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Docket Nos. 50-352/353

MEMORANDUM FOR: G. Lainas, Assistant Director  
for Engineering Branch, DBL  
B. Liaw, Chief, Engineering Branch, DBL  
L. Phillips, Acting Chief, RSB, DBL  
G. Hulman, Chief, PSB, DBL  
M. Srinivasan, Chief, EICSB, DBL  
D. Vassallo, Chief, FOB, DBL  
G. Holahan, Director, ORAS, NRR

THROUGH: Walter R. Butler, Director  
BWR Project Directorate No. 4, DBL

FROM: Robert E. Martin, Sr. Project Manager  
BWR Project Directorate No. 4, DBL

SUBJECT: DRAFT NRR INPUT FOR THE LIMERICK SALP FOR THE PERIOD  
DECEMBER 1, 1984 TO JANUARY 31, 1986

Enclosed is the draft NRR SALP report for the Philadelphia Electric Company's Limerick Generating Station for the period December 1, 1984 until January 31, 1986. The report is based on SALP inputs provided by technical review personnel and the assessments made by the Project Manager. The proposed overall performance rating in the functional area of Licensing Activities is Category 1. In addition, please find the following:

- Appendix A: SALP EVALUATION MATRIX
- Appendix B: NRR SUPPORTING DATA AND SUMMARY
- Appendix C: SUMMARY OF PREVIOUS NRC SALP EVALUATIONS
- Appendix D: SUMMARY OF PREVIOUS NRR SALP EVALUATION  
OF LICENSING ACTIVITIES

Please review the draft evaluation and provide any comments you feel appropriate. All comments received within 7 days of the date of this memorandum will be considered in the final report.

Original Signed by

Robert E. Martin, Sr. Project Manager  
BWR Project Directorate No. 4, DBL

Enclosures:

1. Draft NRR SALP Report
2. Appendices A, B, C, and D

cc: H. R. Denton  
D. G. Eisenhut  
R. Bernero  
R. Houston

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

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R. Berrero  
R. Houston

FACILITY: Limerick Generating Station, Units 1 and 2  
LICENSEE: Philadelphia Electric Company  
EVALUATION PERIOD: December 1, 1984 to January 31, 1986  
PROJECT MANAGER: Robert E. Martin

## I. INTRODUCTION

This report presents the results of the evaluation of the Philadelphia Electric Company (PECo), the licensee and applicant for the Limerick Generating Station, Units 1 and 2, respectively, in the functional area of Licensing Activities.

The approach used in this evaluation is consistent with the provisions of NRR Office Letter No. 44, NRR Inputs to SALP Process, dated January 3, 1984, which requires that each organization responsible for preparing a Safety Evaluation provide a SALP input upon completion of the evaluation. The staff has applied the SALP evaluation criteria for the performance attributes based on first hand experience with the licensee or with the licensee's submittals.

The individual SALP evaluations for each rated issue were assembled into a matrix (See Appendix A). Those data were then used, with appropriate weighting factors for the importance to safety of the licensing issue, to develop the overall evaluation of the licensee's performance. The assessments for the individual ratings were also tempered with judgment regarding the appropriateness of the rating for the specific licensing issue.

This approach is consistent with NRC Manual Chapter 0516, which specifies that each functional area evaluated will be assigned a performance category based on a composite of a number of attributes.

## II. SUMMARY OF RESULTS

The licensee has, in general, continued the high level of performance of the previous two SALP evaluations in the Licensing Activities area. There were a few exceptions to this general high level of performance; specifically, they were the initial handling of the remote shutdown system redundancy issue and the safety parameter display system issue. However, the licensee's response to staff inquiry in these areas was vigorous and technically sound.

Overall, the licensee's strong points are the approach to problems from a safety standpoint, the responsiveness to NRC concerns, the qualifications and depth of staffing and the reporting of events. Senior management control is widely apparent and particularly when a response to a problem is called for. A weak point may be the area of ensuring that all regulatory issues are adequately followed during the transition period from concerns that primarily involve NTOL issues to concerns that primarily involve operating reactor issues.

Based on the assessment approach described in the Introduction, the licensee's performance in the functional area of Licensing Activities is rated Category 1.

### III. CRITERIA

The seven evaluation criteria as given in NRC Manual Chapter 0516 (Table 1) were used in this assessment. In addition, housekeeping in and around the plant is also discussed. These criteria are as follows:

- A. Management involvement in assuring quality
- B. Approach to resolution of technical issues from a safety standpoint
- C. Responsiveness to NRC initiatives
- D. Enforcement History\*
- E. Staffing (including management)\*
- F. Reporting and analysis of reportable events
- G. Training qualification and effectiveness\*
- H. Housekeeping\*

### IV. PERFORMANCE ANALYSIS

The licensee's performance for the Licensing Activities functional area was evaluated for four of the eight criteria listed above. The data base of experience in this rating period for the remaining four criteria (asterisked above) was much smaller than for the other four criteria and therefore, only a summary comment is provided for those criteria.

This performance assessment is based on the staff's evaluation of the licensee's performance in support of licensing actions which had a significant level of activity during the assessment period. These actions included numerous ASLB and ASLAB activities including an ASLB hearing on the Graterford prisoner offsite emergency evacuation issues, preparation of three supplements to the SER, presentation of the proposed full power license to the Commission and operation of the plant in the startup testing program throughout most of the rating period. An extensive effort was required by the staff and the licensee to support these actions during the rating period. Those actions which were explicitly identified as completed licensing actions and reported in SER supplements are listed below (21 actions).

- 1. On-site Meteorological Measurements (III.A.2)
- 2. Pipe break jet impingement loads
- 3. Environmental Conditions Inside Primary Containment
- 4. Findings of RG 1.97 review
- 5. Heavy Loads Handling - Phase II
- 6. Tornado Missile Effects on Ultimate Heat Sink
- 7. Fire Protection System - Completed Modifications
- 8. Shift Advisor Qualifications
- 9. Independent Design Verification Program Evaluation
- 10. Relief per 10 CFR 50.55 for Revision 5 of IST program
- 11. Relief per 10 CFR 50.55 for Preservice Inspection Program items
- 12. Initial Containment Inerting per 10 CFR 50.44

13. Remote Shutdown System Redundancy
14. Solid Radwaste Process Control Program
15. Offsite Emergency Planning
16. Generic Letter 83-28, Item 1.1
17. Detailed Control Room Design Review
18. Containment Isolation Dependability (II.E.4.2)
19. Emergency Plan Exercise Schedule
20. Generic Letter 83-28, Items 3.1.3 and 3.2.3
21. Safety Parameter Display System

A. Management Involvement And Control In Assuring Quality

The licensee's management participated directly in almost all of the major licensing activities addressed in this report. Notable examples of the positive contributions as a result of this management involvement as well as the several areas which could have benefited from additional attention are summarized below.

° The reviews for all of the items listed above in Part IV, except where discussed below, were timely, thorough and technically sound. Subsequent requests for information were not required to support resolution of these issues.

° The Senior Vice President for Nuclear Power was directly involved in supporting the staff's site visit of December 20, 1984 to confirm features of plant design related to the ultimate heat sink tornado missile issue.

° The resolution of the IDVP item concerning pipe break jet impingement loads required several meetings and licensee submittals. However, these were accomplished vigorously over a short period of time and upon identification of the analyses required to address the issue, the licensee's corrective action demonstrated initiative in responding to the issue and resulted in resolution of the concern.

° The resolution of the redundancy in remote shutdown equipment issue required several iterations and submittals to ensure that all of the required information had been adequately provided to the staff. However, once this information was received from the licensee in a sufficiently detailed and verifiable form it showed that the issue was technically resolved and that all but a few of the required hardware modifications had been completed.

° There was only one occurrence during the rating period involving a breakdown in management control of licensing activities. This occurrence involved implementing a FSAR scheduler commitment and associated license condition and the failure of the licensee to notify the staff in a timely manner that the schedule for the startup testing of the safety parameter display system (SPDS) would need to be amended. However, the licensee's corrective action was prompt and thorough. This experience was a departure from the licensee's overall excellent record in anticipating future needs and in communicating information of significance to licensing issues to NRR in a timely, thorough and technically sound manner.

° The licensee's Superintendent for Plant Operations participated in a meeting with the staff to ensure that the applications for license amendments were technically complete and contained adequate bases for the determinations on significant hazards considerations and environmental impact assessments. The proposed license amendments involved the Technical Specifications in regard to surveillance intervals on check valve and isolation valve testing.

° Management participation was particularly evident in the development and implementation of a corrective action program in response to the relatively high rate of reportable events experienced in the early months of licensed operation.

During this assessment period several changes in management responsibilities occurred in response to the transition in plant status from a construction/preoperational state to an operating state. The plant staff was reorganized to provide an additional Superintendent reporting to the Plant Manager to provide for improved control of the activities of Plant Services and of Plant Operations. Also, with the change in status to an operating plant, the corporate staff in the Electric Production Department undertakes certain functions in supporting licensing activities with the NRC staff. Coordination of communications between the NRR staff and personnel in the Electric Production Department, the Engineering and Research Department, which previously had sole responsibility for dealing with NRR licensing issues, and the plant staff has been accomplished in a very effective manner.

On the basis of these observations a rating of category 1 is assigned for this attribute. However, it is recommended that the licensee continue to ensure that a broad oversight be maintained to ensure that forthcoming scheduler requirements are continually recognized and responded to in a timely manner.

#### B. Approach to Resolution of Technical Issues From a Safety Standpoint

Most of the technical issues considered during this rating period were portions of larger issues from the previous rating period. With only a few exceptions, which had relatively minor consequences from a safety standpoint and are discussed above, the licensee's management and staff continued to demonstrate a thorough understanding of the issues. This understanding was often reflected in the adequacy of initial responses to issues. For example, for 11 (Items 1, 3, 4, 5, 8, 12, 14, 16, 17, 19, and 20) of the 21 actions listed earlier in Part IV, no further information, beyond the initial response which was reviewed in this rating period, was required to permit closure of the issues. For other issues, which did require iterations to achieve resolution (Items 2, 6, 11, 13, and 21) the final resolution proposed by the licensee was conservative and technically sound.

On the basis of these observations, a rating of Category 1 is assigned for this attribute.

#### C. Responsiveness to NRC Initiatives

With only a few exceptions (e.g., remote shutdown system redundancy and safety parameter display system) wherein the licensee allowed a substantial fraction of the available time for dealing with an issue to expire before submitting the response to the staff, the licensee's record on this attribute is excellent.



The licensee has been prepared to support meetings and discussions with the staff as frequently and in as much depth as required to reach a technically sound and thorough resolution. This was apparent in our reviews of the pipe break jet impingement loads issue, the tornado missile effects on the ultimate heat sink issue, the IDVP, the preservice inspection program, the remote shutdown system, the DCRDR and the SPDS issues.

It is a characteristic of this licensee that schedule commitments are met or the staff is advised of the need and the associated basis for readjustment of any schedules.

On the basis of these observations a rating of Category 1 is assigned for this attribute.

#### D. Enforcement History

The bases for our assessments on this topic are the Project Manager's observations of various events which took place during the rating period. These events were principally addressed by offices other than NRR and are considered to represent highlights of this attribute for this rating period.

On May 30, 1985, a Notice of Violation and Proposed Imposition of Civil Penalties was issued to the licensee concerning physical protection requirements of Limerick and control of radiological hazards to workers at the Peach Bottom plant. These issues were of concern because they raised questions regarding the adequacy of licensee oversight of the performance of contractors at the plants. The licensee did not contest and promptly paid the civil penalty of \$50,000 for the Severity Level III problem at Limerick.

Early in the operating life at Limerick, Unit 1, a greater than desirable frequency of reportable events was experienced by the licensee. An NRC Inspection Report of February 11, 1985 documented the staff's concerns. The licensee's response, provided during a meeting on February 22, and in a letter dated April 2, 1985, described the corrective action program. The program included attention by senior management, an Independent Safety Engineering Group (ISEG) investigation and addressed the areas of 1) modifications to eliminate recurring design deficiencies, 2) actions to address personnel errors, and 3) programmatic improvements. The corrective actions appear to have been effective as borne out by the subsequent significant reduction in frequency of reportable events. No event to date has resulted in a serious degradation of safety barriers.

During this rating period there has been a rather active level of communication between Region I staff, including the Resident Inspector, and NRR staff, usually the Project Manager, regarding specific event histories, features of the plant design and the status of licensing issues. The licensee has been very cooperative and effective in supporting these communications whether by corporate or plant staff, technical or management personnel attention.

#### E. Staffing

The bases for our assessments on this topic are principally the Project Manager's observations during the rating period. No NRR licensing activities concerning staffing were undertaken during the rating period.

There has been little turnover among senior plant management, shift superintendents or operators during the period. The licensee now has sufficient licensed personnel to fully staff all six shifts (3 operational, 1 day-work, 1 off duty, and 1 in training). The licensee is also now maintaining a level of 3 SRO's on shift around the clock. These levels are in excess of the requirements of the Technical Specifications. There was substantial hot operating BWR experience distributed among the operating staff prior to the startup testing program. On these bases the station appears to be well staffed with operating personnel.

The corporate staff level in Philadelphia has been ample to meet the needs of the licensing activities during this period. This has been demonstrated in meetings and discussions with the NRC staff wherein the staffing level has in virtually every instance been adequate to meet the objectives of the meeting.

#### F. REPORTING AND ANALYSIS OF REPORTABLE EVENTS

PEPCo has held a full power operating license for the past 5 1/4 months of the 15 1/2 month report period. During these 15 1/2 months, the licensee reported 143 non-security events. A large number of events (58) occurred during the first 2 3/4 months of the low power license operation (October 26, 1984 to January 17, 1985). During that same period, one event was considered to be significant enough for the staff to review in detail: On November 29, 1984, Limerick experienced a power loss to the source range and intermediate range monitors. During the remaining 12 3/4 months of the period studied, the rate at which events were reported decreased significantly. The licensee's energetic corrective action program, which was addressing specific areas of performance, was successful in reducing by 2/3 the frequency of reportable events (mostly ESF actuations).

A total of 3 reactor trips during the full power license operation translates into a frequency of 6.8 trips/year, which is slightly higher than the average frequency of 5.9 trips/plant/year recently determined by AEOD, but a very low reactor trip average for a new plant.

Events at Limerick Unit 1 appear to have been reported promptly and accurately. The frequency of reportable events during the full power operation period is average for a new plant and none of the events was of any significance.

Based on these evaluations, and the licensee's successful efforts at reversing an adverse trend, the Operating Reactors Assessment Staff recommends a rating of Category 2 for the licensee's performance in frequency, reporting and analysis of reportable events.

#### G. TRAINING AND QUALIFICATION EFFECTIVENESS

The bases for our assessments on this topic are the Project Manager's contacts with the corporate licensing staff and the plant staff during the rating period. There were no NRR review activities concerning licensee training and qualification programs during this rating period.



Nevertheless the Project Manager has found that the training and qualifications of the licensee's corporate staff have continued to be maintained at a high level. This is due in part to the relatively low turnover of key technical and managerial personnel, many of whom have been with the licensee throughout much of the Unit 1 operating licensing review.

The Project Manager has also found, through limited contacts with plant staff such as the Superintendent for Operations, the Regulatory Engineer, several shift Superintendents and the Administrative Assistant for Security, that the plant staff is highly qualified to perform its functions, and is virtually always well informed concerning the status of the plant's systems and components. In general, the plant staff reflects a high degree of professionalism and a sense of being "on top of" the issues which arise during plant operations.

It is also noted that virtually all currently licensed operators have received their simulator training on the Limerick simulator located nearby at the Limerick Training Center.

#### H. Housekeeping

Housekeeping is an area that will be discussed elsewhere in the SALP report (usually in the Fire Protection and Housekeeping section). However, NRR has a continuing interest in this area since good housekeeping practices indicate that the licensee and its employees take pride in the facilities and their jobs. The Project Manager's observations and discussions with NRC Region I Resident Inspectors indicate that the plant is maintained in an orderly and clean working environment. For example, the Unit 1 side of the plant reflects a general absence of standing pools of water, oil or debris beneath equipment, spare or miscellaneous materials stored about the plant or even excessive dust on components in pipe tunnels.

APPENDIX A SALP EVALUATION MATRIX

Review Branch	Licensing Action Tac No	Management Involvement	Approach Resolution	Responsive- ness	Enforcement History	Reportable Events	Staffing	Training
ICSR	GL R3-28 Items 3.1.3 & 3.2.3 Post Maintenance Testing 56259/56261	1	1	1	NA	NA	NA	NA
Lasher ICSR	Remote Shutdown Capability-SSER 56251	1	3	3	NA	NA	NA	NA
Stevens SR	Reg Guide 1.97 Instrumentation	NA	1	1	NA	NA	NA	NA
ASR	Ultimate Heat Sink-SSER	NA	1	1	NA	NA	NA	NA
Ridgely METB	Solid Radwaste Process Control Program	1	1	1	NA	NA	NA	NA
Nichols HFER	Detailed Control Room Design Review-SSER for License Condition 2.C(8)(a)(1) 56247	2	2	2	NA	NA	NA	NA
1tracch HFER	Detailed Control Room Design Review-SSER for License Condition 2.C(8)(a)2 and 3 56247	2	2	2	NA	NA	NA	NA

[illegible]

## APPENDIX B - NRR Supporting Data and Summary

### 1. NRR/Licensee Meetings

January 10, 1985 Independent Design Verification Program Review

February 7, 1985 DL Director's Briefing on Project Status

March 5, 1985, IDVP Meeting on Jet Impingement Loads

March 12, 1985 SALP Meeting and Licensing Activities Review

April 22, 1985, Remote Shutdown System Redundancy

December 17, 1985 TS Surveillance Interval Extension for Valves

### 2. NRR Site Visits

December 20, 1984 Ultimate Heat Sink Protection from Tornado Missile Events

August 20, 1985 PM visited Resident Inspector and plant staff

September 25, 1985 PM Attended Management Meeting to Discuss Results of Initial Phases of Startup Test Program

December 5, 1985 PM, Hydrologist and Plant Systems personnel toured site in support of affidavits on potential for flooding of plant (LER 85-80).

### 3. Commission Briefings

August 8, 1985 Consideration of Issuance of Full Power License

### 4. Schedular Extensions Granted (Full Power License Conditions)

a) Fire protection - install stairway to Unit 2 cable spreading room

b) Reactor Enclosure Cooling Water and Chilled Water Isolation Valves - by first refueling outage

c) Hydrogen Recombiner Redundant Isolation Valves - by first refueling outage

d) Remote Shutdown System switches for pumps - by first refueling outage

e) Refueling floor volume connection to Standby Gas Treatment System - by first refueling outage

f) Scheduling of next full emergency preparedness exercise - by May 1986

Note: Items a, b, c, and e were repeated in the full power license from the low power license which was issued prior to this SALP rating period. Item d was updated from the low power license.

5. Reliefs Granted

Relief pursuant to 10 CFR 50.55 a(g) for Revision 5 to the Inservice Testing Program for Pumps and Valves as discussed in SSER No. 5.

Relief from certain ASME Code Section XI Preservice Inspection requirements as discussed in SSER No. 5.

6. Exemptions Granted (Full Power License)

- a) GDC-61 SGTS to refueling floor area
- b) GDC-56 Containment isolation valves
- c) GDC-19 Remote shutdown capability
- d) Appendix J Containment airlock testing
- e) Appendix J MSIV leak rate testing
- f) Appendix J TIP valve leak rate testing
- g) Appendix J RHR valve leak rate testing
- h) 10 CFR 50.44 Initial containment inerting
- i) Appendix E Scheduling of EP exercise

7. License Amendments Issued

Two requests for amendment of the full power license Technical Specifications were received but have not been acted on within the rating period. Also, the following activities relevant to the issuance of a full power license occurred.

May 1985, SER Supplement No. 4  
June 1985, SER Supplement No. 5  
August 1985, SER Supplement No. 6

May 2, 1985 ASLB Third Partial Initial Decision  
July 22, 1985 ASLB Fourth Partial Initial Decision

August 8, 1985, Commission Meeting and issuance of Full Power License

8. Emergency Technical Specification Changes Granted

None

9. Orders Issued

Numerous Orders were issued during this period by the ASLB and the ASLAB. Perhaps the two most prominent orders issued were those issued by NRR on August 15 and 21, 1985. In the August 15, 1985 Order the Director, NRR suspended operation above 5% power in view of the U.S. Court of Appeals for the Third Circuit's stay of effectiveness of the full power license. In the August 21 Order the Director, NRR, rescinded the August 15 order based on the Court's lifting of its stay.

10. NRR/Licensee Management Conference

February 7, 1985 Briefing of the Director, DL by the licensee and the staff on overall status of the project.

APPENDIX C

SUMMARY OF PREVIOUS NRC SALP EVALUATIONS FOR THE  
LIMERICK GENERATING STATION

<u>Functional Area</u>	December 1, 1982 to November 30, 1983	December 1, 1983 to November 30, 1984	<u>Trend</u>
1. Construction Activities	1 (Except 2 in Instrumentation and Control and in Engineering/Design Control)	1	Consistent
2. Preoperational and Startup Testing	2	2	Improving
3. Operational Readiness and Plant Operations	2	2	Improving
4. Radiological Controls	Not Assessed	2	Improving
5. Fire Protection/ Housekeeping	Not Assessed	1	Improving
6. Emergency Preparedness	Not Assessed	2	Improving
7. Security and Safeguards	Not Assessed	3	Improving
8. Licensing	1	1	Consistent



APPENDIX D

SUMMARY OF PREVIOUS NRR SALP EVALUATION OF  
LIMERICK GENERATING STATION LICENSING ACTIVITIES

	12/01/82 to 11/30/83	12/01/83 to 11/30/84	12/01/84 to 1/31/86 (PROPOSED)
Licensing			
°Management Involvement	1	1	1
°Approach to Resolution of Tech Issues	1	1	1
°Responsiveness	1	1	1
°Enforcement History	--	*	*
°Reportable Events	--	*	1
°Staffing	1	1	*
°Training	1	*	*
°Housekeeping	NA	**	*
°Overall Summary	1	1	1

\*This area was not formally assigned a numerical rating due to the small number and scope of issues addressed during the rating period. However, if the trend experienced on those few issues had been maintained over a larger base of experience then this would probably have been rated a Category 1.

\*\*Plant was under construction/pre-operational status for almost all of this period. Based on comments by senior NRC representatives during site visits this would probably have been a category 2 with an improving trend had it been rated separately during that period.