

Commonwealth Edison Company  
LaSalle Generating Station  
2601 North 21st Road  
Marseilles, IL 61341-9757  
Tel 815-357-6761



January 21, 2000

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

LaSalle County Station, Units 1 and 2  
Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373 and 50-374

Subject: Response to Request for Additional Information  
License Amendment Request for Power Uprate Operation

- References: 1) Letter from R. M. Krich, Commonwealth Edison (ComEd) Company, to U.S. NRC, "Request for License Amendment for Power Uprate Operation," dated July 14, 1999.
- 2) Letter from D. M. Skay, U.S. NRC, to , Commonwealth Edison (ComEd) Company, "Request for Additional Information – LaSalle County Station, Units 1 and 2 (TAC Nos. MA6070 and MA6071) dated November 29, 1999.

In the Reference 1 letter, pursuant to 10 CFR 50.90, we proposed to operate both LaSalle County Stations at a uprate power level of 3489 MWT. In the Reference 2 letter, the NRC requested additional information concerning the proposed amendment to support their review. The attachment to this letter provides our response to the request for additional information.

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Should you have any questions concerning this letter, please contact  
Mr. Frank A. Spangenberg, III, Regulatory Assurance Manager, at  
(815) 357-6761, extension 2383.

Respectfully,

A handwritten signature in black ink, appearing to read "Jeffrey A. Benjamin". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jeffrey A. Benjamin  
Site Vice President  
LaSalle County Station

Attachment

cc: Regional Administrator - NRC Region III  
NRC Senior Resident Inspector - LaSalle County Station

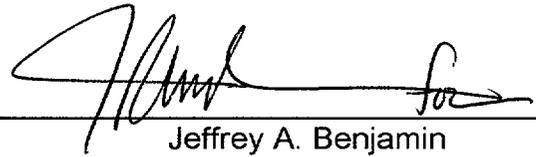
STATE OF ILLINOIS )  
IN THE MATTER OF )  
COMMONWEALTH EDISON COMPANY )  
LASALLE COUNTY STATION - UNIT 1 & UNIT 2 )

Docket Nos. 50-373  
50-374

Subject: Response to Request for Additional Information License  
Amendment Request for Power Uprate Operation

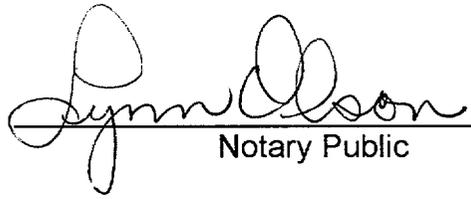
**AFFIDAVIT**

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
Jeffrey A. Benjamin  
Site Vice President  
LaSalle County Station

Subscribed and sworn to before me, a Notary Public in and for the State above named, this 21st day of January, 2000.  
My Commission expires on 8-12-2000.



  
\_\_\_\_\_  
Notary Public

**Attachment**  
**Response to Request for Additional Information**

Question 1:

Attachment A to the July 14, 1999, submittal, page 5, states: "NRC approved computer codes and calculation techniques were used to perform the calculations that demonstrate meeting the stipulated criteria."

- (a) Identify all codes/methodologies used to obtain safety limits and operating limits.
- (b) Identify and discuss any limitations associated with these codes/methodologies that may have been imposed by the Staff.
- (c) How has ComEd ensured that the codes were used correctly by General Electric for the LaSalle power uprate conditions and the limitations and restrictions were followed by GE appropriately?

Question 1a:

Identify all codes/methodologies used to obtain safety limits and operating limits.

Response 1a:

The power uprate process uses approved codes and methodologies as documented in the NRC approved License Topical Report 1 (LTR1), NEDC-31897P-A, "Generic Guidelines for General Electric Boiling Water Reactor Power Uprate," dated May 1992.

General Electric (GE) and Sargent and Lundy (S&L) companies performed the calculations referenced in our July 14, 1999 submittal. A list of the codes used by GE to perform power uprate analyses is provided in Table 1a-1. A list of the codes used by S&L to perform power uprate analyses is provided in Table 1a-2.

The GE safety analyses performed in support of the LaSalle Power Uprate License Amendment Request, submitted on July 14, 1999, used GE's standard analysis codes and application methodologies. The GE analysis codes and methodologies have been developed and approved for application to a wide range of GE BWR plant types and operating conditions. The power uprate operating and accident conditions analyzed for LaSalle are within the range of analysis experience for GE BWRs and are within the allowed range of code and methodology application.

These codes used by S&L are standard codes used in the original licensing of LaSalle County Station. The major difference between the original codes and the codes utilized for power uprate is that the original codes were run on mainframe computers while the current versions of the codes utilized for the power uprate analysis are run on personal computers.

**Table 1a-1**

**GE Computer Codes Used for Power Uprate Analyses**

Evaluation Subject	Computer Code	Version or Revision	NRC Approved	Reference
Recirc. Pipe Whip Restraint Impact	PDA	Revision 0	Yes	NEDE-10813A, Feb. 1976
Reactor Internals	CRTF102	Revision 2	Yes	NEDE-25363, Dec. 1980
	SEPRE01	Revision 1	Yes	NEDE-23862, Aug. 1978
	SEISM03	Revision 3	Yes	NEDE-23865, Aug. 1978
	SEPST02	Revision 2	Yes	NEDE-23864, Aug. 1978
Reactor Internals Pressure Difference	LAMB	Version 07V	Yes	NEDE-20566A; see Note 7
	TRACG	Version 01	Yes	NEDE-32178P; see Note 1
	ISCOR	Version 09V and 09A	Yes	NEDE-24011-P-A
Reactor Vibration - External	NASTRAN	Version 67	No	See Note 9
Reactor Vibration - Internal	SAP4G07	Revision 7	Yes	NEDE-10909, Dec. 1979
Containment Evaluations	M3CPT	Version 05V	Yes	See Note 2
	LAMB	Version 07V	Yes	NEDE-20566A; see Note 7
	SHEX	Version 04V	No	See Note 3
	PICSM	Version 01V	Yes	See Note 2
ECCS-LOCA and Appendix R - Fire Protection	SAFER/GESTR-LOCA	Version 04V	Yes	See Note 4
	LAMB	Version 08V	Yes	NEDO-20566A, Sept. 1986
	SCAT	Version 01	Yes	NEDO-20566A, Sept. 1986
	TASC	Version 03V	Yes	NEDO-20566A, Sept. 1986; see Note 8
Radiation Sources and Fission Products	ORIGEN2	Version CCC-371A, 8/6/91	Industry Code	ORNL/TM-7175, A Users' Manual for the ORIGEN2 Computer Code, July 1980
Transients	ODYNV	Version 09V	Yes	NEDE-24011-P-A
	TASC	Version 3V	Yes	GENE-666-03-0393, March 1993; see Notes 5 and 8
	PANACEA	Version 10V	Yes	NEDE-24011-P-A
ATWS	ODYNV	Version 09V	Yes	NEDC 24154P Supplement 1, Vol. 4
	TASC	Version 03V	Yes	NEDE-24222, Dec. 1979; see Notes 5 and 8
	STEMP	Version 03V	Yes	NEDE-24222, Dec. 1979; see Note 6

Table 1a-1 Notes:

1. TRAC is an industry code, used by many others, including the NRC. TRACG is the GE version of TRAC. The stated reference is for application to SBWR licensing safety analysis. TRACG results have been submitted to the NRC as a best-estimate benchmark in many applications.
2. M3CPT and PICSM were reviewed as part of the generic containment load definition review.
3. SHEX has not been explicitly reviewed by the NRC. It is a containment heat balance model and has been used to calculate suppression pool temperatures in all recent containment application applications by GE which have been reviewed and approved by the NRC.
4. SAFER02/03 have been reviewed and approved by the NRC per NEDE-23785-1-PA R. 1, Oct. 1984, and NEDE-30996P-A, Oct. 1987. Changes since NRC approval are documented in MFN (Master File Number) -040-88, MFN-023-90, MFN-025-91, and MFN-090-93.
5. The NRC reviewed PDA the code for this application in the reference stated.

6. The NRC has not specifically reviewed this code, but they have approved analysis using this code as documented in the stated reference.
7. LAMB07V includes more detailed modeling necessary for non-Appendix K calculations and is used in RIPD and Containment analyses which have been reviewed and approved previously by the NRC.
8. The TASC code is an improved version of the SCAT code, reviewed and approved by the NRC, with advanced fuel features (partial length rods and new critical power correlations) capability.
9. An earlier (VAX) version of NASTRAN has been approved by NRC. Version 67 is benchmarked against the original code, and has been validated and verified pursuant to the NRC-approved GE Quality Assurance program.

Table 1a-2

S&L Computer Codes used for LaSalle Power Uprate Analysis

Evaluation Subject	Computer Code	Description of Code	Used in Current License?	Used in Uprate Submittal?
Lake/UHS	UHSAVG	Determines worst average weather periods for UHS analysis, including peak temperature and lake inventory	Yes*	Yes
	LAKE-T	Predicts lake temperatures, suspended solids, and water consumption for perched lake and UHS studies	Yes*	Yes
Structural Analysis of Containment	SUPTRAN	Predicts suppression pool transient temperature (including peak temperature) for plant transients including SB-LOCA and IB-LOCA. Used in combination with other criteria to determine cutoff pool temperature for chugging loads.	Yes*	Yes
SBO	SUPTRAN	Predicts suppression pool transient temperature (including peak temperature) for plant transients including SB-LOCA, SBO, SORV, and others	Yes*	Yes
	COMPARE	Computes drywell and room temperature response following loss of HVAC associated with Station Blackout (SBO) event	Yes*	Yes
HELB	RELAP4/MOD5	Determines mass and energy release for postulated feedwater line break in the main steam tunnel	Yes*	Yes
	PIPEFLO V6.04	Determine line pressure in feedwater line to demonstrate pressure is bounded by the pressure assumed in HELB analysis	Yes*	Yes
EQ Radiation	RACER-PC Version 1	Determines time specific source terms for use as the input sources for the post accident EQ radiation dose assessment.	Yes*	Yes
	ISOSHL-PC Version 1	Determines time dependent dose rates and integrated doses for post accident EQ radiation dose assessment. This output was also used to scale the post accident dose rates for the PASS and vital areas.	Yes*	Yes
Structural Analysis of Containment	TEMC10 Version 1.0	Suppression Pool wall temperature impact evaluation	Yes*	Yes

\* Original version on mainframe, current version on PC

Question 1b:

Identify and discuss any limitations associated with these codes/methodologies that may have been imposed by the Staff.

Response 1b:

The application of the Table 1a-1 codes to power uprate complies with any limitations or restrictions specified by the NRC in the approving SER where applicable for each of the codes and in the SERs for the power uprate programs. GE's ECCS-LOCA and transient analysis codes have generic NRC approval, and are docketed under the GESTAR II fuels program.

The S&L codes in Table 1a-2 used for the power uprate analyses are a combination of commercial codes and S&L internally written codes. Earlier versions of these codes were used for initial and subsequent licensing evaluations at LaSalle. Each of these codes and each subsequent revision to these codes were validated and verified in accordance with S&L QA Manual requirements. These individual codes were not submitted for specific NRC approval by S&L, but the use of validated codes is required. Under SLTR-1A (S&L LLC Topical Report), Nuclear Quality Assurance Program, a report is periodically updated and submitted to the NRC identifying QA program procedures, processes and acceptance requirements. The use of accepted and validated programs/ codes is identified as a part of those requirements for quality assurance. The latest NRC accepted issue of this report was dated July 15, 1999. Limitations and restrictions on the use of these codes are in accordance with the code supplier limitations and restrictions and the S&L V&V documentation.

Question 1c:

How has ComEd ensured that the codes were used correctly by General Electric for the LaSalle power uprate conditions and the limitations and restrictions were followed by GE appropriately?

Response 1c:

As stated to the NRC in a telephone conference call 11/09/99, ComEd has not audited GE specifically to ensure that codes are used correctly by General Electric for the LaSalle power uprate conditions. However, the code results as applied to the power uprate evaluations have received extensive technical reviews to ensure that code output results are valid and accurate.

ComEd has performed detailed technical reviews of the GE evaluations that support the LaSalle Power Uprate Project (PUP). A ComEd PUP Team was formed at the initiation of the project in early 1999 to perform these reviews as a first priority. The PUP Team consists of members from ComEd who are thoroughly cognizant of LaSalle plant operations and safety analyses, and on the design and licensing basis of the plant. Several industry experts with previous power uprate experience are also part of the PUP Team. In addition, a technical review of the GE Power Uprate Design Record Files was recently completed by the PUP Team in August 1999.

ComEd periodically audits GE as required by the ComEd QA program and as a result of participation in BWR Owners' Groups and NUPIC audits (Nuclear Procurement Issues Committee). ComEd participated in a BWROG/NUPIC audit that was conducted on November 2 through 11, 1998 at GE San Jose, CA. The result was audit report "BWROG/NUPIC Audit of General Electric Nuclear Energy, Technical Assessment of GE LOCA Analysis Methods," Report URA-RP-99-013, Rev. 0, Dated March 22, 1999 compiled by Utility Resource Associates Corporation, 1901 Research Boulevard, Suite 405, Rockville, MD 20850. The review scope was :

- App. K LOCA procedure
- SER's for GE LOCA codes and methodologies
- External interfaces and design control of plant data inputs (OPL-4 forms)
- QA documentation and approval status of codes used
- 10CFR50.46 reports
- Test validation for Thermal-Hydraulic correlations used in LOCA methodology
- Follow up on App. K documentation open issues from previous NUPIC audit

The audit identified no technical issues that are expected to affect the safe operation of the plants or result in any plant exceeding the acceptance criteria defined in 10CFR50.46.

### Question 2:

Attachment E to the July 14, 1999 submittal, Section 2.2 states: "A representative cycle core (LCS Unit 1, Cycle 8) is used for the uprate evaluation." Confirm that Units 1 and 2 have a virtually identical system geometry, reactor protection system configuration, and mitigation functions. Additionally, confirm that both units have similar thermal hydraulic and transient behavior characteristics. Identify any different features between the units.

Response 2:

Units 1 and 2 have a virtually identical system geometry, reactor protection system configuration, and mitigation functions. Additionally, both units have similar thermal hydraulic and transient behavior characteristics. Any different features between the units are identified in the Updated Final Safety Analysis Report (UFSAR), which is common to both Units. Thus, LaSalle Units 1 & 2 are effectively identical since they share the same UFSAR descriptions. Each unit's reactor protection system performs the same required functions.

Each unit has the same basic core design and geometry (fuel bundle array), with similar thermal hydraulic and transient characteristics except for cycle specific analyzed fuel characteristics. Both Units have 764 bundle cores, which use the same pressure and recirculation flow ranges, have the same average power density and meet the same shutdown margin and scram time requirements. The abnormal event mitigation capabilities are identical.

Differences between each cycle occur due to burnup limits (18 month to 24 month cycles), fresh fuel nuclear characteristics such as enrichment, void coefficient and Doppler coefficient. LCS Unit 1, Cycle 8 (L1C8) was an all GE9 fuel core, which utilized the GE method of analyzing its thermal hydraulic and transient characteristics. LCS Unit 1, Cycle 9 and Unit 2, Cycle 8 have a single batch of fresh Siemens ATRIUM-9B fuel and utilized Siemens' method of analyzing its thermal hydraulic and transient characteristics. The differences that exist between L1C8 and the other unit or cycles are completely covered by the cycle specific, core specific reload analyses for accident and transient responses.

Question 3:

Identify the evaluation model used for the reactor overpressure protection analysis in Section 3.2 of Attachment E.

Response 3:

The evaluation model used for the reactor overpressure protection analysis was General Electric ODYN transient code as documented in NEDC-31897P-A, Generic Guidelines for General Electric Boiling Water Reactor Power Uprate.

Question 4:

What is the calculated peak RPV pressure and suppression pool temperature for the Anticipated Transient Without Scram (ATWS) analysis in Section 9.3.1 of Attachment E?

Response 4:

The power uprate ATWS calculated peak RPV pressure was 1477 psig which is within the ASME Service Level C Limit of 1500 psig. The peak suppression pool temperature was 204°F which is below the containment analysis temperature limit of 208 °F (refer to the ATWS acceptance criteria discussed in NEDC-32701P section 9.3.1 (Attachment E to the July 14, 1999 License Amendment Request)).