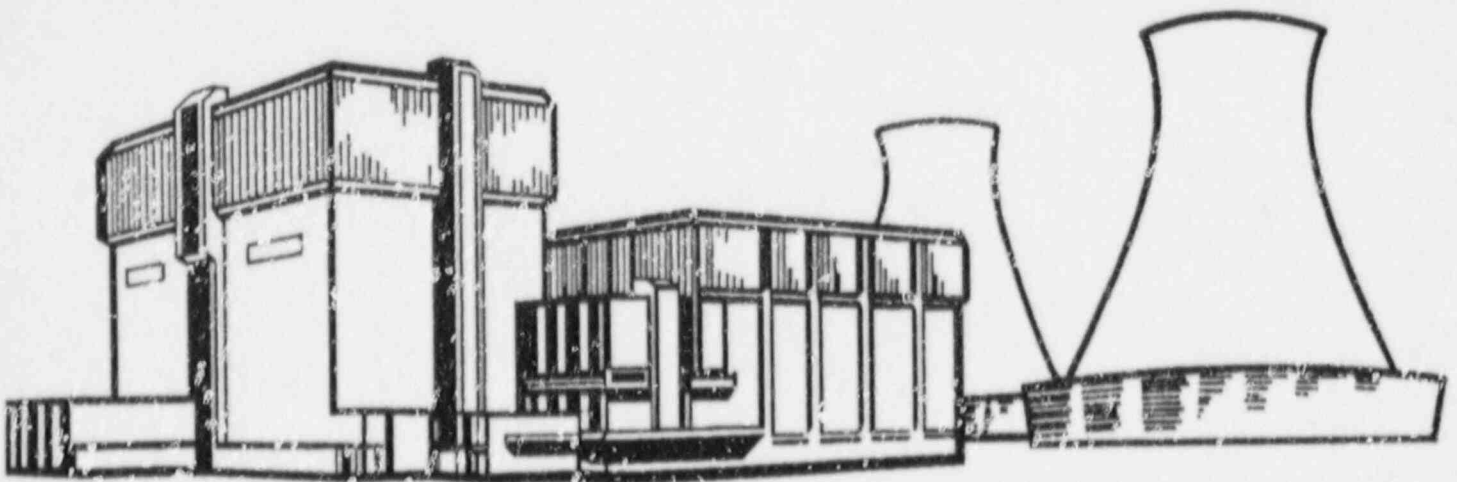




LIMERICK 2
READINESS VERIFICATION PROGRAM
(RVP) Description



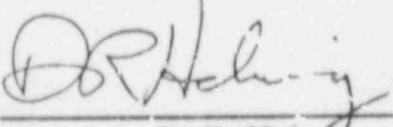
Philadelphia Electric Company

Revision 0
August, 1988

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(RVP) DESCRIPTION**

Philadelphia Electric Company

Approved By:  8/29/88
D. R. Helwig
General Manager, Nuclear Quality Assurance

Revision 0
August, 1988

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ACRONYMS

AC	Alternating Current
ADS	Automatic Depressurization System
A-E	Architect-Engineer
AI	Action Item
ANO	Arkansas Nuclear One
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CAT	Construction Assessment Team
CHR	Containment Heat Removal (Mode of Residual Heat Removal System)
CRD	Control Rod Drive System
DC	Direct Current
EAP	Engineering Assurance Program
ECCS	Emergency Core Cooling System
EQ	Equipment Qualification
ESW	Emergency Service Water
FDDR	Field Deviation Disposition Request
FPER	Fire Protection Evaluation Report
FSAR	Final Safety Analysis Report
GE	General Electric
HELB	High Energy Line Break
HPCI	High Pressure Coolant Injection System
ICE	Independent Critical Evaluation
I&C	Instrumentation and Control
IDCA	Independent Design and Construction Assessment
IDI	Independent Design Inspection
IDR	Independent Design Review
IDVP	Independent Design Verification Program
IE	Inspection and Enforcement
INPO	Institute for Nuclear Power Operations
IP	Inspection Procedure
IRO	Independent Review Organization
ISE	Independent Safety Engineering
K-T	Kepner-Tregoe
LER	Licensee Event Report
LGS	Limerick Generating Station
LOCA	Loss-of-Coolant Accident

ACRONYMS (Continued)

LPCI	Low Pressure Coolant Injection System
LPCS	Low Pressure Core Spray System
MELB	Moderate Energy Line Break
MOV	Motor-Operated Valve
NDE	Non-Destructive Examination
NQA	PECo Nuclear Quality Assurance Department
NRB	PECo Nuclear Review Board
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
OL	Operating License
OR	Observation Report
ORV	Operational Readiness Verification
PA	Program Audit
PECo	Philadelphia Electric Company
PFR	Preliminary Finding Report
PI	Physical Inspection
PM	Preventive Maintenance
PORC	LGS Plant Operations Review Committee
QA	Quality Assurance
QC	Quality Control
QVFI	Quality Verification Functional Inspection
RCIC	Reactor Core Isolation Cooling System
RHR	Residual Heat Removal System
RHRSW	Residual Heat Removal Service Water System
RPA	Readiness Program Assessment
RVP	Readiness Verification Program
RWCU	Reactor Water Clean-Up System
SALP	Systematic Assessment of Licensee Performance
SDR	Significant Deficiency Report
SER	Safety Evaluation Report
SOER	Significant Operating Event Report
SSFI	Safety System Functional Inspection
SWEC	Stone and Webster Engineering Corporation
TA	Technical Audit
V	Volt(s)
VP	Vice President

LIMERICK 2 READINESS VERIFICATION PROGRAM (RVP) DESCRIPTION

1.0 OBJECTIVE

The objective of the Readiness Verification Program (RVP) is to provide a managed program of independent verifications and self-assessment activities performed under the direction of PECO's Nuclear Quality Assurance Department (NQA). This program is designed to provide additional confidence to PECO management that Limerick 2 is ready to be licensed and placed in operation. In order to provide this assurance, selected verifications will be performed. The bases for the selected verifications are discussed in Section 5.0, "Significant Verification Items."

2.0 SCOPE

The Readiness Verification Program encompasses two distinct verification elements that are structured such that when they are combined, they will provide a comprehensive independent measure of Limerick 2's readiness for operation. The two verification elements are:

ONE: Design and Construction Readiness Verification

Perform independent verifications in selected areas, including an in-depth design and construction assessment of at least one safety-related system, to provide added confidence that Limerick 2 design and construction programs have been effectively implemented and are in accordance with licensing commitments.

TWO: Operational Readiness Verification

Perform independent verifications in selected areas of operational readiness to include procedural adequacy, facilities, training, operating practices, and programs designed to provide adequate staff operational knowledge to give additional assurance that Limerick 2 is ready for operation in accordance with licensing and other commitments.

3.0 ELEMENTS OF VERIFICATION

3.1 VERIFICATION ELEMENT ONE: DESIGN AND CONSTRUCTION READINESS VERIFICATION

Perform independent verifications in selected areas, including an in-depth design and construction assessment of at least one safety-related system, to provide added confidence that Limerick 2 design and construction programs have been effectively implemented and are in accordance with licensing commitments.

The major emphasis of design and construction readiness verification will be the conduct of an Independent Design and Construction Assessment (IDCA). A general description of the IDCA, including the sample system selection criteria, candidate systems considered, and system selection is described below. The basic protocol for IDCA conduct is described in Section 4.0.

3.1.1 IDCA Description

The IDCA is a comprehensive technical assessment of the implemented design and construction process for Limerick 2. By focusing on a system which represents a broad sample of design and construction activities, the IDCA is the equivalent of a combined NRC Integrated Design Inspection (IDI) and Construction Assessment Team (CAT). Specifically, it will utilize NRC-pioneered deep-vertical-slice techniques to perform an in-depth technical review of all design and construction activities associated with the sample system. It will start with basic licensing commitments and end with the as-installed configuration of the system and supporting structures. Because of the depth of the assessment and the breadth of activities reviewed during the IDCA, the results and conclusions of the review will provide both an assessment of the sample system's design and construction status vis-a-vis licensing commitments and an assessment of the plant's design and construction process implementation effectiveness.

Stone & Webster Engineering Corporation (SWEC) has been selected as the Independent Review Organization to conduct the IDCA. A detailed description of the IDCA to be conducted is found in SWEC Document J.O. No. 18138.00, "Program for the Independent Design and Construction Assessment of Limerick - Unit 2," which was submitted to the NRC by PECO letter dated July 7, 1988. In a response to this submittal dated July 28, 1988,

NRC stated that "...the IDCA, if properly implemented, will allow the staff to draw overall conclusions regarding the adequacy of the design and construction of Limerick Unit 2." This response further stated that the July 7, 1988 submittal incorporated NRC comments and was acceptable to NRC staff.

3.1.1.1 IDCA Considerations

The assessments will begin with an inspection plan which will address, as a minimum, the following technical disciplines and activities:

- Mechanical Systems Design
- Electrical Power Design
- Instrumentation and Controls Design
- Mechanical Components Design
- Civil and Structural Design
- Hazards Protection and Common Design Features
- Mechanical (Piping) Construction
- Electrical Construction
- Welding and Non-Destructive Examination
- Quality Assurance and Quality Control
- Procurement Activities

In keeping with NRC-pioneered deep-vertical-slice techniques which have been proven successful in a large number of IDI and CAT inspections, the inspection plan will not be treated as a rigid checklist of detailed review activities. Rather, it will be treated as a starting point for experienced inspectors to follow the leads of potential discrepancies and

concerns. The basic concept of this technique relies on the experience of the inspectors to probe deep into the process where concerns may exist, rather than rigid adherence to checklists in areas where no problems exist.

Where a potential problem is identified, additional information will normally be requested to assure the relevant facts are gathered prior to initiating an Action Item (AI). The request for additional information may or may not be in writing, depending on the complexity of the question and the need to better describe the request. An AI is initiated when there is concern that a licensing or design commitment has not been met. Also, since this is a performance-based assessment, an AI will be initiated if there is a concern that the structure, system, or component may not function in accordance with the design intent, even though there may be no specific violation of licensing or design commitments. All AIs and Observation Reports (ORs) will be uniquely identified and a status log will be maintained. Responses to AIs will be assessed to assure that they adequately address the questions raised. Adequate responses will result in an AI being closed. Unresolved AIs will be included in and traceable to OKs. (See Section 4.1.)

In general, the assessment will be conducted within well defined boundaries of the sample system, certain supporting systems, and supporting structures. However, where valid concerns are identified, the assessment will be expanded "horizontally" beyond the sample system boundaries as necessary to establish the limits of the concerns and their generic implications.

3.1.1.2 Tracking IDCA Results

Proposed corrective and preventive actions in response to ORs will be evaluated by the Independent Review Organization to assure that:

1. The entire problem has been addressed,
2. The proposed action is appropriate, and
3. Potential for impact on Limerick 1 has been considered and appropriately addressed.

Verification of corrective and preventive action implementation will be tracked by NQA as part of the overall RVP follow-up and closeout activities.

3.1.1.3 Trending

In addition to conclusions related to the design and construction process implementation for the sample system and the overall plant, the assessment will evaluate the number, type, and magnitude of observations and concerns for possible process deficiency trends. Trends which indicate the need for improvements will be identified and the potential impact on plant safety will be evaluated.

3.1.2 IDCA Sample System Selection

NQA has selected the Containment Heat Removal (CHR) Mode of Residual Heat Removal (RHR) as the sample system. The scope of the IDCA review is defined in SWEC Document J.O. No. 18138.00, "Program for the Independent Design and Construction Assessment of Limerick - Unit 2." This system was selected as the best choice of a system which provides the broadest possible review of design and construction activities while focusing the IDCA team's activities on a limited amount of plant equipment and structures.

The selection process which arrived at CHR is summarized in Figure 1 using Kepner-Tregoe (K-T) decision analysis. The selection process involved determination of selection criteria, rejection of certain systems for specific reasons (e.g., previously reviewed at Limerick or system complexity), and evaluation of the remaining candidate systems against the criteria using K-T weighted scoring techniques.

The system of choice should be the best balanced choice satisfying the following criteria:

1. Safety significant
2. Substantial architect-engineer involvement
3. Substantial interface with the reactor system
4. Representative of typical plant equipment (pumps, motors, motor operated valves, AC and DC power, etc.)
5. Moderate to high energy fluids
6. Involvement of all technical disciplines plus interdiscipline and interorganizational interfaces

7. Large variety of common design features (e.g., HELB/MELB, Seismic II/I, Internal and External Missiles, Flooding, Radiation Shielding)
8. Non-destructive examination (NDE) of welds, including radiography (Class 1 and Class 2 piping preferred)
9. Significant amount of Class 1E equipment and instruments
10. Common to both Limerick 1 and Limerick 2.

The Low Pressure Core Spray (LPCS) system was rejected from consideration because it was the sample system for the Limerick 1 Independent Design Verification Program (IDVP). The High Pressure Coolant Injection (HPCI) system was rejected because it was the subject of a recent NRC construction inspection at Limerick 2. The Residual Heat Removal (RHR) system, as a whole, was rejected because it is so extensive that it might dilute the focus of the assessment and therefore hamper the desired synergism among inspectors (however, various modes of RHR including containment cooling mode, low pressure injection mode, etc. were considered). Finally, a number of systems (e.g., Reactor Enclosure Cooling Water, Ultimate Heat Sink, etc.) were rejected because they were unlikely to achieve a high score against the established criteria.

In view of the above, the following systems were evaluated against the criteria:

1. Containment Heat Removal (CHR) mode of RHR,
2. Automatic Depressurization System and Low Pressure Coolant Injection System (ADS/LPCI),
3. RHR Service Water (RHRSW),
4. Emergency Service Water (ESW), and
5. Reactor Core Isolation Cooling (RCIC).

Both (1) and (2) are actually a combination of systems acting together in a specific safety mode. The numerical analysis, including the weighting factors assigned to the various criteria, is shown in Figure 1. Containment Heat Removal was the first choice, with ADS/LPCI second.

FIGURE 1
IDCA SAMPLE SYSTEM SELECTION
DECISION ANALYSIS SUMMARY

FACTORS:	CHR		ADS/LPCI		RHRSW		ESW		RCIC		HPCI		LPCS		RHR (ALL)	
	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.
Velocity Unreviewed		YES		YES		YES		YES		YES		NO (1)		NO (2)		YES
Reasonable Sample Size		YES		YES		YES		YES		YES		YES		YES		NO (2)
Representative of Overall Design & Construction Process		YES		YES		YES		---		YES		YES		YES		YES
WANTS:	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.	WT.	SC.
Safety Significant	5	10	50	10	5	40	8	40	3	15						
Substantial A/E Participation	4	9	36	7	26	10	40	10	5	20						
Interface w/Reactor System	3	9	27	10	30	5	15	3	8	24						
Representative of Typical Plant Equipment	4	9	36	9	36	7	28	7	7	28						
Moderate to High Energy	3	8	18	10	30	5	15	5	9	27						
Intricate and Intricate Intricate Intricate	5	8	40	6	40	7	35	9	7	35						
Common Design Features	4	5	20	8	32	5	20	5	6	32						
(1) HELMELB	2	5	10	5	10	5	10	5	5	10						
(2) Seismic Mt	3	5	15	5	15	3	9	3	5	15						
(3) Mixtures	2	7	14	4	8	7	14	7	4	8						
(4) Flooding	2	8	16	8	16	2	4	2	4	16						
(5) Shielding	4	8	32	10	40	7	28	7	8	32						
NDE of Welds, including Radiography	4	10	40	10	40	8	32	8	8	32						
Significant I/E Equipment and Instrumentation	4	9	36	2	8	10	40	8	2	8						
Common to both units	4	9	36	2	8	10	40	8	2	8						
TOTAL WEIGHTED SCORE		360	363	326	302	330	326	302	302	302						

RHRSW - Full Service Nuclear System
 HPCI - High Pressure Coolant Injection System
 LPCS - Low Pressure Core Spray System
 RHR (all) - Residual Heat Removal System, as a whole

ADS/LPCI - Automatic Depressurization System and Low Pressure Coolant Injection System
 CHR - Containment Heat Removal Mode of RHR
 ESW - Emergency Service Water System
 RCIC - Reactor Core Isolation Cooling System

(1) Previously studied in NRC Construction Inspection
 (2) Previously studied in Limerick 1 ODP
 (3) Judged too large a sample

3.1.3 Other Design and Construction Verifications

Because the IDCA is limited in scope, selected additional construction verifications are performed by NQA under the overall RVP. These verifications are performed as part of long-standing NQA programs or as specially developed NQA reviews.

3.2 VERIFICATION ELEMENT TWO: OPERATIONAL READINESS VERIFICATION

Perform independent verifications in selected areas of operational readiness to include procedural adequacy, facilities, training, operating practices, and programs designed to provide adequate staff operational knowledge to give additional assurance that Limerick 2 is ready for operation in accordance with licensing and other commitments.

An important aspect of the Operational Readiness Verification (ORV) will be the emphasis placed on evaluating the effectiveness of the site's operations program in addressing the differences between Limerick 1 and Limerick 2 structures, systems, and components and in using systems and structures that are shared or common between the two units. Due to the existence of shared features between the two units, the ORV will review those operational practices on the shared plant features to assure that required Limerick 1 operations will not adversely affect the safe operation of Limerick 2 and, conversely, that Limerick 2 operations will not adversely affect Limerick 1. This review concept will be applied to each area described in this section.

Operational readiness verification includes selected verifications performed by individuals of adequate technical experience and expertise to critically review bases and assumptions that underlie programs and procedures generated by line groups to support PECO startup, testing, and operations. Selected verifications will include the following items:

3.2.1 Operations Programs and Procedures

Assess the performance of training programs in selected areas, focusing attention on the identification of differences in operator responsibilities between Limerick 1 and Limerick 2 and the effects of Limerick 2 operation on Limerick 1. Verify implementation of approved plans developed and incorporated into the training program for training and requalifying operators and instructors and for addressing NRC concerns regarding two-unit operator licenses.

Perform an assessment of the procedure development process in selected areas for control, tracking, revision, and inclusion of human factors, design change considerations, and Unit 1 and 2 differences. Verify support procedures are complete and adequate to reliably operate the plant in accordance with plant design licensing bases by performing selected verifications in each of the following areas:

- Administrative procedures
- Maintenance program and scheduling procedures

- Operating procedures
- Emergency procedures
- Surveillance procedures
- Water chemistry control and analysis
- Emergency plan
- Radiological controls
- Fire prevention/protection

Verify that procedural consistency exists in selected areas between the physical plant and equipment and administrative or technical processes. Also verify that the procedures in selected areas adequately satisfy the requirements of their purpose and objectives, properly reflect technical specification requirements, and are technically accurate.

3.2.2 Start-Up Program and Procedures

Assess the performance of the start-up program in selected areas in demonstrating that structures, systems, and components are ready for operation by performing selected verification of testing and status control processes such as:

- Turnover and acceptance processes and interfaces between construction, start-up, and operations.
- Pre-operational test exception records, tracking nonconformances, test compilation and test exceptions, and resolving nonconforming conditions.
- Procedure preparation, review, approval, and revision.
- Approval of test performance.

3.2.3 Maintenance Program and Procedures

Perform selected verifications of the maintenance program with a special emphasis on assuring that controls, procedures, and schedules developed for Limerick 1 have been properly implemented on Limerick 2. Verify that Preventive Maintenance (PM) procedures have been developed using the latest vendor manuals, vendor recommendations, plant experience with similar equipment (plant history), industry experience with similar equipment (industry history), and technical specification requirements. Verify appropriate procedures exist to maintain plant components after receipt of Operating License (OL).

3.2.4 Organizational Interfaces

Verify interfacing arrangements between the construction, start-up, maintenance, operations, and other organizations have been effectively implemented by performing selected verifications of turnover from construction to start-up and from start-up to operations.

3.2.5 Operational Issues

Review Limerick 1 operations-oriented audit and surveillance reports and verify that any operational deficiencies and issues identified in those documents have been adequately addressed for Limerick 2 readiness.

4.0 PROTOCOL

4.1 IDCA

A specific protocol for communications and interactions between the Independent Review Organization (IRO) and PECO and its agents (Bechtel, General Electric, etc.) is necessary to ensure the independence of the IRO. At the same time, the protocol can not be so cumbersome that the flow of information is stifled in the name of independence to the point where the independent reviewer and the responding organizations can not do an effective job. As stated in Section 3.1.1, Stone and Webster Engineering Corporation (SWEC) has been selected as the IRO. The protocol for the Limerick 2 IDCA is included as Attachment 2 to SWEC document J.O. No. 18138.00, "Program For The Independent Design And Construction Assessment Of Limerick - Unit 2."

PECO reviewed protocols from previous IDVPs and IDRs, and adapted the features of these protocols to the Limerick 2 RVP. Based on this review, PECO concluded the following:

1. The IRO will be established as the agent of the General Manager, NQA, who has sole responsibility for the RVP and, therefore, the IDCA. As such, the IRO enjoys the same independence from influence by PECO management or project personnel as the General Manager, NQA, enjoys under 10CFR50, Appendix B.
2. In spite of the independence afforded by 10CFR50, Appendix B, a protocol is necessary to ensure there is no perception of undue influence by PECO, as viewed by intervenors, the NRC, or other concerned outside organizations.

In view of the above considerations, PECO and SWEC have established the following protocol for the RVP. This protocol assumes the NRC will elect to participate in or monitor the verification processes, and is written to accommodate NRC participation.

1. SWEC may request documentation material, meet with and interview individuals, conduct telephone conversations, or visit the site, PECO headquarters, Bechtel, General Electric, or other contractor's offices to obtain information without prior notification of the NRC or other outside organizations. Communications and transmittals of information shall, however, be documented and such documentation shall be maintained in a location accessible for NRC examination. Communications between SWEC and PECO solely with respect to financial and administrative aspects of the IDCA contract, are outside the scope of this protocol.

2. Observations, reports, evaluations and all exchange of correspondence, including drafts, between SWEC and PECO (including its contractors and subcontractors) will be submitted to the NRC at the same time as they are submitted to PECO. In addition, SWEC shall maintain IDCA files in such condition as to be prepared for NRC examination at any time throughout the assessment, including backup documentation in support of observations, evaluation of proposed resolutions, recommendations, trend analysis, etc.
3. Action Items (AIs) and Observation Reports (ORs) initiated by SWEC will be transmitted to Bechtel for action. Copies of AIs and ORs initiated by SWEC will be provided to the NRC and PECO by SWEC upon issuance. Copies of responses to AIs and ORs provided by Bechtel will be provided to the NRC and PECO by Bechtel upon issuance.
4. Following the issuance of an OR, Bechtel (or other responsible PECO contractor) may discuss the observation with SWEC to obtain further clarification and additional information to allow a full understanding of the observation and its basis. In these instances, the NRC will be notified 24 hours in advance of telephone calls and 48 hours in advance of meetings. Such communications or meetings shall be documented. Copies of such documentation shall be maintained accessible for NRC examination.
5. Following the issuance of an OR, should it be necessary for Bechtel (or other responsible PECO contractor) to discuss possible or proposed resolutions or actions with SWEC, the NRC will be notified 24 hours in advance of telephone calls and 48 hours in advance of scheduled meetings to allow the opportunity for participation. Such communications or meetings shall be documented. Copies of documentation shall be provided to the NRC and PECO in a timely manner, including copies of the ORs discussed.
6. To support the NRC independence criteria, each member of the IDCA team will be required to execute an IDCA agreement and an IDCA questionnaire. Exceptions noted on the IDCA questionnaire will be evaluated by SWEC and the executed questionnaires will be available for NRC and PECO review. Also, any full-time PECO employees assigned to the IDCA team will be under the direction of SWEC. Such personnel will be required to execute the PECO employee IDCA assignment acknowledgment and agreement to ensure objective conclusions and prevent compromising the purposes of this assessment.
7. If, during the conduct of this assessment, SWEC identifies an item for which it appears that an evaluation needs to be performed to assess potential reportability, SWEC

will issue a copy of the appropriate documentation of the item (AI or OR) directly to the General Manager, NQA for evaluation and reporting as required. In addition, a copy of the document will be sent to the NRC and Bechtel in lieu of the AI or OR issue process defined in 3, above.

4.2 VERIFICATIONS OTHER THAN IDCA AND IDCA CLOSEOUT

Closeout of IDCA ORs and other verifications conducted outside of the IDCA Program will be completed under the normal PECO Quality Assurance Program activities and responsibilities. Such verifications will use PECO procedures and commitments for root cause analysis, trending, and corrective actions as necessary to assure item closeout.

5.0 SIGNIFICANT VERIFICATION ITEMS

The RVP will assess a cross-section of Limerick 2's activities as described in the PECO-sponsored "Readiness Program Assessment for Limerick 2," (RPA) dated March 1988. The RPA was submitted to the NRC by PECO letter dated April 11, 1988. Problems and concerns having potential applicability to Limerick 2 were selected. NQA has undertaken the task to identify and document these specific verification items in a verification matrix (see Table 1). The matrix will be used during the conduct of the RVP to assure that the verification items are identified and adequately verified by NQA. This section discusses the development and use of the verification matrix.

5.1 SOURCE REVIEW

An independent review under NQA was conducted to assess if industry "lessons learned" and significant issues are or will be appropriately addressed at Limerick 2. The following sources were assessed for items and issues that in NQA's judgement may be critical to demonstrating Limerick 2 readiness for operation:

- Limerick 1 Licensee Event Reports (LERs)
- Limerick 1 Independent Design Verification Program (IDVP)
- Independent verification programs at Hope Creek 1, Nine Mile Point 2, Clinton, and Beaver Valley 2
- Independent Design Inspections (IDIs), Safety System Functional Inspections (SSFIs) and IDVPs done at other plants
- NRC responses to the above information
- NRC *Inspection and Enforcement Manual* procedures and instructions
- IE Bulletins, Notices, and Generic Letters
- NUREG-1275, *Operating Experience Feedback Report: New Plants*

- Institute of Nuclear Power Operations (INPO) Significant Operating Event Reports (SOERs)
- The 1987 Limerick 2 Systematic Assessment of Licensee Performance (SALP) report and PECO SALP responses
- The 1988 Limerick 1 SALP Report
- The PECO-sponsored Limerick 2 Readiness Program Assessment (RPA) and its implementation
- INPO evaluations of Limerick 1 operation
- Peach Bottom Restart Program for organizational readiness commitments that apply to Limerick 2
- NRC inspections of Limerick
- Limerick Station Significant Deficiency Reports (SDRs)
- Known differences between Limerick 1 and Limerick 2
- NOA audits and audit program

The 1987 Limerick 2 SALP Report and the PECO-sponsored "Readiness Program Assessment for Limerick 2," (RPA) are of particular interest to PECO management as these have both provided critical assessments of Limerick 2 readiness programs and activities. In the selection of specific RVP verification items, these assessments have been specifically included. Items are shown with their corresponding RPA function category; Licensing, Quality Assurance, Engineering, Construction, Hardware Readiness, or Organizational Readiness.

5.2 VERIFICATION MATRIX DEVELOPMENT

Items that were determined to apply to Limerick 2 were incorporated into a verification matrix. The left-hand column of the matrix lists items which are judged by NOA to be applicable to demonstrating Limerick 2 readiness for operation. The RPA function

category is then shown for the item. The source for each item is then listed. The items have been grouped into the following areas of like concern ("Bins") and are presented as such in Table 1:

Bin 1	Management Oversight
Bin 2	Regulatory Commitments
Bin 3	Other Commitments
Bin 4	Industry Experience/Recommendations
Bin 5	Unit 1/Unit 2 Differences
Bin 6	Component and System Functionality
Bin 7	Training and Qualification of Personnel
Bin 8	Procedure Adequacy and Implementation
Bin 9	Documentation

The matrix shows where items are related to Verification Element 1, Design and Construction Verification, and Verification Element 2, Operational Readiness Verification. Under each Verification Element, the verification method by which NQA will assure that the item has been addressed is listed. At least one of five verification methods will be used for each item. The five verification methods are:

- Technical Audit (TA) - A TA is a performance-based verification method that uses the audit process using individuals having sufficient technical expertise to assess the technical adequacy of the audited area.
- Program Audit (PA) - A PA is a compliance-based verification method that uses the audit process to conduct programmatic assessments of specified areas. This technique is appropriate for assessing the achievement of quality in the implementation of the QA program requirements for the audited area.
- Physical Inspection (PI) - A PI is technique that uses direct observation of the physical attributes and characteristics of a process or component to verify its conformance with predetermined requirements.
- Independent Critical Evaluation (ICE) - The ICE is a review technique using technically experienced individuals to critically review bases and assumptions used to develop programs, procedures and processes. As such, the ICE is used to verify that the right things are being done.

- *Independent Design and Construction Assessment (IDCA)* - Developed by NQA and is further described in SWEC Document J.O. No. 18138.00, "Program for the Independent Design and Construction Assessment of Limerick - Unit 2."

For each verification item listed, the NQA group(s) or other independent organization(s) responsible for carrying out the verification are designated. To track the verification progress, columns for Start Date, End Date, and Status are also included and are to be regularly updated throughout the course of the RVP. Start dates and End dates are shown by calendar quarter and year. Verification of each item is ultimately indicated in the Status column by the word "Complete" and is to be accompanied by a list of Closeout Documents supporting the "Complete" status.

A computerized data base system (dBase III PlusTM) will be used and continually updated throughout the duration of the RVP. In this manner, the updated matrix will be used to maintain traceability to Closeout Documents which are maintained in auditable files under the control of NQA.

3.3 VERIFICATION MATRIX REVISIONS

NQA will be responsible for the verifications performed and documenting results of the verifications. As new or revised verification items, elements, or methods are identified, NQA will appropriately revise the RVP and update the matrix.

5.4 OTHER ONGOING VERIFICATION ACTIVITIES BY NQA

In addition to the RVP, NQA will continue to perform Quality Assurance (QA) and Quality Control (QC) reviews, audits, inspections, and monitoring to assure that on a day-to-day basis Limerick 2 activities are conducted in accordance with appropriate procedures and requirements.

dBase III Plus is a registered trademark of Ashton-Tate.

5.5 VERIFICATION MATRIX LEGEND

The Legend for the matrix is as follows:

RPA Function Category

Limerick 2 functions required for plant readiness to receive an OL are as described in the PECO-sponsored "Readiness Program Assessment for Limerick 2" sections listed below:

<i>Licensing</i>	-	<i>Section 4.1</i>
<i>Quality Assurance</i>	-	<i>Section 4.2</i>
<i>Engineering</i>	-	<i>Section 4.3</i>
<i>Construction</i>	-	<i>Section 4.4</i>
<i>Hardware Readiness</i>	-	<i>Section 4.5.1</i>
<i>Organizational Readiness</i>	-	<i>Section 4.5.2</i>

Sources

ANO	-	Arkansas Nuclear One
EAP	-	Engineering Assurance Program
GE SIL	-	General Electric (Nuclear) Service Information Letter
IDR	-	Independent Design Review
IDVP	-	Independent Design Verification Program
IE	-	Inspection and Enforcement
INPO	-	Institute of Nuclear Power Operations
IP	-	Inspection Procedure
LER	-	Licensee Event Report
OR	-	Observation Report
PBAPS	-	Peach Bottom Atomic Power Station
PFR	-	Preliminary Finding Report
P&ID	-	Process and Instrumentation Diagram
QVFI	-	Quality Verification Functional Inspection
RPA	-	Readiness Program Assessment
SALP	-	Systematic Assessment of Licensee Performance
SDR	-	Significant Deficiency Report
SOER	-	Significant Operating Experience Report
SSFI	-	Safety System Functional Inspection
SWEC	-	Stonham Webster Engineering Corporation
TMI-I	-	Three Mile Island Unit 1

Verification Methods

- ICE - Independent Critical Evaluation
- IDCA - Independent Design and Construction Assessment
- PA - Program Audit
- PI - Physical Inspection
- TA - Technical Audit

Responsible Groups

- CONST QA - LGS Quality Assurance Unit 2
- CONST QC - LGS Quality Control Unit 2
- HQ QS - Headquarters Quality Support Division of NQA
- IRO - Independent Review Organization (SWEC)
- HQ ISED - Headquarters Independent Safety Engineering Division of NQA
- LGS ISEG - LGS Independent Safety Evaluation Group
- LGS QS - LGS Quality Support Section
- NQA GM - PECO Nuclear Quality Assurance Department General Manager
- OPS QA - LGS Quality Assurance Unit 1
- OPS QC - LGS Quality Control Unit 1
- FAD - Performance Assessment Division of NQA

Closeout Comments

- TBD - To Be Determined

TABLE 1
VERIFICATION MATRIX

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
1	7	Evaluate key QA personnel understand assigned startup responsibilities.	Quality Assurance	IE Manual IP 35501		ICE	PAD	4Q88	4Q88	SCHEDULED	TBD
2	7	Verify key preoperational test personnel meet specified qualification requirements.	Organizational Readiness	IE Manual IP 70302		PA	CONST QA	2Q88	3Q88	SCHEDULED	TBD
3	8	Verify preoperational test procedures have been reviewed and approved per procedures and have not been adversely affected by design changes and modifications.	Hardware Readiness	IE Manual IP 70302		PA	CONST QA LGS QS	4C87 4Q87	3Q88 3Q88	SCHEDULED SCHEDULED	TBD TBD
4	9	Verify vendor's manuals used by preoperational test personnel are current.	Hardware Readiness	IE Manual IP 70302		PA	CONST QA	4Q88	4Q88	SCHEDULED	TBD
5	8	Verify field-changed drawings are referred to the design engineer for review and revision and Configuration Control Process through startup, operations, and training.	Engineering	IE Manual IP 70302	IDCA	PA	IRO HQQS	3Q88 1Q89	1Q89 1Q89	SCHEDULED SCHEDULED	TBD TBD
6	7	Verify key personnel are familiar with established controls over corrective and preventive maintenance during preoperational testing.	Hardware Readiness	IE Manual IP 70302		TA	CONST QA	2Q88	4Q88	SCHEDULED	TBD
7	8	Verify acceptance criteria are used to evaluate startup tests and preoperational test results and justifications for test exceptions are documented.	Hardware Readiness	IE Manual IP 72301		PA	LGS ISEG	4Q88	1Q89	SCHEDULED	TBD
8	2	Verify startup test program is consistent with FSAR commitments.	Hardware Readiness	IE Manual IP 72400		PA	LGS QS	2Q88	1Q89	SCHEDULED	TBD
9	2,6,9	Verify QA Program and administrative controls define and control the scope of the QA Program.	Quality Assurance	IE Manual IP 35740		PA	HQQS	4Q88	4Q88	SCHEDULED	TBD

READINESS VERIFICATION MATRIX

ITEM ID #	RIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSE-OUT DOCUMENT
10	2	Verify QA audit program and schedule has been defined and is consistent with FSAR and technical specification commitments.	Quality Assurance	IE Manual IP 35741	PA	PA	OPS QA (TS) CONST QA (FSAR) HQGS (FSAR)	1089 3088 4088	1089 4088 4088	SCHEDULED SCHEDULED SCHEDULED	TBD TBD TBD
11	4,5,7	Evaluate QA staffing and qualifications to support two unit operation.	Organizational Readiness	QVFI, E.I. Hatch		ICE	NQA GM	4088	4088	SCHEDULED	TBD
12	2,6	Verify physical installation of selected mechanical and fluid systems are per current P&ID's and FSAR commitments.	Licensing	IE Manual IP 37301	IDCA		IR0	3088	1089	SCHEDULED	TBD
13	2,6	Verify control and logic instrumentation of a selected system conforms to FSAR description.	Licensing	IE Manual IP 37301	IDCA		IRC	3088	1089	SCHEDULED	TBD
14	1,4,5	Verify controls are in place to implement procedure updates per FSAR commitments.	Organizational Readiness	QVFI, Catawba 1&2		PA	OPS QC	1089	2089	SCHEDULED	TBD
15	2,5,6	Verify radiological environmental monitoring programs are operational, meet Tech. Spec. and FSAR commitments, and are adequate for two unit operation.	Organizational Readiness	IE Manual IP 80521		TA	OPS QA	2089	2089	SCHEDULED	TBD
16	2,7	Verify on-site (PORC) and off-site (NRB) safety review committees have been established, staffed, and function per FSAR and Tech. Spec. requirements.	Organizational Readiness	Restart Plan for PBAPS, IE Manual IP 40301		PA	PAD (NRB) OPS QA (PORC)	3088 2089	3088 2089	SCHEDULED SCHEDULED	TBD TBD
17	2,5	Verify effective implementation of the requirements of the Physical Security Plan and the Safeguards Contingency Plan associated with changing to two-unit operation at Limerick.	Organizational Readiness	IE Manual Chapter 81050	PI	TA	OPS QA OPS QC CONST QA	1089 1089 1089	2089 2089 1089	SCHEDULED SCHEDULED SCHEDULED	TBD TBD TBD
18	3,8	Verify Post-Turnover Change Control Process is formally defined and applied for Limerick 2 systems.	Licensing	RPA Report		PA	OPS QA	4088	1089	SCHEDULED	TBD
19	1,2	Verify adequate and timely open item close-out. DELETED - COVERED BY ITEMS 18, 20, 45, 58-71, 84.	Licensing	RPA Report		PA/TA	N/A	N/A	N/A	DELETED	N/A

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
20	2,8	Verify Licensing Document Revision Program has assessed impact of proposed modifications.	Licensing	RPA Report, 1987 Limerick 2 SALP	IDCA		IRO	3088	1089	SCHEDULED	TBD
21	3,4,6	Verify flued-head containment penetrations meet ASME Code for nozzles for primary upset load.	Engineering	Limerick 1 IDVP, PFR 016	IDCA		IRO	3088	1089	SCHEDULED	TBD
22	2,4,6,9	Verify sufficient and consistent documentation to conclude that HELB/MELB effects have been adequately considered and safe-shutdown capability was demonstrated.	Engineering	Clinton IDVP, OR-55, OR-57, OR-64, OR-73, Limerick 1 IDVP, PFR-019, PFR-022	IDCA		IRO	3088	1089	SCHEDULED	TBD
23	2,4,6	Verify exemption from pipe whip considerations based on pipe size has not been extended to jet impingement also.	Engineering	Limerick 1 IDVP, PFR-019, PFR-022	IDCA		IRO	3088	1089	SCHEDULED	TBD
24	2,4,6	Verify safety-related equipment has been adequately protected from damage due to interaction with other equipment during a seismic event.	Engineering	Clinton IDVP, OR-36	IDCA		IRO	3088	1089	SCHEDULED	TBD
25	2,4,6	Verify noncritical diesel generator trip circuits are bypassed during a LOCA condition.	Engineering	Clinton IDVP, OR-10	IDCA		IRL	3088	1089	SCHEDULED	TBD
26	2,4,6	Verify internal panel wiring and external raceway electrical separation has been adequately demonstrated.	Engineering	Clinton IDVP, OR-11	IDCA		IRO	3088	1089	SCHEDULED	TBD
27	2,6	Verify dynamic soil pressures have been adequately combined with seismic effects, i.e., proper methodology. DELETED - DOES NOT APPLY TO LIMERICK SITE.	Engineering	Clinton IDVP, OR-61	IDCA		N/A	N/A	N/A	DELETED	N/A

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
28	4,6	Verify procedure for calculation of instrument set points considers drift and other instrument inaccuracies. DELETED - INCORPORATED INTO ITEM 64.	Engineering	Hope Creek IDVP, OR-51, OR-161	IDCA		N/A	N/A	N/A	DELETED	N/A
29	4,6	Verify voltage drops associated with 120V AC control circuit lengths have been adequately controlled and tracked.	Engineering	Hope Creek IDVP, OR-216	IDCA		IRO	3Q88	1Q89	SCHEDULED	T8D
30	4,6	Verify conduit supports have been designed for peak seismic response, self load, tray systems loading, and amplification of acceleration.	Engineering	Hope Creek IDVP, OR-118, OR-155	IDCA		IRO	3Q88	1Q89	SCHEDULED	T8D
31	4,6	Verify piping relief valves and other pressure boundaries are designed to handle full-open failure of upstream pressure control valves for the RCIC, HPCI, and CRD systems.	Engineering	Nine Mile Point EAP, AI-E-P011, SSF(s): Oconee, Rencho Seco, Pilgrim	TA		HQGS CONST QA (Field Design)	1Q89 1Q89	1Q89 1Q89	SCHEDULED SCHEDULED	T8D T8D
32	4,6	Verify no flow path from suppression pool to the condensate storage tank during valve switchover from single valve failure.	Engineering	Nine Mile Point EAP, AI-E-P37, River Bend IDR	TA		LGS ISEG	1Q89	1Q89	SCHEDULED	T8D
33	4,6	Verify dc switchgear control circuits have been specified for maximum lengths based upon voltage drop and wire size considerations.	Engineering	Nine Mile Point EAP, AI-E-E33	IDCA		IRO	3Q88	1Q89	SCHEDULED	T8D
34	4,6	Verify structural load requirements are applied consistently to safety-related structures (e.g., seismic, wind, tornado, missile, etc.).	Engineering	Nine Mile Point EAP, AI-E-S06	IDCA		IRO	3Q88	1Q89	SCHEDULED	T8D
35	4,6	Verify sizing of suction-side safety-related pump relief valves considers leakage through parallel (idled) pump discharge check valves.	Engineering	Millstone 3 EAP, AI-P027	IDCA		IRO	3Q88	1Q89	SCHEDULED	T8D

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
36	4,6	Verify consistency of motor nameplate data, load lists, vendor data sheets, and drawings.	Hardware Readiness	Millstone 3 EAP, AI-E031	IDCA		IRO	3088	1089	SCHEDULED	TBD
37	4,6, 7,8	Verify selected system includes assessment of vulnerability to internal flooding and its effects on necessary support systems, and that appropriate physical and procedural protection is incorporated.	Engineering	INPO SOER 85-5	IDCA	TA	IRO LGS ISEG	3088 4088	1089 4088	SCHEDULED SCHEDULED	TBD TBD
38	4,6	Verify fan blade escape through nearby expansion joints considered as a potential internal missile hazard.	Engineering	Vogtle IDR, OR-4-92	IDCA		IRO	3088	1089	SCHEDULED	TBD
39	4,6	Verify battery capacity/loading calculations consider effects of low temperatures.	Engineering	SSFIs: Palisades, Pilgrim, Trojan, Turkey Point	IDCA		IRO	3088	1089	SCHEDULED	TBD
40	4,6, 8	Verify MOV overload heaters are correctly sized with proper overload protection provided and Surveillance Procedures have been developed per technical specifications.	Hardware Readiness	SSFIs: ANO, Palisades, Turkey Point	IDCA	PA	IRO (IDCA) OPS QA (QA)	3088 1089	1089 1089	SCHEDULED SCHEDULED	TBD TBD
41	4,6, 8	Verify periodic testing of safety-related check valves meets IST program requirements to assure they will perform their safety function.	Hardware Readiness	SSFIs: ANO, Palisades, Oconee		TA	LGS ISEG	1089	2089	SCHEDULED	TBD
42	4,6	Verify non-safety-grade air systems do not support safety functions.	Engineering	SSFIs: Palisades, Oconee	TA		LGS ISEG	4088	1089	SCHEDULED	TBD
43	2,4, 6	Verify single failure criterion is satisfied.	Engineering	SSFIs: ARO, TMI-1, Turkey Point	IDCA		IRO	3088	1089	SCHEDULED	TBD
44	4,6	Verify MOV torque switch settings are adequate for intended function and adequately controlled.	Hardware Readiness	SSFIs: Palisades, Oconee, TMI-1, Limerick 1 Inspection Report 87-17	IDCA/TA	TA	IRO (IDCA) HQQS (TA) CONST QA (TA)	3088 1089 2088	1089 1089 3088	SCHEDULED SCHEDULED SCHEDULED	TBD TBD TBD

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
45	3	Verify consistency and completeness of interface between open items/tracking lists in various groups (QA, Licensing, Startup, Operations, etc.).	Licensing	RPA Report		PA	OPS QA CONST QA LGS QS	2089 3088 3088	2089 2089 2089	SCHEDULED SCHEDULED SCHEDULED	TBD TBD TBD
46	6	Verify proper application of QA Program to design changes.	Engineering	Limerick 2 Inspection Report 87-16	IDCA		IRO	3088	1089	SCHEDULED	TBD
47	1,2	Verify effectiveness of the Field Audit Program.	Quality Assurance	PECo Audits	IDCA	PA	IRO (Const.) HQOS (Ops.)	3088 1089	1089 1089	SCHEDULED SCHEDULED	TBD TBD
48	4,6	Verify chronic problems with the main control room ventilation chlorine gas detection systems are resolved.	Engineering	Limerick 1 LERs (numerous)	TA		LGS ISEG	1089	1089	SCHEDULED	TBD
49	4,6, 8	Verify reactor vessel neutron fluence dosimetry is installed.	Hardware Readiness	Limerick 1 LER 87-32		PI	CONST QC	1089	2089	SCHEDULED	TBD
50	4,6, 8	Verify RWCU system changes to reflect lessons from Limerick 1 LER 85-82.	Hardware Readiness	Limerick 1 LER 85-82		TA	LGS ISEG	4088	4088	SCHEDULED	TBD
51	3,4	Verify existence of required electrical conduit penetration plugs and controls.	Quality Assurance	Limerick 1 LER 86-18	PI	PA	CONST QC (PI) OPS QA (PA)	3088 2089	4088 2089	SCHEDULED SCHEDULED	TBD TBD
52	4,5	Verify lessons from Limerick 1 LERs are incorporated into Limerick 2 surveillance test, startup, and operating procedures.	Hardware Readiness	Limerick 1 LERs		TA	LGS ISEG	4088	2089	SCHEDULED	TBD
53	4,6, 8	Verify adequate control of procedure revisions during plant modifications.	Hardware Readiness	Limerick 1 LER 85-98	IDCA	PA	IRO (IDCA) OPS QA (PA)	3088 2089	1089 2089	SCHEDULED SCHEDULED	TBD TBD
54	4,6, 9	Verify master surveillance test schedule list complies with technical specifications.	Hardware Readiness	Limerick 1 LER 88-3		PA	OPS QA LGS QS	2089 2089	2089 2089	SCHEDULED SCHEDULED	TBD TBD
55	1,2, 4	Verify adequacy of surveillance test with respect to RHRSW system technical specifications.	Hardware Readiness	Limerick 1 LER 86-12		TA	LGS ISEG	2089	2089	SCHEDULED	TBD

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
56	4,9	Verify system and policy adequacy with respect to portable radio transmissions.	Hardware Readiness	Limerick 1 LER 85-44		TA	OPS QA	1089	1089	SCHEDULED	TBD
57	2,4	Verify each Limerick 2 license condition is implemented as described in the SEM and its supplements.	Licensing	Limerick 1 LER 85-45		PA	OPS QA	2089	2089	SCHEDULED	TBD
58	2,8	Verify Field Deviation Disposition Requests (FDDRs) were evaluated for licensing significance.	Licensing	RPA Open Item	IDCA		IRO	3088	1089	SCHEDULED	TBD
59	2,8	Verify PECO NRC Generic Letter Review Program is up-to-date and current.	Licensing	RPA Open Item	IDCA	TA	IRO (IDCA) HQQS (TA)	3088 2089	1089 2089	SCHEDULED SCHEDULED	TBD TBD
60	2,6	Verify adequacy of link between Startup/Operations and the licensing documents. DELETED - COVERED BY ITEMS 45 and 67.	Hardware Readiness	RPA Open Item, RPA Report		PA	N/A	N/A	N/A	DELETED	N/A
61	1,3	Evaluate adequacy of plan to transition Limerick 2 licensing responsibilities from Nuclear Engineering to Nuclear Support and LGS.	Licensing	RPA Open Item, Limerick 1 SALP		ICE	LGS ISEG	2089	2089	SCHEDULED	TBD
62	1,3	Evaluate actions to assure that Quality Assurance organization is not too complex with too many methods to report nonconformances.	Quality Assurance	RPA Open Item		ICE	NQA GM	3088	4088	SCHEDULED	TBD
63	3	Verify Engineering walkdown list is finalized.	Engineering	RPA Open Item	PA		HQQS	1089	1089	SCHEDULED	TBD
64	4,6, 8	Verify Instrument Setpoint Index Procedure is finalized and implemented and that it adequately considers drift and other instrument inaccuracies.	Engineering	RPA Open Item, Hop-Creek IOVP, OR-51, OR-161	IDCA	PA	IRO (IDCA) CONST QA (PA)	3088 3088	1089 4088	SCHEDULED SCHEDULED	TBD TBD
65	2,5, 9	Verify Fire Protection Evaluation Report (FPER) is updated for Limerick 2.	Engineering	RPA Open Item	TA		HQQS	1089	1089	SCHEDULED	TBD

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
66	2,6	Verify Limerick 2 Equipment Qualification (EQ) Program requirements are incorporated into preventive maintenance program.	Hardware Readiness	RPA Open Item, Nine Mile Point EAP, AI-E-E11	IDCA/TA	PA	IRO (IDCA) HQOS (TA) LGS QS (PA)	3088 1089 1089	1089 2089 2089	SCHEDULED SCHEDULED SCHEDULED	TBD TBD TBD
67	3	Verify facility turnover procedure is finalized, contains a walkdown just prior to final turnover, and is coordinated with Startup activities.	Construction	RPA Open Item	PA	PA	CONST QA	2088	3088	SCHEDULED	TBD
68	3	DELETED - INCORPORATED INTO ITEM 67.	Construction	RPA Open Item		PA	N/A	N/A	N/A	DELETED	N/A
69	2,3	Evaluate adequacy and implementation of overall Organizational Readiness Program.	Organizational Readiness	RPA Open Item	PA	ICE	PAD	4088	1089	SCHEDULED	TBD
70	5	Verify, where preoperational testing differs from Limerick 1, the licensing commitments have been reviewed for modification. DELETED - INCORPORATED INTO ITEM 71.	Hardware Readiness	RPA Open Item		TA	N/A	N/A	N/A	DELETED	N/A
71	2	Verify Blue Tag portion of preoperational testing is consistent with FSAR commitment to Reg. Guide 1.68 requirements.	Hardware Readiness	RPA Open Item, 1987 Limerick 2 SALP		TA	CONST QA	2088	4088	SCHEDULED	TBD
72	2,3	Verify all open items and negative comments in the 1987 Limerick 2 SALP have been adequately addressed.	Licensing	1987 Limerick 2 SALP		PA/TA	PAG	4088	4088	SCHEDULED	TBD
73	2,3, 6,9	Verify radiographic indications on a selected system are properly documented and investigated.	Construction	Limerick 2 Inspection Report 86-07	IDCA		IRO	3088	1089	SCHEDULED	TBD
74	2,3, 6	Verify pipe supports on a selected system are installed in accordance with the design drawings and commitments.	Construction	Limerick 2 Inspection Report 86-12	IDCA		IRO	3088	1089	SCHEDULED	TBD

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
75	2,3,6	Verify diesel generator governor preventive maintenance is performed in accordance with procedures and vendor recommendations.	Hardware Readiness	Limerick 2 Inspection Report 86-12		P1	CONST QA (Pre-t/u)	3Q88	3Q88	SCHEDULED	TBD
							OPS QC (Post-t/u)	3Q88	4Q88	SCHEDULED	TBD
76	2,3,6	Verify examination of field welds during conduct of hydrostatic test.	Construction	Limerick 2 Inspection Report 86-15	PA		CONST QA	1Q87	3Q87	COMPLETED	Audits: AP-502, 2M-531, 2M-532, 2M-533, 2M-534, 2M-535, 2M-536, 2M-538, 2M-540, 2M-545, 2M-546, 2M-549, 2M-551, 2M-567
77	6	Verify use of proper data in cable pulling calculations.	Engineering	Limerick 2 Inspection Report 86-21	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
78	2,3,6	Verify selected heat exchanger support welds are in accordance with design drawings and requirements.	Construction	Limerick 2 Inspection Report 86-21	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
79	2,3,6	Verify relief valve lockwire for blowdown adjustment ring access plugs are intact.	Hardware Readiness	Limerick 2 Inspection Report 87-04		PA	CONST QA	1Q87	3Q88	COMPLETED	Relief valve lockwire audit 2M-582
80	2,3,6	Verify design changes and equipment installations are completed within committed timeframe.	Hardware Readiness	Limerick 2 Inspection Report 87-11	PA		CONST QA	1Q88	3Q88	SCHEDULED	TBD
81	2,3,6	Verify fillet welds on selected raceway supports are in accordance with design drawings and requirements.	Construction	Limerick 2 Inspection Report 87-11	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD

READINESS VERIFICATION MATRIX

ITEM ID #	BIN ID #	ITEM DESCRIPTION	RPA FUNCTION CATEGORY	SOURCE(S)	DESIGN AND CONSTR.	OP. READ.	RESPONSIBLE GROUP	START DATE	END DATE	STATUS	CLOSEOUT DOCUMENT
82	9	Verify proper documentation of maintenance inspections on emergency diesel generators.	Hardware Readiness	Limerick 2 Inspection Report 87-11		PA	CONST QA (Pre-t/u) OPS QA (Post-t/u)	1987 1989	1989 1989	SCHEDULED	TBD
83	3	Evaluate completion of commitments and follow-up actions from INPO exit meeting of March 1988 which could impact Limerick 2 readiness.	Organizational Readiness	INPO Review		ICE	PAD	4088	4088	SCHEDULED	TBD
84	3	Verify Design Closure Plan is up-to-date and that all action items assigned have been completed prior to deletion from the plan.	Engineering	RPA Report, Design Closure Plan	PA		HQGS	2089	2089	SCHEDULED	TBD
85	4,6,7	Evaluate appropriateness of actions taken in response to the recommendations of NUREG-1275.	Hardware Readiness	NUREG-1275		ICE/TA	LGS ISEG	4088	2089	SCHEDULED	TBD
86	4,6	Verify appropriate response to NRC recommendation that operations personnel take responsibility for equipment as early as possible. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A
87	4	Verify appropriate response to NRC recommendation that post-licensing procedures be used before fuel load. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A
88	4	Verify appropriate response to NRC recommendation that construction activities be minimized after fuel load. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A
89	4	Evaluate use of reviews and dry runs and allowance of time for additional testing during the preoperational and startup testing program. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A

READINESS VERIFICATION MATRIX

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90	4	Evaluate use of finalized technical specifications to generate and validate surveillance testing procedures as recommended by the NRC. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A
91	4	Evaluate operating experience feedback program(s) for incorporation of NRC recommendations of NUREG-1275. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		ICE/PA	N/A	N/A	N/A	DELETED	N/A
92	4,7	Verify appropriate response to NRC recommendations for training initiatives in NUREG-1275. DELETED - INCORPORATED INTO ITEM 85.	Organizational Readiness	NUREG-1275		ICE/PA	N/A	N/A	N/A	DELETED	N/A
93	4,6	Verify Engineering and Design have considered the Equipment Lessons outlined in NUREG-1275 to improve early plant performance. DELETED - INCORPORATED INTO ITEM 85.	Engineering	NUREG-1275		TA	N/A	N/A	N/A	DELETED	N/A
94	4,5, 6	Verify measures have been established to prevent resin, lubricating oil, and organic chemicals from being introduced into Limerick 2 reactor coolant.	Hardware Readiness	INPO SOER 82-13, GESIL 381		TA	LGS ISEG	4088	1089	SCHEDULED	TBD
95	4,5, 6,7, 8	Verify procedures and training in place concerning effects of cold weather on safety-related equipment include Limerick 2.	Hardware Readiness	INPO SOER 82-15		TA	LGS ISEG	4088	1089	SCHEDULED	TBD
96	4,6, 8	Verify INPO recommendations to increase diesel generator availability have been effectively addressed.	Hardware Readiness	INPO SOER 83-1		TA	LGS ISEG	4088	1089	SCHEDULED	TBD
97	4,6, 8	Verify INPO recommendations to reduce motor-operated valve failures have been effectively addressed.	Hardware Readiness	INPO SOER 83-9, INPO 83-037		TA	LGS ISEG	4088	1089	SCHEDULED	TBD
98	4,7, 8	Verify INPO recommendations to prevent and mitigate rod mispositioning have been effectively addressed.	Organizational Readiness	INPO SOER 84-2		TA	LGS ISEG	2089	2089	SCHEDULED	TBD

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99	4,7,8	Verify INPO recommendations to prevent excessive personnel radiation exposures have been effectively addressed.	Organizational Readiness	INPO SOER 85-3		TA	PAD	1Q89	1Q89	SCHEDULED	TBD
100	2,4,6	Verify Limerick 2 fire protection system meets design and technical specification requirements.	Engineering	Limerick 1 LER 88-006	1x		OPS QA (TS) CONST QA (Design)	2Q89 2Q88	2Q89 1Q89	SCHEDULED SCHEDULED	TBD TBD
101	2,4,6,7	Verify post-modification or post-maintenance inspection and performance testing is comprehensive in accordance with ANSI N18.7-1976 Sec. 5.2.7, "Maintenance and Modifications".	Hardware Readiness	QVFI, E.I. Hatch		PA/TA	OPS QA	2Q89	2Q89	SCHEDULED	TBD
102	2,4,6,7	Verify safety evaluations adequately substantiate the bases for the determination that changes are not an unreviewed safety question.	Licensing	QVFI, E.I. Hatch, Indian Point 2	IDCA	TA	IRO (IDCA) HQ ISED (TA)	3Q88 4Q88	1Q89 1Q89	SCHEDULED SCHEDULED	TBD TBD
103	4,6,7	Verify Emergency Operating Procedures are readable and can be easily used by the operators at the panels.	Organizational Readiness	QVFI, E.I. Hatch		TA	PAD	1Q89	1Q89	SCHEDULED	TBD
104	4	Evaluate means for communicating with Health Physics regarding contamination events without spreading contamination.	Organizational Readiness	QVFI, E.I. Hatch		ICE	PAD	1Q89	1Q89	SCHEDULED	TBD
105	4,6	Verify appropriate procedures exist to control site modifications.	Organizational Readiness	QVFI, E.I. Hatch, PBAPS Configuration Management Task Force (CMTF)		PA	LGS QS	3Q88	4Q88	SCHEDULED	TBD
106	4,6,7	Evaluate attention to detail in review of changes to plant components to ensure margin of safety is not reduced. DELETED - INCORPORATED INTO ITEM 102.	Organizational Readiness	QVFI, Indian Point 2		TA	N/A	N/A	N/A	DELETED	N/A
107	1,3	Evaluate QA/QC organization's effectiveness in attaining management attention and corrective action when significant problems are noted.	Quality Assurance	QVFI, Indian Point 2, Restart Plan for PBAPS	IDCA	ICE	IRO (IDCA) PAD (ICE)	3Q88 3Q88	1Q89 3Q88	SCHEDULED SCHEDULED	TBD TBD

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108	1,4	Verify responses to audit findings are timely and appropriate management indicators are provided.	Quality Assurance	QVFI, Indian Point 2	PA	PA	HQGS	1Q89	2Q89	SCHEDULED	TBD
109	4,6	Verify the Limerick 2 temporary modifications are identified and a program is in place for their removal.	Hardware Readiness	QVFI, Catawba 1 and 2		TA	OPS QA CONST QA	3Q88 3Q88	4Q88 4Q88	SCHEDULED SCHEDULED	TBD TBD
110	1,4	Verify a system is in place to identify problems detected by QC personnel which are corrected on the spot for proper management review and trending.	Quality Assurance	QVFI, Catawba 1 and 2		PA	OPS QA (PA)	1Q89	2Q89	SCHEDULED	TBD
111	4,7	Verify caution tags are not used as operator aids or plant labels.	Hardware Readiness	QVFI, D.C. Cook		PI	OPS QC (Op. Aids) CONST QC (Labels)	1Q89 1Q89	1Q89 1Q89	SCHEDULED SCHEDULED	TBD TBD
112	4,5, 7	Evaluate adequacy of operator training practices related to operator transparency plant modifications and unit differences.	Organizational Readiness	QVFI, D.C. Cook		ICE	PAD	1Q89	1Q89	SCHEDULED	TBD
113	1,3, 8	Verify selected Limerick 2 Significant Deficiency Reports (SDRs) to identify root causes and that appropriate resolution of SDR occurred.	Quality Assurance	Limerick 2 SDR Status Report	TA	TA	LGS ISEG	1Q89	1Q89	SCHEDULED	TBD
114	5,7	Verify Limerick 1 and 2 differences adequately address operator awareness and are included in operator training. DELETED - INCORPORATED INTO ITEM 112.	Organizational Readiness	List of Limerick 1 and 2 Differences (Rev. 4)		TA	N/A	N/A	N/A	DELETED	N/A
115	1,4, 6	Evaluate upper management response to recommendations of NRC to focus on the BOP prior to operations. DELETED - INCORPORATED INTO ITEM 85.	Hardware Readiness	NUREG-1275		ICE	N/A	N/A	N/A	DELETED	N/A
116	3,7	Verify MGA conducts independent safety reviews of plant events and planned activities. DELETED - INCORPORATED INTO ITEM 117.	Organizational Readiness	Restart Plan for PBAPS		PA	N/A	N/A	N/A	DELETED	N/A

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117	3,7	Verify effectiveness of Independent Safety Engineering Function (ISE) in performing independent reviews of plant operations and advising management.	Organizational Readiness	Restart Plan for PBAPS		ICE	PAO	3Q88	4Q88	SCHEDULED	TBD
118	1,3,9	Verify roles and responsibilities for each NQA function have been clarified and documented.	Organizational Readiness	Restart Plan for PBAPS		PA	NQA GM	3Q88	3Q88	SCHEDULED	TBD
119	1,3,9	Verify reporting responsibilities of NQA with line management, the Executive VP-Nuclear, and the Nuclear Review Board have been clarified and documented.	Organizational Readiness	Restart Plan for PBAPS		PA	NQA GM	3Q88	3Q88	SCHEDULED	TBD
120	4,8	Verify Limerick 1 Operational Audit findings have been reviewed and appropriately incorporated for Limerick 2.	Quality Assurance	Limerick 1 Operational Audits		PA	OPS QA CONST QA	2Q89 4Q88	2Q89 2Q89	SCHEDULED SCHEDULED	TBD TBD
121	6	Verify selected electrical and I&C interfaces for the A-E and NSSS systems are compatible and consistent with Engineering and design requirements.	Engineering	SWEC IDCA Program Description	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
122	3,6,8	Verify selected I&C enclosures, shields, and signal wires are in compliance with applicable standards, vendor requirements, and project procedures.	Construction	SWEC IDCA Program Description	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
123	6	Verify selected field and panel-mounted I&C equipment is capable of controlling and monitoring process functions as required.	Engineering	SWEC IDCA Program Description	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
124	6	Verify availability and independence of power available to selected redundant subsystems.	Engineering	SWEC IDCA Program Description	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD
125	6,8	Verify interfaces with selected disciplines with respect to structural design data for structural analysis (loads, pressure, temperature, etc.).	Engineering	SWEC IDCA Program Description	IDCA		IRO	3Q88	1Q89	SCHEDULED	TBD

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126	6,8	Verify A-E and vendor fabrication procedures have been adequately implemented during the fabrication phases for selected components.	Construction	SMEC ,DCA Program Description	IDCA		IRO	3088	1089	SCHEDULED	TBD
127	7,8	Verify Z/1 isolation tag removal plan is in accordance with established specifications and procedures.	Construction	PECo Internal Letter		PA	OPS QA CONST QA	4088 4088	1089 1089	SCHEDULED SCHEDULED	TBD TBD
128	4,7,8	Verify the adequacy of technical specifications, operating procedures, and emergency procedures with respect to improving the timeliness of operator response to reactor recirculation pump trip and/or neutron flux instabilities.	Organizational Readiness	LaSalle LER 88-003, GESTL 380 (Rev. 1)		ICE/TA	LGS ISEG	2089	2089	SCHEDULED	TBD
129	1,2,3,8	Verify implementation and adequacy of corrective actions resulting from deficiency evaluation and reporting process.	Organizational Readiness	1988 Limerick 1 SALP, Restart Plan for PBAPS		TA/PA	HQ ISED	2089	2089	SCHEDULED	TBD
130	1,2,8,9	Verify implementation and adequacy of corrective actions resulting from identified deficiencies in the LGS Emergency Preparedness Program prior to the next scheduled emergency exercise.	Organizational Readiness	1988 Limerick 1 SALP, PECo Internal Audits		PA	OPS QA	1089	2089	SCHEDULED	TBD
131	2,5,9	Verify LGS Emergency Preparedness Program properly incorporates Limerick 2.	Organizational Readiness	10 CFR 50.47		PA	OPS QA	1089	2089	SCHEDULED	TBD
132	1,2,6	Verify controls are in place to maintain required yard configuration as Limerick 2 construction is completed as indicated in the external flooding analysis.	Construction	SDR 222-1 (Unit Grading Changes)	PA		OPS QA	1089	2089	SCHEDULED	TBD