Enclosure 1

NOTICE OF NONCONFORMANCE

Peebles Electrical Machines
Edinburgh, Scotland

Docket No. 99901065

During an inspection conducted September 23 through 27, 1991, at Peebles Electrical Machines (PEM) located at its Pilton Works in Edinburgh, Scotland, the U.S. Nuclear Regulatory Commission (NRC) inspection team determined that certain activities associated with PEM's manufacture of an emergency ac power generator for its sister company, NEI Peebles - Electric Products, Incorporated (P-EP), of Cleveland, Ohio, were not conducted in accordance with NRC requirements. The NRC requirements applicable to the safety-related generator P-EP procured from PEM for an NRC licensee, Pacific Gas and Electric Company (PG&E), are contained in Appendix B to 10 CFR Part 50.*

In its acceptance of the purchase order from PG&E, P-EP accepted the responsibility to assure overall compliance with all the applicable provisions of Appendix B to 10 CFR Part 50 and the reporting requirements of 10 CFR Part 21. Pursuant to Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50, the PG&E procurement documents issued to P-EP for this generator imposed quality assurance requirements on P-EP as follows: P-EP was required to ensure compliance with all codes and standards referenced in the purchase order. These included the American National Standards Institute (ANSI) Standard N45.2, "Quality Assurance Program Requirements for Nuclear Power Plants" (1971); British Standard 5750, Parts 1 through 3; and other standards, including ANSI N45.2.11-1974 on design control.

The PG&E procurement documents specified that this new generator be identical (like-for-like) to DCNPP's five existing emergency ac power generators (built by P-EP's predecessor company in 1969) and also DCNPP's spare generator (built by PEM and supplied by P-EP in 1986), on the basis that the previously supplied generators had already been determined to have met all applicable (including NRC) requirements.

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* Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10, "Energy," of the Code of Federal Regulations (Appendix B to 10 CFR Part 50).

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P-EP adapted PG&E's technical and quality procurement specifications into its own procurement specifications, including drawings, bills of material, and material specifications. P-EP then either included or referenced its own documents in its procurement documents to PEM. P-EP audited PEM's quality program and determined that, although it was not based on Appendix B to 10 CFR Part 50, PEM's program nevertheless met the applicable requirements of Appendix B to 10 CFR Part 50. Therefore, P-EP believed that it could impose PG&E's requirements on PEM by invoking PEM's quality program. With the notable exception of 10 CFR Part 21, no other NRC requirements or PG&E requirements were formally imposed on PEM, although PG&E's list of critical items and characteristics was informally transmitted to PEM by P-EP.

As required by PG&E's purchase order, when the DCNPP2's generator was delivered, P-EP provided PG&E with a certificate of conformance that certified that the generator was produced in compliance with Appendix B to 10 CFR Part 50 and the reporting requirements of 10 CFR Part 21. This certification was based largely on P-EP's audit and determination regarding the equivalence of PEM's quality program to 10 CFR Part 50, Appendix B.

The NRC has classified the items set forth as nonconformances to the requirements in Appendix B to 10 CFR Part 50.

A. Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 requires, in part, that measures be established for the identification and control of design interfaces and for coordination among participating design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

   American National Standards Institute (ANSI) Standard N45.2, "Quality Assurance Program Requirements for Nuclear Power Plants" (1971), and ANSI N45.2.11, "Quality Assurance Requirements for the Design of Nuclear Power Plants" (1974), require, in part, (1) that the external interfaces between organizations performing work affecting quality of design be identified in writing and include those organizations providing criteria, designs, specifications, and technical direction; (2) that the responsibilities of organizations be defined and documented in sufficient detail to cover the preparation, review, and approval of design documents involving design interfaces; (3) that systematic methods be established for communicating needed design information across external design interfaces, including changes to the design information as work progresses; and (4) that design information transmitted from one organization to another be

documented in specifications, drawings, or other controlled documents that are uniquely identified and issued by authorized persons. These requirements were imposed on P-EP by PG&E's purchase order and, therefore, applicable to PEM's manufacture of PG&E's new (no. 2-3) emergency diesel generator set for the Diablo Canyon Nuclear Power Plant Unit 2.

Contrary to these requirements, in Section 4, "Design Control," of the "Quality Manual Volume 1" (QMV1), PEM failed to establish adequate measures to control the design interface between it and P-EP. These measures consisted of the review, approval, release, distribution, and revision of design documents affected by this design interface.

PEM failed to demonstrate that the results of its design translation activities were equivalent to the design requirements specified by P-EP. P-EP provided its design drawings and specifications to PEM because PEM manufactures P-EP's generators. PEM's engineering organization translated P-EP's design specifications into its own PEM specifications, drawings, procedures, and instructions. The documents produced by PEM were not reviewed or approved by P-EP before use, and PEM-initiated design changes were not controlled by documented procedure until December 1990 when PEM issued Departmental Procedure 03A004, "Processing of Engineering Change," well after the design activities for PG&E's generator were completed. Although PEM performed equivalency evaluations of its drawings, procedures, and material specifications used to fabricate and assemble PG&E's generator, PEM did not adequately document (1) the critical requirements or acceptance criteria compared during the equivalency evaluation and (2) the results of the equivalency evaluation or other basis to support PEM's conclusion that its drawings, procedures, and material specifications were equivalent to P-EP's. Therefore, PEM failed to establish adequate measures to control its design interface activities and to demonstrate adequate design equivalency evaluations (Nonconformance 99901065/91-01-01).

B. Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 requires, in part, that measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the component.

ANSI N45.2 (1971) and ANSI N45.2.11 (1974) require, in part, (1) that measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the function of the component; (2) that the design inputs be identified, documented, and their selection reviewed and approved;

(3) that specified parts, equipment, and processes be suitable for the required application; and (4) that specified materials be compatible with each other and the design environment conditions to which the material will be exposed.

Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50 requires, in part, that measures be established to ensure that purchased material, equipment, and services conform to the procurement documents and include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the supplier, inspection at the supplier source, and examination of products upon delivery.

Contrary to these requirements, in Section 4, "Design Control," and Section 7, "Purchaser Supplied Product," of the QMV1, PEM failed to establish adequate measures to provide for the selection and review for and verification of suitability of application for materials, parts, and equipment that were procured as commercial grade items and were essential to the generator's ability to perform its intended design and safety-related function (dedication).

PEM failed to adequately verify the properties or attributes of certain materials, parts, and equipment that were used in the fabrication and assembly of PG&E's generator and that also directly affect the generator's ability to perform its intended design and safety-related function. Specifically, PEM failed to ensure the suitability of (1) the rotor pole magnet wire wrapped with varnished insulation tape that was specified to be unvarnished, (2) the Bakelite electrical separation ring that was used as a load-bearing component part of the rotor shaft support assembly without an engineering basis for the design, and (3) certain materials, parts, and equipment that were accepted based on certificates of conformance from PEM's suppliers that were not audited to verify that their measures to control design, processes, and material changes were adequately implemented. Therefore, PEM failed to establish adequate measures for the selection and review for suitability of commercial grade items and to demonstrate an adequate dedication of these items (Nonconformance 99901065/91-01-02).

Dated at Rockville, Maryland,
this 13th day of February 1992.