

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-354/83-03

Docket No. 50-354

License No. CPPR-120 Priority - Category A

Licensee: Public Service Electric and Gas Company

80 Park Plaza

Newark, New Jersey

Facility Name: Hope Creek Unit 1

Inspection At: Hancocks Bridge New Jersey

Inspection Conducted: February 14-18, 1983

Inspectors: *R. J. Paolino* 03/07/83  
R. J. Paolino, Lead Reactor Inspector date

Approved by: *C. J. Anderson for* 3/11/83  
C. J. Anderson, Chief, Plant Systems Section date

Inspection Summary: Inspection on February 14-18, 1983 (Report No. 50-354/83-03)  
Areas Inspected: Routine unannounced inspection by one region based inspector of work observation and document review of activities related to the design, procurement, receipt and installation of electrical components/systems. The inspection involved 41 inspection hours onsite by one region based inspector.  
Results: No violations were identified.

## DETAILS

### 1. Persons Contacted

#### Public Service Electric and Gas Company

- \*A. Barnabei, Project QA
- \*R. Donges, QAE
- \*A. E. Giardino, Manager QA
- R. F. Hilditch, Lead Electrical QA
- \*G. Owen, Construction Engineer

#### Bechtel Power Corporation

- \*A. J. Bryan, PCQAE
- J. Duddy, APFE
- \*M. Drucker, LSQAE
- William Flear, Lead Electrical Field Engineer
- \*D. L. Long, P.S.
- \*R. Mackey, Resident Engineer
- \*F. Thesing, Contracts
- \*R. Tringale, APFE

#### U. S. Nuclear Regulatory Commission

- \*William Bateman, Senior Resident Inspector

\* denotes personnel present at exit interview.

### 2. Facility Tour

The inspector observed work activities in progress, completed work and plant status in several areas during a general inspection of Unit 1. The inspector examined work items for obvious defects or noncompliance with NRC requirements or licensee commitments. Particular note was taken regarding the presence of quality control inspectors and indications of quality control activities through visual evidence such as inspection records, material identifications, nonconformance and acceptance tags. In addition, the inspector interviewed craft and supervisory personnel encountered in the work area.

No violations were identified.

### 3. Electrical (Components & Systems) -- Procedure Review

The inspector reviewed pertinent quality assurance plans, instructions and procedures to ascertain whether the licensee has met Quality Assurance program requirements for component and materials storage, handling, installation, testing and inspection.

Documents reviewed for this determination include:

- SWP/P-2, revision 5 - Housekeeping.
- SWP/P-14, revision 12 - Material Receipt, Storage and Handling.
- SWP/P-15, revision 4 - Maintenance of Materials in Storage.
- SWP/P-17, revision 0 - Termination Installation
- SWP/P-18, revision 0 - Raceway Installation
- SWP/P-E-26, revision 2 - Installation of Electric Motors
- Specification 10855-E-034(Q), revision 0 for Cable Trays.
- Specification 10855-E-129(Q), revision 5 for 5KV power cable.
- Specification 10855-E-157(Q), revision 5 for 600 V control cable.
- Specification 10855-E-162, revision 5 for 600 V shielded Instrument Cable.
- Specification 10855-E-170, revision 2 Technical Specification for Co-Axial Cable, Tri-axial cable and twin-axial cable
- Standard Work Plan/Procedure
  - WP/P-E-33, revision 0 for Installation of Electric Control Boards, Switchgear, Motor Control Centers, Load Centers and Distribution Panels
- WP/P-E-31, revision 0 for Installation of Bus Ducts.
- WP/P-E-30, revision 0 for Installation of Electric Batteries
- Construction Performance Standard CPS-E-17, revision 0 for Cable Installation
- Notes and Details E-1408, revision 5 for Wire and Cable
- Notes and Details E-1406 for Raceway
- Administrative Quality Control Instructions (AQCI), revision 13 including Supplemental Instructions for AQCI-I thru IX.

No Violations were identified.

#### 4. Electrical (Components & Systems) -- Work Observation

The inspector observed work in progress, partially completed work and completed work pertaining to safety-related electrical cable raceways to ascertain whether the requirements of applicable specifications, work procedures, drawings and instructions have been met in areas relating to procurement, receipt inspection, material qualification, installation and inspection.

Documents used for this determination include:

- E-1406 Raceway & Raceway Supports - Notes and Details
- SWP/P-E-20, revision 3 on Raceway Installation
- Raceway Specification No. 10855-E-034 revision 0.
- NEMA VE-1-1976 Standards Publication for Cable Tray Systems
- Drawing Nos. E-1664-1 revision 4, sheet 1 thru 5, E-1654-1 revision 5, sheet 1 thru 5 and E-1689-1 revision 4 sheet 1 thru 9.
- FSAR Section 8.9

- a. The inspector noted that the purchase specification E-034 references the NEMA VE-1-1976 document for testing and seismic qualification of raceways.

Section 6.1 of Appendix A (NEMA VE-1) states that cable trays shall be tested in conditions simulating as closely as possible normal operating conditions. Figure 4 of the NEMA document specifies raceway supports for T's, 90° bends and crossover sections at a point 2 foot from point of transition to a straight raceway section and in the area of the bend. However the inspector observed that installed raceways Nos. 14DTFR20 and 14DTLS20 in area 27, elevation 130'-0" and raceway Nos. 12BTPQ/12PREPO8 in area 19, elevation 119'-0" are not supported in accordance with the NEMA document. The inspector requested that the licensee provide justification, either by test or analysis, for using less restrictive support configurations than the recommended commercial practices outlined in the NEMA standards.

This item is unresolved pending NRC review of licensee design criteria (83-02-01)

- b. The inspector observed a vertical riser No. 128TLP40 attached to tray Nos. 12BTMP23, 12BTMQ23, 12BTXP23 and 12 BTXQ23 in area 13, elevation 102. Drawing Nos. E-1533-1 and Notes/Detail drawing No. E-1406, support type 165 illustrates the installed configuration as an acceptable method of installation. However, tray design criteria and seismic test **data results are based on loads of 50 lb./ft. and 200 lb. load in center of tray.** The inspector was not able to verify acceptability of the additional loading that would be placed by attaching the vertical riser to cable carrying trays. The licensee was requested to provide documentation, either of tests or analyses to indicate this concern had been addressed. This item is unresolved pending NRC review of licensee data (83-03-02).
- c. The inspector observed cable tray installations in area 27, elevation 130'-0 (Diesel Corridor) for which the span between supports measured eleven feet. Tray Nos. 14BTFR06, 14BTLS06 and 14BTR06 were identified as not meeting the maximum support span of 8 foot specified in drawing E-1406. Section 3.32a of drawing E-1406 states that tray support locations shall be  $\pm 4'0"$  provided the 8'-0" maximum support spacing is not exceeded. The NEMA VE-1 document and supporting seismic test data is based on span support spacing of 8 feet. Drawing E-1406 allows tray support spans in excess of 8 foot, but only with engineering approval. The inspector requested engineering justification, either by test or analysis, for the installed configuration which differs from the approved test configuration.

This item is unresolved pending NRC review of licensee test data (83-03-3).

5. Electrical (Cables and termination) -- Record Review

The inspector reviewed pertinent work and quality records for safety related electrical cable to determine whether the records reflect work

accomplishments consistent with NRC requirements and licensee commitments in the area of procurement specifications, receipt inspection, material qualification and test.

Document reviewed for this determination include:

- Cable Specification 10855-E-129(Q) revision 5 for 5KV Power Cable
- Cable Specification 10855-E-157(Q) revision 5 for 600 V Control Cables
- Cable Specification 10855-E-162(Q) revision 5 for 600 V Instrument Cable
- Purchase Order Nos. E-129, E-157 and E-162
- Material Receiving Report Nos. 93518 and 93517
- Certified test reports, Electrical and Physical test data for cables referenced above.

No violations were identified.

6. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, or items of noncompliance. Unresolved items identified during this inspection are discussed in Paragraphs 4a, b & c.

7. Exit Interview

The inspector met with licensee and construction representatives (denoted in paragraph 1) at the conclusion of the inspection on February 18, 1983. The inspector summarized the scope and findings of the inspection as described in this report.