

ORGANIZATION: NUTHERM INTERNATIONAL INCORPORATED
MOUNT VERNON, ILLINOIS

REPORT NO.: 99900779/88-01	INSPECTION DATE: October 3-7, 1988	INSPECTION ON-SITE HOURS: 116
CORRESPONDENCE ADDRESS: Nutherm International Incorporated 501 South Eleventh Street Mount Vernon, Illinois 62864		
ORGANIZATIONAL CONTACT: Mr. Jerry Tankersley, QA Manager TELEPHONE NUMBER: (618) 244-6000		
NUCLEAR INDUSTRY ACTIVITY: Nutherm International Incorporated (NI) performs two primary functions for commercial and military nuclear facilities. NI manufactures safety-related electrical and instrumentation equipment such as control panels, panelboards, instrument racks, etc. NI also is a qualification and dedication service organization supplying electrical and instrumentation devices for safety-related services. In many instances the two functions are combined into a qualification and fabrication project.		
ASSIGNED INSPECTOR:	<u>E T Baker for</u> J. J. Petrosino, Reactive Inspection Section No. 1 (RIS-1)	<u>3/17/89</u> Date <u>68</u>
OTHER INSPECTOR(S):	T. Foley, NRR/DRIS S. Alexander, NRR/DRIS W. Gunther, Brookhaven National Laboratory	
APPROVED BY:	<u>Edward T Baker</u> E. T. Baker, Chief, RIS-1, Vendor Inspection Branch	<u>3/17/89</u> Date <u>68</u>
INSPECTION BASES AND SCOPE: A. <u>BASES</u> : 10 CFR Part 21 and Appendix B to 10 CFR Part 50. B. <u>SCOPE</u> : This inspection was performed as a follow-up to NRC Information Notice 88-46, regarding commercial grade circuit breaker upgrading for safety-related use.		
PLANT SITE APPLICABILITY: All Plants.		

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A. VIOLATIONS:

None

B. NONCONFORMANCES:

1. Contrary to Criterion V, "Instructions, Procedures and Drawings," of Appendix B to 10 CFR Part 50, the following was noted:
 - a. Quantitative and qualitative acceptance/rejection criteria were not adequately delineated for Siemens RL-800 circuit breaker test, TP-11.6.28.
 - b. Quantitative and qualitative acceptance/rejection criteria were not adequately delineated for the "Baseline Testing of Differential Pressure Indicating Switches," TP-9.7.10.43.
 - c. The test result record for TP-9.7.10.43 does not require an acceptance or rejection signature to signify that the test results are either accepted or rejected.
 - d. While performing tests using TP-9.7.10.43 an inappropriate pressure monitoring device was used to verify whether a Meriam 0-3 psi differential pressure indicating switch was within an accuracy of 2 percent (i.e., 0-30 psi, uncalibrated U.S. Gauge.)

As a result, nonconformance (88-01-01) was identified.

2. Contrary to Criterion III, "Design Control," of Appendix B to 10 CFR Part 50, it was identified that NI's program for dedicating commercial grade circuit breakers for use in safety-related applications does not, in all cases, adequately evaluate material or design changes and the effect of any such changes on environmental or seismic qualification. NI's practice of using reports of previous qualification tests to qualify new production items is not valid because it does not account for material and design changes that may have been instituted since the qualification test was performed.

As a result, nonconformance (88-01-02) was identified.

C. OPEN/UNRESOLVED ITEMS:

None were identified during this inspection.

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D. STATUS OF PREVIOUS INSPECTION FINDINGS:

1. Nonconformance 99900779/87-01/B.1.a, b, and c

Closed - Criterion II, "Quality Assurance Program." These nonconformances are closed based on an adequate QA program manual revision, (Section 10 and 12), and observations that QA appears to be monitoring and verifying test lab activities. NI has added a measurement and test equipment recall system that should prevent recurrence of the original problem. (Refer to Section E.2 of this report for an additional discussion).

2. Nonconformance 99900779/87-01/B.2 a, b, and c

Closed - Criterion III, "Design Control." These nonconformances are closed based on the following corrective actions:

(a) discussions and reviews of documents indicate that all previously identified technical procedures have been reviewed, revised as necessary, and approved by cognizant NI engineers. Additionally, all other NI technical procedures have been similarly dispositioned;

(b) engineering reviews that were performed to ensure that NI performs design verifications by full functional testing as allowed by ANSI N.45.2.11. NI has also established requirements for its engineers to perform an overview of customer stated specifications and requirements and to document its review on an NI checklist; and

(c) drawing reverifications and/or engineering justifications.

3. Nonconformance 99900779/87-01/B.3.a, b, and c

Closed - As discussed in Section D.1 above, NI has taken satisfactory action to revise its QA program manual to better meet the intent of Appendix B to 10 CFR Part 50 and ANSI N45.2. In addition, NI appears to be effectively executing that portion of its QA program and currently has "resident" QA inspectors located in its testing laboratory facilities.

4. Nonconformance 99900779/87-01/B.4

Closed - During testing activities for an NGV type relay for project TVA-2605, it was observed that the applied test current was 2.5 times less than specified by the manufacturer. Nutherm provided data sheets to demonstrate that subsequent to this finding, testing of the relay was successfully completed at the proper current.

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During testing of an alternating current contactor for project BPC-2475, it was observed that a resistive load was being used in lieu of the required inductive load. NI provided documentation to indicate that this is permissible, provided a higher resistive loading is used. The data sheets reviewed demonstrated that the higher resistive load had been properly applied.

5. Nonconformance 99900779/87-01/B.5

Closed - A random verification of several personnel qualification packages for current employees and discussions regarding the NI employee background verifications that are being performed indicate that NI has taken adequate corrective actions to provide both remedial actions and to prevent recurrence.

6. Nonconformance 99900779/87-01/B.6

Closed - NI has taken adequate corrective actions to prevent recurrence of the QA staff performing audits of its own QA programs and has committed to obtain periodic third party reviews of its program to ensure its effectiveness.

7. Open Item 99900779/87-01/C.(1)

Closed - Adequate corrective actions concerning personnel qualifications have been implemented by NI as discussed in Section D.5 above.

8. Open Item 99900779/87-01/C.(2)

Closed - The issue of correct performance of testing is closed based on additional test sequence reviews that were performed during this inspection, NI's corrective actions regarding its technical procedure review, revision of procedures and programmatic changes, additional QA monitoring and surveillance activities, and third party audit of NI's QA program.

9. Open Item 99900779/87-01/C.(3)

Open - The issue of radiation testing failures was not reviewed during the inspection and therefore will remain open as item 88-01-03.

10. Open Item 99900779/87-01/C.(4)

Open - The issue of procurement and receipt inspection control was not reviewed during the inspection and therefore will remain open as item 88-01-04.

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11. Open Item 99900779/87-01/C.(5)

Closed - Closure of the quality assurance procedures and instructions issue is based on the pro-active approach that NI has demonstrated with its QA manual revision, hiring of additional QA personnel, and an internal reorganization that will enhance its QA program control.

12. Open Item 99900779/87-01/C.(6)

Closed - The area of audits was characterized in an anonymous allegation letter to NRC, dated September 2, 1987, in the following manner: "Check into the external audits performed by the quality assurance department." The review of numerous NI purchase orders indicate that the majority of components are procured by NI as commercial grade components and therefore would not require audits. However, the third party audit team (ERCI) review indicates that its review of NI lead auditor files for personnel qualifications was satisfactory and a selected review of previously completed external NI audits found no discrepancies. Based on NRC review of this matter and the ERCI review, this matter is closed.

13. Open Item 99900779/87-01/C.(7)

Closed - Section 21.21 of 10 CFR Part 21, requires, in part, that NI either provide for evaluating deviations that it is aware of or notify the purchaser or end user so that they may cause an evaluation to be performed. The NRC inspector found no instance where this action was not satisfactorily performed. It was noted that NI performed a recent review of its circuit breaker procurement records after the issuance of NRC IN 88-46, "Licensee Report of Defective Refurbished Circuit Breakers." As a result, NI identified two suspect vendors that it had procured from and appropriately notified the applicable licensees that received the suspect circuit breakers.

14. Allegation Aspect 99900779/87-01/E.4.a

Closed - Adequate corrective actions concerning personnel qualifications have been implemented by NI as discussed in Section D.5 above.

15. Allegation Aspect 99900779/87-01/E.4.b

Closed - The issue of correct performance of testing is closed based on the discussion in Section D.8 above.

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16. Allegation Aspect 99900779/87-01/E.4.c

Open - The area of radiation testing will remain open as discussed in Section D.9 above and be identified as open item 88-01-03.

17. Allegation Aspect 99900779/87-01/E.4.f

Closed - Based on the results of this inspection, the area of receipt inspection and procurement control appears satisfactory. An NRC review of the current NI procurement and receipt inspection program effectiveness was performed regarding commercial grade circuit breakers. Additional concerns were identified regarding NI's program for dedicating circuit breakers for safety-related use. These concerns are discussed in Section E.3 of this report.

18. Allegation Aspect 99900779/87-01/E.4.g

Closed - The issue of external audits is considered closed based on the discussion in Section D.12 above.

19. Observation Aspect 99900779/87-01/E.15

Open - General observations concerning the execution of the current NI QA program were favorable. However, the NRC inspector did not evaluate the QA program procedures for adequacy. Therefore, this item will be categorized as open and be identified as open item 88-01-05.

E. INSPECTION FINDINGS AND OTHER COMMENTS:

1. Entrance and Exit Meetings

The NRC inspection team informed the NI representatives of the scope of the inspection during its October 3, 1988 entrance meeting and summarized the inspection findings, observations and comments during its October 7, 1988 exit meeting. The overall improvement in the NI QA Program activities was evident and indicated an excellent management response to the concerns raised in NRC inspection report 99900779/87-01.

2. Background/Conclusions

The main objective of this inspection was to review the circuit breaker qualification program that NI has established and determine what measures are being controlled by the NI program. The review of the program is discussed in Section E.3 below.

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The second objective was regarding the corrective actions that were established and executed by NI in response to the findings identified in NRC inspection report 99900779/87-01. The NRC inspector noted an improved program control regarding testing when compared to what was previously observed during the 87-01 inspection. The NRC review of the corrective actions reveals that NI appears to have reviewed all of the questionable qualification results index forms and their applicable test results. The NI review concluded that the manufacturers' technical information was adequately applied to its testing program to ensure component functionality. The NI review identified some test deviations but most were stated as being of a minor technical concern. Those that were significant were dispositioned under the NI nonconformance program. It also appears that the test anomalies and nonconformance reports are included in the NI test reports, which are retrievable.

3. Adequacy of NI Equipment Qualification and Dedication

a. Procedure Review

The NI procedures associated with the testing of circuit breakers were reviewed for technical adequacy. This review is summarized below.

TP 9.7.22, "Function Testing of Thermal Magnetic, Thermal, and Magnetic Trip Circuit Breakers."

This procedure is now required to be performed on every Class 1E circuit breaker supplied by NI to its customers. In the past, this procedure was also performed upon receipt inspection; however, this is no longer the case. It is now performed following visual inspection and review of similarity to previously qualified breakers of the same type, as well as subsequent to qualification testing to verify that the breaker is still operable. The original procedure, which was issued on February 25, 1987, and the present procedure, Revision 3, issued on May 5, 1988, were reviewed to determine the changes that have occurred in the NI program and to compare NI testing requirements to industry standards.

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Technical procedure TP-9.7.22 has not changed substantially from its original form to its present revision. The circuit breaker testing called for in the procedure includes the following:

- ° continuity check of contacts.
- ° test of breaker at 100 percent load (verify no trip).
- ° overcurrent trip test at 300 percent of load.
- ° overcurrent trip test of magnetic trip unit.

A table is provided of acceptable tripping times for various sized breakers, i.e., different voltage and current rating.

National Electrical Manufacturers Association (NEMA) Standard AB1-1986 addresses the performance requirements and the tests to verify performance of molded case circuit breakers. While this standard emphasizes design verification tests, breaker performance applicable to the type of testing conducted by NI is also mentioned. Specifically, NI procedures address the overcurrent trip test and the rated current test prescribed by the NEMA standard with one exception. For the rated current test, NEMA specifies that the breaker carry rated current until stable temperature conditions are achieved. TP-9.7.22 contains no direction regarding the time that rated current should be applied.

Underwriters Laboratories (UL) Standard 489, which is the standard for safety on molded case circuit breakers and circuit breaker enclosures, also discusses the overcurrent trip test and the rated loading test. Again, the only difference noted is paragraph 15.4, which states that a "circuit breaker shall be capable of carrying 100 percent of its rated current until temperatures become constant."

TP 9.7.21, "Baseline Testing of Magnetic Circuit Breakers."

Originated on April 30, 1985, and subsequently revised nine times, this procedure checks continuity, rated load, and the magnetic trip unit as in TP-9.7.22, and also performs 300 percent and 600 percent overcurrent tests. Precautions are taken to conduct the test at proper temperature conditions. The areas in which the procedure has evolved are:

- ° overcurrent test at 300 percent rated load was added in Revision 5.

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- ° a 200 percent overcurrent test was deleted in Revision 7.
- ° Revision 8 added more definitive specifications on the temperature at which the test should be conducted.
- ° Revision 9 added testing of a shunt trip device and provided tolerances on the current to be applied during the test.

Table 1 of IEEE Std 649-1980, "IEEE Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations," lists the minimum operational tests that should be performed for equipment qualification base line data. For molded case circuit breakers, the operational tests are:

- ° manual operation.
- ° trip test at 600 percent of rated current.
- ° trip on 70 percent to 110 of maximum magnetic trip setting.

b. Review of Selected NI Purchase Orders

A significant portion of the inspection was associated with the review of NI purchase order packages of circuit breakers from selected suppliers. For each order, documentation of receipt inspection and functional or equipment qualification (EQ) testing was reviewed. This information was provided to the NRC inspection team for possible follow-up inspections of the suppliers of the circuit breakers. A summary of the review follows:

Job I.D.	Breaker Mfg. & Model NO.	Continuity	Over Current Trip Test			Comments
			100%	300%	600%	
TVA-2716	GE TEC-36007	X	X	EQ	EQ	Data in EQ report.
	GE TEC-36015	X	X	EQ	EQ	TVA-2716-A, Rev. 0, Vol. 1. Some contact chatter, accepted by TVA.
TVA-3090	GE THED136100WL	X	X	X		Functional Testing of CBs performed per 9.7.22, Rev. 3.

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Job I.D.	Breaker Mfg. & Model No.	Continuity	Over Current Trip Test			Comments
			100%	300%	600%	
TVA-2899	GE TJK636Y600	X	X	EQ	EQ	300 & 600 percent test performance, EQ Report TVA-2438 K (NTL 1903).
TVA-2799	GE THED136135WL	X	X	EQ	EQ	TVA-2799, Rev. 0 EQ Note: 134 per 9.7.22 Package (NTL 3043). Ordered Rev. 3.
PLG-2925	GE TED Series	X	X	EQ	EQ	EQ Report PLG-2925, Sample Receipt Rev. 0, Testing.
TVA-3032	GE TED136YT100	X				No Testing - This is a switch.
TVA-3027	<u>W</u> FB-3100 <u>W</u> FB-3100	X X	X X	X X		Receipt inspection EQ testing performed on January 10, 1988 per 9.7.22, Rev. 0. Compared to NTL 185.
EBS-1385	GE THED Type					No functional test data found.
YAE-2299	LA & LB 2400 <u>W</u> HLA & HLB 2400	X X	X X		X	Testing per 9.7.23, and 9.7.22, Rev. 0. EQ package reviewed only for seismic qualification.
PGE-1762	<u>W</u> HMA36000TM					No functional testing on NTL production breakers 1762.
PSE-2452	<u>W</u> FB-2070 <u>W</u> FB-2015	X X	X X	X (200%) X	X X	Seismic EQ by similarity NTL 665.

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Job I.D.	Breaker Mfg. & Model No.	Continuity	Over Current Trip Test			Comments
			100%	300%	600%	
FPL-2796	GE THED136015WL	-	-	-	-	Function test 9.7.22, Rev. 1 referred to but no data found. NTL 1747.
PSE-2276	GE TEC 36015	-	-	X (200%)	-	Function test 9.7.22, Rev. 1. No test results found except for 200 percent.
GPU-1900	GE TEC 124020	-	-	X	-	Part of panel EQ test. Comparison to NTL 1194.
UNC 2172-18	W MCP0322R W MCP13300R	X	X	N/A	N/A	Per 9.7.22, Rev. 0.

NTL = Nutherm Test Library Report; X indicates that test was performed;
GE = General Electric Company; W = Westinghouse Electric Company

c. Review of Equipment Testing and Dedication

- On October 8, 1988, testing of a Siemens type RL-800 low voltage circuit breaker was conducted. Procedure TP-11.6.28, Revision 1 was used by the lab technician to determine if the breaker tripped within an acceptable time when an overcurrent condition was simulated. Sections 8.2 and 8.3 of the NI procedure (acceptance criteria) state that the circuit breaker must interrupt currents "within the parameters of the time current curves." These curves were included as an attachment to the procedure. In discussing this procedure with the lab technician, the lab supervisor, the QA manager, and the engineering manager, it was evident that extrapolation of the acceptance criteria is subject to interpretation. This judgement should be made at the engineering level with specific acceptance criteria provided to the lab technician.

The circuit breakers tested are being supplied to the Department of Energy Hanford reactor for use in an emergency AC power system. While the overcurrent trip

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settings are functionally tested for the customer's specified equipment qualification purposes, the NI Engineering Manager indicated that in a postulated emergency situation, the overcurrent trip function would be bypassed.

2. While observing Exploratory Test NTL 2965, in accordance with Engineering Instruction 2538 EI-1, "To Verify Manufacturer's Information on the Operating Characteristics of the Meriam Differential Pressure Indicating Switch Model 1226-2, 0-3 psid," and TP-9.7.10.43, "Baseline Testing of Differential Pressure Indicating Switches," it was noted that the procedure appeared inappropriate for the circumstances. Specifically, Step 6.7 requires the technician, on increasing pressure, to record the pressure at which contacts change state and the set points are reached, where applicable. The data sheet provides only two spaces (set and act) for recording the previously established set points as read on either the source gauge, 0-30 psi or the instrument being tested 0-3 psid. The procedure lacked specificity for recording the act which was understood by some NI personnel to be actual pressure but could be confused with actuation of the contact set points. For example, the set and act were interpreted by the Test Technician, the Project Engineer, and the Test Lab Manager as either actual pressure on the source gauge, actual pressure on the instrument being tested, actuation of the contacts on either (unspecified) gauge, or the actual actuation set point previously set by the technician. Further, the data sheet provides only two spaces for recording the set point and the change for actuation of set points and the changes for resetting the contacts as pressure increased.

Through discussions with the engineer reviewing the document, the inspector determined that the details of the procedure, as understood by the engineer, were not consistent with the Test Technician's performance of the procedure as observed by the inspector.

Additionally, during the review of the test data recorded, it was difficult to determine whether the data fell within the acceptance criteria as stated in Step 7 of the procedure. The acceptance criteria within the procedure required that the indicator, set points, and dead band shall be within the range as specified on the data sheet.

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Indicator accuracy was ± 2.5 percent of full scale. Set point repeatability tolerance was ± 1 percent of full scale and the maximum dead band was 10 percent. The test results did not specify what the accuracy of the indicator was determined to be. The instrument repeatability and the dead band were not determined. The test procedure did not provide for or require a determination or conclusion of either satisfactory or unsatisfactory test results.

The inspector further noted that the procedure required certain accuracies and percentages to be determined and compared these to the accuracy of the instrument which was used as a source of pressure indicator. The source pressure instrument was a 0-30 psi U.S. Gauge (NI 386) with a 1 percent accuracy. The differential pressure switch, 0-3 psi, was required to have an accuracy of 2 percent, thus the source instrument was five times less accurate and not calibrated within the range of the instrument being tested.

Step 4.2 of Procedure TP-9.7.10.43 requires the use of a pressure monitoring device appropriate for the range of the device being tested. This criteria was apparently not met. The NI management recognized this and stated that a newly purchased, more sensitive test device was planned for use, however, it recently broke and was currently being repaired. The management also recognized the lack of clarity and detail with regard to the acceptance criteria and had made several proposed changes to the data sheet prior to the end of the inspection. It is the inspector's understanding that this was the first and only test of this type of differential pressure switch (Model 1226-2) with an inappropriately sized gauge; therefore, NI would not be required to determine whether it has previously supplied model 1226-2 switches to other customers. Nonconformance 88-01-01 was identified in this area.

3. The NRC inspectors reviewed and evaluated NI's dedication program and its implementation with emphasis on the issue of fraudulent and/or refurbished electrical equipment, particularly molded case circuit breakers (MCCB's), as discussed in NRC Information Notice (IN) 88-46 and Supplement 1. The effectiveness of the program in detecting fraudulent and/or substandard MCCB's and controlling them to prevent their sale as "Nutherm Qualified Items" (NQI's) and

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hence their use in safety-related systems (as well as adequacy of dedication in general) was assessed.

Accordingly, the review began with an examination of NI's procurement records to select a sample of commercial grade procurements, to determine what components, if any, had been purchased from suppliers listed in the notice and supplement, and to review the degree of traceability NI had established and documented.

The inspector compiled numerous examples of commercial grade MCCB procurements, most of which were from commercial suppliers such as various General Electric Supply Company (GESCO) offices and Westinghouse Electric Supply Company (WESCO) offices. A concern with these suppliers is that they are able to draw on stock from their respective supply networks which are known to be contaminated with fraudulent and/or refurbished MCCB's. In the vast majority of cases, NI's records could establish traceability only as far as their immediate supplier, although there were a few records of purchases directly from branch offices of the original manufacturer. The invoices in these cases usually indicated direct shipment from a manufacturer's warehouse.

The NRC inspectors had learned in discussions with NI that they routinely obtain NRC generic communications and screen them for subjects pertinent to their activities. Prompted by IN 88-46 and its supplement, NI had reviewed its records prior to the inspection and identified procurements of MCCB's from two of the suppliers listed in the notice, General Circuit Breaker and General Magnetics. NI then notified the affected customers. The NRC inspector likewise identified those procurement files during this phase of the review. While NI's records indicated that the purchases directly from suspect suppliers were readily identified and traceable to their respective customers, the potential remains for infiltration of the supply networks of secondary suppliers like WESCO and GESCO by MCCB's of indeterminate quality.

In summary, the NRC inspectors reviewed numerous procurements of commercial grade MCCB's, intended for dedication, from suppliers other than the original manufacturers, and without documented traceability to those manufacturers. Among them were 42 purchase orders (POs) to various GESCO branches for MCCB's which were subsequently supplied to

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various customers including 21 for the Tennessee Valley Authority (TVA), one for Florida Power and Light, one for Niagara Mohawk Power Company, and one for General Public Utilities. Included in nine POs for MCCB's from WESCO were three for TVA, one for Yankee Atomic Electric (YAE), and one for Portland General Electric (PGE). PO's to General Magnetics were for Job Numbers TVA-2297 and 3027 and the POs to General Circuit Breaker were all for Job Number TVA-2297, requisitions 27, 35 and 36.

After identifying the procurements discussed above, the NRC inspector reviewed the records of dedication for the purchased material contained in the files for the various customer jobs. The records were reviewed for procedural compliance (referring to the revisions of applicable NI procedures in effect at the time the dedications were performed) as well as technical adequacy and conformance to regulatory requirements. The evaluation also included interviews with NI test and engineering personnel and observation of MCCB dedication testing in progress.

On the basis of the reviews discussed above, the NRC inspector found that although NI's dedication program was generally implemented in accordance with NI procedures, and that the testing program generally was consistent with industry standards, NI was not in most cases able to document traceability of individual MCCB's to their original manufacturers. NI's dedication program included provisions for establishing similarity of commercial grade items (including MCCB's) to NQI's by (1) a design review where information is available, (2) by non-destructive physical comparison and (3) by "destructive" comparison in which components are dismantled and physical comparison conducted on the piece-parts. The results of these comparisons were contained in similarity analyses in the dedication files, many of which the inspectors reviewed. The analyses were further supported by functional performance verification test data on all production components destined for sale as NQI's.

However the methodology of establishing similarity to a previously qualified product by sample testing or destructive examination can be used only if the population of items sampled is homogeneous. This cannot be assured if the items are not traceable to the original manufacturer.

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As discussed above, MCCB's procured from distributors have been in many instances rebuilt or altered by using other than the original manufacturer's parts, using uncontrolled processes and used and/or substandard parts. Therefore, the current NI methodology does not provide adequate assurance that the MCCB's supplied under the program would perform satisfactorily in safety-related applications, especially when seismic or environmental qualification is required. Nonconformance 88-01-02 was identified in this area.

d. Conclusion

The electrical circuit breaker test and qualification program contained functional tests that verify functionality: 300 percent and 600 percent thermal trip tests, magnetic trip tests, and pole to pole megger checks. These tests were performed in addition to the receipt and product baseline tests. The NRC inspectors witnessed the testing of some breakers. The testing of commercial grade molded case circuit breakers for safety-related applications that was observed was conducted in accordance with procedures. However, a failure to specify the correct trip time values on the test form resulted in the apparent failure of a magnetic trip test. The breakers were determined to have passed when test results were compared to the correct specifications.

The NI procedure for establishing similarity between NI production equipment and "NI Qualified" equipment provided for the comparison of form, fit, and function; however, process, materials, and potential design and manufacturing changes were inadequately addressed. In order to establish similarity to previously qualified equipment, NI must establish that no changes to material, design, or manufacturing process have been made or NI must evaluate the changes and verify the changes do not adversely affect qualification. Much of NI's product is procured through distributors and documentation often does not establish traceability to the manufacturer. Therefore, these attributes may not be adequately evaluated, which renders invalid the similarity arguments based solely on inspection and testing. Accordingly, NI's program for dedication of commercial grade equipment must be judged to be inadequate to properly assure sufficient quality for safety-related applications in those instances where material traceability cannot be adequately established.

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F. NI PERSONNEL CONTACTED:

<u>Name</u>	<u>Title</u>
*W. Eckert	Chairman of the Board
*L. Hinson	President
*T. Stomberski	Vice President
*D. Stephens	Engineering Manager
*I. Gunin	EQ Manager
*S. Akerman	QA Manager
*M. A. McCann	QA Coordinator
R. Heifner	QA Engineer
A. Evrard	QA Engineer
D. Winder	Lab Technician
G. Pierce	Lab Technician
J. Hagston	Lab Technician
M. Partak	Project Manager
*R. St. Julian	Lab Manager

*Attended Exit Meeting