Edward M. Gogol
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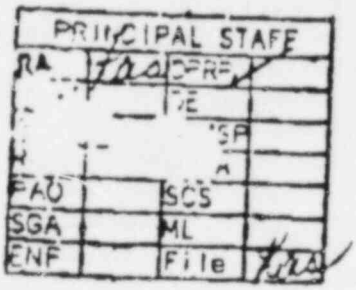
November 29, 1983



PETITION FOR EMERGENCY RELIEF

RE: Primary Containment Leak Rate at LaSalle Units 1 and 2

DOCKETS NO. 50-373 and 50-374

Honorable James Keppler
Director, Region 3
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn IL 60137

Dear Mr. Keppler:

I am writing to notify you of an extremely serious and unsafe condition which now exists at LaSalle Unit 1 with regard to the ability of the primary containment of that reactor to fulfill its design function and provide the level of containment of reactor fission products mandated by law and the reactor's technical specifications.

There exists strong evidence that the Integrated Leak Rate Testing (ILRT) done at LaSalle Unit 1 in Spring, 1982, provides no assurance whatever that the containment leak rate is within the required limit.

Besides being a clear and present danger, this situation represents a gross violation of the requirements of the Atomic Energy Act and 10 CFR Part 50.

Description of the situation:

1. There are severe errors, defects, and loopholes in "American National Standard N45.4-1972, Leakage Rate Testing of Containment Structures for Nuclear Reactors", which Appendix J of 10 CFR Part 50 requires that containment leak rate tests be conducted in accordance with. As a result, ILRT's are conducted in accordance with modified versions of this standard which have not been endorsed.

2. Most of these errors, defects, and loopholes stand uncorrected in the document "ANSI/ANS-56.8-1981: American National Standard Containment System Testing Requirements", which the American Nuclear Society is proposing as a standard to replace the N45.4 standard, and which was basically followed during the 1982 LaSalle test.

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3. The defects in these documents include:

   a. The equation used to calculate the containment air mass at any given time is wrong. This error is the result of an obvious and glaring mistake made during the derivation of this equation. This error was reported as early as 1969 (see References 1 and 2). Errors resulting from the use of the wrong equation may become significant when temperature gradients throughout a containment are not small.

   b. A lack of any prohibition on a wide variety of ways in which the final calculated leak rate may be fudged. These include, but are not limited to:
      i. unjustified discarding of the first part of the mass curve;
      ii. unjustified discarding of data;
      iii. insufficient and unjustified placement of temperature and pressure sensors;
      iv. use of unjustified weighting coefficients;
      v. Invalid and unjustified blockage of leakage pathways;
      vi. Invalid and unjustified use of "B" and "C" type tests as verification of overall containment leak rate; and
      vii. Errors in verification tests.

   c. Loose requirements for permanent archiving of the actual raw, individual temperature and pressure sensor readings, as well as other essential data. If this data is not preserved, meaningful review of an ILR test is impossible - especially in light of the many opportunities described above for fudging the calculated result.

4. It can be mathematically demonstrated that the errors and loopholes in the standards allow the reporting of a leak rate which may be one, or in extreme cases as much as two, orders of magnitude lower than the real leak rate.

To sum up, the ILRT methodology now in use offers no guarantee that actual leak rates are acceptably low. We simply do not know what the actual leak rates are. This is precisely the case with LaSalle Unit 1.

This unacceptable situation represents a fundamental violation of the requirements of 10 CFR Part 50, which requires that reactor containment leak rates be demonstrated to be within certain values for a reactor to obtain and keep an operating license.

Specific problems with LaSalle Unit 1 ILRT:

In July of this year, I filed with the NRC a Freedom of Information Act Request (FOIA-83-384), asking for copies of any and all documents in the NRC's possession regarding Integrated Leak Rate Testing at the LaSalle 1 and 2 and D.C. Cook 1 and 2 reactors, including any and all information on flaws or errors in these tests. The NRC responded, after a very significant delay, by placing various documents regarding LaSalle in the LaSalle Public Document Room, at which I was able to peruse and photocopy them. I have submitted these materials for review to Dr. Zinovy Reytblatt, a specialist on containment leak rate testing.

Dr. Reytblatt informs me that these materials, which pertain to the spring 1982 ILRT conducted at LaSalle 1, are:

a. insufficient to justify the reported leak rate;
b. insufficient to prove that the kind of unjustifiable fudging of the data described above was not done; and
c. insufficient to permit a meaningful review of this test.

Necessary data not provided include:

a. Precise location of temperature and pressure instruments;
b. Compartment subvolume recalculations;
c. Individual sensor weighting factors. It appears that the testing organization simply used temperature averaging over individual compartments;
d. Individual temperature sensor readings;
e. Back-up pressure gauge readings; and
f. Containment ventilation and cooling conditions in effect during the test.

No complete review can be done without such information.

There is strong evidence, however, that the real leak rate may be in excess of the reported value simply because the local temperature range within the containment during the test was at times greater than 40 degrees F. Another adverse factor is a possibility of actual weighting factors being in excess of 0.1, which violates even the faulty standard.

In addition, the materials received were fragmentary, disordered, and in many cases illegible.

In conclusion, there appears to be no justification for the conclusion that LaSalle Unit 1's containment leak rate is within acceptable limits. It appears that the NRC has never received from Commonwealth Edison any materials which can justify any such conclusion.

Relief requested:

I therefore request that you immediately order:

1. that LaSalle Unit 1 be placed in cold shutdown until Commonwealth Edison (CECO) can provide valid proof that its containment leak rate is within the limit mandated by law;

2. that CECO assemble and submit to the NRC all ILR test reports and supporting documents or computer media containing such supporting materials (including material relating to points a-f above) pertaining to LaSalle Units 1 and 2 and Byron Units 1 and 2, including such documents or media which contain the actual raw test data;

3. that the NRC immediately release copies of all this material to me so that an independent review can be done;

4. that the NRC immediately commence its own review of these tests; and

5. that Commonwealth Edison be ordered to conduct no further Integrated Leak Rate Testing until all errors and defects in the test methodology have been corrected.

The public interest, as well as 10 CFR Part 50, demands that this extremely serious situation be corrected. I shall expect to hear from you immediately.

Sincerely,

Edward M. Gogol

cc. Congressman Sidney Yates

References:

1. See pages 33-34 of:
BNWL-1028, UC-80, Reactor Technology: Air Leakage Rate Studies on the C.S.E. Containment Vessel.
by M.E. Witherspoon and G.J. Rogers, Reactor Engineering Department, Physics and Engineering Division,
Battelle Memorial Institute, Pacific Northwest Laboratories.
September 1969.

2. Report 0183: Critique of Containment System Test Requirements
By Z. Reytblatt, Extran Inc., POB 2849, Chicago IL 60690

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 16, 1983

Docket Nos.: STN 50-454/455
and 50-373/374

Mr. Edward M. Gogol
154 Linden
Glencoe, Illinois 60022

Dear Mr. Gogol:

This letter acknowledges receipt of three Petitions for Emergency Relief submitted by you to the U. S. Nuclear Regulatory Commission on November 29, 1983. One petition was directed to the Chairman of the Nuclear Regulatory Commission. The second petition was directed to the Regional Administrator of Region III and the third petition was directed to my office. As all petitions address substantially the same issue, that is, the adequacy of the containment integrated leak rate testing which has been conducted at U. S. nuclear power reactors, your petitions are being consolidated. And, as the issue you raise is primarily one related to the licensing of commercial nuclear reactor facilities, the Office of Nuclear Reactor Regulation will provide the substantive response to all three petitions.

Your petitions are being treated under 10 CFR 2.206 of the Commission's regulations and appropriate action will be taken on your petitions within a reasonable time. While your petitions seek immediate action with respect to the allegations which those petitions raise, specifically placing La Salle County Unit 1 of Commonwealth Edison Company in cold shutdown, ceasing further construction and licensing activities with respect to La Salle County Unit 2 and Byron Unit 1, and shutting down reactors with insufficient evidence of adequate containment leak rate testing, I decline to take such actions based upon the preliminary evaluation of your petitions and other information, including a December 13, 1983 response from Commonwealth Edison regarding your petitions.

You contend that there are severe errors, defects, and loopholes in both ANS N45.4-1972 and ANSI/ANS 56.8-1981, and that the ILRT methodology now in use offers no guarantee that actual leak rates are acceptably low. The specific defects alleged in your petitions include:

1. The equation used to calculate the containment air mass at any given time is wrong;

2. The final calculated leakage rate may be "fudged"; and

3. There are "loose" requirements for permanent archiving of actual raw data and other essential data.

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The Commission's requirements for integrated leak rate testing (ILRT) are set out in 10 CFR 50.54(o) and Appendix J to 10 CFR 50. These requirements call for preoperational and periodic leak rate testing in accordance with American National Standard N45.4-1972, "Leakage Rate Testing of Containment Structures for Nuclear Reactors." American National Standard ANSI/ANS56.8-1981, "Containment System Leakage Testing Requirements" is an industry concensus document which provides detailed guidance for performing the ILRT required by Appendix J.

With regard to Item 1, the equation presented in ANSI/ANS 56.8-1981 for calculating containment mass is not wrong as you allege. The manner in which the mean containment temperature is calculated for use in the equation, however, could be clarified. In this regard, ANSI/ANS 56.8-1981 does not prescribe how to calculate the mean containment temperature. Either a mass-weighted mean temperature or a volume-weighted mean temperature would be acceptable. While the use of a volume-weighted temperature is technically more correct, for reasonably well stabilized containment test conditions, as required by Appendix J, the error that could result from using the mass-weighted mean temperature is not significant. What is necessary then is assurance that the entire ILRT program is conducted to assure stable conditions and proper evaluation of test data.

A test so conducted would not likely be flawed by the type of deficiencies you allege in the second item of your petitions, such as unjustified discarding of data or the use of unjustified weighting coefficients. The manipulation of data in the manner you suggest in the second item of your petition would be a violation of the Commission's regulations. To assure compliance with the ILRT requirements, NRC inspectors generally observe these tests and document the results of their observations. For example, the ILRT inspection for La Salle County Units 1 and 2 are documented in the following inspection reports:

Inspection Report 50-373/82-25 (June 9, 1982) - Unit 1
Inspection Report 50-373/82-32 (July 29, 1982) - Unit 1
Inspection Report 50-373/83-28; 50-374/83-23 (DE) (July 28, 1983) - Unit 2

Based on these inspections, we find that the licensee's Containment Integrated Leak Rate Tests for both La Salle County Units 1 and 2 meet the current regulatory requirements contrary to the allegations in your petitions.

In addition, prior to the licensing of Byron Unit 1, a similar inspection effort will be undertaken. Also, a similar effort has been undertaken each time an ILRT is performed at a licensed commercial power reactor thus providing assurance that the Commission's requirements are met.

With respect to Item 3, consistent with 10 CFR 50.34 and Criterion XVII of Appendix B to 10 CFR 50, licensees of commercial power reactors are required to retain records which furnish evidence of activities affecting quality of safety-related items including the reactor containment. Furthermore, the Technical Specifications, which form a part of the operating license for each plant, require the permanent retention of records associated with inservice inspections and tests required by the Technical Specifications. The ILRT is one of those inservice inspections and tests called out in the Technical Specifications. Finally, the NRC staff has assured itself that ILRT records do in fact exist and are being so retained at La Salle County and Byron.

As you are aware from your participation, and that of Dr. Zinovy Reytblatt, in the activities of Working Group ANS-56.8 of the Standards Committee of the American Nuclear Society, efforts are underway to more clearly articulate the procedures and conditions governing the conduct of integrated leak rate tests. Consequently, the participants of this group have the benefit of your concerns. These efforts could result in appropriate modifications to Appendix J to 10 CFR 50 at a future date.

The NRC staff will continue to review your petitions, and I will issue a formal decision with regard to them in the reasonably near future. A copy of the notice that is being filed for publication with the Office of the Federal Register is enclosed here for your information.

Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
Commonwealth Edison Company

[7590-01]

NUCLEAR REGULATORY COMMISSION

REQUEST FOR ACTION UNDER 10 CFR 2.206 REGARDING
INTEGRATED CONTAINMENT LEAK RATE TESTING
AT COMMERCIAL NUCLEAR POWER FACILITIES

Notice is hereby given that, by three petitions dated November 29, 1983, Edward M. Gogol sought emergency relief and immediate action to remedy alleged inadequacies in the conduct of integrated leak rate testing at U. S. nuclear power reactors, including specifically La Salle Units 1 and 2 and Byron Units 1 and 2. Severe errors, defects, and loopholes are alleged in the integrated leak rate testing methodology now in use. A variety of relief is requested including placing La Salle Unit 1 in cold shutdown, ceasing further construction and licensing activities with respect to La Salle Unit 2 and Byron Unit 1, and shutting down reactors with insufficient evidence of adequate containment leak rate testing. The petitions are being treated pursuant to 10 CFR 2.206 of the Commission's regulations and, accordingly, appropriate action will be taken on these requests within a reasonable time. A copy of the petitions are available for inspection in the Commission's public document room, 1717 H Street, NW, Washington, DC 20555 and at the local public document room for the La Salle Station, Units 1 and 2 at Illinois Valley Community College, Rural Route #1, Oglesby, Illinois 61348 and Byron Units 1 and 2 at Rockford Public Library, 215 N. Wyman Street, Rockford, Illinois 61101 and Byron Public Library, 218 W. Third Street, Byron, Illinois 61010.

Dated at Bethesda, Maryland, this 16th day of December 1983.

FOR THE NUCLEAR REGULATORY COMMISSION

Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

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