

IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in Nuclear Facilities

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Sponsor

**Nuclear Power Engineering Committee
of the
IEEE Power Engineering Society**

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Abstract: IEEE Std 498-1990, *IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in Nuclear Facilities*, sets forth the requirements for a calibration program to control and verify the accuracy of measuring and test equipment used to ensure that safety systems of a nuclear facility are in conformance with prescribed technical requirements and that data provided by testing, inspection, or maintenance are valid. These requirements also cover modifications and those activities occurring during the operating phase that are comparable in nature and extent to related activities occurring during the initial construction of the facility.

Keywords: Calibration, records, traceability, M&TE.

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Foreword

(This Foreword is not a part of IEEE Std 498-1990, IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in Nuclear Facilities).

This standard sets forth the Quality Assurance requirements for the calibration and control of measuring and test equipment used in the construction, operation, maintenance, and modification of nuclear facilities. It is intended to be used in conjunction with ANSI/ASME NQA-1-1989, Quality Assurance Program Requirements for Nuclear Facilities, and ANSI/ASME NQA-2-1989, Quality Assurance Requirements for Nuclear Power Plants, with respective addenda to and including ANSI/ASME NQA-1a-1989 and ANSI/ASME NQA-2a-1989.

This standard originally was prepared by the Institute of Electrical and Electronics Engineers (IEEE) in response to a request by the American National Standards Committee N45, Reactor Plants and their Maintenance. The N45 committee was chartered to promote the development of standards for the location, design, construction and maintenance of nuclear reactors, and plants embodying nuclear reactors, including equipment, methods, and components specifically for this purpose.

In October of 1972, the IEEE Nuclear Power Engineering Committee established Subcommittee 8 (SC-8) to develop standards on Quality Assurance. A working group (SC-8.1) from this subcommittee was organized in April of 1973 to develop a standard to provide supplementary requirements for the calibration and control of measuring and test equipment used in the construction and maintenance of nuclear power generating stations. This working group was composed of representatives of key segments of the nuclear industry, including utilities, reactors suppliers, construction contractors, component manufacturers, consultants, and the United States Nuclear Regulatory Commission.

The standard was revised in 1985 to include applicability to Nuclear Facilities other than Nuclear Power Generating Stations. Nuclear facilities include facilities for power generation, spent fuel storage, waste storage, fuel processing, nuclear and radioactive materials processing, and fuel fabrication.

During 1989 and 1990, the standard was revised to clarify certain aspects of the requirements and to expand on applicable aspects of personnel training and qualification, control of purchased calibration services, handling, shipping, and storage, and computer software program verification. Significant consideration was given during the development of this revised standard to the possibility of reducing the 4:1 greater accuracy ratio requirement when calibrating reference standards against other reference standards. Article 17.1.12.7 and 17.2.12.1 of NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, LWR Edition," dated June 1987, grants relief in allowing reference standards to be calibrated against standards of "greater accuracy." The 4:1 greater accuracy requirement for standards that calibrate M&TE was not relieved in NUREG-0800. The working group consensus was that such an across the board relaxing of the accuracy requirements for calibration of reference standards would not serve the best interest of the industry and was, therefore, not incorporated into IEEE 498-1990.

At the time this standards was approved, the Subcommittee 8.3 , Quality Assurance Working Group, had the following membership:

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