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Re: Consolidated Edison Company of New York (Indian Point, Unit No. 2)
Docket No. 50-247

Gentlemen:

This letter is intended to advise you of further areas of concern of the Citizens Committee for the Protection of the Environment with respect to the ECCS. To the extent that you wish to expedite the hearings on these issues you should respond to these concerns in writing indicating your position on the issue and the documents or evidence upon which you rely to support that position:

A. With respect to Supplement 3 to the Staff Safety Evaluation

pg. 3 - What are all of the changes that have been made in the analysis of the ECCS to correct the erroneous assumption regarding uniform and instantaneous mixing? For instance, have rod quench tests for shattering and rod swelling and bursting tests been redone to reflect variable temperatures in the coolant? How do the non-uniform and non-instaneous mixing effect the predictions on core internal remaining intact during blowdown and post blowdown pressures.

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pg. 3-4 - Which actual test results are relied upon by the Staff in its safety evaluation and in which is there not an exact scaling of parameters affecting system performance?

pg. 4 - What are all of the inadequacies of the currently used calculational techniques to predict accumulator water behavior during blowdown and how have these and similar inadequacies been eliminated in predicting all of the post-blowdown behavior of the accumulators?

pg. 7 - Is the 34 second lag for full rated flow of the pumping system based upon the most conservative assumptions used in prior analysis - i.e. have the worst credible diesel and pump failures been counsidered? Is the 34 seconds the same assumption used by the Applicant in its most recent analysis of the post-LOCA conditions?

pg. 8 - In what way will the operation of the reactor be affected by modifications in the nuclear hot channel factors?

pg. 8 - To what extent have the Idaho tests (845-851) been taken into account in predicting when blowdown will be completed, how much accumulator water actually is lost during blowdown, the path of steam during and after blowdown.

pg. 8-9 - What other changes if any have been made in the ECCS performance calculations? Please explain all of these changes in greater detail.

pg. 9 - Explain the offsetting effect of the changes and the basis for making the changes, - i.e. test results etc. Does the 1550°F temperature occur when the most conservative assumptions (as used in earlier staff and Applicant analysis) are used?

pg. 10 - Under the new analysis what are the rod temperatures at each second following the LOCA until reflooding begins and to what extent do these differ from the rod temperature behavior as originally predicted. To what extent have these rod temperature variations been taken into account in determining flow blockage from rod swelling and bursting and core disassembly such as rod shattering?

pg. 10 - At what rate or rates are the rods assumed to heat up following LOCA and before reflooding begins?

pg. 10 - To what extent is the steam buildup after blowdown taken into account in computing refilling and reflooding time. Explain how the steam generation is assumed to begin only after 20 secs and the basis for your assumptions regarding the steam pressure and the direction of the steam once it begins to build up.

pg. 10-11 - Provide the details, including reference to supporting tests or analysis, upon which your conclusions on steam flow, water pressure, water and steam routes, are based.

pg. 11 - Upon what assumptions tests and analyses is the 80 second peak temperature based? Please identify all of those factors for which a 10% or less error would result in peak temperatures at any time in excess of 2300°F and the basis for the figures used for those factors.

pg. 12 - Upon what test and analyses is the total metal water reaction assumed to be less than 1%. In this regard please indicate the minimum temperature at which you assume metal water reactions will occur and the percent of reaction at that and higher temperatures up to 2300°F.

pg. 12 - What factors or combination of factors assumed in the computation of the metal water reaction would produce a metal water reaction in excess of 1% if there were an error of 10% in the calculated amount for the factor and upon what tests and/or analyses are those factors based?

pg. 13 - At what temperature do you consider fully irradiated (i.e. end of life) fuel rods to be immune from embrittlement failure following quenching and upon what tests and analyses do you base these figures? Please compare and comment upon the rod quench tests conducted by Westinghouse and discussed in the CCPE statement of issues (¶ 3.a.1.f).

pg. 15 - Is a copy of the nonproprietory version of the Westinghouse June 1, 1971, ECCS report now available and if so, will you provide a copy?

pg. 17 - Explain the effect of permitting no steam flow in the intact loops during blowdown on the loss of accumulator water - i.e. at the intact loop inlet to the reactor what effect does the steam by-passing that inlet have on the rate at which accumulator water flows through the intact loop during blowdown and is swept out of the reactor. In particular, upon what tests and analyses is it determined that no more than 25% of accumulator water will be lost during blowdown.

B. With respect to Semiscale Tests 845 through 851 (June 29, 1971):

1. p. I-1 - Why cannot tests which check the adequacy of analytical models used in evaluating ECCS performance be directly applied to the performance of the reactors themselves?

2. p. II-14 - Compare the time in which rupture occurred in the tests to the time in which a double-ended pipe break would occur in a LOCA and explain the effect of the difference, if any, on ECCS performance.

3. p. II-14 - Compare the difference in accumulator water temperature in the tests to actual accumulator water temperature assumed for this plant and explain the effect of the difference, if any, on ECCS performance.

4. p. II-18 - In the Indian Point No. 2 reactor is the water injected directly into the inlet plenum or does it enter the annulus? Compare this to the procedures used in the tests and explain how the differences affect the evaluation of ECCS performance.

5. p. II-27 - In what way, if any, do the pressure drop figures differ from the assumptions used in evaluating the ECCS performance for this plant and how do the differences affect the evaluation?

6. p. III-3 - What is the residual heat build-up rate for the fuel rods used in the semi-scale tests? To what extent does the difference, if any, from the actual heat up rate of nuclear fuel rods affect the ECCS performance?

7. p. III-4-5 - Explain in greater detail the cause of the ECCS failure during the semi-scale tests.

8. p. III-4-5 - Compare the ratio of accumulator water to water in the reactor system for the semi-scale tests to the comparable measurement in this reactor and explain why all accumulator water will not be lost during blowdown. In particular discuss the projected rate of accumulator water flow for the semi-scale tests with the actual rate of flow observed in the tests.

9. p. III-4-5 - Explain what the computer codes being verified in these tests predicted would happen and what actually happen with respect to all observed phenomena where the results differed from the predictions.

10. p. III-7-14 - Compare the results produced here with the predicted results and with the results now being predicted for this plant in the event of a LOCA.

C. With respect to Applicants Additional Testimony (July 13, 1971):

1. p. 3 - How is it more conservative to ignore the effect of core geometry distortion in reaching the 2300°F peak temperature? Does the 2300°F peak temperature calculated for the double-ended pipe break, cold-leg, disregard the effect of core geometry distortion?

2. p. 3 - Compare the two Westinghouse rod burst programs with the ORNL rod burst studies as reported in ORNL - 4635 this year.

3. p. 5 - In what manner was the SATAN-V Code compared to the semi-scale tests 845-851 and what differences in results as to any reported phenomena occurred in those tests than what was predicted by the SATAN-V Code?

4. pp. 9-10 - How does this analysis take account of steam pressure delaying accumulator water reaching the core either by holding it in the loop or sweeping it out of the loop and away from the core both during and after blowdown?

5. p. 10 - To what extent is the assumption regarding water remaining in the downcomer region and lower plenum different from the most conservative assumptions used previously in the FSAR in analyzing the ECCS performance and upon what basis are changes made?

6. p. 10 - Upon what basis are the post-LOCA pre-reflooding-of-the-core conditions assumed to be as stated on this page. List tests and/or analyses to support these conclusions.

7. pp. 10-12 - Provide the figures, tests results and analyses which support the assumptions upon which the effect of the steam (both during and after blowdown) on the reflooding rate is calculated.

8. p. 12 - Compare the performance of the accumulators following blowdown as they are affected by steam with the performance of the accumulators during blowdown as affected by steam. For instance, how does quantity and pressure of steam differ and how does the path the steam takes differ?

Further specification of our concerns will follow as we complete our analyses of these documents and further documents now being provided. We would expect the Staff to be primarily responsible for answering questions under A and B and the Applicant for questions under C although comments by both on all of the concerns will be most helpful.

Sincerely,

Anthony Z. Roisman
Counsel for the Citizens Committee
for Protection of the Environment

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CC: All Parties of Record