



**Commonwealth Edison**  
1400 Opus Place  
Downers Grove, Illinois 60515

July 13, 1994

Mr. William T. Russell, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Response to Request for Additional Information Relating to the  
Request to Amend Technical Specification Section 3/4.4.5,  
"Steam Generators"

Braidwood Station Unit 1  
NPF-72; NRC Docket No. 50-456

- References:
- 1) N. J. Liparulo (Westinghouse) letter to B. Sheron (NRC) dated July 13, 1994, addressing the proprietary nature of Westinghouse supplied information
  - 2) R. Assa letter to D. Farrar dated July 7, 1994, transmitting a Request for Additional Information
  - 3) D. Saccomando letter to W. Russell, dated June 20, 1994, transmitting a request to amend Technical Specification Section 3/4.4.5, "Steam Generators"

Dear Mr. Russell:

Reference 2 (attached) transmitted a Nuclear Regulatory Commission Request for Additional Information pertaining to Commonwealth Edison Company's request to amend Section 3/4.4.5 of Technical Specifications for Braidwood Unit 1, as transmitted in Reference 3.

Attachment 1 provides the requested information regarding primary-to-secondary leakage monitoring. Attachments 2 and 3 address the questions pertaining to the tube support plate deflection analysis.

Please note that Attachments 2 and 3 contain proprietary information as specified in the attached Westinghouse letter (NTD-NRC-94-4197) dated July 13, 1994. This letter defines how Westinghouse Corporation will comply with the requirements of 10 CFR 2.790. Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure.

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July 13, 1994

Correspondence with respect to the proprietary aspects of Attachments 2 and 3 should be addressed to N. J. Liparulo, Manager of Nuclear Safety & Regulatory Activities, Westinghouse Electric Corporation, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

If you have any questions concerning this correspondence please contact this office.

Sincerely,

*Joseph A. Bauer for*  
Denise M. Saccomando  
Nuclear Licensing Administrator

Attachments

cc: R. Assa, Braidwood Project Manager-NRR  
S. Dupont, Senior Resident Inspector-Braidwood  
B. Clayton, Branch Chief-Region III  
Office of Nuclear Facility Safety-IDNS



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

July 7, 1994

Docket No. STN 50-456

Mr. D. L. Farrar  
Manager, Nuclear Regulatory Services  
Commonwealth Edison Company  
Executive Towers West III, Suite 500  
1400 OPUS Place  
Downers Grove, Illinois 60515

Dear Mr. Farrar:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (TAC NO. M89116)

By letter dated June 20, 1994, Commonwealth Edison Company (ComEd) requested a revision to Technical Specification (TS) 3/4.4.5, "Steam Generators." The revision would allow Braidwood, Unit 1, to continue operations pass the 100 day limit imposed by Amendment No. 50 issued on May 7, 1994. Prior to the amendment request, by letter of May 4, 1994, ComEd submitted information concerning primary-to-secondary leakage monitoring. Based on our review of your submittals, we have determined that we need additional information to continue our review. The enclosed list of questions identifies the information needed. The questions are in two parts: part one seeks to clarify the information you provided regarding the leakage monitoring and part two addresses the tube support plate deflection analysis. Please review these questions and submit your response by July 13, 1994. The staff requests your prompt response to these questions in order to support your requested date for completion of this review.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Should you have any further questions regarding this request, please contact me at (301) 504-1391.

Sincerely,

Ramin R. Assa, Acting Project Manager  
Project Directorate III-2  
Division of Reactor Projects -III/IV  
Office of Nuclear Reactor Regulation

Enclosure:  
Request for Additional  
Information

cc w/enclosure:  
See next page

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Mr. D. L. Farrar  
Commonwealth Edison Company

Braidwood Station  
Unit 1

cc:

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Westinghouse Electric Corporation  
Energy Systems Business Unit  
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Pittsburgh, Pennsylvania 15230

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Office of Nuclear Facility Safety  
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Springfield, Illinois 62704

Mr. Ron Stephens  
Illinois Emergency Services  
and Disaster Agency  
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Springfield, Illinois 62706

Commonwealth Edison Company  
Braidwood Station Manager  
Rt. 1, Box 84  
Braceville, Illinois 60407

EIS Review Coordinator  
U.S. Environmental Protection Agency  
77 W. Jackson Blvd.  
Chicago, Illinois 60604-3590

REQUEST FOR ADDITIONAL INFORMATION  
TO SUPPLEMENT REQUESTED TECHNICAL SPECIFICATION AMENDMENT  
COMMONWEALTH EDISON COMPANY  
BRAIDWOOD STATION, UNIT 1

1. The response offered in the attachment to ComEd's letter of May 4, 1994, addressed the expected impact of installing N-16 steam line monitors. The response discussed existing radiation monitoring capabilities considered equivalent to N-16 monitors. To more clearly compare the monitoring methods, please address the following:
  - a. Furnish a comparison of the sensitivity of the steam jet air ejector/gland steam process radiation monitor and the N-16 monitor considered under the proposal to install N-16 monitors discussed in the May 4, 1994, letter. Sensitivity should be characterized by the minimum detectable primary-to-secondary leakage levels compared at the same power level, the response time of the instruments, and the delay involved from instrument leakage response to indication available in the control room. Also contrast the ability of the monitoring methods to differentiate the leaking steam generator (SG) in terms of the time from leak initiation to indication available to the operators.
  - b. Considering the detection methods covered in 1(a), discuss the ability to furnish leak rate trending information to the control room operators.
  - c. Explain how the portable N-16 monitor is to be used during a primary-to-secondary leak event. Include what conditions prompt its use, how the instrument is calibrated, the time required to obtain an indication from the time an order is issued to use the portable monitor. Also furnish a sensitivity comparison of this device to the permanently installed monitoring equipment as discussed under 1(a).
  - d. Discuss, in detail, the method used to estimate primary-to-secondary leak rate from area radiation monitors and process radiation monitor indications.
  - e. Regarding the monitoring methods discussed in 1(a) and 1(c), compare the work load encountered by the operators during a tube failure event. Discuss sources of errors and chances of operator faults for the monitoring alternatives.

2. The first step in the tube support plate (TSP) deflection analysis is to predict the hydraulic loads on the TSPs during a limiting event. The TRANFLO code was used to calculate the loads for a steam line break (SLB) occurring from hot standby and normal operating conditions for the D3 SG design and from operating conditions for the D4 design (it is our understanding that further analysis for the D4 design is underway). In order to take any credit for the TSP deflection analysis, more information is needed to qualify the results of the hydraulic loading calculations.
  - a. Provide detailed information on the noding used in the TRANFLO model, i.e., for the noding used in WCAP-14046, give volumes and junction flow areas, loss coefficients and flow areas they are based on, and heat slabs in the model. Supplement this with detailed diagrams of the D4 SG internal layout, showing dimensions and all internal components. Provide details of the initial secondary flow distribution for the SLB calculation.
  - b. Explain, in further detail, why the secondary side SG water levels chosen for the analyses are most conservative. Were sensitivity studies performed to determine the effect of varied water level?
  - c. Provide complete documentation on the TRANFLO code, including all changes made since WCAP-8821, "TRANFLO Steam Generator Code Description" (September 1976) was issued. Include experimental data used for verification and results of TRANFLO simulations used in the verification.
  - d. Discuss the assumptions and uncertainties associated with the TRANFLO model. Include an assessment of the level of uncertainty of the differential pressures depicted in the graphs in Chapter 4 of WCAP-14046.
  - e. Discuss the extent to which pressure differentials on the TSPs may be asymmetric about the SG centerline.
  - f. Does TRANFLO account for acoustic effects at the initiation of the SLB event? If not, what is the expected magnitude of such an effect compared to the differential pressures determined by TRANFLO?
  - g. Page 4-10 of WCAP 14046 states that "pressures are scaled" and that "pressure drops were modified" in the hydraulic analysis for application to the structural analysis. Please explain in detail the procedure referred to by these statements.