

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
REGION IV

Report No. 99900404/81-01

Company: Westinghouse Electric Corporation  
Nuclear Technology Division  
P.O. Box 355  
Pittsburgh, Pennsylvania 15230

Inspection Conducted: March 17-20, 1981

Inspectors: CJ Hale 4-16-81  
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Date

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C. J. Hale, Chief  
Reactor Systems Section  
Vendor Inspection Branch  
Date

Summary

Inspection on March 17-20, 1981 (Report No. 99900404/81-01).

Areas Inspected: 10 CFR Part 50, Appendix B in the areas of QA records, background verification of technical personnel, and follow up on four Regional and Headquarters requests. The inspection involved 57 inspector hours on site by two NRC inspectors.

Results: No noncompliance, nonconformance, unresolved, or follow up items were identified.

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DETAILS SECTION I

(Prepared by R. H. Brickley)

A. Persons Contacted

- D. W. Call, Manager, Plant Protection
- T. E. Campbell, Manager, Structural Mechanics
- M. R. Gasparro, Engineer
- J. J. McInerney, Senior Engineer
- \*P. T. McManus, Manager, Product Assurance Systems
- D. B. Pierce, Engineer
- G. H. Streiter, Administrator
- \*R. A. Wiesemann, Manager, Regulatory and Legal Affairs

\*Denotes those attending the exit interview.

a. Action on Previous Inspection Findings

1. (Closed) Infraction (Report No. 99900404/79-04) A defect identified in a safety related system in a Westinghouse designed foreign reactor and known to Westinghouse after the effective date of 10 CFR Part 21 to be generic to domestic reactors was not handled as required under 10 CFR Part 21.

The inspector verified the commitments made by Westinghouse to the NRC. These commitments are described in detail in paragraph B.2 below.

2. (Closed) Deficiency (Report No. 99900404/79-04) The Westinghouse procedure that implements 10 CFR Part 21 is deficient in assuring the immediate notification of the Commission in that Appendix A, Item C requires that the responsible officer "concurs that the information reasonably indicates that notification is required." The procedure does not address what action will follow should the responsible officer not concur.

The inspector verified the commitments made by Westinghouse in their letter to the NRC (WRD-1131) dated November 26, 1980, and in previous discussions with the inspector (refer to Details Section I, paragraph D.3.a.(1), of Report No. 99900404/80-04), i.e. procedure WRD-OPR-19.0 has been revised to clarify various requirements such as:

- a. Time limits imposed for evaluation of potential substantial safety hazards and unreviewed safety questions. This requires that for those items involving an extended evaluation period, they must be submitted to the Safety Review Committee (SRC) to determine the reportability based on available information, unless there

is reasonable assurance that the safety of operating plants is not significantly affected in the interim.

- b. Actions to be taken by the Responsible Officer when he does not concur with the SRC recommendation to report the item to the NRC, is to refer the matter back to the SRC for further evaluation, informing them of the basis of his decision to reverse the recommended reporting action.

The SRC files have been reorganized and updated. A computer program CAIRD (Composite Action Items Reporting Documents) has been established, which provides a retrievable data file of key SRC information, e.g. key dates of potential items from initial identification to final disposition, results of SRC reviews, applicable plants, and a listing of all key documents applicable to the item.

### C. Technical Personnel Background Verification

#### 1. Objectives

The objectives of this area of the inspection were to verify that measures have been established and are being effectively implemented that assure:

- a. The education and work experience information contained in employees' job applications are being verified by the employing organization.
- b. There is objective, documented evidence/records that attest to the employees' education and experience.

#### 2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the employee screening procedure, and the New Employee Checklist maintained on six members of the Westinghouse technical staff.

#### 3. Findings

- a. There were no nonconformances, unresolved, or follow up items identified.
- b. Westinghouse requires that all applicants for employment (permanent and temporary) be subjected to verification of previous employment (previous ten years) and education. New employees undergo a probationary period during which time their work is reviewed/verified by another Westinghouse experienced employee and they are evaluated by their supervisor.

Reportedly temporary employees, including "job shoppers" are subjected to the same probationary policy as permanent employees. Management representatives stated that their contract with "job shop" type organizations required the organization to certify the education and experience data on each individual.

D. Boron Dilution

This item is a follow up to a licensee and Westinghouse report to the NRC concerning the potential for an inadvertent boron dilution event while the reactor is shutdown and the Residual Heat Removal System is operating.

1. Objectives

The objectives of this area of the inspection were to:

- a. Examine the results of the evaluation of this item to determine that a proper evaluation was performed.
- b. Determine whether this item is generic or plant unique.
- c. Determine if the QA program requirements were followed.
- d. Verify that applicable reporting requirements were followed.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the records maintained on SRC item ID 80-164 consisting of internal memos, letters to licensees and NRC, and SRC meeting minutes.

3. Findings

- a. The SRC met on June 27, 1980, to review this concern which had been previously identified and reported by another PWR vendor. The concern involved the possibility of an inadvertent boron dilution while the RCS is "drawn down" (cold shutdown conditions while on the RHR System). In this case, the full RCS volumes were used in the analysis instead of the "drawn down" volumes, which would have reduced the reported operator action times by a factor of two. The SRC concluded that the concern was reportable to the NRC and operating plant licensees under 10 CFR Part 59 even though the scenario required multiple failures of operators and control instrumentation.

- b. This item was identified by Westinghouse as generic to all Westinghouse plants.
- c. A proper evaluation appears to have been performed and the QA program and applicable reporting requirements were followed.
- d. There were no noncompliance, nonconformance, or unresolved items identified. This item will be inspected further during a subsequent inspection, specifically relating to one operating plant (North Anna 1 and 2) that required this operating condition to have been analyzed.

## 2. Centrifugal Charging Pumps

This item is a follow up to a licensee and Westinghouse report to the NRC concerning potential damage to one or more centrifugal charging pumps (CCPs). A Westinghouse review of their Safety Injection (SI) Termination Criteria following a secondary side high energy line rupture (feedline or steamline rupture at high initial power levels) revealed that the potential for damage existed before the SI termination criteria are satisfied and CCP operation terminated.

### 1. Objectives

The objectives of this area of the inspection were to:

- a. Examine the results of the evaluation of this item to determine that a proper evaluation was performed.
- b. Determine whether this item is generic or plant unique.
- c. Determine if the QA program requirements were followed.
- d. Verify that applicable reporting requirements were followed.

### 2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the records maintained on SRC item ID 80-158 consisting of internal memos, letters to licensees and NRC, and SRC meeting minutes.

### 3. Findings

- a. Originally, the Westinghouse plant operating procedures required the CCPs to be terminated after the water level is returned to the pressurizer. As a result of knowledge gained following the incident at TMI, these procedures were changed to require that the CCPs remain functional until the water level in the steam generator is restored. Since the changes in the operating procedures provided for a different mode of plant operation, Westinghouse performed a failure analysis that included the following conclusion. Subsequent to a secondary side high

energy line rupture, and assuming the pressurizer PORVs inoperable, the Westinghouse analysis indicated that sufficient flow to satisfy CCP minimum flow requirements (to avoid CCP degradation) may not be assured.

- b. The SRC met on May 6, 1980, and determined that this item was reportable under the requirements of 10 CFR Part 21. The Responsible Officer was notified of the SRC recommendation on May 8, 1980, and the NRC was informed of the item and the recommended corrective actions on May 8, 1980.
- c. This item was determined to be generic to all Westinghouse plants that utilize the CCPs as Emergency Core Cooling System pumps, where the CCPs are automatically started, and where the CCP miniflow isolation valves are automatically isolated upon SI initiation.
- d. A proper evaluation appears to have been performed and the QA program and applicable reporting requirements were followed.
- e. There were no noncompliance, nonconformance, unresolved, or follow up items identified.

F. Exit Interview

An exit interview was held with management representatives on March 20, 1981. In addition to those individuals indicated by an asterisk in paragraph A of each Details Section, those in attendance were:

T. M. Anderson, Manager, Nuclear Safety  
 T. W. Coffield, Engineer, Design Integration  
 E. J. Hampton, Manager, Design Assurance  
 L. E. Race, Principal Engineer, Design Assurance

The inspector discussed the scope and findings of the inspection. Management comments were generally for clarification only, or acknowledgement of the statements by the inspector.

DETAILS SECTION II

(Prepared by D. G. Breaux)

A. Persons Contacted

C. Doughty, National Underground Storage Inc., Fire Protection Specialist  
W. P. McElravy, Manager, Document Storage Site  
\*P. T. McManus, Manager, Product Assurance  
P. A. Raymond, Records Analyst  
D. Russel, Records and Files Operation Manager  
M. H. Shannon, Senior Quality Engineer

\*Denotes those in attendance at the exit interview.

B. Malfunctioning of Westinghouse Type W-2 Rotary Switches

This item is a follow up to a 10 CFR Part 50.55(e) report by the Commonwealth Edison Company to Region III regarding the malfunctioning of a switch important to safety at the Zion Unit 1 generating station.

1. Objectives

The objectives of this area of the inspection were to:

- a. Examine the results of the evaluation of this item to determine that a proper evaluation was performed.
- b. Determine whether this item is generic or plant unique.
- c. Determine if this item was properly reported to the NRC and subsequently all parties involved.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

- a. Commonwealth Edison Co. Licensee Event Report (LER) No. 80-24/99X-1, dated July 8, 1980, concerning the Zion Generating Station.
- b. Westinghouse notification letter to NRC Office of Inspection and Enforcement, NS-TMA-2264, dated June 18, 1980.
- c. NSD Technical Bulletin NSD-TB-80-9.
- d. Minutes of June 17, 1980 Westinghouse meeting of the Safety Review Committee addressing ID-80-163, "Erratic W-2 Switch Operation."

- e. Switchgear Division Westinghouse Electric Corporation, Engineering Report 6-624003M-80-11, dated, November 1980.
- f. Westinghouse meeting minutes concerning W-2 switch, dated November 14, 1980, and November 18, 1980.
- g. Westinghouse Design Review, DR-80-14, dated December 4, 1980.
- h. Westinghouse Licensing and Safety Evaluation, dated January 9, 1980.
- i. Westinghouse letter to NRC Office of Inspection and Enforcement, NS-TMA-2402, dated March 4, 1981.
- j. Westinghouse Technical Bulletin, NSP-TB-80-09 (Revision 1), dated February 16, 1981.

### 3. Findings

The potential malfunctioning of Westinghouse Type W-2 switches was reported to the NRC under 10 CFR Parts 21 and 50.55(e). It was reported by Westinghouse because they were unable to rule out a generic problem and because intermittent switch contact discontinuity could go undetected. The initial investigation of the failed switches by the manufacturer, Westinghouse Switchgear Division, determined that the intermittent contact discontinuity was attributed to surface contaminants, occurring after the switches were installed and had been in use for several years.

There have been no other reports of W-2 switch malfunction; however, Westinghouse recommended in Technical Bulletin NSD-TB-80-9 that all plants test W-2 switches used in safety systems. The recommendations contained in Westinghouse Technical Bulletin NSD-TB-80-9, dated June 18, 1980, were made minimum requirements in NRC Bulletin IE-80-02, dated July 31, 1980. Rewiring of the existing W-2 switches is being implemented as a permanent resolution of the problem in accordance with the Westinghouse Technical Bulletin. This rewiring would detect any switch contact discontinuity that may occur in the future.

The Westinghouse Design Review Committee agreed in principle to the long-term recommendations of changes in manufacturing processes that would decrease switching surface contaminants. However, under present required testing standards, Westinghouse Quality Control would not have detected the intermittent switch contact discontinuity caused by switching surface contaminants that occurred at the Zion unit. Since no other examples of switch malfunction have been made known to Westinghouse or the NRC, absolute generic determinations cannot be made.

All reporting requirements were properly met by Westinghouse in informing the NRC and the involved clients of the W-2 switch concerns.

There were no nonconformances, unresolved, or follow up items identified in this area of the inspection.

C. Underground Storage of Westinghouse Records

This item is a follow up to commitments made by Westinghouse with respect to qualification of their Corporate Records Center (CRC) facility located in Boyers, Pennsylvania, for storage of nonduplicate, lifetime records. These commitments were made in letters to the NRC:NRR Quality Assurance Branch; (QAB) dated May 2, 1980, and May 27, 1980.

The commitments were found acceptable by the QAB and Westinghouse was so notified by letter, dated June 2, 1980. The objectives of this area of the inspection were to verify that the Westinghouse commitments were implemented. The facility was inspected and the inspector verified that the commitments made by Westinghouse for the additional fire-resistive measures have been completed.

There were no nonconformances or unresolved items identified in this area of the inspection.

D. QA Records

1. Objectives

The objectives of this area of the inspection were to examine the establishment and implementation of quality related procedures for collecting, filing, storing, maintaining, and dispositioning of QA records to verify that:

- a. A QA records system is defined, implemented, and enforced in accordance with approved procedures, instructions, or other documentation for all groups performing safety related activities.
- b. QA records are legible, completely filled out, adequately identifiable to the item involved, validated, and listed in an index that indicates: the record retention time, where the record is to be stored, and the location of the record in the storage area. Any changes or modifications to these records are controlled.
- c. A specific submittal plan for QA records is established between the licensee and contractor and records exist that acknowledge the licensee's receipt of QA records.
- d. A designated authority has been assigned to control the receipt of QA records.

- e. A custodian has been designated to assure that QA records are in accordance with b. above and to enforce a QA record storage filing system.
- f. The QA record storage facility is in compliance with applicable codes, standards, and regulations consistent with NRC Regulatory Guide 1.88.
- g. The QA record storage system is periodically audited to assure the record control system is implemented.

2. Method of Accomplishment

The preceding objectives were accomplished by review of the following documents.

- a. Westinghouse Electric Corporation Water Reactor Divisions Quality Assurance Plan, Revision 9A, dated October 15, 1979, Section 17.1.7, "Quality Assurance Records." The organizations involved in the preparation, collection, storage, maintenance and disposition of Quality Assurance records are identified in this section.
- b. Westinghouse Water Reactor Divisions Policy/Procedures Manual, procedure WRD-OPR-17.0, dated July 19, 1979, "Quality Assurance Records."
- c. Westinghouse Corporate Records Center Manual for Receipt, Storage, Retrieval, and Final Disposition of NES QA Records, dated March 9, 1977.
- d. To assure that procedural requirements are being properly and effectively performed, the following were reviewed:
  - (1) Record Flow Schedule - PWR Quality Assurance (CAP 38), latest revision June 1978.
  - (2) Destruction of Records List for the years 1979, 1980, and 1981.
  - (3) Security Micro-Film Record Flow Schedule (CAP 46).
  - (4) Central Records Center carton storage index.
  - (5) Central Records Center security roll index.
  - (6) Microfilm request file.
  - (7) Ten Quality Assurance Record Cartons (hard copy) were reviewed for proper retrieval at Central Records Center.

- (8) Eight Microfilm Security rolls were reviewed for proper content and retrieval capabilities at the Central Records Center.

3. Findings

In this area of the inspection no nonconformances, unresolved, or follow up items were identified.