

American Nuclear Society

**criteria for investigations of
nuclear facility sites for
seismic hazard assessments**

an American National Standard

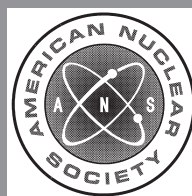
REAFFIRMED

June 15, 2016

ANSI/ANS-2.27-2008; R2016

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**American National Standard
Criteria for Investigations of
Nuclear Facility Sites for
Seismic Hazard Assessments**

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American Nuclear Society

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American National Standard

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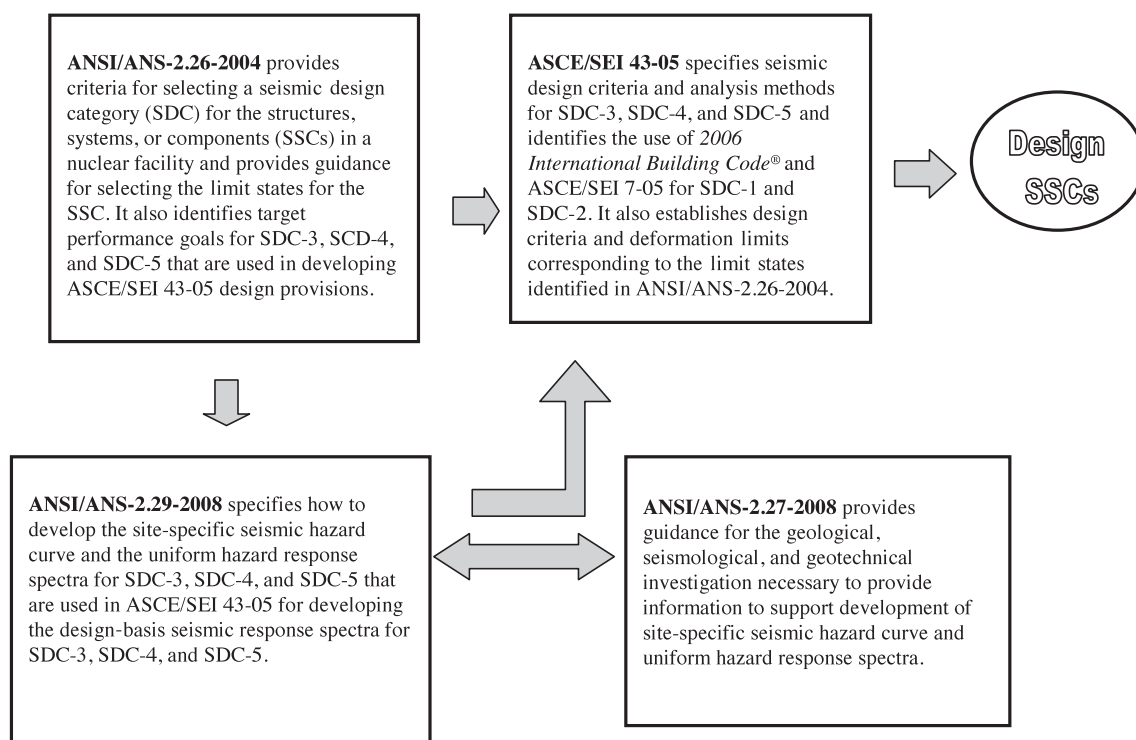
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Foreword (This Foreword is not part of American National Standard “Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments,” ANSI/ANS-2.27-2008.)

This standard provides requirements and recommended practices for conducting investigations and acquiring data sets needed to characterize seismic sources for probabilistic seismic hazard analysis (PSHA). The data sets provide information for site response and soil-structure interaction analyses needed for design of those facilities. They also are used to evaluate fault rupture and associated secondary deformation and other seismically induced ground failure hazards (e.g., liquefaction, ground settlement, slope failure).

This standard is one of a group of four standards that establish requirements for the seismic design of nuclear facilities. The overall objective of these standards is to achieve a risk-informed design that protects the public, the environment, and workers from potential consequences of earthquakes. The other three standards are American National Standards Institute/American Nuclear Society ANSI/ANS-2.26-2004, “Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design”; ANSI/ANS-2.29-2008, “Probabilistic Seismic Hazards Analysis”; and American Society of Civil Engineers/Structural Engineering Institute ASCE/SEI 43-05, “Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities.” The procedural relationship among these four standards is shown in Fig. A.

The seismic design process for nuclear facilities is based on the consequences of seismic-initiated failure of structures, systems, and components (SSCs). The



Key: = Information flow when applying the standards

Figure A – Schematic showing the relationships of the seismic standards

seismic design categories identified in ANSI/ANS-2.26-2004 and the design requirements specified in ASCE/SEI 43-05 satisfy target performance goals defined in terms of the annual probability of exceeding specified SSC performance limits. Achieving a target performance goal is directly related to the probability of occurrence of a seismic load that is beyond design specifications. ANSI/ANS-2.29-2008 establishes procedures for performing a PSHA needed to support selection of the seismic loads used in ASCE/SEI 43-05. This standard provides guidance for the geological and geotechnical investigations needed to provide information to support (a) seismic source characterization input to the PSHA, (b) evaluation of surface fault rupture hazards, (c) site response analyses, and (d) seismic-induced ground failure hazards.

This standard might reference documents and other standards that have been superseded or withdrawn at the time the standard is applied. A statement has been included in the reference section that provides guidance on the use of references.

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