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LICENSEE: Philadelphia Electric Company  
Peach Bottom Atomic Power Station  
P. O. Box 195  
Wayne, PA 19087-0195

FACILITY NAME: Peach Bottom Atomic Power Station Units 2 and 3

DATES: January 3-7, 1994

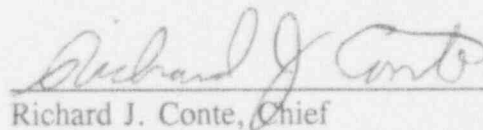
INSPECTOR:



S. L. Hansell, Operations Engineer  
BWR Section  
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1/13/94  
Date

APPROVED BY:



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1/14/94  
Date

Inspection Summary: Inspection from January 3-7, 1994 (Report Nos. 50-277/94-01 and 50-278/94-01)

Areas Inspected: An announced safety inspection was conducted of the licensee's TRIP procedures using Inspection Procedure 42001 that included an assessment of the technical adequacy of the TRIP procedures; the TRIP procedure review, revision, and approval process; the QA involvement in the TRIP procedure program; and the operator training in TRIP procedures.

Results: Based upon this inspection, the TRIP procedures are technically accurate and are written and formatted in accordance with plant procedures. Procedural controls are in place to maintain the technical basis, format, and validation of the procedures. The licensee took prompt action to correct and resolve problems identified during this inspection such as the EOP tool box inventory discrepancies.

QA audits of the TRIP procedure program were timely and thorough. The recent QA audit evaluated the plant changes related to the new primary containment hardened vent pipe. Only minor deficiencies were identified by the licensee's review group.

Two TRIP procedure program strengths were noted. First, was the additional TRIP procedure bases training provided to the reactor operators equivalent to the senior reactor operator training. The reactor operators were knowledgeable about each step of the TRIP procedures. Second, was the human factors and design of the TRIP procedure tables and SPDS monitors in relation to the control room panels.

The TRIP procedures are usable by operating crews and operators understand how to implement the TRIP procedures. Lesson plans for licensed operator requalification training on TRIP procedures were well written. The nonlicensed operator training program included an appropriate amount of TRIP procedure training to perform inplant emergency tasks. Training in this area was complete with no discrepancies noted or makeup training needed.

## DETAILS

### 1.0 INTRODUCTION AND OVERVIEW

This safety inspection reviewed for adequacy, on a sampling basis, the facility's emergency operating procedures (known as TRIP procedures at Peach Bottom) and operator training. The requirements for the inspection and related guidance is found in NRC Inspection Manual Procedure (IP 42001). This IP was developed as a result of special inspections conducted to verify completion of a TMI-2 action item (TAP) No. I.C.1, "Guidance for the Evaluation and Development of Procedures for Transients and Accidents." NUREG-0737 and supplement 1.

### 2.0 TECHNICAL ADEQUACY OF TRIP PROCEDURES

#### Scope

The scope of the review was to determine that the TRIP procedures are consistent with the NRC endorsed accident mitigation strategies. In addition, the inspection was to determine if the licensee has procedural controls in place to maintain the technical basis, format, verification, and validation of the TRIP procedures.

#### Findings

The inspector reviewed the licensee's current Plant Specific Technical Guidelines (PSTGs) that was used to develop the TRIP procedures. The PSTG is complete and technically accurate. The inspector verified that changes to the TRIP procedures were documented in the PSTG and incorporated into the TRIP procedures. On a sampling basis, the inspector determined that the TRIP procedures contain accident mitigation strategies as described in the BWR Owner's Group Emergency Procedures Guidelines (EPG's), Revision 4.

The inspector reviewed procedure NG-11T001, "Peach Bottom and Limerick TRIP Procedures Writer's Guide (PSWG)," and NG-11T002, "Verification and Validation Program for Peach Bottom and Limerick TRIP Procedures." The procedures provide adequate controls to maintain the technical basis, format and validation of the TRIP procedures.

#### Conclusion

Based on this review, the TRIP procedures are consistent with the BWR Owner's Group EPG's, Revision 4, and the site specific PSTG. Also, the licensee has procedural controls in place to maintain the technical basis, format, and validation of the TRIP procedures.

### 3.0 TRIP PROCEDURE REVIEW, REVISION, AND HUMAN FACTORS INPUT

#### Scope

The scope of the inspection was to determine the impact of the changes to the TRIP procedures and determine whether changes to the licensee's TRIP procedures are properly controlled and to verify that the licensee's nuclear group administrative procedures adequately govern the review, revision, and human factors input of the TRIP procedures.

#### Findings

The inspector's TRIP procedure review did not reveal any major procedure changes since the previous inspection. The recent initial licensed operator examinations did not demonstrate any TRIP procedure program related weaknesses. Therefore, the operator performance was not evaluated on the site specific simulator.

The most significant change to the TRIP procedures since the last owners group revision was the installation of a primary containment hardened vent pipe. The hardened vent pipe provides an emergency vent path from the primary containment directly to the atmosphere. The vent path provides the necessary isolation valves and piping to vent pressure from the primary containment to prevent exceeding the containment design pressure. Appropriate analyses were made before the changes were incorporated into the TRIP procedure flowcharts. The changes were verified and validated as required by the nuclear group (NG) procedure NG-11T002.

The quality assurance (QA) group conducted an independent audit of the primary containment hardened vent modification and impact on the TRIP procedure program. The QA audit was dated September 16, 1993, and was thorough and well documented. The audit verified that the TRIP procedure changes conformed to the facility procedure and regulatory requirements. Only minor deficiencies were identified by the licensee's review group.

The inspector reviewed the TRIP procedures in the main control room to evaluate the procedure adequacy (Attachment 1 lists the procedures reviewed). The TRIP procedure entry and exit points were easy to follow and the transitions between and within procedures were well defined and easy to follow. The procedure decision points were properly written and the format was easy to understand. The use of TRIP procedure notes and cautions were consistent and in accordance with the TRIP procedure writers guide.

The TRIP procedure graphs and axis were properly color coded and labelled correctly. The necessary control room indications and recorders were operable and labelled properly.

The safety parameter display system (SPDS) contained the required information needed to implement the TRIP procedures. The SPDS graphs were updated to match the corresponding TRIP procedure graphs for the current revision of the TRIP procedures.

The location of the TRIP procedure table and SPDS monitors, in relation to the control room panels, provides the operators with an excellent vantage point to implement the TRIP procedures in an emergency. The human factors and design of the TRIP procedure tables and SPDS monitors was a noted program strength.

The plant modification process was reviewed to ensure that impacts on TRIP procedures were considered. Plant modifications made in 1993 were reviewed for TRIP procedure impacts. No impacts on TRIP procedures were found in these modifications. The licensee has procedures in place to ensure that modifications are reviewed for TRIP procedure impacts.

### **Conclusion**

The human factors and design of the TRIP procedure tables and SPDS monitors was a noted program strength. The QA audits of the TRIP procedure program were thorough and timely. No weaknesses were identified in the plant modification process as it relates to the TRIP procedure program. The changes to the TRIP procedures were verified and validated as required by the nuclear group procedure NG-11T002.

## **4.0 TRIP SUPPORT PROCEDURES**

### **Scope**

The scope of the inspection was to verify that selected TRIP support procedures (T-200 series) could be implemented by the plant staff. The inspection was conducted by walking down the procedures in the plant.

### **Findings**

The inspector walked down the following T-200 TRIP support procedures.

- T-211-2, "CRD System Nonenriched Boric Acid and Borax Injection," Rev. 1
- T-214-2, "Isolating and Venting the Scram Air Header," Rev. 2
- T-222-2/3, "Secondary Containment Ventilation Bypass," Rev. 1

- T-228-2, "Defeating ARI Logic Trips," Rev. 0
- T-246-2, "Maximizing CRD Flow to the Reactor Vessel," Rev. 0

The plant walkdown of the TRIP procedure support procedures revealed that plant components were clearly labelled, easy to find and accessible. Overall, the T-200 procedures were well written and performance steps were listed in a logical order to complete the required task. A few minor procedure errors were noted in the following areas:

- \* T-222-2, was missing the GE relay contact arrangement drawing (Figure 1) as stated in step 4.1. The corresponding Unit 3 procedure contained Figure 1.
- \* T-246-2, step 4.4.8, incorrectly lists the control rod drive (CRD) pump designator for 2AP039 as 3AP039.

The licensee reviewed and agreed to correct the T-200 procedure errors.

The inspector noted that prestaged TRIP procedure equipment needed to perform the above procedures was available in the locked cabinets in various locations throughout the plant. In addition, the associated T-200 procedure was available in the appropriate equipment storage locker. The T-200 procedures were verified to be the current authorized revision.

### **Conclusion**

Overall, the T-200 procedures were well written and performance steps were listed in a logical order to complete the required task. The T-200 procedure plant components were clearly labelled and accessible. The licensee agreed to correct the minor errors noted in the T-200 procedures.

## **5.0 TRIP PROCEDURE TOOL INVENTORY**

### **Scope**

The scope of the inspection was to verify that the dedicated equipment required to implement the TRIP procedures is available to the operators. The emergency operating procedure tool inventory routine test was reviewed for adequacy. The inspector performed additional checks of equipment inventory as part of the T-200 support procedure walkdowns.

## Findings

The licensee performed the routine test RT-0-100-505-2, "Emergency Operating Procedure Tool Inventory," Rev. 3, the week of the inspection. The inspector reviewed the procedure and the licensee's documentation. Overall, the procedure was adequate and the documentation listed the discrepancies that needed to be corrected to accomplish the task. The licensee noted and corrected the components that were missing from the locked TRIP procedure storage cabinets. The discrepancies noted and corrected by the licensee are listed below.

The inspector also reviewed the required quantity listed in the routine test procedure. The inspector independently checked the inventory of borax and boric acid in the storeroom; T-210, 211, 212 tool box; T-222 tool package; and T-215 equipment locker. No additional problems were found by the inspector.

- \* T-200 tool package was missing one (1) 24-inch banana plug jumper
- \* Equipment locker in U-3 reactor building El. 135 SE by HCU was missing one of the two required 50 foot steel braided vent hoses.
- \* Equipment locker in U-3 reactor building El. 135 NW by HCU was missing two of the four required CRD vent valve adapters.
- \* The routine test listed the required quantity of borax and boric acid drums as two/one respectively. Procedure T-211-2, step 2.5, requires 12 drums of borax and nonenriched boric acid.

Even though these deficiencies were discovered and promptly corrected by the licensee, the inspector asked why there were discrepancies with the inventory of components that are dedicated and locked for emergency use only. The licensee did not know why there were missing components but agreed to address the issue.

## Conclusion

In general, the emergency operating procedure storage lockers were maintained and controlled in accordance with the licensee's approved procedures. The licensee noted and promptly corrected a few components that were missing from the locked TRIP procedure storage cabinets. The licensee agreed to address the reason for the equipment inventory discrepancies.

## 6.0 PLANT OPERATOR TRAINING

### Scope

The scope of the inspection was to verify that licensed and nonlicensed operators receive an appropriate amount of TRIP procedures training. TRIP procedure lesson plans were reviewed for adequacy and classroom attendance records were checked to verify proper documentation.

### Findings

The inspector reviewed the licensed operator requalification (LOR) training lesson plans and two year sample plan to evaluate the TRIP procedure training. The LOR lesson plans used to instruct the plant operating staff in the use of TRIP procedures were well written and technically consistent with the TRIP procedures. The two year LOR program provided an appropriate amount of Trip procedure training in the classroom and plant referenced simulator.

The initial licensed class training for reactor operators (ROs) and senior reactor operators (SROs) emphasized the understanding and significance of each TRIP procedure step. A program strength was noted in that the facility's action to provide the ROs the same amount of TRIP procedure bases training as the SROs. The ROs detailed knowledge of the TRIP procedures should allow them to function better in the control team and backup the SRO if needed. The review of the last initial license class training records showed that all of the trainees received the required TRIP procedure training.

The nonlicensed operator TRIP procedure training was focused on the use of the TRIP support procedures (T-200s). The training concentrated on the nonlicensed operators' knowledge of the T-200 procedures and the ability to perform these procedures.

### Conclusion

All plant operator training programs provided an appropriate amount of TRIP procedure training. A program strength was noted in that the facility's action to provide the ROs the same amount of TRIP procedure bases training as the SROs. The lesson plans used to instruct the LOR personnel in the use of the TRIP procedures were well written and are consistent with the TRIP procedures. The nonlicensed operator TRIP procedure training was properly focused on the use of the TRIP support procedures (T-200s). TRIP procedure training records were documented properly. Licensed operator attendance at this training was complete with no discrepancies noted or makeup training needed.



## 7.0 EXIT MEETING

The inspector met with licensee representatives at the conclusion of the inspection on January 7, 1994. The inspector summarized and discussed the findings and observations made during the inspection.

### 7.1 Key Persons Contacted During This Inspection Were:

#### Philadelphia Electric Company

- \* G. Edwards, Plant Manager
- \* G. Ward, Nuclear Quality Assurance
- \* D. Wheeler, ISEG
- \* J. Gilbert, Manager, Operations Support
- \* T. Wasong, Manager, Experience Assessment
- \* J. Fisher, TRIP Procedure Program Manager
- \* D. Foss, Regulatory Engineer
- T. Niessen, Director, Site Engineering
- R. Smith, Experience Assessment
- F. Polaski, Manager, ISEG
- A. Fulvio, Manager, NQA

#### U.S. Nuclear Regulatory Commission

- \* S. Hansell, Operations Engineer
- \* W. Schmidt, Senior Resident Inspector
- S. Maingi, Pennsylvania State Representative

The inspectors also contacted various senior reactor operators, reactor operators, and members of the operation support staff during the course of this inspection.

- \* Denotes those present at the exit meeting on January 7, 1994.

## ATTACHMENT 1

Documents Reviewed

<u>Procedure Number</u>	<u>Title</u>	<u>Revision</u>
T-100	"Scram"	rev. 6
T-101	"RPV Control"	rev. 12
T-102	"Primary Containment Control," Sh. 1,2 &3	rev. 7
T-111	"Level Restoration"	rev. 6
T-112	"Emergency Blowdown"	rev. 10
T-103	"Secondary Containment Control"	rev. 5
T-104	"Radioactivity Release"	rev. 3
T-116	"RPV Flooding"	rev. 6
T-200-2	"Primary Containment Venting"	rev. 3
NG-11T001	"Peach Bottom and Limerick TRIP Procedures Writer's Guide (PSWG)"	rev.0
NG-11T002	"Verification and Validation Program for Peach Bottom and Limerick TRIP Procedures"	rev.0
LOT-1560	"Introduction to PBAPS Transient Response Implementation Plan (TRIP) Procedures"	rev. 5
LOR-90-01A	"Introduction to EPG REV. 4, TRIP Procedures"	rev. 0
NLO-3115	"T-200 Series TRIP Procedures"	rev. 0
GP-3	Normal Plant Shutdown	rev. 58

Unit 2 Technical Specifications

Unit 3 Technical Specifications