

Edward M. Gogol  
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November 29, 1983

PRINCIPAL STAFF			
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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.

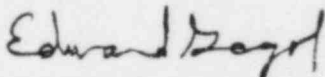
Relief requested:

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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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 LaSalle 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 LaSalle Unit 1 in cold shutdown, ceasing further construction and licensing activities with respect to LaSalle 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, N.W., Washington, D.C. 20555 and at the local public document room for the LaSalle Station, Units 1 and 2 at [ ] and Byron Units 1 and 2 at [ ].

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

FOR THE NUCLEAR REGULATORY COMMISSION

Harold R. Denton, Director  
Office of Nuclear Reactor Regulation



MAR 14 1984

MEMORANDUM FOR: Commissioner Gilinsky

FROM: William J. Dircks  
Executive Director for Operations

SUBJECT: ACCURACY OF STATEMENTS IN RECENT CONGRESSIONAL TESTIMONY

As we have discussed, several of the remarks concerning the hearing process and related staff actions contained in your prepared testimony presented to the Udall and Simpson Committees, and repeated in the Energy Daily for March 6, 1984, bother me. I am concerned by the implication of these remarks that you believe, and that others may therefore conclude, that the NRC staff is not playing fair in the way it processes licensing applications. I have discussed this matter with you previously, and have spent additional time looking into it to see if I can find the basis for the specific charges contained in your testimony. Obviously, had I been able to find substantial justification for your perception, I would take the appropriate steps to initiate corrective action. However, I am unable to find that the charges that you have made are supported by the facts. This memorandum sets forth what I have found.

With regard to the Atomic Safety and Licensing Board decision regarding Byron, you stated that the staff "tried to circumvent the Licensing Board's review of the plant's quality assurance program and failed to inform the Board promptly of some of the problems at the plant." In our recent conversation, you told me that you were simply repeating the findings made by the Board.

A careful reading of the ASLB decision makes it clear that it does not support the harsh conclusions drawn by you. There are statements in the initial decision that "the relevance and importance of the reinspection program at Byron to the licensing review . . . and to the quality assurance litigation is, and has been, obvious" (Finding D-411), that the staff's original testimony "made no mention whatever of a reinspection program" (Id.), and that the failure to address the reinspection program in the original testimony "has never been explained by the staff nor understood by the Board" (Finding D-414). The ASLB explains this "initial slighting of the issue of the reinspection program" on the basis of "what appears to be the staff's misunderstanding" of the circumstances under which hearing matters may be delegated for post-hearing resolution (Finding D-418).

I do not believe that these ASLB statements support your conclusion that the staff "circumvented" the ASLB and (impliedly with improper motives) "failed to inform the Board promptly of some of the problems at the plant."

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The ASLB was informed of the specific staff inspection findings which created the need for the reinspection program no later than September 1982, when Inspection Report No. 82-05 was attached as support for an intervenor's motion to reconsider summary disposition of another quality assurance contention. The staff's original testimony, filed in February of 1983, addressed the broad averments of the contention and briefly mentioned Inspection Report No. 82-05. The specific noncompliance relating to Hatfield Electric Co. (No. 82-05-19) was described as an open item in the attachment to the Staff testimony. During cross examination by applicant on April 7, 1983, the Staff witnesses discussed the ongoing reinspection program (Tr. 3657-59). The ASLB in its initial decision acknowledges that a reference to Noncompliance No. 82-05-19 was included in the Staff's original testimony and concedes that this "escaped our [the Licensing Board's] attention initially." (Finding D-43).

In a nutshell, I think it is clear that the Board, in its decision, was telling the staff that it should have informed the Board sooner and in more detail about the reinspection program, but that it understands the staff did not do so because it thought that resolution of the issues subject to the reinspection program could properly be delegated to the staff. I read nothing in the Board decision as implying improper motivation. Your contrary reading of the decision, erroneous in my view, is that the staff didn't tell the Board any earlier or in any more detail because it was improperly trying to keep the matter from coming to the Board's attention in order that it could resolve the matter in its own way and on its own schedule.

Another element of your testimony which gives me concern is the allegation that "the NRC staff and the Byron owners are currently in discussions, to which the Commission is not privy, on how best to extract the license from the Boards." There are absolutely no such discussions going on, nor have any taken place in the past. The closest thing to such discussions (and not very close at that) was the large meeting held in the Maryland National Bank Building on January 17, 1984 which was attended by your assistant Bill Manning. All Commissioners' offices were notified of the meeting in advance and copies of the minutes were distributed to all parties to the Byron proceeding, to the Boards, and to the Commission by both the staff and Mr. Manning.

The purpose of that meeting was not to discuss the "extraction of the license from the Boards," but rather to discuss the underlying technical issues which led the Byron Board to reject the license and the current status of the resolution of those issues. In addition, the Applicant explained that it was weighing two procedural options: asking the ASLB to reopen the record or pursuing an appeal to the Appeal Board, possibly coupled with a request that the Appeal Board itself take additional evidence. The staff made it clear that Commonwealth Edison would have to make that choice itself and that the staff could not provide advice.

Finally, I must take exception to your charge that "in the TMI-1 case, the NRC staff and the Chairman of the Board of GPU have apparently agreed upon a change in the top management of GPU Nuclear. Again the Commission is on

the sidelines." Over the past several years, I have had a number of meetings with the Chairman of the Board of Directors of GPU, William Kuhns, and the President of GPU, Herman Dieckamp. Within the last year, several of those conversations have indeed touched upon reorganization of GPU Nuclear. For example, Mr. Kuhns and Mr. Dieckamp met with me in late May or early June of 1983 and outlined what was shortly thereafter submitted as their June 10th proposal. That proposal did not involve, nor did we discuss, a change in "the top management of GPU Nuclear" (except for the proposed shift in emphasis of the duties of Bob Arnold, then President of GPU Nuclear, to focus on TMI-2 and Oyster Creek, while Phil Clark, his Executive Vice President, would focus on the TMI-1). I had no advance notice of the changes in top management of GPU Nuclear which subsequently took place. I learned of the resignation of Bob Arnold only when it was publicly announced at the time of an open Commission meeting. I was informed by Mr. Kuhns of the resignation of Herman Dieckamp, from the position of Chairman of the Board and Chief Executive Officer of GPU Nuclear, after the Board of Directors had finally approved such action. I had no advance notice. Upon receiving this information from Mr. Kuhns, I had Guy Cunningham, who was with me at the time, promptly inform each Commissioner's office, since the action had not yet been publicly announced.

I have taken the time to detail the basis for my belief that your recent testimony contained substantial inaccuracies because I am convinced that such inaccuracies do a substantial disservice to the Commission. They present a picture--totally untrue--of an NRC staff, in league with license applicants, running amuck in its efforts to aid these applicants at all costs in circumventing the established procedures of Licensing and Appeal Boards and the Commission, to obtain their licenses. Coming from a Commissioner, such charges are likely to be given more than ordinary credence, and can only further erode public confidence in the licensing process. I, and many others, share your frustrations over the workings of the existing hearing process, the limitations of the ex-parte and separation of functions rules, and the consequences of the existing role of the staff in the hearing process. The underlying causes of this frustration will not be eliminated by the repetition of distorted and exaggerated charges of improper dealings on the part of the Commission's own staff.

(Signed) William J. Dircks

William J. Dircks  
Executive Director for Operations

cc: Chairman Palladino  
Commissioner Roberts  
Commissioner Asselstine  
Commissioner Bernthal

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Edward M. Gogol  
154 Linden  
Glencoe IL 60022  
(312) 835-3988

November 29, 1983

PETITION FOR EMERGENCY RELIEF

RE: Primary Containment Leakage and Integrated Leak Rate Testing at all  
U.S. nuclear power reactors

Honorable Nunzio Palladino  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington DC 20555

Dear Mr. Palladino:

I am writing to notify you of an extremely serious and unsafe condition which now prevails with regard to Integrated Leak Rate Testing (ILRT) of U.S. nuclear power reactor containments, and to request emergency action on your part to correct this situation. 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.
2. 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.
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 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;

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- 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.
  - 5. Integrated leak rate tests at U.S. power reactors have been conducted in this faulty manner since at least the 1960's.
  - 6. This situation has persisted, and persists today, despite the fact that the Nuclear Regulatory Commission staff, the American Nuclear Society, Oak Ridge National Laboratory, and Sargent and Lundy were notified of it years ago.

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. There is evidence, however, that at least one or several U.S. containments may have drastically higher leak rates than has been reported, and than the technical specifications for these plants allow.

If a Three Mile Island-type accident were to occur at a reactor with an unacceptably high containment leak rate (one that had not been detected by a faulty ILR test), radioactive contamination of the surrounding area could be severe. The immense fission product inventory of the core would not be contained to the degree mandated by law.

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.

This situation also violates the Atomic Energy Act - indirectly since it violates 10 CFR Part 50, and directly since the Atomic Energy Act mandates that atomic reactors may only be licensed if such licensing is consistent with protecting the public health and safety.

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 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. It appears that the testing organization simply used temperature averaging over individual compartments;
- c. Individual sensor weighting factors;
- 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.

There appears, therefore, to be no justification whatever for any 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.

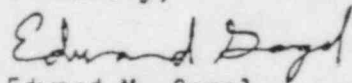
Relief requested:

I therefore request that you immediately order:

1. that LaSalle Unit 1 be placed in cold shutdown until Commonwealth Edison (CECO) has provided to the NRC valid proof that its containment leak rate is within the limit mandated by law;
2. that all further construction and licensing activities on LaSalle Unit 2 and Byron Unit 1 be halted until CECO has provided to the NRC complete and valid proof that their containment leak rates are within the limit mandated by law;
3. that the NRC staff immediately order CECO to submit complete ILRT reports and all supporting documentation, of the most recent ILRT's done at LaSalle Units 1 and 2, and Byron Unit 1;
4. that the NRC immediately release all such materials to me, including that described in "Necessary data not provided", points a-f above;
5. that a moratorium be placed on further Integrated Leak Rate Testing until all errors and defects in the test methodology have been corrected;
6. that the NRC notify all U.S. reactor owners of this unsafe situation;
7. that the NRC order all U.S. reactor owners to assemble all ILR test reports and supporting documents or computer media containing such supporting materials, including such documents or media which contain the actual raw test data; and to supply this material or copies thereof to the NRC;
8. That the NRC commence an urgent program to promulgate a correct, valid methodology for Integrated Leak Rate Testing; and initiate a rule-making procedure to obtain the adoption of this new methodology; and
9. that the most recent ILR tests done at all U.S. reactors be reviewed immediately, and reactors ordered closed where there is not sufficient evidence of containment leak rates within the legal limits..

The public safety, as well as the law you are sworn to uphold, demands that this extremely serious situation be corrected. I shall expect to hear from you immediately.

Sincerely,



Edward M. Gogol

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



Edward M. Gogol  
154 Linden  
Glencoe IL 60022  
(312) 835-3988

November 29, 1983

PETITION FOR EMERGENCY RELIEF

RE: Primary Containment Leakage and Integrated Leak Rate Testing at all  
U.S. nuclear power reactors

Honorable Harold Denton  
Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington DC 20555

Dear Mr. Denton:

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- v. Invalid and unjustified blockage of leakage pathways;
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- 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.
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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.

This situation also violates the Atomic Energy Act - indirectly since it violates 10 CFR Part 50, and directly since the Atomic Energy Act mandates that atomic reactors may only be licensed if such licensing is consistent with protecting the public health and safety.

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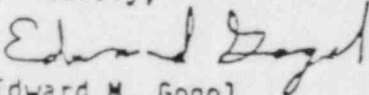
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I therefore request that you immediately order:

1. that LaSalle Unit 1 be placed in cold shutdown until Commonwealth Edison (CECO) has provided to the NRC valid proof that its containment leak rate is within the limit mandated by law;
2. that all further construction and licensing activities on LaSalle Unit 2 and Byron Unit 1 be halted until CECO has provided to the NRC complete and valid proof that their containment leak rates are within the limit mandated by law;
3. that the NRC staff immediately order CECO to submit complete ILRT reports and all supporting documentation, of the most recent ILRT's done at LaSalle Units 1 and 2, and Byron Unit 1;
4. that the NRC immediately release all such materials to me, including that described in "Necessary data not provided", points a-f above;
5. that a moratorium be placed on further Integrated Leak Rate Testing until all errors and defects in the test methodology have been corrected;
6. that the NRC notify all U.S. reactor owners of this unsafe situation;
7. that the NRC order all U.S. reactor owners to assemble all ILR test reports and supporting documents or computer media containing such supporting materials, including such documents or media which contain the actual raw test data; and to supply this material or copies thereof to the NRC;
8. That the NRC commence an urgent program to promulgate a correct, valid methodology for Integrated Leak Rate Testing; and initiate a rule-making procedure to obtain the adoption of this new methodology; and
9. that the most recent ILR tests done at all U.S. reactors be reviewed immediately, and reactors ordered closed where there is not sufficient evidence of containment leak rates within the legal limits.

The public safety, as well as the law you are sworn to uphold, demands that this extremely serious situation be corrected. I shall expect to hear from you immediately.

Sincerely,

  
Edward M. Gogol

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



Edward M. Gogol  
154 Linden  
Glenview IL 60022  
(312) 835-3988

November 29, 1983

PRINCIPAL STAFF	
RA	TAC/PRF
SA	SA
FAO	SCS
SGA	ML
ENF	File

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.

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.

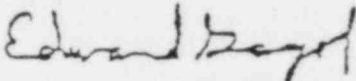
Relief requested:

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.F. Containment Vessel.  
by M.E. Witherspoon and G.J. Rogers, Reactor Engineering Department, Physics and Engineering Division,  
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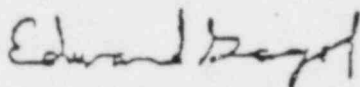
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