



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 8 1980

Docket Nos.: 50-373
and 50-374

MEMORANDUM FOR: B. J. Youngblood, Chief, Licensing Branch No. 1, DL
FROM: A. Bournia, Project Manager, Licensing Branch No. 1, DL
SUBJECT: FORTHCOMING MEETING WITH COMMONWEALTH EDISON COMPANY

DATE AND TIME: December 17, 1980
8:30 AM

LOCATION: G. E. Office, Landow Building
Bethesda, Maryland

PURPOSE: To discuss all open items with respect
to LaSalle's SER, both TMI and non-TMI,
see Enclosures

PARTICIPANTS: CECo Staff
L. DeGeorge, et al.
NRC Staff
P. S. Check, J. P. Knight, V. S. Noonan,
L. S. Rubenstein, R. L. Tedesco, W. E. Kreger,
J. Kramer and S. Schwartz

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bcc: Applicant & Service List

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ENCLOSURE 1

STATUS OF LASALLE NON-TMI ISSUES

1. Flood Potential - (2.4.2, 2.4.5)

The revised gradation for the riprap submitted in Amendment 41 to the FSAR is acceptable. However, the as-built spillway riprap does not conform to either the stated design in the FSAR or to good riprap erosion protection practices. The applicant is taking remedial action. When this action is completed, we will inspect the as-built riprap.

2. Low Shear Modulus - (2.6.1, 2.6.6)

The applicant has committed to provide field testing data for verifying the shear modulus at low strain levels.

3. Internally Generated Missiles - (3.5.1)

The applicant must clarify the criteria used to determine "significant" damage to structure, systems and components (SSC) and show how these SSC are protected against missiles inside containment.

4. Mark II Containment

(a) Dynamic System Analysis Under Faulted Conditions - (3.9.2, 3.9.5)

We require documentation of the applicant's reevaluation of the reactor vessel, its internals, supports, and attached piping for combined loss-of-coolant accident and safety shutdown earthquake loads, including the annulus pressurization effects.

(b) Loading Combinations, Design Transients and Stress Limits - (3.9.3, 3.9.5)

We require documentation of the applicant's reevaluation of the safety-related systems and components based upon the load combinations, response combination methodology, and acceptance criteria required by us.

(c) Pool Dynamic LOCA and SRV Loads - (6.2.1.1)

We need additional information to complete our review in the following areas:

- a. T-quencher air clearing load specification, and
- b. Pool temperature responses to safety relief valve transients.

5. Component Supports - (3.9.3)

The applicant has not submitted its resolution of observed cracking of the jet pump hold-down beams.

6. Preservice and Inservice Testing of Pumps and Valves - 3.9.6)

The applicant has not submitted its proposed program for the preservice and inservice testing of pumps and valves.

7. Seismic Qualification

(a) The applicant has not submitted the information describing the methods and criteria used to address the vibration fatigue cycle effects on the affected equipment due to the required loading conditions, has not submitted the results of the in-situ impedance tests and has not completed the qualification program.

(b) We have not completed our seismic qualification review team review.

8. Environmental Qualification - (3.11)

We are currently reviewing the applicant's NUREG-0588 environmental submittal, and we anticipate a site audit in December 1980.

9. Ballooning and Rupture - (4.2.3)

We have not completed our generic review and implemented new acceptance criteria for cladding models. Therefore, we require that ECCS analyses in the FSAR be supplemented and be performed with the materials models of NUREG-0630.

10. Combined Seismic and LOCA Loads on Fuel Assembly - (4.2.3)

The applicant must perform analyses with GE approved analytical methods as reported in GE Report NEDE-21175-P to show compliance with our acceptance criteria.

11. Channel Box Deflection - (4.2.3)

The applicant has not referenced NEDO-21354 and as a result has not committed to perform the recommended tests or the time interval for performing these tests.

12. MCPR - (4.4.1, 4.4.2, 15.1)

The applicant must modify the operating limit MCPR based on the generator load rejection without bypass event satisfying the MCPR safety limit of 1.06.

13. ODYN Reanalysis

The applicant must analyze the following transients: (a) generator load rejection without bypass, (b) turbine trip without bypass and main steam isolation valve closure, and (c) for ASME Overpressure Protection - main steam isolation valve closure with flux scram.

14. Control Rod System Modification - (4.6.2)

The applicant must show operability of the control rod drive system in order to justify elimination of the return line to the reactor vessel.

15. Scram Discharge Volume - (4.6.2)

We require the applicant to satisfy the requirements resulting from the generic study on scram discharge volume design.

16. Safety/Relief Valves - (5.2.2, 6.3.2)

We require that the applicant perform tests to show that flow through the safety relief valves is adequate to provide the necessary fluid relief for alternate shutdown cooling. In addition, the applicant must submit drawing's indicating modification to the Crosby valves and the results of review performed by the BWR Owner's Group on tests of these valves.

17. ATWS - (5.2.2, 7.2.3, 15.2.1)

(a) We require that the applicant agrees to implement plant modifications on a schedular basis in conformance with the Commission's final resolution of ATWS. In the event that LaSalle starts operation before necessary plant modifications are implemented, we require some interim actions be taken by LaSalle in order to reduce, further, the risk from ATWS events. The applicant will be required to:

- (i) Develop emergency procedures to train operators to recognize an ATWS event, including consideration of scram indicators, rod position indicators, flux monitors, vessel level and pressure indicators, relief valve and isolation valve indicators, and containment temperature, pressure, and radiation indicators.
- (ii) Train operators to take actions in the event of an ATWS including consideration of immediately manual scrambling the reactor by using the manual scram buttons followed by changing rod scram switches to the scram position, stripping the feeder breakers on the reactor protection system power distribution buses, opening the scram discharge volume drain valve, prompt actuation of the standby liquid control system, and prompt placement of the RHR in the pool cooling mode to reduce the severity of the containment conditions.

18. Preservice and Inservice Inspection Program - (5.2.4)

The applicant has not submitted its revised program of preservice and inservice inspection of Class 1, 2, and 3 components in accordance to 50.55 a(g).

19. Detection of Intersystem Leakage - (5.2.5)

The applicant must address leakage criteria for check valves at the RCS/RCIC, RCS/RHR, RCS/LPCS, RCS/LPCI interfaces and show how leakage into the LPCS and LPCI system is detected.

20. Compliance with Appendices G & H - (5.3.1, 5.3.2, 5.3.3)

For Unit 1, additional information for exemption for paragraphs IV.A.2.a and IV.B of Appendix G must be submitted by the applicant. For Unit 2, insufficient information are presented for use to complete our review.

21. Flow Capacity of Safety/Relief Valves in RHR (5.4.2)

See item 16 above.

22. Classification of RHR Isolation Valves - (5.4.2)

We require that the valves which serve to isolate the residual heat removal system from the reactor coolant system be classified category A/C in accordance with the provisions of Section XI of the ASME code.

23. Steam Bypass of the Suppression Pool - (6.2.1.1)

The applicant approach to suppression pool bypass is not consistent with Branch Technical Position CSB 6-5. The applicant must commit to perform a low power surveillance leakage test of the containment at each refueling outage. Applicant plans to appeal the staff's position.

24. Containment Leakage Testing - (6.2.6)

With respect to applying with Appendix J, the following commitment and additional information is required:

- (a) Leak test of RHR shutdown return isolation valve be performed as Type C test utilizing air.
- (b) Additional information is required for isolation valves in lines for LPCS injection, HPCS injection, RHR/LPCI injection, and the RHR shutdown cooling return and the arrangements of the vacuum breaker valves.

25. Assurance of Filled ECCS Line - (6.3.2)

The applicant must specify the test interval for the periodic venting of the ECCS injection lines to reduce the likelihood of air pocket presence.

26. Periodic Testing of Valves Used to Isolate Reactor Coolant System - (6.3.2)

See item 19 above.

27. Post-LOCA ECCS Leakage - (6.3.4)

We require the applicant to address the consequences and means of containing leakage from the first isolation valve outside the suppression pool.

28. Physical Separation and Electrical Isolation - (7.1.4, 7.2.3, 7.3.3, 7.6.3)

Based on information supplied by the applicant, there is still concern regarding LaSalle's definition and/or treatment of associated circuits. We are reviewing the adequacy of the present design. For the instrument cabinets where non-Class IE wiring is bundled with Class IE wiring, we require that the applicant demonstrate (by test or analysis) that the Class IE circuits and equipment are not degraded below an acceptance level by challenges by non-Class IE circuits.

29. Test Techniques - (7.1.4)

In order to perform some surveillance testing, it is necessary for the applicant to pull fuses. We consider that this design does not satisfy the requirements of IEEE Std 279-1971 Paragraphs 4.11 and 4.20. We consider this item closed. The applicant will only utilize this method at refueling. The applicant must document its commitment.

30. Safety System Setpoints - (7.1.4)

We have not completed our review of the Technical Specifications. We intend to review the information on setpoints in the Technical Specifications. If any concerns are noted, we will require some clarification.

31. Drawings - (7.1.4, 7.3.3, 7.6.3)

Based on our audit of certain drawings during our site visit, we consider this item closed except for confirming documentation (drawings) to be supplied on the low-low set relief logic and documentation of the function of this system.

32. RCIC Classification - (7.4.3)

The applicant has provided the information on their proposed design change for switchover. We consider this item closed except for their submittal of the final design.

33. Safety - Related Display - (7.5)

We are reviewing this item as a result of the applicant's input.

34. Rod Block Monitor - (7.6.3)

We are reviewing this item. The applicant has documented that the rod block monitor is not required for any of the analyses in Chapter 15.

35. Low or Degraded Grid Voltage - (8.2.2)

The applicant committed to implement the second level undervoltage protection. We require the design implementation information prior to our approval. This information has not been provided.

36. Shared Diesel - Generator (8.3.2)

(a) The applicant has informally committed to transferring automatically a number of vital support system loads for the shared diesel generator. This has been found acceptable pending verification of the design implementation. Drawing showing the implementation have not been provided.

(b) The applicant did not commit to transferring automatically the AC source of power to the 250 DC and 125 DC battery chargers. The applicant indicated that the battery had sufficient capacity for the time required to manually reconnect the AC power. We require manual procedures be provided for our review.

37. Reactor Containment Electrical Penetrations - (8.4.1)

The reactor containment electrical penetrations do not conform to Regulatory Guide 1.63. The applicant was informed that we will not accept self-fusing characteristics of cable to provide protection against rupture of primary containment. Applicant plans to appeal the staff's position.

38. Adequacy of the 120-Volt Alternating Current Reactor Protection System Power Supply - (8.4.7)

The applicant has committed to comply with the generic resolution. This was found acceptable pending verification of the design implementation. Drawings showing design implementation have not been provided.

39. Thermal Overload Protection Bypass - (8.4.9)

The applicant has indicated that provisions for bypassing thermal overload protection would meet position C1 of Regulatory Guide 1.106. This was found acceptable pending documenting. The documentation has not been provided.

40. Physical Separation Between Class IE and Non-Class IE Cables

A site visit by the staff (I&E and ICSB) identified a number of locations where inadequate separation exists between Class IE and non-Class IE cables. Separation criteria in the FSAR specifies that non-Class IE cables are separated by an acceptable distance or barriers from Class IE cables.

41. Fire Protection - (9.5)

With respect to fire protection, the following additional information is required:

- (a) For the alternate shutdown panel, it was determined that simultaneous loss of several circuits and/or cabinets would jeopardize safe plant shutdown. The applicant has not provided details of the design to alleviate this condition.
- (b) The applicant agreed to evaluate the physical separation between cables for the control room redundant HVAC systems and identify areas where separation does not meet fire protection guidelines. The results of this evaluation has not been provided.
- (c) The applicant has not documented that all primary shutdown cables are not located in the same room with the alternate shutdown panel.
- (d) Control cables for two series RHR valves are not separated by the required distance at two locations. The applicant has stated though that these RHR valves are the only primary reactor boundary interface protected by two series motor operated valves. This needs to be documented to resolve this issue.
- (e) Separation of associated cables is a requirement resulting from Appendix R. Additional questions are being prepared to address this item.

- (f) Violation of containment isolation due to a design basis fire is a requirement resulting from Appendix R. Additional questions are being prepared to address this item.

42. Radiation Protection Management (12.5)

- (a) The Radiation Protection Manager should have a clear line of authority to the Plant Manager as indicated in NUREG-0731 and Regulatory Guide 8.8. Figure 1.7 of the Topical Report CE-1A, Rev. 14, does not delineate this line of authority between the Rad/Chem Supervisor and the Plant Superintendent.
- (b) It is our position that the Rad/Chem Supervisor meet the minimum requirement of Regulatory Guide 1.8 which references ANS/18.1. Your Rad/Chem Supervisor resume indicates that he has a majority of his training and experience as a chemist and does not meet the requirements of Regulatory Guide 1.8.

43. Industrial Security (13.4)

As a result of our site visit and our review, there are 32 items of concern.

44. Use of Nonreliable Equipment in Anticipated Operational Transients - (15.1)

- (a) The applicant must analyze the generator load rejection without bypass and turbine trip without bypass transients without relying upon the use of the level 8 trip.
- (b) In analyzing anticipated operational transients, the applicant took credit for equipment which has not been shown to be reliable. Our position is that this equipment be identified in the technical specifications with regard to availability, setpoints and surveillance testing. The applicant must submit its plan for implementing this requirement along with any system modification that may be required to fulfill the requirement.

45. Use of Non-Safety Grade Equipment in Shaft Seizure - Accident - (15.2)

The applicant included the use of non-safety grade equipment in his analyses for shaft seizure and shaft break accidents. We require that these accidents be reanalyzed without allowance for the use of non-safety grade equipment.

46. Technical Specifications - (16)

We have not completed our review of Technical Specifications.

47. Quality Assurance - (17.0)

The applicant must address deficiencies of those systems, structures and components which should be under the control of the operational quality assurance program (Q-list).

48. Financial Qualifications - (20)

We have not completed our financial qualifications review.

ENCLOSURE 2

STATUS OF LASALLE'S TMI ISSUES

I.A.1.1 Shift Technical Advisor

1. We are unable to ascertain if the STAs meet the requirements for technical education and training as described in our October 31, 1979 letter to licensees. CECO should provide a statement that it meets the requirements of this October 31, 1979 letter and provide detailed information substantiating this fact for each of its STA candidates.
2. CECO written submittals have not been clear as to the number of SROs that it will provide on each minimum shift crew in addition to the SCRE/STA. Based on our discussions with CECO, we believe that it proposes to a) provide two SROs in addition to the SCRE/STA and b) to have the shift foreman/SRO replace the SCRE/STA as the control room SRO in an emergency situation where the SCRE/STA must assume the STA function. We made no determination thus far as to the acceptability of such a proposal. CECO should document its proposal on this subject with sufficiently detailed information to provide a basis for discussion and resolution of the issues with appropriate NRC management.

I.A.1.2 Shift Supervisor Administrative Duties

1. CECO should provide a management directive that emphasizes the primary management responsibility of the shift supervisor (shift engineer) for safe operation of the plant under all conditions of his shift and clearly establishes his command duties.
2. CECO should provide a statement indicating that the senior corporate manager responsible for nuclear operations has reviewed the administrative duties of the shift supervisor and delegated those that detract from or

are subordinate to the management responsibilities for assuring safe operation of the plant to other operations personnel not on duty in the control room.

3. Procedures should be modified to show that in case of an emergency where the shift supervisor is required to establish himself in the control room and remain in command authority until properly relieved, the shift supervisor's office is not considered to be part of the control room for this purpose and that the shift supervisor must physically establish himself in the immediate control console area of the control room.
4. Procedures should be modified to specify that a senior reactor operator will be assigned to and physically stationed inside the immediate control console area of the control room at all times and to indicate that, for this purpose, the shift supervisor's office is not considered to be part of the control room.
5. Procedures should be modified to clearly describe the control room command authority as residing with the SRO assigned to the control room any time the shift supervisor is not physically present inside the control room.

I.A.1.3 Shift Manning

1. CECO should submit information specifying for SROs and ROs (excluding management personnel) a) how many personnel it expects to have qualified for each shift crew position at fuel load and at other specific dates out to one year following fuel load and b) the number of employees in each position that it expects to lose versus time (i.e.; through exam failure and attrition). This information will provide a basis for our conclusions regarding the adequacy of the staffing plan for LaSalle. CECO should also describe its contingency plan for filling positions in the event

that the five individuals in the shift engineer training program or the five in the STA training program are not licensed or available to serve in these positions.

2. It is our view that shift crews should work and train together on an essentially permanent basis. CECO has informed us that it cannot require this because of its agreement with the Bargaining Unit. We intend to impose this as a requirement. However, this is a proposed new staff position which we must get approved before imposing it.
3. CECO should submit a commitment to provide three licensed reactor operators (ROs) on the minimum shift crews for two unit operation. The October 20, 1980 CECO submittal committed to only two ROs for two unit operation.

I.B.1.2 Evaluation of Organization and Management

NUREG-0731 states that the Radiation Protection Section and the Chemistry Section be separate. LaSalle's organizational chart (Figure 13.1-4) shows these two groups as one.

I.C.1 Short-Term Accident and Procedure Review

The staff has not received responses from the BWR Owner's Group to the issues raised in the letter from D. Eisenhut to S. T. Rogers dated October 21, 1980. These responses will provide the background and bases for several required actions in the LaSalle emergency procedures.

I.C.2 Shift and Relief Turnover Procedures

1. CECO's shift relief turnover procedures must be modified prior to fuel load to include:
 - a. check lists for critical plant parameters
 - b. check lists for proper system alignment
 - c. check lists for equipment under maintenance and test for non-licensed operator shift relief.

2. CECO must describe its system for evaluating the adequacy of its shift turnover procedures.

I.C.4 Control Room Access

CECo control room access procedures must be modified prior to fuel load to eliminate portions of draft procedures that seem to undermine the responsibility of the shift engineer (shift supervisor) and SRO for operation and control room command.

I.C.5 Feedback of Operating Experience

The procedures in place at LaSalle during our September 9-12, 1980 site visit did not describe the system for disseminating operating experience information to plant operating personnel and support staff in sufficient detail to assure that operating personnel are informed of all appropriate operating experience information both from LaSalle and from other nuclear stations. CECO must provide appropriate procedures to assure adequate dissemination of operating experience information to the LaSalle operating and support staff prior to fuel load.

I.C.6 Verify Correct Performance of Operational Procedures

We require a letter from the applicant committing to implement a program for verifying correct performance of operational phase activities prior to fuel loading. The letter should state the program will comply with the description provided in NUREG-0737. Our I&E will audit the implementation.

I.C.7 NSSS Vendor Review of Procedures

The applicant stated that General Electric will review the low power tests, power ascension tests and emergency procedures, but did not indicate when they would complete the review. After the review is completed, we need verification from the applicant that General Electric has completed their review.

In addition, we need to know General Electric's conclusion, and how any of General Electric's recommendations were handled.

I.C.8 Pilot Monitoring of Selected Emergency Procedures for NTOLs

We require that the applicant provide a revised copy of the LaSalle General Abnormal procedures, the ATWS procedure and the Reactor Trip procedure revised to reflect the commitments made during our procedure review. We also require that the applicant provides a description of the training to be conducted on the emergency procedures prior to fuel load.

I.D.1 Control Room Design Review

We have performed our site review and our review of the applicant's preliminary assessment. Design improvements have been specified to the applicant to be completed prior to fuel loading and an item before full power, see attachment. The applicant has committed to perform these tasks. In addition, long range improvements have also been indicated which must be addressed in the long term analysis as required by this task action. Subject to the certification by the residence inspector of the improvements required prior to fuel load and full power, we consider this item closed.

ATTACHMENT

A. Deficiencies to be corrected prior to fuel loading

1. Annunciators and Alarms

- a. Approximately 92 individual annunciator tiles will be rearranged to improve organization of annunciator panels. A.1.(b)(2) *
- b. Annunciator tiles with legends using small character size and weight will be replaced. A.1.(b)(4)
- c. Audible alarm signal intensities will be adjusted to provide equal detection levels for all audible alarms. A.1.(b)(8)
- d. Reactor control panel audio alarm frequency will be lowered to a level well below 5000 Hz. A.1.(b)(9)
- e. Annunciator tile reflash capability will be demonstrated. A.1.(b)(10)

2. Controls

- a. Demarcation will be applied to control panels to promote visual recognition of closely-spaced J-handle controls. A.2.(b)(1)
- b. Guardrails will be installed on all benchboards and consoles. A.2.(b)(2)
- c. Demonstrate clockwise direction of Feedwater Turbine control to increase turbine speed. A.2.(b)(4)
- d. J-handles for pumps, open-close valves and throttleable valves will be differentiated by color, shape and texture coding. A.2.(b)(6)
- e. Institute administrative procedures to control removal and replacement of interchangeable control indicator light covers. A.2.(b)(7)
- f. Demonstrate availability of tools for replacement of indicator lamps. A.2.(b)(8)

* References are to the staff's Control Room Design Review Report transmitted to the applicant on October 23, 1980.

- g. Demonstrate availability and use of administrative procedures to assess indicator light status, failure or degradation. A.2.(b)(9)
- h. Provide positive visual indication of armed/disarmed status of pushbutton trip switches. A.2.(b)(10)

3. Displays

- a. Provide 'normal range' banding on vertical indicators located just below annunciator panels. Banding shall be permanent (i.e., on meter face) wherever possible. A.3.(b)(1)
- b. Relabel meter 'strings' of 5 or more meters to aid in meter identification. A.3.(b)(2)
- c. Identify those meters which have a 'normal' operating range, and provide temporary range bands. Range bands shall be made permanent where possible, and all applicable meters shall have permanent 'normal' range bands by 18 months after full power operation. A.3.(b)(3)
- d. Provide demarcation to organize and identify related meters on electrical panel 1PM01J. A.3.(b)(5)
- e. Replace all hand-made meter scales with permanent scales. A.3.(b)(6)
- f. Provide demarcation lines to improve the visual association of legend/indicator lights with their associated controls. A.3.(b)(7)
- g. Replace blue indicator lamp covers for those indicators where luminance contrast is too low. A.3.(b)(9)

4. Control/Display Relationships

- a. Demonstrate that valve position indications are based on positive indication of valve status. A.4.(b)(1)
- b. Identify isolation valve pressure displays as inboard or outboard. A.4.(b)(3)

- c. Relabel HPCS pump displays. A.4.(b)(4)
- d. Provide demarcation lines and possible color coding to associate the HPCS current meter with the HPCS pump controls. A.4.(b)(5)
- e. Provide identical Penetration Pressure B/C Duct and B/C Room temperature meters. A.4.(b)(6)(b)
- f. Relocate labels that are partially obscured by indicator light covers at base of panel 1H13P601. A.4.(b)(6)(c)
- g. Provide RHR system white indicator lights with labels/legends that indicate system status. A.4.(b)(6)(d)
- h. Provide label for LPCS pump cooler valve. A.4.(b)(7)
- i. Demonstrate human factors enhancement and appropriate control/display relationships for Containment Isolation and Leak Detection panel/console 1PM13J and 1PM16J. A.4.(b)(9)
- j. Provide the following Standby Gas Treatment panel corrections: A.4.(b)(10)
Provide Unit 1/Unit 2 demarcation.
Label strip chart recorders and install correct chart paper
Provide missing indicator light covers
Complete panel mimics
Correct inconsistent annunciator legend.
- k. Provide Feedwater and Condensate Panel 1PM03J demarcation and color coding to enhance system/subsystem discrimination, visually segregate unrelated control/display components, improve control/display relationships, and improve the visual relationship between valve controls and valve position indicators. A.4.(b)(11)(a)(b)(c)(d)
- l. Relabel motor-driven feedwater pump. A.4.(b)(11)(e)
- m. Provide demarcation and color coding to enhance control/display relations and discrimination for Auxiliary Systems Panel/Console 1PM09J and 1PM10J. A.4.(b)(12)(b)(c)

6. Recorders

- a. Demonstrate recorder operability/maintenance. A.6.(b)(1)
- b. Establish consistent systems for dual-recorder upper/lower pen colors, and provide appropriate labels for each recorder that will be consistent with pen location and color coding. A.6.(b)(2)(3)(4)(5)
- c. Demonstrate that recorder scales and chart paper scales correspond. A.6.(b)(6)
- d. Modify SRV temperature recorder (Panel 1H13P614) to eliminate ambiguity as to which channel is being displayed. A.6.(b)(8)

7. Workspace, Layout and Environment

- a. Relocate general procedures, annunciator procedures and emergency procedures at the Unit 1 operating desk. Provide color coding to identify procedures. Demonstrate rapid and uninhibited selection of appropriate procedures by the operators. A.7.(b)(1)(d)
 - b. Demonstrate computer capability to printout historical meteorological data on demand. A.7.(b)(1)(i)
 - c. Replace white indicator lights with white backlight legend lights. A.7.(b)(2)(a)
 - d. Replace black emergency trip pushbuttons with red pushbuttons. A.7.(b)(2)(b)
 - e. Demonstrate installation and accuracy of new mimics and demarcations as described in the Preliminary Assessment Report. A.7.(b)(3)(4)
 - f. Install additional control room lighting to increase lighting levels on panels and consoles. A.7.(b)(5)(a)
 - g. Install new covers for blue status lights where luminance contrast is too low. A.7.(b)(5)(b)
-

- h. Install modified ceiling grids to reduce glare on panels and consoles. Note: time period for completion of this item may be extended to accommodate vendor delivery schedules. A.7.(b)(5)(c)
 - i. Reduce sound levels of audible alarms to a maximum 65dbA level. A.7.(b)(6)
 - j. Improve visual recognition of phone jacks on control room back panels. A.7.(b)(8)(a)
 - k. Provide index and location labels for the sound powered phone patch panel. A.7.(b)(8)(b)
 - l. Organize communications equipment located at the center desk. A.7.(b)(8)(c)
 - m. Provide accessible, designated storage for operator protective equipment, and demonstrate that equipment is installed and available for use by operators. Demonstrate availability of adequate communication systems for use with operator protective equipment. Demonstrate availability and adequate storage of individual operator corrective lenses for use with protective equipment. A.7.(b)(9)(b)(c)
8. Remote shutdown panel
- a. Provide panel mimics and demarcation. A.8.(b)(1)
 - b. Demonstrate emergency lighting provisions in the remote shutdown panel area. A.8.(b)(3)
9. Computers
- a. Demonstrate trending capability of computer printouts and CRT displays. Install labeling system for stripchart trend recorders. A.9.(b)(1)
 - b. Demonstrate resolution of the problem of glare on CRT displays. A.9.(b)(2)
 - c. Modify CRT displays to improve CRT readability. A.9.(b)(3)

- d. Demonstrate availability of operational procedures covering operator actions in the event of total loss of the process computer system. A.9.(b)(4)
- e. Relabel point ID display to be consistent with thumbwheel control. A.9.(b)(5)
- f. Reorganize point ID index by component number and by system. A.9.(b)(7)

B. Deficiencies to be corrected before full power operation

1. Annunciators and alarms

- a. Improve visual access to annunciator controls by color and shape coding. A.1.(b)(5)

C. Deficiencies to be addressed in the Detailed Control Room Design Review

The following items do not represent the entire scope of the detailed control room design report called for in Task I.D.1 of NUREG-0660, but are those deficiencies which have been identified at this time as requiring additional analysis to arrive at an appropriate solution, or which are scheduled for correction after initial full power operation.

1. Annunciators and Alarms

- a. Provide a plan for annunciator tile relocation that locates annunciator tiles above their related systems or controls/displays, and complete the analysis of annunciator tile organization within individual annunciator panels. A.1.(b)(1)(2)
- b. Provide a detailed analysis of annunciator panel arrangement that provides unambiguous distinction between alarms with direct plant safety implication and alarms not having a direct effect on plant safety. A.1.(b)(3)
- c. Provide a detailed analysis of the use of additional audible alarms (and associated tone/frequency coding) to improve directional cueing and operator location of alarmed panels, and to avoid the possibility of failure to recognize individual alarms during multiple alarm events. A.1.(b)(7)

2. Controls

- a. Provide a detailed analysis of the potential operator error that could be caused by the close spacing of adjacent J-handle controls (e.g., panel 1PM03J). Improve operator visual access to controls by relocating control indicator lights. Indicator light relocation to be accomplished prior to second startup cycle. A.2.(b)(1)
- b. Analyze all J-handle controls to ensure that visual access to legend/identification material obscured by the J-handle is not material that would be required during emergency situations. A.2.(b)(3)
- c. Identify and evaluate positive means of determining indicator light failure or degradation. A.2.(b)(9)

3. Displays

- a. Review all indicators with either temporary or permanent 'normal' range bands, and ensure that all applicable meters have been identified and that permanent 'normal' range bands have been installed prior to the second start up cycle. Identify all indicators where the provision of additional range bands (e.g., abnormal operation) would improve operator performance, and provide schedules for installing these range bands. A.3.(b)(3)
- b. Provide plans and schedules for reorganization of electrical panel 1PM01J meters. A.3.(b)(5)
- c. Provide detailed analyses of means to improve the positive association of legend/indicator lights with their associated controls. A.3.(b)(7)

4. Control/display relationships

- a. Develop improved Div. I Outboard Isolation valve labeling to minimize the potential confusion resulting from the A-B-C-D/A-E-J-N relationship as it now exists. A.4.(b)(2)
- b. Provide a detailed analysis of the RHR system Loop B Div. II mirror-imaging between Pump A and Pump B meters. Justify the arrangement as it now exists, or provide plans and schedules for meter relocation. A.4.(b)(6)(a)

- c. Provide detailed analyses for the relocation of Feedwater and Condensate panel 1PM03J controls and displays to enhance subsystem discrimination and improve control/display relationships. Provide plans and schedules for accomplishing relocations. A.4.(b)(11)(a)(b)(c)(d)
- d. Analyze Auxiliary Systems panel/console 1PM09J and 1PM10J and identify display relocations to improve control/display relationships. Complete relocations prior to second startup. A.4.(b)(12)(a)
- e. Analyze Electrical Control panel 1PM01J and relocate selected meters to improve control/display relationships. Complete relocations prior to second startup. A.4.(b)(13)(a)(c)
- f. Provide an analysis of the Reactor Control Panel 1H13P603 status indicator mirror imaging. Justify this arrangement or provide plans and schedules for revised sequencing of these indicators. A.4.(b)(16)(a)

5. Labels

No requirements

6. Recorders

- a. Provide an analysis of the potential problems associated with use of dual-scale chart paper. A.6.(b)(7)

7. Workspace, layout and environment

- a. Provide a detailed analysis of the duties and functions of the center desk operator, acting as a communications command center controller, during the course of an emergency requiring communications to-and-from the control room. A.7.(b)(1)(f)
- b. Provide an analysis and operational plans for Unit 1 or Unit 2 operator interfaces with the mirror-imaged Unit 1/Unit 2 consoles and panels. A.7.(b)(1)(h)
- c. In conjunction with the detailed analysis of annunciator panel rearrangement to distinguish between safety and non-safety alarms,

provide an analysis investigating the use of color (over and above 'first-out' red) to categorize the degree of severity or potential safety consequences of individual alarms. A.7.(b)(2)(c)

8. Remote shutdown panel

No requirements

9. Computer

- a. Provide an analysis of the apparent violation of design convention with respect to location of the number thumbwheel switch and the function thumbwheel switch. A.9.(b)(7)

I.G.1 Training During Low Power Testing

This item requires a special low power test that provides meaningful technical information beyond that obtained in the normal start-up program, and also provides supplemental operator training. The applicant's proposal only responded to supplemental operator training during their start-up program. We require additional low power tests from which useful information could be derived. In a telephone conversation with the applicant, we proposed a test that would meet these objectives. The applicant indicated that it would review our proposed test with General Electric and get back with us. We informed the applicant that to maintain our current schedule, we need agreement on the proposed test and a commitment from the applicant to perform the test, or one of similar scope, as soon as possible. We further noted that we need the details of the test and a safety analysis for our review four weeks prior to the scheduled test date.

II.B.1 Reactor Coolant System Vents

We require the following to complete our review:

- a. Procedures and supporting analysis for operator use of the vents.
- b. Verification that a positive indication of valve position is provided in the control room.
- c. Description and drawings of the specific design features of the LaSalle vent system. A comparison of the venting capability should be made with the generic venting capability proposed by the BWR owners group.

II.B.2 Plant Shielding

This item states that the location of all vital areas be identified and the applicant provide for adequate access to vital areas and protection of safety equipment by design changes, increased permanent or temporary shielding. Accordingly, the applicant must provide layout drawings to indicate the

location of the vital areas, post-accident access routes to those areas, and shielding modifications made as a result of implementing NUREG-0737 requirements.

II.B.3 Post-Accident Sampling

The applicant has not provided the piping and instrument drawings locating the post-accident sampling and analysis systems, and also estimates for sampling and analysis times.

II.D.1 Relief and Safety Valve Test Requirements

The applicant has not provided a commitment for resolution of this item. We require a commitment to requirements of NUREG-0737 as applied to II.D.1 and our generic resolution of BWR Owner's Group testing programs.

II.B.7 Analysis of Hydrogen Control and

II.B.8 Degraded Core

To meet II.B.7 & II.B.8 action items, the applicant committed to inert the containment with certain contingencies. Further discussions with the applicant are needed before we can conclude our review on this matter.

II.D.3 Valve Position Indication

The applicant has submitted sufficient information to start our review.

II.F.1 Additional Accident Monitoring Instrumentation*

1. The applicant does not comply with the low energy gamma sensitivity requirements of Table II.F.1-3 of October 30, 1979 clarification letter for the high-range containment monitor. LaSalle's containment monitors are located in steel sleeves which will result in the inability of the monitors to detect 60 KEV photons.
2. The applicant has not provided a summary of the interim procedures for quantifying the high-level accident radioactivity releases of noble gases

*Additional requirements may be defined later.

and iodines. However, if the applicant completes installation and calibration of high-range noble gas effluent monitors and iodine and particulate effluent samples prior to fuel loading, then interim procedures are not necessary.

II.F.2 Inadequate Core Cooling Instruments

The applicant states that this item is not applicable to LaSalle. However, NUREG-0737 requires by fuel load that a description of other instrumentation be submitted by all plants and installation of additional instrumentation by 1/1/82.

II.K.1 IE Bulletins

10. Operability Status

The October 20, 1980 response is incomplete. The applicant must review and modify, as required, administrative procedures to be used to verify redundant systems operability when safety-related systems are removed from service. The applicant must also review and modify, as required, procedures for restoring equipment to service and to assure operability status is known. Furthermore, the applicant must review procedures to assure operator awareness of system status.

23. Reactor Vessel Level Instrumentation

The applicant must provide a description of alternate instrumentation that might give the operator the same information on plant status as the primary level indicators.

II.K.3 Final Recommendations of B&O Task Force

3. Reporting SV & RV failures & challenges

This item has not been addressed by the applicant. However, the applicant committed to perform this item.

13. HPCI & RCIC Initiation Levels

The applicant has provided its bases for not implementing this item, but we require the applicant to provide analyses which supports its position. In addition, the applicant must address provisions for automatic restart of RCIC.

15. Isolation of HPCI and RCIC

The applicant has indicated to incorporate time delay relays to overcome pressure spike, however the installation date will not be till June 1, 1982. NUREG-0737 requires by 4 months before operating license.

16. Challenges to and Failure of Relief Valves

The applicant must provide the results of the BWR Owner's Group in this area.

17. ECCS Outages

This is not applicable to LaSalle.

18. ADS Actuation

This item was not addressed by the applicant.

21. Restart of LPCS & LPCI

The applicant must provide the results of the BWR Owner's Group in this area.

22. RCIC Suction

The applicant has provided the information on their proposed design change to meet this requirement. We consider this item closed except for their submittal of the final design. In addition the applicant indicates that the modification will be completed by 6/82 as compared to NUREG-0737 requirement 1/1/82.

24. Space Cooling for HPCI/RCIC

The applicant must provide verification that the HPCI/RCIC systems are designed to withstand the complete loss of alternating current power to their support systems, including coolers for at least two hours. It is not clear that the FSAR analysis referenced in the October 20, 1980 response address a two-hour loss of all alternating current power nor that the analyses apply to RCIC which is not part of the ECC system.

30. Small Break LOCA Methods

This item was not addressed by the applicant.

44. Evaluate Transients with Single Failure

The October 20, 1980 response references FSAR transient analyses; however, these analyses do not include worst single failure. The applicant must provide an evaluation of anticipated transients with single failure to verify no fuel failure.

45. Manual Depressurization

The applicant must provide the results of the BWR Owner's Group Study of this topic.

46. Michelson Concerns

This item was not addressed by the applicant.

III.A.2 Emergency Preparedness - Long Term

Based on our review, we conclude that upon satisfactory resolution of the items listed below the planning objectives of NUREG-0654 will be met:

1. Provide a description of and completion schedule for meeting the minimum shift staffing requirement as indicated in Table B-1. The Plan must describe the on-shift staffing levels and describe the capability to augment the on-shift functional areas within a short period after declaration. The implementation schedule for licensed operators, auxiliary operators, and the shift technical advisor shall be as specified in the July 31, 1980, letter to all power reactor licensees.
2. Provide for predetermined EALS for the high range effluent monitors. EALS shall be based on offsite dose rates in accordance with Appendix 1 of NUREG-0654 and with the recommendations set forth in Table 5.1 of the Manual of Protective Action Guides.
3. Provide a description of and completion schedule for a prompt alerting and notification system which meets the design objectives of Appendix 3 of NUREG-0654, Revision 1.
4. Provide an actual sample of the public educational program in the Plan for NRC review.
5. Provide a description of and completion schedule for an upgraded meteorological program which meets the criteria stated in Appendix 2 of NUREG-0654, Revision 1.
6. Provide a summary of the evacuation time study and a description of their use for recommending protective actions.
7. Provide a description of the expected dose reduction factors offered in residential units near the facility.

8. Fulfill the following commitments:
 - a. Clearly indicate in the Plan that the local emergency organizations will be invited to participate in annual exercises and that State emergency organizations will be invited once every three years.
 - b. Clearly indicate in the Plan that Health Physics drills will be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. These drills shall include an actual test of the post-accident sampling systems.
 - c. The Plan must indicate that independent audits of Emergency Preparedness will be conducted annually.
9. Conduct an exercise* that tests the integrated capability and a major portion of basic elements within emergency preparedness plans and organizations (i.e. licensee, State and county groups).

* An exercise has recently been conducted with the licensee, State of Illinois, and LaSalle and Grundy Counties on December 4, 1980. This was a major full-scale exercise with all organizations and was observed by the NRC.

III.D.1.1 Primary Coolant Sources Outside Containment

The applicant has not provided: (1) a list of the systems to be initially tested prior to full power operation, (2) a description of the method for obtaining actual leak rates, and (3) frequency of periodic leak testing in the continuing leak reduction program. Also, the applicant has not discussed the applicability of North Anna and related incidents (discussed in NUREG-0737, item III.D.1.1 clarification, subsection 3) to LaSalle. We require this information to resolve our concern relating to this item.

Items Required to be Addressed by a Date
Other Than Fuel Load or Full Power

I.D.2

Plant Safety Parameter Display Console

The applicant has not addressed this item. However, in NUREG-0737 for this item, the specific implementation schedule and specific requirements were specified to be presented in NUREG-0696. We anticipate that NUREG-0696 will be issued in December 1980, and that we will require that applicants shall submit to us by April 1, 1981 or prior to issuance of an operating license, whichever is later, a description of the design of the safety parameter display system and their schedule of installation of this system. We will perform a pre-installation audit. A safety parameter display system shall be operational, but not necessarily meet all the design criteria of NUREG-0696 by July 1, 1982, or prior to issuance of an operating license, whichever is later. Compliance with all design requirements of NUREG-0696 is required by April 1, 1983.

II.K.3

25. Power on Pump Seals 7/1/81

This item was not addressed by the applicant.

27. Common Reference Level 7/1/81

The technical specification water-level nomenclature described in the October 20, 1980 response is unacceptable as a substitute for a common reference point for level instrumentation. The applicant must provide documentation of modifications to level instrumentation to reference a common point.

28. Qualification of ADS Accumulators 1/1/82

The fact that only 2 of 7 valves are needed in the short term and 1 of 7 valves is needed in the long term is not sufficient justification of design acceptability. The applicant must verify that the accumulators on the ADS valves are designed to withstand a hostile environment and still perform their function 100 days after an accident.

31. Plant-Specific Analysis 1/1/83

This item was not addressed by the applicant.

III.A.1.2 Upgrade Emergency Support Facilities

Additional clarification will be provided in the near future.

No Additional Information Required

I.A.2.1
I.A.2.3
I.A.3.1
I.C.3
II.B.4
II.E.4.1
II.E.4.2
II.K.1 item 5 and item 22
III.A.1.1
III.D.3.3
III.D.3.4