

ORGANIZATION: WESTINGHOUSE ELECTRIC CORPORATION
PROCESS CONTROL DIVISION
PITTSBURGH, PENNSYLVANIA

REPORT NO.: 99900404/92-02

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NUCLEAR INDUSTRY ACTIVITY: Safety-related instrumentation and control systems for commercial nuclear power plants

INSPECTION CONDUCTED: November 16-19, 1992

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Reactive Inspection Section 2 (RIS2)
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APPROVED: *Gregory C. Cwalina* 12/17/92
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INSPECTION BASES: 10 CFR Part 21 and 10 CFR Part 50, Appendix B

INSPECTION SCOPE: To review the dedication of commercial grade components for nuclear safety-related applications, and to review previous inspection concerns and 10 CFR Part 21 notifications

PLANT SITE APPLICABILITY: Numerous

1 INSPECTION SUMMARY

1.1 Nonconformances

1.1.1 Nonconformance 99900404/92-02-01 (Open)

Contrary to Criteria III, V, and VII of Appendix B to 10 CFR Part 50, and to Westinghouse Process Control Division (W-PCD) Procedure DP 07-003, W-PCD failed to document that possible changes to the commercial grade items being dedicated for safety-related use in commercial nuclear power plants were controlled, identified, or evaluated for safety impact in six instances (see Sections 3.3.1, 3.3.2, 3.3.3, 3.3.4, and 3.3.5 of this report).

1.1.2 Nonconformance 99900404/92-02-02 (Open)

Contrary to Criterion XVII of Appendix B to 10 CFR Part 50, and to W-PCD Procedure DP 07-003, W-PCD failed to maintain records of dedication test results for components supplied for safety-related use in commercial nuclear power plants (see Sections 3.3.2, 3.3.4, and 3.3.6 of this report).

1.1.3 Nonconformance 99900404/92-02-03 (Open)

Contrary to Criterion V of Appendix B to 10 CFR Part 50, and to W-PCD Quality Assurance (QA) Procedure TP1018, W-PCD failed to accomplish dedication activities in accordance with established procedures for components supplied for safety-related use in commercial nuclear power plants (see Sections 3.3.4 and 3.3.5 of this report).

2 STATUS OF PREVIOUS INSPECTION FINDINGS

2.1 Nonconformance 99900404/91-02-01 (Closed)

Nonconformance 99900404/91-02-01 stated that, contrary to Westinghouse procedures implementing Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50, W-PCD did not have documented instructions or procedures to control all of the QA activities performed in dedicating commercial grade items for safety-related use, and that the new procedure "TP1018 DRAFT" was not properly controlled.

At the time of this inspection, W-PCD had completed issue of written procedures and instructions covering their dedication program, principally Section DP 07-003, "Commercial Grade Item Dedication - Nuclear," Revision 4, dated February 14, 1992, of WCAP 12710/TP199, "Process Control Division Quality Assurance Program." In addition, TP1018, "Commercial Dedication Instruction," Revision 1, dated January 31, 1992, had been formally

issued as a part of TP 1000, "Department Quality Assurance Procedures, Nuclear Projects."

The NRC inspectors did not identify any instances where W-PCD procedures failed to impose the QA requirements of Appendix B to 10 CFR Part 50 with respect to dedication of commercial grade items for safety-related applications, although the identified nonconformances clearly indicate that the implementation of the requirements is still deficient. Based on their review the inspectors closed Nonconformance 99900404/91-02-01.

2.2 Unresolved Item 99900404/90-01-08 (Closed)

Unresolved Item 99900404/90-01-08 stated that the inspectors had not reviewed W-PCD's program for complying with the reporting requirements of 10 CFR Part 21. During the present inspection the NRC inspectors discussed W-PCD's 10 CFR Part 21 program with personnel from both W-PCD and the Westinghouse Nuclear and Advanced Technology Division (W-NATD), and reviewed applicable procedures. W-PCD letter to the NRC dated April 24, 1992, reported a new possible Part 21 concern, and it was reviewed as an implementation example for W-PCD's Part 21 policy as it functions in conjunction with W-NATD.

The responsible Westinghouse official is Mr. N. D. Woodson, Vice President and General Manager of the Westinghouse Energy Systems Business Unit (ESBU), which includes both PCD and NATD. The applicable controlling procedure is OPR-19.0, "Identification and Reporting of Conditions Adverse to Safety," Revision 4, dated October 1, 1992, included in WCAP-9550, the ESBU "Quality Assurance Program for Basic Components." From November 1991 until October 1992 an interim letter was in effect. OPR-19.0 requires a division implementing procedure, which for W-PCD is DP 19.0, "Identification & Reporting of Substantial Safety Hazards, Significant Deficiencies and Unreviewed Safety Questions," Revision 6, dated October 1, 1992, included in WCAP 12710/TP199.

The NRC inspectors reviewed these procedures. They invoked the current issue of Part 21, important terms were correctly defined and the instructions for employee and management activities appeared to be adequate. The inspectors noted that, where a Part 21 concern originates in W-PCD, the concern is acted on by the ESBU Safety Review Committee and reported by W-NATD.

Westinghouse NATD letter ET-NRC-92-3692 transmitted an "Interim Report of Evaluation of a Deviation or Failure to Comply Pursuant to 10CFR21.21(a)(2)" dated April 24, 1992, concerning type 7300 circuit boards and piece parts that may not have been properly dedicated. During the inspection, W-NATD issued another letter, ET-NRC-92-3771 dated November 13, 1992, describing the evaluation performed by Westinghouse, and concluding that the issue was not reportable under 10 CFR Part 21. The NRC inspectors discussed

the evaluation with Westinghouse personnel, and concurred that the evaluation conducted by Westinghouse was adequate, and that all of the parts were in fact qualified. The inspectors stated that Westinghouse was nonetheless correct in reporting the possible concern.

The November NATD letter committed to "continued corrective actions to assure that any vendor or part changes are reviewed for seismic qualification," but Nonconformance 99900404/92-02-01 of this inspection report identifies six instances where an evaluation of such changes was not documented. With the exception of that concern, which will be followed separately, the inspectors concluded that W-PCD is properly handling 10 CFR Part 21 concerns and closed Unresolved Item 99900404/90-01-08.

2.3 Open Item 99900404/90-01-10 (Closed)

Open Item 99900404/90-01-10 stated that Westinghouse had not completed investigating a concern involving electrical isolation between protection and control circuits on type 7300 NCT circuit boards, reported by Duquesne Light Company as Licensee Event Report (LER) 90-022-00 for the Beaver Valley Power Station. Westinghouse then determined that the problem only affected certain plants where the non-safety channel test bypass annunciator output signal for the energize-to-actuate containment spray function was not routed through a qualified isolator card. The problem had been identified in 1980, but apparently was not corrected for equipment that had already been shipped.

In March 1991 Westinghouse notified all licensee customers of the concern. Affected licensees were provided a basis for interim operation involving similarity of the untested isolator to qualified devices, and suggested possible long term corrective actions. Westinghouse ESB letter NS-NRC-91-3590 dated May 15, 1991, advised the NRC that the issue was closed based on a determination that it was not reportable because the isolation function most likely would be performed, and the reasonable assurance of safe operation provided to the affected plants.

Since 1980, Westinghouse has changed evaluation procedures to prevent recurrence of this type of concern. The inspectors reviewed an evaluation form used by W-PCD in the current review as required by the Procedure and Guidance Manual for the W-NATD nuclear safety department. The new 10 CFR Part 21 procedures described in Section 2.2 of this report also improve Westinghouse's ability to track potential safety issues. Based on this review the inspectors closed Open Item 99900404/90-01-10.

2.4 Open Item 99900404/91-02-03 (Closed)

Open Item 91-02-03 stated that W-PCD had not completed responding to findings from a recent audit by the Westinghouse Nuclear

Services Division, and had not completed implementation of upgrades to its QA program resulting from that audit and another by a joint utility group. The inspectors verified that since the last NRC inspection W-PCD had revised their procedures and instituted training to address the open findings. In addition, the inspectors reviewed a letter from the lead Westinghouse auditor dated February 6, 1992, that closed all eighteen findings and twelve observations. The inspectors also reviewed the report of an audit performed in February 1992 by the joint utility group which verified that W-PCD had performed all required corrective actions resulting from the group's previous audit. Based on this information the inspectors closed Open Item 99900404/91-02-03.

2.5 Open Item 99900404/91-02-04 (Closed)

Open Item 91-02-04 stated that W-PCD was not adequately verifying critical characteristics by means of commercial grade vendor surveys because the surveys were not specific to the characteristics being verified and the surveys were infrequently performed.

W-PCD had performed several commercial grade vendor surveys prior to the inspection. W-PCD personnel stated that surveys are based on critical characteristics, and are not used as the sole method of dedication.

The NRC inspector selected and reviewed two commercial grade surveys that W-PCD conducted during 1992. The first survey was performed August 1992, at Airpax Co., Cambridge, Maryland, a supplier of circuit breakers, and the second January 1992, at ASTEC America Incorporated, Oceanside, California, a supplier of power supplies. The inspectors determined that both surveys verified supplier controls affecting critical characteristics.

The inspectors reviewed W-PCD's QA Commercial Grade Supplier List (CSGL) dated November 16, 1992. It showed the survey frequency for each supplier based on supplier performance, item complexity, standard receipt inspection results, and procurement frequency. The survey frequencies are mostly one to two years.

W-PCD uses Vendor Quality Specifications (VQSs) for vendors that supply commercial grade components to W-PCD. The VQS establishes the requirements for 10 CFR Part 21 applicability, supplier requirements, W-PCD receipt inspection requirements, and W-PCD dedication requirements. After a first-time procurement of commercial grade components from a supplier or initial survey of a supplier, W-PCD QA develops a VQS which is incorporated into the CSGL for that supplier. The VQS identifies the QA requirements and elements of the supplier's QA program applicable to the items or services procured. The W-PCD QA group generates, distributes, and controls the VQS. W-PCD is currently developing or revising VQS's for the commercial grade items used in systems, assemblies and subassemblies.

Based on this review the inspectors closed Open Item 91-02-04. However, the inspectors identified numerous examples of Nonconformance 99900404/92-02-01, indicating that W-PCD needs to continue their emphasis on conducting commercial supplier surveys.

3 INSPECTION FINDINGS AND OTHER COMMENTS

3.1 Entrance and Exit Meetings

In the entrance meeting on November 16, 1992, the NRC inspectors discussed the scope of the inspection, outlined the areas to be inspected, and established interfaces with W-PCD management and staff. In the exit meeting on November 19, 1992, the inspectors discussed their findings and concerns with W-PCD management and staff.

3.2 Inspection Scope

W-PCD manufactures instrumentation and control systems for safety- and nonsafety-related applications. The safety-related scope was transferred from another Westinghouse division in 1989. Previous NRC inspections have monitored the preparation and implementation of W-PCD's safety-related QA program. The major new area remaining for this inspection was the W-PCD program to dedicate commercial grade items for safety-related applications.

The procedures for W-PCD's commercial grade dedication program were completed and in effect at the time of the inspection. W-PCD had completed approximately 108 of 182 commercial dedication instructions. W-PCD had conducted several commercial grade supplier surveys, and scheduled several more for 1993. The NRC inspectors reviewed the dedication program procedures, and selected and examined several packages representing specific dedication activities, as well as closing the concerns from previous inspections that are addressed in Section 2 of this report.

3.3 Dedication Package Reviews

Topical Report WCAP 8370/7800, "Westinghouse Electric Corporation Energy Systems Business Unit [ESBU]/Nuclear Fuel Business Unit Quality Assurance Plan," Revision 11A/7A, dated December 1988, committed ESBU, of which W-PCD is a part, to a QA program meeting the criteria of Appendix B to 10 CFR Part 50. WCAP-9550, "Energy Systems Business Unit Quality Assurance Program for Basic Components," Revision 24, dated October 1, 1992, and WCAP 12710/TP199, "Process Control Division Quality Assurance Program," Revision 11, dated November 16, 1992, imposed these criteria on W-PCD.

In addition, for each dedication package reviewed, the General Order (GO) from the Westinghouse Nuclear Services Division (W-NSD) imposed the requirements of 10 CFR Part 21 and stated

that the procurement was quality code A (safety-related). Each GO also invoked W-NSD Standard QA Requirements SQAR 101, Revision 5, and Appendix A, Revision 3. Appendix A referenced two other Westinghouse quality system requirements documents, QPS-320-1 Revision 2, and QCS-1 Revision 7, which incorporated the requirements of American National Standards Institute (ANSI) standard N45.2-1971 "Quality Assurance Program Requirements for Nuclear Power Plants."

3.3.1 Order N2403, High Voltage Power Supplies

W-PCD order number N2403 covered 41 nuclear instrument (intermediate range) high voltage power supplies delivered to W-NSD under their GO RPIN00085 dated August 7, 1992. The GO specified style number 3A56943G02, designating Group 2 on W-PCD drawing 3A56943, which specified part number PS20005H04 as item 2 and group 2. The GO also specified part number UPMD-X 54W, which was the supplier's catalog number for the power supply. Note 1 of Drawing 3A56943 also specified that the item 2 power supply should be inspected and tested per procedure 3A56944. Development Engineering Order (DEO) No. 97283 dated June 10, 1992, controlled by DEO Notification (DEON) dated June 10, 1992, revised the drawing to add Commercial Dedication Instruction (CDI) No. 4A07794 for the group 2 power supplies. Vendor Quality Specification (VQS) 042 designated part number PS20005H04 as catalog number UPMD-X54W from Power Designs Inc.

As part of the dedication, CDI No. 4A07794 referenced report WCAP-8687, Supplement 2-E47C, Revision 1, "Equipment Qualification Test Report, Nuclear Instrumentation System Four-Bay Cabinet, Boron Dilution Source Range and Intermediate Range Drawer Assemblies (Environmental and Seismic Testing)," dated April 1985. This document identified the high voltage power supply in the intermediate range drawer as position NQ201, and also referenced intermediate range schematic drawing 6081D151, Revision E, which showed the intermediate range high voltage power supply NQ201 as part number 2384A23H04. Drawing 2384A23 sheet 5 identified part number 2384A23H04 as vendor part number UPMD-X54 W. This number agrees with the vendor part number dedicated in the 1992 dedication activity.

The documentation trail just described established that the commercial grade part ordered was the same catalog number as the part that was originally qualified in 1982 and 1985 qualification reports. However, W-PCD's dedication activities did not show that commercial grade power supplies provided by Power Designs Inc. under catalog number UPMD-X54W are adequately controlled to ensure that the recently dedicated items can perform the same safety functions as the qualified items in the same environments.

CDI 4A07794 defined three types of critical characteristics:
(a) The part number was verified by inspection, and the NRC

inspector observed appropriate inspection data sheets. (b) Qualification for seismic and mild environments was verified by reference to the qualification test reports, and the CDI stated that a "commercial survey of the vendor for design control helps ensure the changes in the power supply do not affect the seismic qualification." (c) W-PCD testing in accordance with procedure 3A56844 covered burn-in, voltage and current rating, and other tests, and appropriate test data sheets for each power supply by serial number were included in the file.

W-PCD, in fact, had not performed a commercial grade survey of Power Designs Inc. A W-PCD internal memo from engineering to QA dated August 7, 1992, referred to a future survey, and a schedule provided to the inspectors listed Power Designs Inc. for February 1993. However, the power supplies under W-PCD order number N2403 were shipped in September 1992 and certified as meeting all requirements of customer order XARN90288 on September 21, 1992. The NRC inspector reviewed Westinghouse audits of Power Designs Inc. performed in 1990 and 1991. W-PCD personnel agreed that these audits do not serve the purpose of a commercial grade supplier survey addressed on page 7 of Procedure DP 07-003.

In addition to the absence of a commercial grade supplier survey, the dedication tests performed by W-PCD were not sufficient by themselves to establish similarity between the dedicated items and the qualification test specimens. Further, there was no documentation that possible changes to the commercial grade power supplies were controlled, identified, or evaluated for safety impact. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated for safety impact is the first example of Nonconformance 99900404/92-02-01.

3.3.2 Order N4890, Printed Circuit Boards and Isolation Relays

W-PCD order number N4890 covered 12 line items, including four type NTC printed circuit (PC) boards (line item 6), part number 2837A94G08, shipped to a W-NSD warehouse under W-NSD GO RPIN00087 dated May 8, 1992. Change Notices 1 and 2 added line item 13 for 25 Struthers-Dunn Co. relays, part number PS12805H01. The inspectors reviewed both the item 6 boards and the item 13 relays.

* Printed Circuit Boards (line item 6)

Assembly drawing 2837A94, supplemented by DEON, references CDI 4A07736 and test procedure 953A80. The critical characteristics defined in the CDI included seismic integrity and mild environment qualification as verified by reference to the 1986 qualification test report for the 7300 Series Process Protection System, with the statement that changes are evaluated under DEO/DEON control. No documentation indicated that a review was performed to verify whether possible part changes made since the original 1986

seismic and mild environment qualification were evaluated. There was no evidence of a commercial grade survey of the supplier, and the dedication testing described in the next paragraph was not sufficient to detect all such changes. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated for safety impact is the second example of Nonconformance 99900404/92-02-01.

Other critical characteristics defined in CDI 4A07736 included repeatability and operability, to be verified as part of PC board level testing in accordance with test procedure 953A80. No hard copy record or any other form of documentation indicated that these critical characteristics were verified by testing, or what results were found.

W-PCD's practice for PC boards, as detailed in Procedure TP 5000, Section 5302, "Card Test," Revision 1, dated October 18, 1991, is to mark the card edge of boards that passed tests with a designated semi-permanent marker. The quantitative test results are recorded on the QC Card Test Data Collection Product Assurance data log form, which is used for data collection and evaluation by the Product Assurance Department. The data are entered into the QA data base for the purpose of trending and other analyses, and eventually the data log forms are discarded. For serialized PC boards, test results are also recorded on test data sheets that are retained by Product Assurance. However, for less complex, non-serialized boards, the test procedures do not require officially recording test data or retaining hard copy records. As part of the CDI justification, the final inspector simply verifies that appropriate tests were performed by observing whether the proper test markings are on the card's edge.

Failure to maintain adequate test records is the first example of Nonconformance 99900404/92-02-02.

- Isolation Relays (line item 13)

Assembly drawing 3A98884, supplemented by DEON, reference DI 4A07847. The critical characteristics defined in the CDI include seismic integrity and mild environment qualification as verified by reference to a 1986 qualification test report for Struthers-Dunn relays, with the statement that a commercial survey of the vendor for design control helps ensure that changes to the relay do not affect the seismic qualification. The schedule provided to the inspectors indicated that W-PCD had neither surveyed Struthers-Dunn nor scheduled a survey. There was no documentation that any review was performed under the DEON control system of possible part changes made since the original 1986 seismic and mild environment qualification, and the dedication testing performed was not sufficient to detect possible changes. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated

for safety impact is the third example of Nonconformance 99900404/92-02-01.

CDI 4A07847 also identified isolation as a critical characteristic, but not in the critical characteristics portion of the CDI (section E); however, isolation was listed in the table in section H of the CDI. The CDI did not identify operability as a critical characteristic. Test procedure 953A20, which was not referenced in the CDI, was referenced by the assembly drawing 3A98884; the test procedure verified operability of the relay by confirming minimal leakage current using a hi-pot tester and by verifying proper contact status for the "operate" and "reset" functions. Although the W-PCD Certificate of Conformance dated September 3, 1992, stated that the relays were tested in accordance with test procedure 953A20, Revision 1, W-PCD personnel agreed with the inspector's comment that isolation and operability should be clearly identified in the CDI as critical characteristics. W-PCD initiated quality performance feedback QPF 92-060 during the inspection to correct the documentation.

No hard copy record or any other form of documentation indicated that the relays were tested and what results were found. The final inspector simply verified that testing was performed by observing whether the proper test sticker, which indicated the date of test and initials of the test operator, was affixed to the relay. Since the sticker was shipped with the relay, no documentation was retained to support test acceptance. This lack of adequate test records is the second example of Nonconformance 99900404/92-02-02.

One relay failed during dedication testing due to high contact resistance. W-PCD initiated discrepant item notice DIN 231697 in accordance with TP121, "Quality Assurance Inspection Handbook," Revision 3, dated August 31, 1992. The rejected relay was scrapped. A replacement passed testing and was shipped.

3.3.3 Order N2405, Fan Assemblies

W-PCD order number N2405 covered two type 2D34586G01 fan assemblies shipped to the Byron Nuclear Power Station of Commonwealth Edison Co. under W-NSD GO RPS22273 to W-PCD dated May 27, 1992. W-PCD drawing 2D34586, Revision 2, as modified by DEON 097510, references CDI 4A07860. The fan assembly includes a fan, part number 9936A43H01, vendor model MB5100 Type 100, procured commercial grade from EG&G Rotron Co. as their part number 020099. The critical characteristics defined in the CDI include seismic integrity as verified by reference to the original qualification test report for the 7300 Series Process Protection System, with the statement that changes are evaluated under DEO/DEON control.

No documentation indicated that a review was performed to verify whether fan changes possibly made since the original 1986 seismic

qualification were adequately evaluated. There was no evidence of a commercial grade survey of the supplier, and the dedication testing was not sufficient to detect all such changes. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated for safety impact is the fourth example of Nonconformance 99900404/92-02-01.

3.3.4 Order N4925, Timer Modules

W-PCD order number N4925 covered five timer module printed circuit (PC) cards, part number 2839A49G04, for use on type NPL PC boards. The cards were shipped to the Comanche Peak Steam Electric Station of Texas Utilities Electric Co. under W-NSD GO PCD00051 dated August 14, 1992. Assembly drawing 2839A49 did not contain a notice requiring DEON control of the drawing. W-PCD QA Procedure TP1018, "Commercial Dedication Instruction," Revision 1, dated January 31, 1992, requires stamping "DEON CONTROLLED ASSEMBLY" or equivalent on drawing sheets for dedicated commercial grade items. It also requires that the DEON list each critical characteristic and evaluation of changes to it.

Drawing 2839A49 was changed by DEO 052341 dated September 11, 1992, without DEON control. There was no documentation showing that the change was analyzed for impact on seismic qualification or other safety concerns. This lack of DEON control is the first example of Nonconformance 99900404/92-02-03.

Based on the inspectors' concerns, during the inspection W-PCD issued QPF 92-058 and QPF 92-059 to initiate corrective action to properly mark the assembly drawing and to issue a DEON to accompany the previously issued DEO 052341. The inspectors also noted that assembly drawing 2839A49 did not cross-reference CDI 4A07784 as required by TP1018 page 3. W-PCD issued QPF 92-057 as a result of this NRC concern to assure proper corrective action.

The critical characteristics defined in CDI 4A07784 included seismic integrity and mild environment qualification as verified by reference to the 1986 qualification test report for the 7300 Series Process Protection System, with the statement that changes are evaluated under DEO/DEON control. However, no documentation indicated that a review was performed to verify whether design changes possibly made since the original 1986 qualification were evaluated under the DEON control system. There was also no evidence of a commercial grade survey of the supplier, and the dedication testing was not sufficient to detect all such changes. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated for safety impact is the fifth example of Nonconformance 99900404/92-02-01.

Another critical characteristic defined in CDI 4A07784 was repeatability, to be verified using the module test procedure detailed on sheets 13 through 15 of assembly drawing 2839A44. As for other PC boards, as discussed in Section 3.3.2 of this report, no hard copy record or any other form of documentation indicated that this critical characteristic was verified by testing or what results were found. This lack of adequate test records is the third example of Nonconformance 99900404/92-02-02.

3.3.5 Order N2379, Blower Assemblies

W-PCD order number N2379 covered four type 1864E25G01 blower assemblies shipped to the Joseph M. Farley Nuclear Plant of Alabama Power Company under W-NSD GO RPS22170 dated March 31, 1992. Assembly drawing 1864E25 did not have a DEON control notice. Drawing 1864E25 was changed by DEO 097489 dated September 11, 1992, without DEON control, and there was no documentation showing whether the change was analyzed for impact on seismic qualification or other safety concerns. This lack of DEON control is the second example of Nonconformance 99900404/92-02-03.

Based on the NRC inspectors' concerns, during the inspection W-PCD issued QPF 92-058 to properly mark the assembly drawing and to issue a DEON to accompany the previously issued DEO 097489. QPF 92-059 and DEO/DEON #097627 were also issued to add the "DEON Controlled" statement to the assembly drawing 1864E25.

The critical characteristics defined in CDI 4A07782 include seismic integrity as verified by reference to the 1988 qualification test report for the Eagle 21 Process Control System, with the statement that changes are evaluated under DEO/DEON control. The test data sheets for the blower assemblies included process line tags indicating completion of hardware inspection and testing. However, no documentation indicated that a review was performed to verify whether possible design changes made since the 1988 qualification were evaluated under the DEON control system. There was no evidence of a commercial grade survey of the supplier, and the dedication testing was not sufficient to detect all such changes. This failure to document that possible changes to the commercial grade items being dedicated were controlled, identified, or evaluated for safety impact is the sixth example of Nonconformance 99900404/92-02-01.

3.3.6 Order N2393, Termination Modules

W-PCD order number N2393 covered 14 termination modules shipped to the Zion Nuclear Station of Commonwealth Edison Company under W-NSD GO IN18680 dated May 11, 1992. The termination modules are manufactured at PCD using commercial printed circuit boards and component piece parts, and tested to the requirements of test procedure 1A90652 as required by CDI 4A07783. Sections 4-4 and 4-5 of Procedure TP121, "Quality Assurance Inspection Handbook,"

Revision 3, dated August 31, 1992, require attaching a process record tag to each assembly or sub-assembly manufactured by W-PCD. Section 14 of TP122, "Product Assurance Manual," Revision 3, dated November 30, 1991, requires that all assemblies except printed circuit assemblies and cable assemblies have a "Process Line Tag" attached. The process line tags are the normal evidence of testing but they could not be located, so only the inspector's signature on the commercial dedication inspection data sheets verified that the required testing was performed. This lack of adequate test records is the fourth example of Nonconformance 99900404/92-02-02.

3.3.7 Order N2389, Power Supply

W-PCD Order N2389 covered one power supply shipped to the North Anna Station of Virginia Power Company under W-PCD GO RM36205 dated April 30, 1992. In contrast to the examples of Nonconformance 99900404/92-02-01, this dedication activity included considerable effort to identify and evaluate possible changes in a commercial grade item.

W-PCD analyzed the piece parts and materials of the new power supply to determine differences from the originally qualified unit, and documented the results in a report. The coil was found to be mounted differently on the power supply converter board. The new design was seismically evaluated, and the analysis was documented. The seismic evaluation concluded that the coil and its mounting were acceptable for the seismic requirements.

4 PERSONNEL CONTACTED

W-PCD:

- * A. E. Pauley, General Manager
- + * R. L. Loving, Acting Manager, Customer Sys. and Projects
- + * E. Torres, Manager, Total Quality
- + * R. A. Judd, Acting Manager, Operations
- + * K. A. Wells, Manager, Purchasing
- + * W. L. Miller, Manager, Nuclear Applications
- + A. F. Sahasrabudhe, Manager, Special Products & Applic.
- + * P. T. McManus, Manager, Quality Assurance
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- A. Lamanski, Test Technician
- J. E. Leyland, Inspector
- C. Riley, Test Engineer
- S. Martin, Senior QC Inspector
- W. Deutsch, Senior QC Inspector
- J. Duffy, Test Technician
- R. Stoffiere, Senior Procurement Specialist

W-NUCLEAR AND ADVANCED TECHNOLOGY DIVISION:

- + * R. D. Petrosky, Manager, Quality Assurance
- + * P. J. Morris, Secretary, Safety Review Committee
- + * R. B. Miller, Fellow Engineer

- + Attended the entrance meeting on November 16, 1992
- * Attended the exit meeting on November 19, 1992