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May 15, 1992

Office of Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

Subject: LaSalle County Station Units 1 and 2
Response to Safety Evaluation on the Station Blackout Rule
NRC Docket Nos. 50-373 and 50-374

Reference: (a) Byron L. Siegel (NRC) letter to Thomas J. Kovach (CECo), dated March 6, 1992, Safety Evaluation of the LaSalle County Station Response to the Station Blackout Rule

(b) Peter L. Piet (CECo) letter to USNRC dated September 23, 1991, Supplemental Response to Station Blackout (SBO) Rule

Dr. Murley,

In the Safety Evaluation for the Station Blackout (SBO) rule, reference (a), the NRC Staff concluded that the design of LaSalle County Station conformed with the SBO rule contingent upon the satisfactory resolution of the six recommendations presented in the Safety Evaluation. Attachments A through F of this letter contain LaSalle's responses to these six recommendations. Attachment G contains copies of the calculations referenced in the Attachments.

Reference (b) provided supplemental information on the Station Blackout Rule. Item 5) in the Attachment to that letter provided a list of equipment which required a QA program in accordance with Regulatory Guide 1.155 Appendices A and B. Further review of this list revealed that valves 1G33-Z001-32A, 1G33-Z001-32B, 1G33-Z001-32C, 2G33-Z001-32A, 2G33-Z001-32B, and 2G33-Z001-32C are not required for safe shutdown. These valves are Reactor Water Clean Up filter demineralizer isolation valves, and not primary containment isolation valves. Therefore, these valves will not be included in the SBO QA program and will be deleted from this list.

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

Sincerely,

JoAnn M. Shields
Nuclear Licensing Administrator

Attachments:
A. Effects of loss of ventilation on control room, AEER, and RCIC room temperatures
B. Effects of loss of ventilation on drywell temperature profile
C. Reactor coolant inventory analysis demonstrating core coverage
D. Suppression pool temperature effects on RCIC and HPCS
E. Suppression pool temperature effects on RHR
F. Modification documentation and retention
G. Supporting Calculations

cc: A.B. Davis, Regional Administrator - RIII
D. Hills, Senior Resident Inspector - LaSalle
B.L. Siegel - NRR Project Manager
P. Gill - NRR Electrical Systems Branch
Office of Nuclear Facility Safety - IDNS

ZNLD/1806/2

Attachment A

Effects of Loss of Ventilation on
Control Room, AEER, and RCIC Room Temperatures

A revision has been made to the control room, AEER and RCIC room temperature transient calculations based on an additional evaluation which included a surveillance review of summertime room temperatures. The combination of higher, more conservative initial room temperatures and smaller, more realistic electrical heat loads in the calculation resulted in higher final room temperatures and necessitated the procedural requirement to open panel doors in both the control room and AEER during the event. The AEER has been analyzed with closed access doors to maintain less than 120 °F room temperatures. THe doors will only be opend for personnel access. The other conclusions stated in the original control room and AEER temperature transient calculations remain valid. The final RCIC room temperature is also slightly higher in its revised calculation although its original conclusions remain valid.

The basis for reasonable assurance of equipment operability using the results of revised calculations 3C7-0290-001, Rev. 1, 3C7-0289-001, Rev. 1 and 3C7-0290-002, Rev. 1 are listed in the table below:

Area	Initial Temp.	Final Temp.	RAO Justification
Control Room	90°F	116°F	Less than 120° (open panel doors)
U1 South AEER	90°F	110°F	" " "
U1 North AEER	90°F	119.7°F	" " "
U2 SE AEER	90°F	119.7°F	" " "
U2 NW AEER	90°F	108.6°F	" " "
RCIC Rooms	124.0°F	164.7°F	Less than the design temp. of 212°F for 6 hours

The Center Desk Shiftly Surveillance LOS-AA-S2 which monitors area temperatures in accordance with Technical Specification 3/4.7.7 will be revised to verify the SBO assumption that the initial control room and AEER temperatures are less than or equal to 90°F. If this limit is exceeded, appropriate action will be taken to investigate the problem and resolve it in a timely manner. The procedure revisions required to open control room and AEER panel doors and monitor their area temperature daily for SBO will be completed within one year after the issuance date of the Safety Evaluation.

Attachment B

Effects of Loss of Ventilation on Drywell Temperature Profile

The drywell temperature transient calculation 3C7-0390-002 was revised to include the affect of venting to the suppression chamber and the pressure decay of the vessel during the coping period. The resultant maximum drywell temperature during a four-hour SBO is 251°F. The six hour drywell temperature is 245°F. The equipment qualification curve for the drywell is a step function with the following temperature limits:

340°F from 0 - 3 hours

320°F from 3 - 6 hours

250°F from 6 - 24 hours

Thus, the EQ equipment inside the drywell is designed to operate at 320°F for 6 hours. A review of the drywell temperature analysis while taking into account the SBO time duration shows that the EQ temperature profile envelopes the SBO conditions.

Attachment C

Reactor Coolant Inventory Analysis Demonstrating Core Coverage

Either the RCIC or HPCS systems may be utilized to provide reactor coolant inventory makeup while coping during a SBO. Original calculation 3C7-0189-001, Rev. 2, SBO Condensate Inventory Coping Assessment shows that the suppression pool has sufficient capacity to compensate for primary system losses due to SRV steam discharge, RCIC turbine steam requirements and the assumed RPV leakage. Additionally, the Suppression Pool Temperature Transient calculation 3C7-0390-00[illegible], Rev. 1, models the RPV level for either the HPCS pump or RCIC pump operations. Per the analysis, the lowest reactor vessel level occurs during RCIC makeup at approximately -130". This level does not result in core uncovery since the Top of Active Fuel (TAF) is -161" per LaSalle Technical Specification Bases Figure B3/4 3-1.

Attachment D

Suppression Pool Temperature Effects on RCIC and HPCS

The maximum 4 hour and 15 minute suppression pool temperature is 234.2°F when using the HPCS system and 217.1°F when using the RCIC system for decay heat removal and reactor coolant inventory, as stated in the Suppression Pool Temperature Transient calculation 3C7-0390-001, Rev. 1. The qualified temperature rating for the RCIC pump materials is 221°F and for the HPCS materials is 300°F per calculation CQD-055096 Rev. 0. Thus, the maximum suppression pool temperatures have no adverse effect on the RCIC and HPCS materials.

When HPCS or RCIC is taking suction from the suppression pool, the suppression pool temperature affects the pump's Net Positive Suction Head Available ($NPSH_A$). An evaluation of the suppression pool during SBO and until pool cooling becomes available shows that the $NPSH_A$ for the HPCS or RCIC pump exceeds the Net Positive Suction Head Requirements ($NPSH_R$). The following table summarizes these results as stated in calculation ATD-0117, Rev. 0:

Pump	$NPSH_R$	$NPSH_A$
RCIC	15 ft.	22.6 ft.
HPCS	1.5 ft.	16.5 ft.

The RCIC turbine backpressure was determined based on worst case suppression pool water levels, suppression chamber pressure and RCIC turbine exhaust flow following the SBO. The calculated maximum RCIC turbine backpressure is 23.1 psig at four hours following SBO and is 24.5 psig at four hours and 15 minutes following SBO. These pressures are below the RCIC turbine backpressure trip setpoint of 25 psig (see calculation ATD-0117, Rev. 0).

Attachment E

Suppression Pool Temperature Effects on RHR

The maximum suppression pool temperature when utilizing HPCS for decay heat removal and reactor inventory control is 234.2°F. The RHR materials are unaffected since their qualified temperature rating is 300°F (calculation CQD-055096 Rev. 0). An evaluation of the suppression pool up until the time suppression pool cooling becomes available shows that the $NPSH_A$ for the RHR pumps is 16.2 ft. while the $NPSH_R$ is 11.5 ft. Thus the $NPSH_A$ exceeds the $NPSH_R$ (see calculation ATD-0117, Rev. 0).

Attachment F

Modification Documentation and Retention

LaSalle Station has six Class 1E 125 Vdc batteries and 2 Class 1E 250 Vdc batteries. Due to the addition of DC loads since fuel load, the safety related DC systems had reached their maximum load for the existing size batteries. Subsequent to the decision to replace these batteries the Station Blackout analysis was completed and reviewed against the replacement batteries for its impact. The calculations concluded that the replacement Class 1E batteries have adequate capacity to feed SBO loads for a four-hour duration and to restore ac power following coping assuming non essential load shedding. All Class 1E batteries have been replaced except for the Unit 1 division 3 battery which is scheduled for the fourth quarter of 1992. However, the division 3 battery is not required to cope with an SBO and the division 3 battery charger would be available if the division 3 generator was utilized during an SBO event. The table below references the modifications and the SBO load calculations associated with the replacement batteries. A full description of the nature and objective of the modifications can be found in these documents.

Description	Modification No	Calculation Nos.
U1 DIV-1 125Vdc Bat	M01-1-88-004	(4266/19D30 Rev. 1
U1 DIV-2 125Vdc Bat	M01-1-88-003	&
U1 250 Vdc Bat	M01-1-88-001	4266/19D31 Rev. 0)
U2 DIV-1 125Vdc Bat	M01-2-88-004	"
U2 DIV-2 125Vdc Bat	M01-2-88-003	"
U2 250Vdc bat	M01-2-88-001	"
U1 DIV-3 125Vdc Bat	M01-1-90-011 (sched 4th quarter 1992)	"
U2 DIV-3 125Vdc Bat	M01-2-90-009	"

Attachment G

Supporting Calculations

3C7-0290-001, Rev. 1, Main Control Room Temperature Transient Following Station Blackout

3C7-0289-001, Rev. 1, AEER Temperature Transients During Station Blackout

3C7-0290-002, Rev. 1, RCIC Pump Room Temperature Transient Following Station Blackout

3C7-0390-002, Rev. 1, Drywell Temperature Transient Following Station Blackout

3C7-0390-001, Rev. 1, Suppression Pool Temperature Transient Following Station Blackout

CQD-055096, Rev. 0, Calculation for EQ Impact due to Station Blackout Conditions

ATD-0117, Rev. 0, Evaluation of NPSH requirements for HPCS, RHR, and RCIC Pumps and Back Pressure Limitations of RCIC Turbine Following Station Blackout