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V. S. BOYER
SR. VICE PRESIDENT
NUCLEAR POWER

August 31, 1984

Docket Nos. 50-352
50-353

Mr. Darrell G. Eisenhut
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

- REFERENCES:
1. Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events", July 8, 1983
 2. Letter, J. F. Stolz, USNRC to E. G. Bauer, Jr., PECO, "Clarification of Required Actions Based on Generic Implications of Salem ATWS Events", October 21, 1983
 3. Letter, V. S. Boyer, PECO, to D. G. Eisenhut, USNRC, "Response to Generic Letter 83-28," November 10, 1983

Dear Mr. Eisenhut:

Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," issued July 8, 1983 requires licensees to address issues related to reactor trip system reliability and general management capability in the areas of Post-Trip Review, Equipment Classification and Vendor Interface, Post Maintenance Testing and Reactor Trip System Reliability Improvements.

This letter is a follow-up to the Reference 3 letter describing the post-trip review program description and procedures for Limerick Generating Station Units 1 and 2. The NRC position regarding Post-Trip Review specified as Item 1.1 in Generic Letter 83-28 is restated below along with our response.

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1.1 POST-TRIP REVIEW (PROGRAM DESCRIPTION AND PROCEDURE)

Position

Licensees and applicants shall describe their program for ensuring that unscheduled reactor shutdowns are analyzed and that a determination is made that the plant can be restarted safely. A report describing the program for review and analysis of such unscheduled reactor shutdowns should include, as a minimum:

1. The criteria for determining the acceptability of restart.
2. The responsibilities and authorities of personnel who will perform the review and analysis of these events.
3. The necessary qualifications and training for the responsible personnel.
4. The sources of plant information necessary to conduct the review and analysis. The sources of information should include the measures and equipment that provide the necessary detail and type of information to reconstruct the event accurately and in sufficient detail for proper understanding. (See Action 1.2.)
5. The methods and criteria for comparing the event information with known or expected plant behavior (e.g., that safety-related equipment operates as required by the Technical Specifications or other performance specifications related to the safety function).
6. The criteria for determining the need for independent assessment of an event (e.g., a case in which the cause of the event cannot be positively identified, a competent group such as the Plant Operations Review Committee, will be consulted prior to authorizing restart) and guidelines on the preservation of physical evidence (both hardware and software) to support independent analysis of the event.

RESPONSE1.1.1 ACCEPTABILITY OF RESTART

Limerick Procedure GP-18, Scram Review Procedure, and GP-18 C.O.L. (Check-Off List for the Scram Review Procedure) were approved by the Plant Operations and Review Committee (PORC) on August 29, 1984.

These procedures are attached as Exhibits 1 and 2, respectively. When completed, GP-18 C.O.L. forms the basis to determine the acceptability of plant restart. This check-off list requires documentation of the event and key safety parameters, use of the Post Trip Data Log, Sequence of Events Log and the Emergency Response Facility Data System (ERFDS), and a listing of any discrepancies in Reactor System operations following the trip. The completed check-off list and the resultant Upset Report which is generated are then reviewed in the process described in Response to Item 1.1.2. Approval to restart the reactor is granted in Attachment I of Appendix I to Procedure GP-2, Reactor Start-up and Heat-Up (Exhibit 3) by the Station Superintendent or alternate. Procedure GP-2, Normal Plant Startup (Exhibit 4), requires resolution of the Check-Off List for the Scram Review Procedure C.O.L. GP-18. Thus, approval for restart cannot be granted unless there are no unexplained or unresolved conditions noted in C.O.L. GP-18 as a result of the trip.

1.1.2. RESPONSIBILITIES AND AUTHORITIES

The responsibilities for review and analysis following a plant trip are delineated in Procedure GP-18, Scram Review Procedure (Exhibit 1). Following a plant tripping, C.O.L. GP-18 is completed by Shift Supervision or a Shift Technical Advisor (STA) as directed by Shift Supervision. Using the completed C.O.L. and by conducting interviews with shift personnel involved, the STA prepares a preliminary Upset Report which is a narrative of the event and discusses the report with plant management face-to-face or by telephone prior to leaving the site at the end of his shift. The specific duties of the STA following a transient are delineated in attached Procedure A-7, Section 5, Shift Technical Advisor Duties and Responsibilities (Exhibit 5).

The Engineer-Operations or his designated alternate reviews the completed C.O.L. GP-18 prior to restart to ensure there are no unresolved or unexplained conditions as a result of the event. The Engineer-Operations

determines, by virtue of this review, if further review of the event is required by the Plant Operations Review Committee (PORC) in accordance with the Scram Review Procedure. If the Engineer Operations determines that no further review is required, his signature on C.O.L. GP-18 completes this check-off list for the purpose of completing the Normal Plant Startup Procedure (GP-2). As described in response to Item 1.1.6 below, PORC and the Nuclear Review Board may provide independent review as required.

1.1.3. QUALIFICATIONS AND TRAINING

Each of the Shift Technical Advisors at Limerick have a Bachelor's degree in a scientific or engineering discipline with specific training in plant design, and response to, and analysis of the plant for transients and accidents. Candidates for the STA position must undergo an intensive six-month training program administered in the following areas:

- Health Physics and Radiation Protection
- Chemistry Fundamentals and BWR Chemistry
- Materials Science and Reactor Materials
- Atomic Physics and Reactor Theory
- Fluid Flow
- Thermodynamics
- Heat Transfer and BWR Heat Transfer
- Management Skills
- Simulator Training

Following the training program, each STA candidate is tested and evaluated for this position. The STA's must successfully complete this training before being assigned to a shift position.

The Plant Operations Review Committee is composed of the following permanent members:

- A. Station Superintendent - Chairman
- B. Station Assistant Superintendent
- C. Technical Engineer
- D. Maintenance Engineer
- E. Operations Engineer
- F. Reactor Engineer
- G. Instrument & Control Engineer
- H. Senior Health Physicist

Each member of the PORC Committee meets or exceeds the minimum qualifications of ANSI/ANS 3.1, 1978 for comparable positions except the Senior Health Physicist who meets or exceeds the qualifications of Regulatory Guide 8.8, September 1977. Individuals presently filling the above positions B through E are Senior Licensed Operators with up-to-date requalification.

Members of the Nuclear Review Board (NRB), including the Chairman and alternate members are appointed by the Vice-President, Electric Production. These members have an academic degree in an engineering or physical science field. Additionally, each member has a minimum of five years technical experience, of which a minimum of three years is in one or more of the following areas:

- A. Nuclear Power Plant Operations
- B. Nuclear Engineering
- C. Chemistry and Radiochemistry
- D. Metallurgy
- E. Instrumentation and Control
- F. Radiological Safety
- G. Mechanical or Electrical Engineering
- H. Quality Assurance Practices

1.1.4. SOURCES OF INFORMATION

The plant process computer and ERFDS provide monitoring of both digital and analog parameters which represent those most critical in assessing the operation of the plant in all operating modes. In addition to these, the control room annunciator system provides a "First Out" capability for selected alarm points. This allows identification of the first in a group of alarms received.

CAPABILITY FOR ASSESSING SEQUENCE OF EVENTS (ON-OFF INDICATIONS)

This capability is provided by the plant process computer system. This system consists of two Honeywell 4010 CPU's in a primary and hot standby configuration. Several CRT's and printers are provided in the Control Room behind the Operator's Console for this system. It is powered from an uninterruptible power supply which is backed up by a diesel generator. The computer system and its power supply are non-Class IE.

The computer system provides sequence of events monitoring of approximately 220 digital points.

The sequence of events program is initiated by the occurrence of an interrupt caused by the change of state of any one of the contact points associated with event recording.

Any "Sequence of Events" contact may also be defined as a regular alarm point. That is, in addition to being logged in correct sequence as part of the Sequence of Events Log, it will be processed by the normal alarm handlers and typed on the alarm typer with the same resolution as all other alarms. No permanent storage of the sequence of events is provided on disc or tape. The printer hardcopy is the only permanent record.

COMPUTER BASED DATA SYSTEM

The Emergency Response Facility Data System (ERFDS) is a continuous on-line transient monitoring system. It also is used to provide operating information to the operator via CRT graphic displays which include the Safety Parameter Display. This system consists of two VAX 11-780 CPU's, one of which updates the CRT graphics, the other stores and analyzes transient data.

The analog parameters monitored by ERFDS were selected based on the following criteria: (1) those needed to comply with Reg. Guide 1.97 for post-accident monitoring, (2) those needed for the startup transient test program, (3) those needed to support the displays to be used in conjunction with the Emergency Procedure Guidelines.

Data collected by the Data Acquisition System (DAS) is compared against a unique significant change value. When that value is reached or at least once every hour, the data is sent to disc where it will reside for approximately 14 days before being overwritten. This data can be transferred onto tape for data archiving. The system can also operate in a "trigger mode" wherein selected inputs are scanned and recorded at the selected scan rate when a pre-selected trigger variable exceeds a pre-selected limit.

Detailed descriptions of the capability to assess transient sequence of events and the ERFDS computerized transient monitoring system were provided to the NRC Division of Licensing in the Reference 3 letter.

1.1.5. METHODS AND CRITERIA FOR COMPARISON

The Scram Review Check-Off List, Procedure C.O.L. GP-18, is divided into sections for review and analysis of the event. Completion of the check-off list allows verification of the proper operation of the Reactor Protection System (RPS), Primary Containment Isolation System (PCIS), Emergency Core Cooling Systems (ECCS), and the 4Kv and 13Kv electrical systems.

C.O.L. GP-18 is formatted in such a way that system response associated with the event is compared with the expected system response for a specific transient. This is accomplished by completing Parts II through V which, based on the nature of the scram, indicates whether a particular system response to the condition was required. If system response was not required, no further analysis of the system in that part is required. If the system was required to operate, the remainder of that part of the check-off list must be completed as indicated to determine if the system has operated as designed for the transient condition.

1.1.6. CRITERIA FOR NEED FOR INDEPENDENT ASSESSMENT

PORC review of an event is mandated if any of the following conditions occurred during the event.

- A. Undetermined cause of the SCRAM
- B. Unexplained or unidentified action or events
- C. Failure of ECCS to operate properly
- D. Failure of all control rods to fully insert
- E. Failure of RPS, PCIS or other systems subject to Limited Safety System Setting to operate as required
- F. Any other significant event deemed necessary for PORC review by the Engineer-Operations

PORC review is conducted to determine the necessary remedial actions which must be taken prior to unit restart. The PORC also determines if the condition was such that a review of the event is required by the Nuclear Review Board (NRB). Review of the event by the NRB is mandated if any condition concerning the event was different from those evaluated in the Safety Analysis Report or if NRB review is requested by the PORC.

Mr. Darrell G. Eisenhut

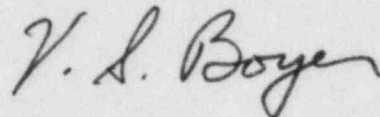
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We trust the information contained in the above response is sufficient for Nuclear Regulatory Commission review of Philadelphia Electric Company's post trip review program and procedures for Limerick Units 1 and 2.

Should you require any further information, please do not hesitate to contact us.

Very truly yours,

A handwritten signature in cursive script, appearing to read "V. L. Boyer".

Enclosures: Exhibits 1 through 5

cc: Dr. T. E. Murley, Administrator
See Attached Service List

COMMONWEALTH OF PENNSYLVANIA :

: SS.

COUNTY OF PHILADELPHIA :

V. S. Boyer, being first duly sworn, deposes and says:

That he is Senior Vice President of Philadelphia Electric Company; that he has read the foregoing partial response to Generic Letter 83-28 relative to Limerick Units 1 and 2 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

V. S. Boyer

Subscribed and sworn to

before me this 31st day

of August 1984

Patricia D. Scholl

Notary Public

PATRICIA D. SCHOLL
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires February 10, 1986

cc: Judge Lawrence Brenner	(w/o enclosure)
Judge Peter A. Morris	(w/o enclosure)
Judge Richard F. Cole	(w/o enclosure)
Troy B. Conner, Jr., Esq.	(w/o enclosure)
Ann P. Hodgdon, Esq.	(w/o enclosure)
Mr. Frank R. Romano	(w/o enclosure)
Mr. Robert L. Anthony	(w/o enclosure)
Maureen Mulligan	(w/o enclosure)
Charles W. Elliot, Esq.	(w/o enclosure)
Zori G. Ferkin, Esq.	(w/o enclosure)
Mr. Thomas Gerusky	(w/o enclosure)
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David Wersan, Esq.	(w/o enclosure)
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Mr. James Wiggins	(w/o enclosure)
Mr. Timothy R. S. Campbell	(w/o enclosure)