

C37.98

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1.1 Project Number: C37.98
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Seismic Qualification Testing of Protective Relays and Auxiliaries for Nuclear Facilities

Changes in title: Standard for Seismic Qualification Testing of Protective Relays and Auxiliaries for Nuclear Facilities

3.1 Working Group: Standard Seismic Testing of Relays (PE/PSRCC/C37.98_WG)

Contact Information for Working Group Chair

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None

3.2 Sponsoring Society and Committee: IEEE Power and Energy Society/Power System Relaying and Control (PE/PSRCC)

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3.3 Joint Sponsor: IEEE Power and Energy Society/Nuclear Power Engineering (PE/NPE)

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 08/2012

4.3 Projected Completion Date for Submittal to RevCom

Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 02/2013

5.1 Approximate number of people expected to be actively involved in the development of this project: 10

5.2 Scope: This standard specifies test methods and conditions to be used in the seismic qualification testing of protective relays and auxiliaries such as test and control switches, terminal blocks and indicating lamps for use in nuclear facilities.

Changes in scope: This standard specifies the test procedures, methods and conditions to be used in the seismic qualification testing of protective relays used and in auxiliaries power such systems as facilities, test and standard control switches, concerned terminal blocks, the determination of the seismic fragility level of relays and also indicating gives lamps recommendations for proof use testing in nuclear facilities.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: The purpose of this standard is to establish test methods and conditions for determining the seismic capability and to demonstrate seismic qualification of protective relays and auxiliaries specified in IEEE Std C37.105. The prerequisites for the qualification testing are defined in IEEE Std C37.105. These test methods are divided into three main categories, as described in IEEE Std 344; fragility, proof and generic testing. To define the specific conditions for seismic testing of protective relays the following parameters shall be specified:

- a) The settings and electrical inputs to the protective relay and auxiliaries, and other pertinent information as detailed in this standard required to define its condition during the test.
- b) The unintentional change in state, contact chatter, deviation in operating conditions, tolerances, or other change in performance of the relay that constitutes failure.
- c) The seismic levels (required response spectra) to be imposed during the test.

This standard provides guidance to establish the test parameters listed above, determine seismic capacity and to demonstrate the ability of protective relays and auxiliaries to perform their safety function during and or after the specified seismic motion. In addition, this standard provides the documentation requirements necessary to demonstrate seismic qualification of protective relays and auxiliaries.

Changes in purpose: The purpose of this standard is to establish procedures test methods and conditions for determining the seismic capability and to employ demonstrate what seismic has qualification been of called protective fragility relays and auxiliaries specified in IEEE Std C37.105. The prerequisites for the qualification testing are defined in IEEE Std C37.105. These test methods are divided into three main categories, as described in IEEE Std 344-2004; fragility, proof and generic testing. To define the specific conditions for fragility seismic testing of protective relays, parameters the infollowing three parameters separateshall areas must be specified: In general, they are a) The electrical settings and electrical inputs to the protective relay and auxiliaries, and other pertinent information as detailed in this standard required to define its econditionscondition during the test. b) The unintentional change in state, contact chatter, deviation in operating echaracteristicsconditions, or tolerances, or other change ofin performance of the relay that constitutes failure. c) The seismic vibrationlevels environment(required response spectra) to be imposed during the test. SinceThis itstandard isprovides notguidance possible to defineestablish the econditionstest for every conceivable application for all relays, those parameters, whichlisted in practice encompass the majority of applicationsabove, haveedetermine been seismic specifiedcapacity inand this to standard demonstrate When the applicationability of the protective relayrelays isand other auxiliaries thanto asperform specifiedtheir undersafety anyfunction ofduring (a), (b), and (c), or ifafter it is not practical to apply existing results of fragility tests to that new application, then proof testing must be performed for that new case. The use of these capability data will assist in the selectionspecified of relays. One number will be used to catalog the seismic capability of a relay motion. TheIn ecapability data will help designers of generating stations, substations, this and standard variousprovides other the powerdocumentation system requirements installations necessary to incorporate demonstrate the seismic ecapabilitiesqualification of the protective relays intoand the overall design of these facilities auxiliaries.

5.5 Need for the Project: The standard has not been updated since 1987 and while the overall test methods have not changed, there have been upgrades in the equipment available. There is also a need to expand the standard to address the testing of multifunction relays.

5.6 Stakeholders for the Standard: The industry that has the most interest in the standard is the nuclear industry. However, the standard is not written exclusively for the nuclear industry. Users that are concerned with the performance of a relay during a seismic event may include medical, telecommunication and power delivery.

Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No

7.2 Joint Development

Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes: The change in the title was initiated by the working group to be consistent with other standards used in the nuclear industry.

The changes in the scope and purpose were initiated to reflect the changes made during the document update and revision process.