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DMB

February 7, 1984

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Mr. J. G. Keppler, Regional Administrator  
Region III  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Subject: LaSalle County Station Unit 1  
High Drywell Temperature  
NRC Docket No. 50-373

- References (a): C. W. Schroeder letter to J. G. Keppler dated December 22, 1983, transmitting report on Unit 1 High Drywell Temperature.
- (b): C. W. Schroeder letter to J. G. Keppler dated December 27, 1983, supplementing the above referenced report.
- (c): C. E. Norelius letter to Cordell Reed dated January 13, 1984, requesting followup reports on Edison commitments on this subject.

Dear Mr. Keppler:

This letter indicates the results achieved on LaSalle Unit 1 for the high drywell temperature situation. This report supplements the reference (a) and (b) submittals and responds to Item 1 of Reference (c). It discusses the actions taken on Unit 1 and the results observed in the drywell thermal measurements program with sensible heat present. The submittal date for this report has been discussed with Mr. R. Walker of your staff.

A two-iteration damper trimming exercise on Unit 1 resulted in drywell air flow settings that produced acceptable temperatures with the augmented air ducted into the upper drywell regions. The bulk temperature remained within acceptable limits and no equipment temperatures exceeded allowables.

The resulting average drywell temperature was verified for Unit 1 to be less than the 135°F design value recorded in the FSAR and referenced in the Technical Specifications. A comparison of the drywell average return temperature and the calculated volume-weighted temperature is as follows:

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Power Level (MWE)	Computed Volume Weighted (Bulk) Temp OF	Average * Return Temp OF	Correlated Sensors** ITE-VP083 OF	ITE-VP076 OF
150	115.3	113.3	116.7	115.1
752	122.3	121.3	121.9	120.3
895	127.3	127.5	127.6	127.1
Rated	130.6 (est)	---	---	---

\* The ITE-VP033 and 034 sensors on the return air duct are used in the Tech Spec to represent average drywell temperature.

\*\* Note that these two temperature sensors ITE-VP083 and ITE-VP076 represent the average drywell temperature fairly accurately for the modified flow configuration (after trimming) for the at power condition.

The specific request of Item 1 in Reference (c) is fulfilled via the attached Figure which compares the before and after fixes thermal profile. The limiting condition is an ambient temperature of 148°F near the SRV solenoid. This is within Technical Specification 3/4.7.7 for LaSalle, which fulfills an objective of the short-term fix with respect to protection of safety related equipment.

Analytical predictions of "remaining life" for the installed IMF-2 solenoids based upon the EQ test data from Wyle Laboratories for this device is indicated below, along with predictions of "remaining life" based upon EQ analyses of the weak-link materials.

#### Remaining Life for IMF-2 Solenoids on Safety Relief Valves

	Lifetime Basis	Original Life <sup>1</sup> for 135°F Ambient	Adjusted <sup>2</sup> Life for 152°F Ambient	Consumed <sup>3</sup> Life 145°F ≤ 210	Remaining <sup>4</sup> Life at X° Ambient
Unit 1	Test * Analysis**	5 years 44	1 1/2 years 40 years	all 3.6 years	None, 152 40 yr., 152
Unit 2	Test * Analysis**	5 years 44	1 1/2 years 40 years	0 0	2.7 yr. 152 44 yr., 135

Solenoid body temperature (°F) equals 0.916 (ambient temp) + 46.2.

- \* Cat I Test was 141 hr. at 329°F for thermal aging equivalent for 10 year life at 135°F ambient service plus a LOCA accident exposure. (Wyle Test Report 44220-2.)
- \*\* Cat II Qualification by Analysis based upon Material properties for RTV-732 (0.77 ev activation from Wyle Materials Data Bank).
- 1. Original qualification basis to NUREG 0588 Cat I (EQ-LS-041, EMD 030803).
- 2. Adjusted life for worst case high drywell temperatures projected from drywell flow conditions observed in Preoperational Tests.
- 3. That part of qualified thermal life used (or aged) during past over-temperatures in upper drywell region; calculated from Unit 1 time-temperature histograms.
- 4. Qualified thermal life remaining after subtraction of consumed (aged) life and allowance for LOCA accident apportionment from the whole life capability of the most limiting material in the solenoids (Basis is Wyle Laboratories Material Data Bank, Wyle Lab Report 44220-2 and Crosby Test Report 3977 dated May 6, 1982).

The solenoids from the hottest location in Unit 1 are scheduled for proof testing at Wyle Laboratories to validate these analytical predictions of "remaining life". The test plan for that testing has been in preparatio during the second half of January 1984.

This report is intended to fulfill the specific request of Item 1 in Reference (c); details of the analysis are available for inspection at the station or at SNED in downtown Chicago. A working-level discussion may be the best way to respond to detailed questions on the methodology or data base. Edison would be pleased to host such a meeting or to participate with your reviewers at the station or some other location.

It is noteworthy that drywell temperature limits were not exceeded during the restart of Unit 1 to sequentially establish the air-flow settings inside containment. It should also be noted that at no time did the Unit 1 high drywell temperatures result in erratic water level indications traceable to flashing or boiling in the reference legs of the water level sensors.

Responses on Items 2 and 3 of Reference (c) must of necessity be deferred, respectively, for calendar-time and for final selection of the long term corrective actions now under study. Additional detail on the latter topic is included in a separate summary report on Unit 2 drywell temperatures.

J. G. Keppler

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To the best of my knowledge and belief the statements contained herein and in the attachment are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison and contractor employees. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

If there are any further questions regarding this matter, please contact this office.

Very truly yours,

*CW Schroeder* 2/7/84

C. W. Schroeder  
Nuclear Licensing Administrator

CWS/lm

Attachment

cc: NRC Resident Inspector - LSCS

8102N



# COMPARISON OF INITIAL AND MODIFIED VERTICAL DRYWELL THERMAL PROFILE - UNIT 1

BEFORE FIXES

AFTER FIXES

