

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-334/84-23

Docket No. 50-344

License No. DPR-66 Priority -- Category C

Licensee: Duquesne Light Company

Post Office Box 4

Shippingport, Pennsylvania

Facility Name: Beaver Valley Power Station, Unit #1

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: October 9-12, 1984

Inspectors: Frederick P Paulitz
F. Paulitz, Reactor Engineer

1-30-85
date

Approved by: [Signature]
C. J. Anderson, Chief
Plant System Section, EPB

1/30/85
date

Inspection Summary:

Inspection on October 9-12, 1984 (Inspection Report 50-334/84-23)

Areas Inspected: Routine, unannounced inspection of Safety Parameter Display System (SPDS) and Process Variable System (PVS) interface with safety related systems. The inspection involved 28 hours of direct inspection effort onsite by one region-based inspector.

Results: No violations were identified.

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DETAILS

1. Persons Contacted

Duquesne Light Company

- *T. A. Slavic, Supervising Engineer
- *T. O. Dowhy, Nuclear Safety Engineer
- T. Pudio, Senior Computer Engineer
- W. Stacey, Plant Manager
- A. J. Mizia, Senior Quality Assurance Engineer
- G. S. Sovick, Senior Compliance Engineer
- G. E. Hustek, ENO/NOR
- J. Sloan, Computer Specialist
- E. Olshanski, Senior Project Engineer, PSE

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- W. M. Troskoski, Senior Resident Inspector
- *D. W. Johnson, Resident Inspector

*Denotes those present at the exit interview on October 12, 1984.

2. Background

The Safety Parameter Display System (SPDS) provides a display of the plant parameters from which the safety status of the operation may be assessed in the Control Room (CR), Alternate Technical Support Center (ATSC) and the Emergency Response Facilities (ERF).

The SPDS is a post TMI requirement approved by the Commission for implementation. This is identified in NUREG-0737, "Clarification of TMI Action Plant Requirements". The SPDS functions, display considerations, and design criteria are detailed in NUREG-0696, "Functional Criteria for Emergency Response Facilities".

The total SPDS need not be designed to Class 1E requirements nor must it meet the single failure criteria. It must, however, meet an operational availability goal. Therefore, a second system has been provided. This system, The Process Variable System (PVS) is supplied power from a separate uninterruptable power supply backed up by a battery for the short term, and by a separate non-safety diesel generator, for the long term.

All interfaces between the SPDS or PVS and a safety system must be isolated in accordance with safety system criteria to provide channel independence and ensure the integrity of the safety system in the case of either SPDS or PVS malfunction.

3. Plant Status

The unit tripped off from 90% power on October 12 and will remain off for the refueling outage which was scheduled to start on October 13, 1984.

4. Safety-Nonsafety System Interaction

This inspection was conducted to assess protective system channel independence. The sensors of the protective process variables signals are shared between the reactor protection system (RPS)/engineered safety features (ESF) and the safety parameter display system (SPDS)/process variable system (PVS). The SPDS/PVS systems are not designed to the same requirements as the safety RPS/ESF systems.

The specific requirements to which the modification was inspected are as follows:

- (1) Single Failure Criteria for RPS/ESF
- (2) Channel Independence
- (3) Control and Protection Interaction
- (4) Equipment Qualification
 - a. The scope of the modification with respect to the prevention of unacceptable interaction between the RPS/ESF and the SPDS/PVS was the rearranging of components within the process panels and the addition of both analog and digital isolation devices within the original and new panels. The original panels were removed from the plant and modified in the Westinghouse facility. All cable and termination modification was done by the licensee.
 - b. The inspector examined the following documents governing design and construction of the system modification to ascertain whether the modification was performed in accordance with the facility license, Technical Specification, 10 CFR 50 Appendix B and the Applicable Codes and Standards to which the facility was built.
 - Technical Support Center, Plant Safety Status Display, Design Specification No. 955558, October 29, 1982, Revision 0.
 - Emergency Response Facilities, Analog Signal Isolation Equipment and Transducers, Purchase Specification No. 3039, February 17, 1984, Revision 2.
 - Emergency Response Facilities, Digital Signal Isolation Equipment, Purchase Specification No. 3038, February 17, 1984, Revision 2.
 - Westinghouse 7300 Series, Process Control System Noise Test WCAP-8892-A, 1977.
 - Generic Topical Report Westinghouse Interpretation of Criteria IEEE 323-74, IEEE 344-75, RG.1.89 and RG.1.100, WCAP 8687.

- Information on Elementary Diagrams - Isolator wiring July 31, 1981.
- Elementary Diagram for Digital Signals (IE) shared by PVS and SPDS Computers, July 29, 1981.
- Procedure for Revising Loop Diagrams - Isolator additions, September 16, 1981.

No items of noncompliance were identified.

- c. The inspector performed an inspection of the installed equipment to ascertain whether the requirements of applicable specification, have been accomplished in the area of identification, separation, termination and protection.

No items of noncompliance were identified.

- d. The remaining 50% of the signal input are to be wired into the SPDS/PVS systems during the present refueling outage and the system is to be fully functional prior to the next refueling outage.

5. Exit Meeting

At the conclusion of this inspection on October 9, 1984, an exit meeting was conducted with the licensee's representatives denoted in paragraph 1. The results of the inspection were discussed. At no time during this inspection was written material provided to the licensee by the inspector.