

## APPENDIX A

GE Nuclear Energy  
Docket No. 99900403/89-01

### NOTICE OF NONCONFORMANCE

Based on the results of an NRC inspection conducted on March 13 through 23, 1989, it appears that certain of your activities were not conducted in accordance with NRC requirements.

- A. GE Nuclear Energy (GENE) Quality Assurance Topical Report, NEDO-11209-04A, Section 3, "Design Control," states that the design of structures, systems, and components is controlled within the various design organizations to assure safe and reliable performance of products and services to be supplied. The design control processes are documented in practices and procedures which establish the responsibilities and interfaces of each organizational unit. The practices and procedures include measures to assure that suitable materials, components, and processes are specified in design documentation. The implementing procedure, GE Engineering Operation Procedure (EOP) 65-2.20, "Dedication of Commercial Grade Items," states in Section 4.1 that the responsible engineer is to document in a Design Record File (DRF) or equivalent corporate document, the safety function to be performed by the item in the intended application, and those characteristics of the item, critical to the performance of the safety function, which can be measured, inspected, or otherwise determined.

Contrary to the above, in several dedication packages, the safety function and critical characteristics of the item being dedicated were not documented in the DRF or other equivalent corporate documents. The inspectors noted that there was a varying degree of documentation of these attributes in the DRF's, Dedication Specifications, and Selected Item Drawings (SID's) depending on the initiator. In a number of the dedications reviewed, the inspectors could only determine that the dedications were adequate after discussion with the responsible engineer and receiving additional information with which to complete the basis for dedication. This basis was not usually documented in the DRF or equivalent.

The following are examples of dedications inadequately performed and/or documented, identified by GE drawing number:

1. DD317A6154 for a Vogt check valve for NMP2
2. DD213A8507 for Woodward governor parts for Limerick-2
3. DD213A8529 for a hydraulic actuator for Susquehanna-1
4. DA188C7225 for a 24-Vdc power supply for Browns Ferry-2
5. DD184C4723 for a Topaz inverter at Susquehanna-2

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And one additional example as described in the cited Field Deviation Disposition Request (FDDR):

6. FDDR-KG1-6262 for a protective relay for the high pressure core spray (HPCS) EDG at NMP2
- B. GE Nuclear Energy (GENE) Quality Assurance Topical Report, NEDO-11209-04A, Section 3, "Design Control," states that the design of structures, systems, and components is controlled within the various design organizations to assure safe and reliable performance of products and services to be supplied. The design control processes are documented in practices and procedures which establish the responsibilities and interfaces of each organizational unit. The practices and procedures include measures to assure that suitable materials, components, and processes are specified in design documentation. The implementing procedure, GE EOP 65-2.20, "Dedication of Commercial Grade Items," states, in Section 4.1, that the responsible engineer is to document in a DRF or equivalent corporate document, the safety function to be performed by the item in the intended application, and those characteristics of the item, critical to the performance of the safety function, which can be measured, inspected, or otherwise determined.

Contrary to the above, two examples of inadequate dedication of commercial grade items were identified which led to the components' being of potentially indeterminate quality.

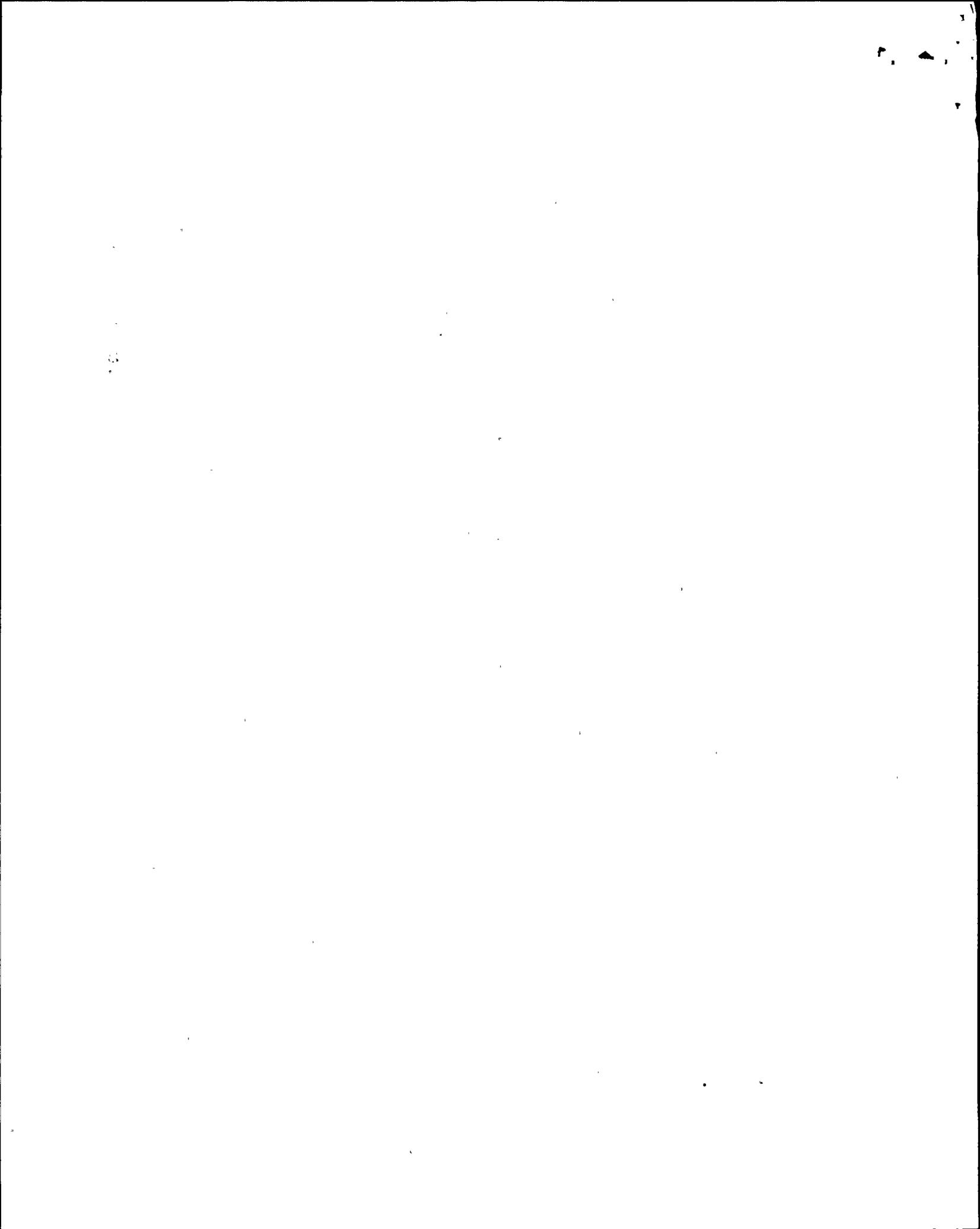
1. GENE dedication of molded case circuit breakers (MCCBs) was deficient with respect to the above as follows:
  - a. Safety functions of MCCBs were generally not explicitly defined. Instead, general MCCB safety-functions, according to statements by GENE personnel, are assumed to be "enveloped by the published catalog performance characteristics." However, this was a verbal assertion only and not formally documented.
  - b. GENE staff stated that the critical characteristics were intended to envelope the catalog performance characteristics, and were documented on the selected item drawings (SIDs) and expressed in terms of "critical parameters." However, critical parameters to be verified by the dedication tests listed on the SIDs were not consistent with all catalog performance characteristics of the types of MCCBs listed on the SIDs to which the SIDs applied. Additionally, certain MCCB critical characteristics that are not testable, or unable to be tested nondestructively, such as current interrupting capability, were not addressed.



Specifically, dedication testing listed on the SIDs varied with MCCB type, but the most comprehensive set of tests listed on any of the SIDs reviewed was comprised only of (1) cycling, (2) 2800-VAC dielectric withstand test, (3) verifying that the breaker would not trip under 100 percent load at ambient temperature, and (4) a 300 percent overcurrent trip test. Not included were some tests required in various industry standards as well as the GE MCCB Application Guide, GE catalog number GET 2779G, 1986 Edition, which defines the performance envelope for which GENE takes credit. These were: (1) contact resistance tests and (2) instantaneous magnetic trip functional tests indicated as necessary to verify functional performance.

Furthermore, many SIDs for type TEC and THEC MCCBs, which are used as motor circuit protectors and have only an instantaneous magnetic trip function, listed the 300 percent overcurrent trip test which is applicable only to the inverse-time thermal overcurrent trip function and is inappropriate for a type TEC or THEC MCCB.

- c. For the dedication testing that was prescribed in the SIDs, GENE apparently took credit for testing conducted on 100 percent of production MCCBs at the factories. However, GENE could produce no documented evidence to support past dedications other than GE-ED&C "End-of-line audit" procedures that called for sampling only, and the reports of their annual programmatic audits of the ED&C factories that were general in nature and did not confirm specifically that SID prescribed testing was conducted, or was conducted on all production MCCBs. The SID requirement for capability of the MCCB to carry 100 percent load without tripping was not specific as to how this should be tested and available manufacturer's procedures did not cover it.
  - d. Recent GENE purchase orders to GE-ED&C called for special testing to be done on the MCCBs purchased for eventual dedication by GENE. However, the testing requirements did not cover all critical characteristics and test data received by GENE was also incomplete.
  - e. Specific examples of inadequately dedicated MCCBs were identified and are discussed in the enclosed inspection report.
2. Replacement parts for the Limerick-2 RCIC Terry Turbine Governor Valve were procured commercial grade from Dresser-Rand (D-R), (formerly Terry Corporation) on purchase order (PO) 205-87J019, dated December 12, 1987. These included the fulcrum support and pin, the valve spring and seat, and the governor lever. These parts were manufactured by D-R using several different materials, including stainless steel, that required welding and nondestructive testing (NDT).



The welding and NDT requirements as well as other critical characteristics were not identified by GENE. No material certifications were received from D-R, and at the time of purchase, D-R was an unapproved vendor. The procurement package included a statement by GE that no material certifications were received with these materials, yet required materials are specified in the design drawings and the PO specified the applicable design drawings. GE did have a Product Quality Certification (PQC) signed by D-R certifying that they met all quality requirements and the design drawing specifications, but this does not constitute adequate material traceability for use in safety-related equipment. It should be noted that GE Test Instruction (TI) 3898, "RCIC Turbine Governor Valve Parts Drawing Number DD213A8545," lists material certifications as part of documentation required for the records documentation package; however, this was not identified on the PO to D-R.

