identify those tanks having bladders in the air space above the stored liquid. Provide your evaluation of the potential for and the consequences of the failure of these bladders. Include a description of the bladder material, its deterioration characteristics, and the related in-service inspection program.

9.19 Regarding the Compressed Air System (CAS):

9.19.1 Provide a P&ID showing isolation, interlock, and emergency provisions, for the CAS.

9.19.2 Provide a summary of CAS component design and operation data.

9.19.3 Delineate the systems essential to plant safety serviced by the CAS instrument air and service air systems. Provide a failure mode and effects analysis on essential system performance.

9.20 Regarding the Heating System (HS):

9.20.1 Provide a P&ID of the HS showing all package boilers serving the common system, Indian Point Units 1, 2, and 3. The diagram should have the steam loads delineated as well as the fuel, fuel supply, a location of the fuel tanks, and their cross connections.

9.20.2 Delineate alternate HS steam circuits available in the event of failure of the common heating circuit.

9.20.3 Determine the mean low winter temperature expected to exist inside the Diesel Generator Building with and without the HS in service. Describe means, if necessary, to avoid freezing of the jacket cooling water, and delineate the engine capability to start within the time required at the temperatures expected.

9.21 Provide component design and operation data for the roughing and HEPA filters in the Primary Auxiliary Building Ventilation System (PABVS).

9.22 Provide a P&ID showing method of shut-off, fire protection provisions, filters, and the capability to meet the single failure criterion for the Control Room Air Conditioning, Heating, and Ventilation System and the PABVS. Describe the performance efficiencies of these systems following the release of airborne radioactivity.

10.0 STEAM AND POWER CONVERSION SYSTEM

10.6 Provide Process and Instrumentation Diagrams for the following systems: Main, Reheat, and Turbine Bypass Steam System; Main Feed and Condensate Return System; Bleed Steam and Heater Drains; Auxiliary Steam and Heating System; Site Boiler Steam Distribution System; Condenser Air Removal and Gland Steam and Exhauster System; Circulating Water System; Demineralized Water and Chemical Treatment System; and Auxiliary Feedwater System.

10.7 Clarify if the condenser system is designed to accept 50 percent of full steam flow through the turbine simultaneous with the remaining 50 percent of full steam flow passing through the steam bypass valves.

10.8 Clarify (Page 10.1-2) what is meant by the term, "condenser isolation." What heat removal capability is available during this abnormal condition?

10.9 Provide the conditions determining availability of the main condenser to accept steam from the steam bypass valves. Delineate the signals, alarm points and automatic actions that permit discharge of steam through the steam bypass valves, or through the power operated relief and code safety valves, or from one or all means simultaneously. Provide a discussion of the safety significance of the alternate methods and their combined use.

10.10 Clarify whether the local manually operated isolation valves provided at each turbine steam bypass control valve are normally open or normally closed. Describe the logic of the normal valve position.

10.11 Describe the design basis for four power operated relief valves and the twenty code safety valves, and their relieving capacity. Describe their manifolding, and the effect of reaction forces should all relieve simultaneously.

10.12 Provide an evaluation of the consequences of the reactor system transient expected to occur assuming that all power operated relief valves in the secondary system fail to open.

10.13 Provide a description of tests on the free swinging disc steam line isolation valves, and on the flow rate venturi intended to limit blowdown following a steam line rupture. Provide a diagram and explain how reverse flow of steam closes the nonreturn valve. List set-points and differential pressures. Evaluate the potential for and consequences of valve closure caused by an abnormal operational event resulting in a pressure reduction rather than an accident-caused condition.

10.14 Describe the bases for the steam generator stop check valve and the steam generator check valve design leakage rates and the acceptance criteria for shop and in-plant tests. Indicate the in-plant testing frequency.

10.15 Describe, with the aid of drawings, the bulk hydrogen storage facility including its location and distribution system. Include the protective measures that would prevent fires and explosions during operations such as purging the electric-generator, as well as during normal operation.

10.16 Provide a description and operating information for the air ejector exhaust monitoring system. Discuss the diversion scheme where air ejector exhaust is automatically diverted to the containment. With the aid of drawings, discuss the measures provided that would prevent pressurizing the containment, or continued release to the atmosphere on failure of equipment intended to divert the gases to the containment.

10.17 Provide your plans regarding the in-service inspections planned for the high pressure-high temperature piping, valves, pumps, and heat exchangers in the main steam and feedwater systems. Describe the program identifying what is to be inspected, the method of inspection, test, and/or nondestructive examination, and the frequency of in-service inspection.

10.18 Provide your plans regarding the in-service inspection program for the turbine-generator. Describe the program identifying what is to be inspected, the method of inspection, test, and nondestructive examination. Delineate the frequency (maximum-minimum) of in-service inspection. As a part of the overall program to be provided, the following information is required to assure that thorough precautionary steps will be taken to detect impending failures before they occur. For the last stage low pressure turbine wheels, describe the calculated crack size, and its location and orientation as well as its rate of growth just before attaining critical crack size. Discuss the methods that will be employed to detect these cracks and the frequency and sensitivity of the in-service inspections using these techniques.

B.0 QUALITY ASSURANCE PROGRAM

B.1 Information is needed to evaluate the adequacy of planning and efforts for the QA Program for reactor fuel. Therefore, discuss the quality assurance programs and quality control checks that are designed to assure the mechanical integrity of your fuel over its anticipated lifetime including the design review effort, review and audit of quality assurance measures and your planned inspections of the fuel upon delivery. Indicate how your QA program with respect to fuel design and fabrication will minimize possible failures from clad hydriding, clad collapes and UO_2 -clad interaction. Describe the efforts to apply the principles and practices of statistical quality control, reliability, and other recognized good practice in this area.