AMERICAN NUCLEAR SOCIETY

Standards Committee

2022 GLOSSARY OF DEFINITIONS AND TERMINOLOGY

(An archive of definitions in ANS standards)

Issued July 5, 2023
Reissued October 21, 2024 (with reformatting)

American Nuclear Society
Standards Committee

Foreword

This Glossary is an edited compilation (archive) of the "definitions" provided in standards issued by the American Nuclear Society (ANS) Standards Committee. This version, the 2022 Glossary of Definitions and Terminology (referred to as the "Glossary"), includes definitions in standards issued prior to January 1, 2023. The specific standards that were reviewed for this update are listed in the appendix. This review included new standards from all ANS consensus committees. Over time, as standards are revised, the glossary will be updated so that it fully reflects the definitions used in all ANS standards.

In 2023, the ANS Standards Board formed an ad hoc group comprised of Mark Linn (lead), Jim August, Brandon Chisholm, Mehdi-Resi Fard, and Robert Kalantari for the purpose of evaluating concerns of the team that produced the 2022 Glossary. The ad hoc group prepared the 2024 Glossary Report that contains a number of recommendations. The 2024 Glossary Report also includes the definitions and terms from the 2022 Glossary in table format. The 2024 Glossary Report was reviewed by the Policy Task Group (PTG) of the ANS Standards Board. The PTG found the table format of the definitions and terms to be a significant improvement in the readability of the Glossary and directed that the table format be incorporated into the 2022 Glossary for reissuance. This version of the Glossary, reissued October 21, 2024, includes the new table format of the terms and definitions and an updated foreword to explain the reissuance. No new definitions and terms were added.

The PTG recognized many good recommendations in the 2024 Glossary Report. However, with significant resources needed to follow through on all recommendations, the PTG felt that the recommendations should be considered at a later date when resources permit the work. The evaluation and recommendations from the ad hoc group can be found in the 2024 Glossary Report. The recommendations are provided below in Table 1 and Attachment 1 copied form the 2024 Glossary Report:

Table 1

1. The overwhelming percentage of terms with a single source (B) or single source with multiple revisions (C) indicates that many terms are unique to the standard's subject and, consequently, associated with the relevant consensus committee (CC). It is suggested the role of the glossary be evaluated from one having a single overarching global use to one that separates terms unique to CC use from terms that have a truly global role across all standards. This will result in a glossary with one global list and multiple CC-unique lists of terms. This structure would still allow the outcome of consistent term usage to be achieved while providing more accountability for definition maintenance.
2. It is recommended the use of "preferred," non-preferred," and "variation" be discontinued. While its intended use is to promote consistent use of terms throughout ANS standards, this goal is not pragmatic. The practice further lends itself to subjective rankings by those having at best, a limited knowledge of the related subject. By discontinuing this practice, each definition stands on its own merits and it is then incumbent on working groups to ensure a particular definition meets their needs or not.
3. The use of "variant" as a categorization is narrowly defined as having only minor editorial differences to the "preferred" definition. Having no technical or substantive differences from the preferred definition, a variant is considered of a "historical" nature and may be removed to historical index listing.
4. The expedience of copying text from the standard and pasting it into the definitions should be resisted.

Attachment 1
Criterial-based Recommendations

A. Proper names of organizations, groups, committees, locations, etc. that are listed as a definition are not appropriate for glossary inclusion. Names and abbreviations of names should be identified and described within the standard text.
B. Terms and associated definitions having a single source or are defined by a series of standards originating from the same consensus committee (e.g., probabilistic risk assessment or emergency planning) should remain in the glossary without change.
C. Terms and associated definitions having a single source but includes multiple revisions should remain in the glossary without change. However, only the most recent edition should be listed with the remaining older references moved to a historical index listing (e.g., *term:ANS X.X-1985*)
D. Terms and associated definitions having multiple and different sources should remain in the glossary without change.
E. There are instances in the existing glossary where "similar" terms have been assigned the same definitions. In these instances, the "preferred" term should be designated by the glossary.
F. The use of equations, figures, and illustrations to define a term is not appropriate and should be provided only in the text of the standard.
G. The definition of a term should not describe or identify the scope of the standard from which it comes. Example – "*Other sensor types, for example, velocity or displacement, are not included in this standard*."
H. If a definition is taken wholly from a source that is external (other standards organization, federal, state, etc.) to the standard, it should not be included as a separate definition, but should be described within the text of the standard with appropriate references, in accordance with ANS policy.
I. Broad concepts or multiple items described in a standard should be summarized in the definitions and not repeated from the text. Example – For the term *aggregate*, the current definition includes a single general paragraph description and then adds additional paragraphs describing the technical aspects of four specific types of aggregates. The detailed discussions should be included only in the text.
J. The definition of a term should seek to be a general description of the term and not include detailed references, allowances, limits, etc. that are more appropriate for the text. Example – The term airborne radioactivity area has the following definition:
   A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of permitted or licensed material, exist in concentrations:
   - *in excess of the derived air concentrations (DACs) for controlling occupational exposures, e.g., those specified in 10 CFR 20, Sec. 20.1001 ("Purpose") through Sec. 20.2401 ("Violations") and Appendix B ["Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage"] [1] and EPA-520/1-88-020 [2]; or*
   - *to such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in 1 week (7 consecutive days), an intake of 0.6% of the ALI or 12 DAC-hours or, in the case of submersion nuclides, exceed an effective dose equivalent of 30 mrem (0.3 mSv). See "Note 1" at the end of this section.*
K. Requirements should not be included in definitions.
L. A definition that is considered of a universally accepted nature, and its use in the standard is consistent with that definition, should not be repeated as it may be considered redundant. Example – gray is a unit of measure for radiation absorbed dose in SI units (1 Gy = 1 joule/kg = 100 rads).
M. Abbreviations or acronyms should generally not be part of the term to be defined. Example – "High Confidence of Low Probability of Failure (HCLPF) capacity" is preferred over "HCLPF capacity.
N. Examples providing clarification should be in the text of the standard and not in the definition itself.

O. Language that links a specific definition to a specific standard should be included in the text of the standard.
P. Undefined abbreviations and acronyms are not to be included in definitions.
Q. References to external notes, footnotes, external references, bibliographic information, etc. are not appropriate for use in definitions.
R. A definition is a succinct set of statements that provide a general description of the term. Applications, elaborations, examples, amplifications, and expansions of the term and its usage should be provided in the text of the standard.
S. All definitions should be clear and self-explanatory without additional sidenotes of clarification and purpose.
T. Such specificity is acceptable if correct. If the term is of a more general nature, the technology-specific wording should be removed.

Each ANS standard shall include a definitions section that provides clarity for terms used in the standard that may not be commonly understood in the nuclear industry. The glossary definitions shall be used to provide a consistent set of definitions and to minimize the time-consuming task of developing unique definitions for each document. Terms not contained in this glossary may be defined by the working group (WG), included in the definitions section of the standard, and added to the next revision of this glossary.

This glossary is intended to be a living document subject to revision. The glossary will be provided as a part of the ANS Standards Toolkit available at:

- On the ANS public website at: *http://www.ans.org/standards/toolkit/*
- On the ANS Standards Committee Member site of ANS Collaborate at: https://collaborate.ans.org/higherlogic/ws/groups/542cf6e5-cf8d-47cf-b977-ecafa8fbd0ee/download/5969/latest (login required)

A definition followed by a (G) means the definition was in the original glossary, a (C) or (ANS 3.2-[no date]) means the definition came from the 1983 glossary, and that no later version was available for review. If a revised standard eliminated a definition, it may be included, if it was worthwhile, with no standard(s) identified.

In general, this document provides the preferred definition in the glossary followed by non-preferred alternate definition variations that have been used in other standards. The source document for each definition is identified at the end of each definition (e.g., ANS-3.2-1989). The reaffirmation dates of standards have not been identified since it has no bearing on the definitions. Standards with exact duplicate definitions are also identified, as well as those documents which contain a variant form.

The goal of identifying preferred and alternate definitions is to assist WGs in selection of definitions and to standardize definitions used in ANS standards when possible.

The preferred definitions have been selected based on general applicability, the number of standards, the hierarchy and age of the standards using the definition. For example, a new issue of ANS-50.1 would be preferred over a definition used for a detailed specific subject standard. A definition used in 10 standards would be preferred over a definition used in only one. A definition of general applicability would be preferred over one unique to a particular application.

Where similar, but not identical, terms are identified, the glossary identifies terms that should be subordinate and its definition replaced by reference in whole or part to the preferred term.

If the need for change in terminology or definition has been identified, a “Note:” has been inserted following the definition to provide guidance to the WGs considering this definition.

Alternate definitions have a lead in “*Non-preferred variation (x)*” where x is 1 for the first alternate definition, 2 for the second, etc. The alternate definitions are indented.

Format Sample

core damage	Any physical disruption of the nuclear core including fuel, fission products, and containing geometry consisting of cladding, structure, and flow alignment that could release significant amounts of radioactivity from fission products by being undercooled or overreactive.	ANS-53.1-2011
core damage	Non-preferred variation 1 - Any physical disruption or change in radionuclide retention in the fuel of the nuclear core including fuel, fission products, and containing geometry consisting of cladding, structure, and flow alignment that could release significant amounts of radioactivity from fission products by being undercooled or overactive.	ANS-30.3-2022
core damage	Non-preferred variation 2 - Uncovery and heatup of the reactor core to the point at which prolonged oxidation and severe fuel damage are anticipated and involving enough of the core, if released, to result in offsite public health effects.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022

Definition Guidance

- Definitions should be as generic as possible so that other standards can use the same definitions.
- No requirements or recommendations should be included in definitions. (No “shall,” “should,” or “may” statements)
- Definitions should not contain or define the scope of a standard.
- Definitions extracted from other (non-ANS standards) documents should give credit to such documents by footnote or reference.
- Common terms the meaning of which is being used by a standard are not required to be defined unless confusion is expected.
- Definitions should be self-contained. They should not refer back to another definition, document, or section of the standard. However, they may use other defined terms.

Instructions for the ANS Standards Working Groups (WG)

The WG shall:

1. Use the preferred definition unless it is not applicable to the subject of the standard or confusion would be created,
2. If the preferred definition is not applicable, use one of the alternate definitions,
3. Check to see if another term that is already defined in the glossary can be used.
4. If none of the included definitions are applicable, an alternate term or alternate definition may be substituted with a footnote stating the reason for use of a new definition.
5. When revising a standard, the WG shall check the glossary for the preferred terms and any notes that apply. It shall identify any new, revised, or deleted definitions to the standards manager for use in the next glossary update.

Suggestions and Questions

Questions and suggestions should be addressed to ANS standards manager at standards@ans.org

For information only - For additional definitions, refer to:

Nuclear Regulatory Commission Glossary at
http://www.nrc.gov/reading-rm/basic-ref/glossary.html

IAEA Nuclear Safety Glossary at:
IAEA Nuclear Safety and Security Glossary | IAEA (or current version)

World Nuclear Association Nuclear Glossary at:
Nuclear Glossary - World Nuclear Association (world-nuclear.org)

The support of the following personnel was critical to the 2022 glossary update:

James August, RARCC
John Bess, SRACC
Robert Burg, LLWRCC
Mark Joseph, NRNFCC
Mark Linn, LLWRCC and RARCC
Leah Parks, ESCC
Randy Shackelford, NCSCC
Maryanne Stasko, FWDCC
Abraham Weitzberg, SRACC
Patricia Schroeder, Glossary Coordinator

A

Term	Description	Reference/Source
abnormal conditions and events (ACEs).	Conditions and events identified as a result of system considerations or from specific software design and implementation that have the potential for incorrect execution of the software. Thus, ACEs include conditions and events internal to computer hardware or software. Examples of ACEs due to inadequate design and implementation are buffer overflows, input/output timing, initializations status, out of sequence of subroutines.	ANS-10.7-2013
abnormal radionuclide release	The unplanned or uncontrolled emission of an effluent (i.e., containing plant-related, licensed radioactive material).	ANS-2.17-2010
absorbed dose (D)	Absorbed dose (D) is defined as the quotient of the mean energy $\mathrm{d}\bar{\epsilon}$ imparted by ionizing radiation to mass dm, that is, $\mathrm{D} = \frac{\mathrm{d}\bar{\epsilon}}{\mathrm{dm}}$. (Eq. 1) The unit of absorbed dose is J/kg and is given the special name gray (Gy).	ANS-6.1.1-2020
absorbed dose (D)	Non-preferred variation (1) The quotient of de by dm where de is the mean energy imparted by ionizing radiation to matter of mass dm: The special name for the unit of absorbed dose in the gray (Gy); 1 Gy = 1J/kg. [based on ICRU Rpt. 33 & Publication 26].	ANS 6.1.1-91
absorbed dose (D)	Variant forms	ANS 3.7.1-D92 ANS 15.11-2016
academic training	Successfully completed college level work leading to a recognized degree in a discipline related to the position in question.	ANS-3.1
academic training	Preferred variation - Successfully completed job-related college-level work.	ANS-15.4-2016
acceleration sensor	An instrument capable of sensing absolute acceleration and producing an analog or digital signal that could be transmitted to a recorder. Other sensor types, for example, velocity or displacement, are not included in this standard.	ANS-2.2-2016 ANS-2.10-2017
acceleration sensor	Note: Definitions shall not specify the scope of a standard. Thus the above sentence - “Other sensor types, for example, velocity or displacement, are not included in this standard” should not be included in this definition.“	
accelerogram	A representation (either recorded, modified recorded, or synthetic) of the acceleration of the ground during an earthquake.	ANS-2.27-2020
accelerogram	Non-preferred variation (1) A representation (either recorded, modified recorded, or synthetic) of the acceleration of the ground during an earthquake. The accelerogram contains acceleration-time-data pairs.	ANS-2.27-2008
accelerogram	Non-preferred variation (2) The output from an accelerograph of an earthquake ground motion record expressed in terms of acceleration versus time for a single component of motion.	ANS-2.10-2017
accelerograph	An instrument used to record one or more orthogonal components of the earthquake vibratory ground or in-structural motion. Plant reference or geographic axes typically include one vertical component and two horizontal components.	ANS-2.10-2017
acceptable	The word "acceptable" is used when a system or component has been demonstrated to meet its design and performance criteria by test or analysis.	ANS-56.5-1989
acceptable	Non-preferred variation (1) In many places, this standard contains statements indicating that a certain reference provides an “acceptable” for satisfying the intent of a given requirement. This should be interpreted as the referenced method being one way to meet the given requirement. The intent is permissive, meaning that the analysis team can use another method, if justified, without prejudice. However, it is important to understand that whenever the phrasing “acceptable” is used, the intent is that if the analysis uses another method, the other	ANS-2.29-2020

Term	Description	Reference/Source
	method shall satisfy the stated requirement with a comparable level of rigor considering a similar level of details pertinent to the scope of analysis. The analysis shall not use another method that does not satisfy the requirement at least as well as the acceptable method would satisfy it. Whenever an alternative to the acceptable method is selected, the peer review team should pay particular attention to this topic.	
acceptable damage	Damage resulting from an event (or appropriate combinations of events) where the safety design requirements for the appropriate category of events are met. Events (and appropriate combinations of events) are categorized by plant conditions in ANS-51.1 and 52.1.	ANS 58.3-1992 ANS 58.3-1998
acceptable level of safety	The aggregate of an individual facility's conditions found on case-by-case basis to be adequate to assure protection of the worker and public health and safety considering the probability and consequences of adverse events including the expected response of that facility to those events.	ANS-58.3-1992 W19 ANS-58.4-1979-W90
acceptable method	In many places, the commentary contains words such as, “Reference X provides an acceptable method for performing this aspect of the analysis.” The plain meaning of this wording should be clear, namely that using the methodology or data or approach in Reference X is one way to meet the Standard. The intent of any Requirement that uses this language is to be permissive, meaning that the analysis team can use another method without prejudice. However, it is important to understand that the intent of the Standard goes beyond the plain meaning, as follows: Whenever the phrasing “acceptable method” is used herein, the intent is that if the analysis uses another method, the other method must accomplish the stated objective with a comparable level of detail, a comparable scope, a comparable level of conservatism, etc. It is not acceptable to use another method that does not accomplish the intent of the Requirement at least as well as the “acceptable method” would accomplish it. Whenever an alternative to the “acceptable method” is selected, it is understood that the peer-review team will pay particular attention to this topic.	ANS-2.29-2008
acceptance criteria.	The standard, with a tolerance, against which test results are to be compared for establishing the functional acceptability.	ANS-10.8-2015 ANS-56.8-2020
acceptance criteria.	Non-preferred variation (1) Actionable, measureable guidance for evaluating tests, inspections, and performance.	ANS-53.1-2011
acceptance criteria.	Non-preferred variation (2) The standard against which test results are to be compared for establishing the functional acceptability of the primary containment as a leakage-limiting boundary.	ANS-56.8-2002
acceptance criteria.	Non-preferred variation (3) Specified bounds on the value of a functional indicator or condition indicator used to assess the ability of an SSC to perform its design function [3].[1]	ANS-30.3-2022
accepted method	A method that the regulatory body has used or accepted for the specific risk-informed application for which it is proposed. ()	ASME/ANS RA-S-1.1-2022
access control station	A station established to control access between controlled and uncontrolled areas. Its function is to assure that only authorized personnel, properly equipped, may enter into controlled access areas, and that personnel leaving controlled access have been cleared by the radiation monitors.	ANS-6.7.1-85
access control station	Variant form	ANS-5.6.1-1985
accessible area	The area that can reasonably be occupied by a significant portion of an individual’s body.	ANS-15.11-2016
accessible instruments	Instruments or sensors whose locations permit ready access during plant operation without violation of applicable safety regulations, such as those of the Occupational Safety and Health Administration (OSHA), or regulations that address plant security or radiation protection safety.	ANS-2.2-2016 ANS-2.10-2017

[1] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
accident	Any unintended event, including operating errors, equipment failures, and other mishaps, the consequences or potential consequences of which are not negligible from the point of view of protection and safety [3].[2]	ANS-30.3-2022
accident	Non-preferred variation (1) Design Basis Accident Events and those unpostulated events that have the potential for release of significant amounts of radio-active material to the environment.	ANS-4.5-96W
accident	Variant form	ANS-56.2-1984 ANS-59.1-1986
accident class	A grouping of severe accidents with similar characteristics (e.g., accidents initiated by a transient with a loss of decay heat removal, loss of coolant accidents, station blackout accidents, and containment bypass accidents)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
accident class	Non-preferred variation (1) A grouping of accident sequences with similar characteristics such as common POS, initiating event type, or containment challenge; e.g., accident sequences initiated by a transient with a loss of decay heat removal, loss of coolant accidents, station blackout accidents, and containment bypass accidents.	ANS/ASME-58.22-2015
accident conditions	Plant conditions such as status of fuel, reactor coolant system, radionuclide transport barriers, and harsh environments established by deleterious environmental effects or degraded equipment, components, or systems, as a result of an accident.	ASME/ANS RA-S-1.4-2013
accident duration	The period of time post-accident during which the cumulative dose equals 95% of the total expected cumulative dose due to the accident.	ANS-5.6.1-D90
accident family	The event family for an event sequence defined as an accident (see “event sequence”).	ANS-53.1-2011
accident isolation	Establishment of isolation barriers(s) in a specific fluid system or group of fluid systems penetrating the containment to arrest or mitigate the potential consequences of an accident.	ANS-56.2-1984
accident isolation signal	A signal which automatically initiates the accident isolation function.	ANS-56.2-1984
accident phases	Phase I That period of time extending from the initiation of the accident to the time at which the plant is in a controlled condition. Phase II That period of time extending from the onset of a controlled condition to the time that personnel access is possible to commence activities in parts of the plant that require inspection, repair or replacement.	ANS-4.5-96W
accident progression sequence	It is preferred that the term (accident sequence) and the associated definition be used in ANS standards.	
accident progression sequence	Non-preferred variation (1). a unique combination of events, that clearly delineates the chronological and physical progression of core damage, containment response and fission product release to the environment.	ASME/ANS RA-S-1.2-2015 ASME/ANS RA-S-1.1-2022
accident sequence	A representation in terms of an initiating event defined for a set of initial plant conditions (characterized by a plant operating state), followed by a sequence of failures or successes of events (such as system, function, or operator performance) that can lead to undesired consequences, with a specified end state (e.g., core damage or large early release).	ANS/ASME-58.22-2015 ANS-30.3-2022
accident sequence	Non-preferred variation (1) One of the set of accident sequences, defined at the functional or systematic level, that when rank-ordered by decreasing frequency aggregate to a specified percentage of the release category core damage frequency or that individually contribute more than a specified percentage of core damage to the release category frequency. The aggregate percentage is 95%, and the individual percentage is 1%. Accident sequence significance can be measured relative to each separate release category frequency (an	ANS-53.1-2011

[2] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
	accident sequence may be significant to one release category and not necessarily significant to others).	
accident sequence	Non-preferred variation (2) A representation in terms of an initiating event followed by a sequence of failures or successes of events (e.g., system, function, or operator performance) that can lead to undesired consequences, with a specified end state (e.g., core damage or large early release).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
accident sequence analysis	The process to determine the combinations of initiating events, safety functions, and system failures and successes that may lead to core damage or large early release.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
accident sequence, significant	See significant accident sequence.	ASME/ANS RA-Sb–2013
accuracy	Conformity of an indicated value to an accepted standard value or true value.	ANS-56.8-2002 ANS-10.8-2015 ANS-56.8-2020
accuracy	Non-preferred variation (1) Variant form	ANS-6.8.1-1981 ANS-6.8.2-1986
accuracy	Non-preferred variation (2) A concept employed to describe the dispersion of measurements with respect to a known value. The result of a measurement is “accurate” if it is close to the true value of the quantity being measured. Inaccurate results may be caused by imprecision or bias in the measurement process.	ANS-41.5-2012
accuracy	Non-preferred variation (3) A qualitative assessment of correctness or freedom from error.	ANS-10.7-2013
action	One or more manipulations which accomplishes a specified task. One or more actions are necessary to accomplish a function.	ANS-58.8-1992
action level	The numerical value that causes the decision maker to choose one of the alternative actions. The action level may be a derived concentration guideline level, background level, release criterion, regulatory decision limit, etc. The action level is often associated with a particular matrix/analyte combination. (Note that the action level is specified during the planning phase of a data collection activity; it is not calculated from the sampling data.)	ANS-41.5-2012
active component	A component in which mechanical movement or change of state must occur to accomplish the function of the component.	ANS-58.14-1993 ANS-51.1/52.1-1983 ANS-56.1-1985
active component	Non-preferred variation (1) Variant form.	ANS-56.2-1984 ANS-56.5-1989 ANS-54.1-1989
active component failure	A malfunction, excluding passive failures, of an active component that would prevent completion of its intended function upon demand.	ANS-54.1-1989
active failure	A malfunction of a component that prevents mechanical movement or change of state required to accomplish the function of the component on demand. Examples of active failures include the failure of a motor-operated valve to move to its correct position or the failure of a pump, fan, or diesel generator to start.	ANS-30.3-2022
active failure	Non-preferred variation (1) A malfunction of a component that prevents mechanical movement or change of state required to accomplish the function of the component on demand. Examples of active failures include the failure of a valve to move to its correct position or the failure of a pump, fan, or diesel generator to start. Spurious action of a power-operated component originating within its actuation or control system shall be regarded as an active failure unless specific design features or operating restrictions preclude such spurious action. An example is the unintended energization of a power-operated valve to open or close.	ANS-56.8-2020 is the same as preferred without the words “check value” in the 1st paragraph.
active failure	Non-preferred variation (2) A malfunction of a component that prevents mechanical movement or change of state required to accomplish the function of the component on demand. Examples of active failures include the failure of a valve or check valve to move to its correct	ANS-58.14-93 ANS-51.10-2020

Term	Description	Reference/Source
	position, or the failure of a pump, fan, or diesel generator to start. Spurious action of a powered component originating within its actuation or control system shall be regarded as an active failure unless specific design features or operating restrictions preclude such spurious action. An example is the unintended energization of a powered valve to open or close.	
active failure	Non-preferred variation (3) Variant form.	ANS-51.1/52.1-1983 ANS-51.10-1987 ANS-56.1-1985 NS-56.2-1984 ANS-56.4-1983) ANS-56.5-1987 ANS-56.8-2002 ANS-58.2-88 ANS-58.9-1994
active failure	Non-preferred variation (4) A malfunction, excluding passive failures, of a component that relies on mechanical movement to complete its intended nuclear safety function upon demand.	ANS-51.10-2002
active function	A function where mechanical motion, actuation, or a change of state occurs (e.g., the closing of a valve or relay or the change in state of a logic circuit).	ANS-58.14-2011
active status	Actively perform(ed) the functions of a reactor operator or senior operator on a minimum of seven 8-hour or 5 12-hour shifts per calendar quarter.	ANS-3.1-2014
active water seal system	A water seal system supplied by an active source that is capable of sealing gas leakage from a containment pathway at a pressure no less than 1.1Pa for at least 30 days following a design- basis accident (DBA). This system must also be able to meet these specifications following a single active failure.	ANS-56.8-2020
activity	A planned interaction with the plant, such as to conduct maintenance, to re-align the plant operating configuration, or to change plant operating parameters; e.g., power level.	ANS/ASME-58.22-2015
activity	The rate of disintegration (transformation) or decay of radioactive material. The units of activity are the curie (Ci) and the becquerel (Bq).	ANS-15.11-2016
activity median aerodynamic diameter (AMAD)	The median diameter, based on activity rather than mass, of a particle with unit density that has the same terminal velocity when settling in air as the particle of interest.	ASME/ANS RA-S-1.3-2017
actuating (motive) power	Electric, pneumatic or hydraulic supply required to operate the isolation valve.	ANS-56.2-1984
Acute Exposure Guideline Level (AEGL)	For the purposes of this standard, AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. • AEGL-1 effects are those that are not disabling and are transient and reversible upon cessation of exposure; • AEGL-2 effects are those above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape; • AEGL-3 effects are those above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death [3].	ANS-58.16-2014
additive	In the context of containment spray systems, any substance added to the spray water to adjust pH or enhance fission product removal.	ANS-56.5-1987
additive subsystem	That portion of the containment spray system which is specifically designed to place additive(s) into the spray water during spray operation.	ANS-56.5-1987
adequate	Established to be acceptable by the safety analysis of the plant.	ANS-4.1
adjusted probable minimum flow	The probable minimum flow adjusted for man's activities.	ANS-2.13-1979

Term	Description	Reference/Source
administrative controls	Rules, orders, instructions, procedures, policies, practices, or designation of authority and responsibility.	ANS-58.14-1994 ANS-3.2 ANS-51.1/52.1-1993 ANS-3.2-2006 ANS-30.3-2022
administrative controls	Variant form.	ANS-56.2-1984 ANS-59.1
administrative controls	Non-preferred variation (1) Specific requirements including administrative hold and administrative conditional restriction. Administrative controls remain in effect until the examining physician certifies that they are no longer necessary or a condition becomes permanent and reported to the U.S. Nuclear Regulatory Commission (NRC) with a request for a license restriction.	ANS-3.4-2013
administrative conditional restriction	A restriction placed on an operator by the facility licensee allowing the operator to continue to perform licensed duties within the restrictions. Administrative conditional restrictions include, but are not limited to, “no solo operations,” “no working at heights,” and “shall take medication as prescribed.”	ANS-3.4-2013
administrative hold	An administrative restriction placed on an operator by the facility licensee restricting the license holder from performing licensed duties pending further evaluation of a health status change.	ANS-3.4-2013
administrative limit	Leakage limit assigned to each Type B or Type C component as an indication of potential valve or penetration degradation and used to establish Type B and Type C test performance-based intervals.	ANS-56.8-2002 ANS-56.8-2020
adult	An individual 18 or more years of age.	ANS-15.11-2016
adversely affect	To impact plant equipment items leading to equipment failure (e.g., in the context of a fire PRA, a fire that includes spurious operation of devices).	ASME/ANS RA-S-1.1-2022
adversely affect	Non-preferred variation (1) To impact plant equipment items leading to equipment failure (for example, in the context of an Internal Fire PRA, a fire that includes spurious operation of devices).	ASME/ANS RA-S-1.4-2021
adversely affect	Non-preferred variation (2) In the context of fire PRA, to impact, via fire, plant equipment items and cables leading to equipment or circuit failure (including spurious operation of devices).	ASME/ANS RA-Sb–2013
aerodynamic entrainment	The suspension and transport of particulate materials, initially at rest, by the flow of gas.	ANS-5.10-1998
aerodynamic equivalent diameter (AED)	The diameter of a sphere with a density of 1g/cm^3 that exhibits the same terminal velocity as the particle of concern.	ANS-5.10-1998
aggregate	Aggregate is the granular material which is mixed with water and cement to form concrete. Concrete for radiation shielding is classified as ordinary or high density according to the unit weight of aggregate used. The aggregates defined in this section are those usually used for radiation shielding; other aggregates are sometimes used when it can be objectively shown that they produce concrete of the required strength, durability, and shielding characteristics. 1) Aggregate for Ordinary Concrete. Fine and coarse aggregates for ordinary density concrete are described in Descriptive Nomenclature of Constituents of Natural Mineral Aggregates, ASTM C294. They must normally meet the requirements of Specifications for Concrete Aggregates, ASTM C33, except aggregates for concrete to be placed by the PA (pre-placed aggregate) method which meet the gradation requirements of Pre-placed Aggregate Concrete for Structural and Mass Concrete, ACISP-304. 2) Aggregate for High Density Concrete. Fine and coarse aggregate for high density concrete is special aggregate or mixtures of special aggregate with the natural mineral aggregates used for normal density concrete. Special aggregates are iron shot, steel punchings, or natural-mineral	ANS-6.4-85

Term	Description	Reference/Source
	or synthetic aggregate as described in Descriptive Nomenclature of Constituents of Aggregates for Radiation Shielding Concrete, ASTM C638 and meeting the requirements of Specifications for Aggregates for Radiation-Shielding Concrete, ASTM C637. 3) Hydrous Aggregate. If the water content of the cured concrete cannot be maintained at a level high enough for the desired neutron attenuation requirements with the aggregates specified in (1) and (2), special aggregates having a relatively high water-of-hydration content may be used. Properties of hydrous aggregates are given in ASTM C637. 4) (4) Boron-Containing Aggregates. Boron containing aggregates are sometimes mixed with other aggregates to enhance neutron capture and reduce secondary gamma ray production. Boron containing minerals are described in ASTM C638.	
aging mechanism (or degradation mechanism)	Any mechanism that can cause a structure or component (or its subcomponents) to degrade in its function. It usually refers to an attack on the materials of construction of the structure or component, whether metal, concrete, or polymer.	ANS-3.14-2021
air temperature	It is preferred that the term (dry-bulb temperature) and the associated definition be used in ANS standards.	
air temperature	Non-preferred variation (1) The temperature indicated by a thermometer exposed to the air in a place sheltered from direct solar radiation.	ANS-3.11-2015
airborne radioactive material	Radioactive material dispersed in the air in the form of dusts, fumes, particulates mists, vapors, or gases; also commonly referred to as airborne radioactivity.	ANS-15.11-2016
airborne radioactivity area	A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of permitted or licensed material, exist in concentrations: • in excess of the derived air concentrations (DACs) for controlling occupational exposures, e.g., those specified in 10 CFR 20, Sec. 20.1001 (“Purpose”) through Sec. 20.2401 (“Violations”) and Appendix B [“Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage”] [1] and EPA-520/1-88-020 [2]; or • to such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in 1 week (7 consecutive days), an intake of 0.6% of the ALI or 12 DAC-hours or, in the case of submersion nuclides, exceed an effective dose equivalent of 30 mrem (0.3 mSv). See “Note 1” at the end of this section.	ANS-15.11-2016
airborne release factor (ARF)	The fraction of affected material that can be suspended in air and become available for airborne transport.	ANS-5.10-1998
airborne release rate (ARR)	The fractional rate of affected material that is suspended into air and becomes available for transport as a function of time.	ANS-5.10-1998
aircraft impact	Accidental impact of an aircraft into a safety-related structure, system or component such that the resulting missile, fire, or smoke could affect the ability of the structure, system or component to perform its intended safety function. Note: Future users of this definition should consider deletion of the word “accidental”	ANS-2.12-1978
aircraft impact	Non-preferred variation.	ANS-2.19-1989

Term	Description	Reference/Source
ALARA. (As Low As Reasonably Achievable)	As stated in 10CFR20, ALARA means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.	ANS-55.1-91 ANS-15.11-2016 ANS-55.1-2021
albedo	The probability under specified conditions that a particle entering into a region through a surface will return through that surface.	ANS-6.4-95
aleatory variability	The variability inherent in a nondeterministic (stochastic, random) phenomenon. In principle, aleatory variability of a nondeterministic phenomenon cannot be reduced by the accumulation of more data or additional information, but the accumulation of more data or additional information can better constrain the aleatory variability of a probabilistic model of a nondeterministic phenomenon. Note that aleatory variability is sometimes called “aleatory uncertainty” or “randomness.”	ANS-2.27-2020 ANS-2.29-2020
aleatory variability	Non-preferred variation (1) aleatory variability. The variability inherent in natural randomness in a process. Sometimes aleatory variability is called “randomness.”	ANS-2.8-2019
aleatory variability	Non-preferred variation (2) The variability inherent in a non-deterministic (i.e., stochastic, random) phenomenon (see Variability). Aleatory variability is accounted for by modeling the phenomenon in terms of a probability model. In principle, aleatory uncertainty cannot be reduced by the accumulation of more data or additional information, but the detailed characteristics of the probability model can be improved. Sometimes aleatory variability is called randomness.	ANS-2.27-2008 ANS-2.29-2008
aleatory variability	Note: The 2023 review team recommends the use of the term “aleatory uncertainty” instead of “aleatory variability.”	
aleatory uncertainty	The uncertainty inherent in a nondeterministic (stochastic, random) phenomenon. Aleatory uncertainty is reflected by modeling the phenomenon in terms of a probabilistic model. In principle, aleatory uncertainty cannot be reduced by the accumulation of more data or additional information. (Aleatory uncertainty is sometimes called “randomness.”)	ASME/ANS RA-Sb–2013 ANS-2.30-2015 ASME/ANS RA-1.4-2021 ASME/ANS RA-1.1-2022
aleatory uncertainty	Non-preferred variation (1) The variability inherent in natural phenomena (i.e., stochastic, random). Aleatory variability is accounted for by modeling the stochastic aspect of the phenomenon under study in terms of a probability distribution. In principle, aleatory uncertainty that results from aleatory variability cannot be reduced by the accumulation of more data or additional information, but the detailed characteristics of the probability model can be improved [2].[3]	ANS-2.8-2019
aliquant	Sample volume that could vary in different instances.	ANS-16.1-2019
aliquot	A known fractional part of a defined quantity.	ANS-16.1-2003
aliquot	Non-preferred variation (1) Constant sample volume taken in each instance.	ANS-16.1-2019
all rods out (ARO)	All full-length control rods withdrawn (part-length rods may be inserted).	ANS-19.6.1-2019
alpha testing	Operational testing by users or an independent team of testers at the developers’ site.	ANS-10.7-2013
alternate shutdown	The maintenance of safe hot shutdown or achievement and maintenance of safe cold shutdown independent of and separate from the control room. See also; dedicated shutdown.	ANS-58.6-D92
alternate shutdown station	See; auxiliary shutdown station	ANS-58.6-1992

[3] This reference is to ANSI/ANS-2.29-2008 (R2016), “Probabilistic Seismic Hazard Analysis.” However, while the definition is the same, the term used in ANSI/ANS-2.29 (R2016) is “aleatory variability.”

Term	Description	Reference/Source
alternate source	A source of water which when combined with the primary source, has sufficient capacity to allow maintaining hot shutdown conditions for a minimum period of 24 hours plus a cool down period sufficient to reduce plant temperature to levels where low temperature and pressure decay heat removal equipment can be implemented.	ANS-51.10
Alternative assumption	One that has broad acceptance within the technical community and for which the technical basis for consideration is at least as sound as that of the assumption being challenged.	ASME/ANS RA-S-1.4-2021
ambient noise	Any signal other than the signal (e.g., earthquake motion) being measured. It can be recorded in absence of an earthquake signal. Microseisms (e.g., from ocean waves), wind noise, and cultural noise are signals that can be in the background and recorded along with the earthquake shaking.	ANS-2.10-2017
ambient flow	Natural horizontal or vertical groundwater movement through the subsurface or resulting from natural hydraulic gradients in an open borehole, well, or piezometer.	ANS-2.17-2010
analysis	Analysis of radiation transport in and through shields including predictions of dose rates and neutron and gamma-ray fluxes as modified by the introduction of shields in the systems involved.	ANS-6.4-1985
analyte	The particular radionuclide(s) to be determined in a sample of interest. As a matter of clarity when interpreting various clauses of this standard, a gamma-ray spectral analysis is considered one analysis category but may include multiple target analytes.	ANS-41.5-2012
analytical protocol specification (APS)	The output of a project planning process that contains the project's analytical data needs and requirements in an organized, concise form.	ANS-41.5-2012
anisotropic	The properties at any point within a medium are different in different directions.	ANS-2.9-1989
annual or annually	Twelve months plus or minus three months with the objective of a long-term average of once a year.	ANS-3.3-1988
annual limit on intake (ALI)	The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 5 rem (0.05 Sv) or a committed dose equivalent of 50 rem (0.5 Sv) to any individual organ or tissue. (ALI values for intake by ingestion and by inhalation of selected radionuclides are given in 10 CFR 20, Secs. 20.1001 through 20.2401 and Appendix B, Table 1, columns one and two [1].)	ANS-15.11-2016
anti-aliasing filter	A filter used before a signal is digitized to restrict the signal bandwidth at high frequency and prevent high-frequency signals from being aliased (misrepresented as lower frequencies) to satisfy the sampling requirements based on the sample rate. An anti-aliasing filter reduces the signal amplitude to ensure that higher frequencies are not aliased to lower frequencies.	ANS-2.10-2017
anticipated operational occurrence	Licensing-basis events (LBEs) and conditions of plant operation that are expected to occur one or more times during the life of the plant. Event sequences from the PRA are classified as AOOs when their expected frequency of occurrence exceeds 1 × 10-2 events/plant-year (1E−02 events/plant-year).	ANS-53.1-2011 ANS-30.3-2022, but only 1st sentence
anticipated operational occurrence	Non-preferred variation (1) Those conditions of normal operation which are expected to occur one or more times during the life of the nuclear power unit and include but are not limited to a loss of all offsite power, an inadvertent control rod withdrawal, and tripping of the turbine generator set.	ANS-54.1-1989
anticipated operational occurrence	Variant form.	ANS-6.8.1-1989
anticipated transients without scram (ATWS)	Transients resulting from anticipated operational occurrences in combination with a failure to scram. (Also, anticipated transients without trip (ATWT)	ANS-54.1-1989

Term	Description	Reference/Source
application-dependent multigroup	A discrete energy group structure that is intermediate between the application-independent multigroup structure and a few-group structure. The application-dependent multigroup structure may be such that the group constants are dependent on reactor composition through an estimated neutron energy spectrum. An application-dependent multigroup data set is one type of averaged data set.	ANS-19.11-2011 ANS-19.11-2022
application-independent multigroup	A discrete energy group structure that is sufficiently detailed that the group constants may be considered as being independent of reactor composition, geometry, or spectrum for a wide range of reactor analysis. The application-independent multigroup structure may be employed directly in reactor design spectrum calculations, or it may be employed to generate group constants in an application-dependent multigroup structure. An application-independent multigroup data set is one type of averaged data set.	ANS-19.11-2011 ANS-19.11-2022
apportioning	The process of distributing population data from a dataset where data are aggregated in geographic units (e.g., census tracts or block groups) that do not match the polygon shape of the defined areas within the study area (e.g., sectors or uniform grid squares).	ANS-2.6-2018
approved	Signifies that devices, materials, or assemblies have been successfully tested or accepted by prior class or type testing for a specific purpose or application by a nationally recognized testing laboratory.	ANS-59.4-79W86
aquifer	A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to springs, seeps, and wells.	ANS-2.17-2010
aquifer, confined	An aquifer bounded above by an aquitard.	ANS-2.17-2010
aquifer, unconfined	An aquifer whose upper surface is a water table.	ANS-2.17-2010
aquitard	A geologic formation that restricts, but does not prevent, groundwater movement into or between aquifers.	ANS-2.17-2010
area monitor channel	A gamma radiation sensitive detector, electronic processing and alarm circuitry, readout devices, and interconnecting cables used to measure and display the exposure rate present at the detector location.	ANS-6.8.1-1981
area probability sample	A probability sample selected using a frame which identifies population elements by their geographic location. Note: A frame is a scheme which assigns a unique identification to each population element. (Not used)	ANS-2.15-2013.
area source	A two-dimensional array of pollutant sources so widely dispersed and uniform in strength that they can be treated in a dispersion model as an aggregate pollutant release from a defined area at a uniform rate.	NOT DEFINED
areal density	The total mass of fissionable material per unit area projected perpendicularly onto a plane. (For an infinite, uniform slab, it is the product of the slab thickness and the concentration of fissionable material within the slab.)	ANS-8.1-2014 ANS-8.12-1987
areal source	A volume of the earth's crust, commonly represented in map view as a bounded region, within which future seismicity is assumed to have a continuous distribution.	ANS-2.27-2020 ANS-2.29-2020
area-ratio method	A method of apportioning the population data whereby the population of a defined area (e.g., sectors or uniform grid squares) is expressed as a relative proportion of population of a larger geographic unit (e.g., a census tract or block group) in which the defined area is located.	ANS-2.6-2018
area source	An area of the earth's crust that is assumed to have relatively uniform earthquake source characteristics for use in the PSHA. (See also "volumetric source zone").	ANS-2.27-2008 ANS-2.29-2008
armed response individual	An onsite individual, not necessarily uniformed, whose primary duty in the event of attempted toxicological and/or radiological sabotage, is to respond, armed and equipped, to delay or prevent such an act.	ANS-3.3-88

Term	Description	Reference/Source
Arrhenius model	.Used in accelerated aging tests that relates the rate of reaction of a material to temperature by a simple exponential function, r = A exp(0/kT), where r is the reaction rate, A is a material constant (frequency factor), 0 is the activation energy of the material (ev), k is Boltzmann's constant (0.8617×10^{-4} ev/°K) and T is absolute temperature (°K).	ANS-6.4.2-1985
as-built, as-operated	A conceptual term that reflects the degree to which the PRA matches the current plant design, plant procedures, and plant performance data, relative to a specific point in time. (Note: At the design certification stage, the plant is neither built nor operated. For these situations, the intent of the PRA model is to reflect the “as-designed, as-to-be-built, and as-to-be-operated” plant.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
aspect	Compass direction, with respect to true north, toward which a slope or coastline is facing, thereby influencing the local temperature and amount of incident solar radiation at that location.	ANS-2.21-2022
associated effects	Characteristics of the flood event that are not captured solely by flood elevation (height). Associated effects include factors such as wind waves and runup effects; hydrostatic loading; hydrodynamic loading, including debris and water velocities; effects caused by sediment deposition and erosion; clogging due to debris; concurrent site conditions, including adverse weather conditions; and groundwater ingress.	ASME/ANS RA-S-1.1-2022
assumption	A judgment that is made in the development of the PRA model either for modeling convenience or because of a lack of information or state-of-knowledge. An assumption is a source of model uncertainty. • An example of assumption used for modeling convenience is limiting the number of individually modeled components under the assumption that the consequence of any individual combination of components is the same. • An example of assumption made for the lack of information is assuming component failure due to failure of heating, ventilation, and air conditioning (HVAC) in the absence of detailed room heat-up calculations.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
assumption	Non-preferred variation (1) A decision or judgment that is made in the development of the PRA model. An assumption is either related to a source of model uncertainty or is related to scope or level of detail. An assumption related to a model uncertainty is made with the knowledge that a different reasonable alternative assumption exists. A reasonable alternative assumption is one that has broad acceptance within the technical community and for which the technical basis for consideration is at least as sound as that of the assumption being made. An assumption related to scope or level of detail is one that is made for modeling convenience. An assumption is labeled “key” when it may influence (i.e., have the potential to change) the decision being made. Therefore, a key assumption is identified in the context of an application.	ASME/ANS RA-Sb–2013
as-found leakage rate	The leakage rate prior to any repairs or adjustments to the barrier being tested.	ANS-56.8-02 ANS-56.8-2020
as-found testing	Leakage rate testing after some period of normal service conditions, performed prior to any repairs or adjustments.	ANS-56.8-02 ANS-56.8-2020
as-left leakage rate	The leakage rate following any repairs or adjustments to the barrier being tested.	ANS-56.8-2002
as-left testing	Leakage rate testing performed following repair or adjustment.	ANS-56.8-2002
as low as is reasonable	It is preferred that the term (ALARA—As Low As Reasonably Achievable) and the associated definition be used in ANS standards.	
as low as is reasonable	Non-preferred variation (1) Every reasonable effort is made to maintain exposures to radiation as far below the dose limits as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of	ANS-2.17-2010

Term	Description	Reference/Source
	improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.	
assured station blackout response facilities	The capability to withstand a station blackout demonstrated by the application of all requirements of this standard.	ANS-58.12-1985
at-initiator human failure event	At-initiator human failure event: a type of initiating event; a human failure event that causes or contributes to an initiating event (e.g., the human failure event that directly involves plant personnel actions at the time of the initiating event, including actions correctly performed but which are based on erroneous indications). This group does not include malicious acts such as sabotage. Of particular interest are those at-initiator HFEs that are directed from the main control room and in the objectives portion of Section 4.3.6 Human Reliability Analysis element.	ASME/ANS RA-S-1.4-2021
at-initiator human failure event	Non-preferred variation (1) A type of initiating event; human failure events that cause, or contribute to, an initiating event (e.g., the human failure events that directly involve plant personnel actions at the time of the initiating event, including actions correctly performed but which are based on erroneous indications). This group does not include malicious acts such as sabotage.	ANS/ASME-58.22-2015
Atomic Energy Act	Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) (the Act): As amended. (ANS-15.11-2016) : This is an incorrect usage of the definitions section. It should be a specified reference and listed in the references section of the standard.	
at power	Those plant operating states characterized by the reactor being critical and producing power, with automatic actuation of critical safety systems not blocked and with essential support systems aligned in their normal power operation configuration.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
at power	Non-preferred variation (1) A reactor operating state where the core is critical and is producing measurable heat from nuclear fission.	ANS-19.11-2017
at reactor storage (AR)	Storage capability of spent fuel at the reactor facility following unloading.	ANS-2.19-1989
atmospheric transport and dispersion	The process by which material that has been released from its place of confinement, moves through and spreads upon release to the atmosphere.	ASME/ANS RA-S-1.3-2017
atmospheric/barometric pressure	The pressure exerted by the atmosphere as a consequence of gravitational attraction exerted upon the “column” of air lying directly above the point in question.	ANS-3.11-2015
atmospheric pressure change	Atmospheric pressure change loads result from the variation in the atmospheric pressure field as a vortex moves over a structure. Atmospheric pressure change loads are considered in tornado design and depend on the amount of venting or leakage of the structure as a translating tornado interacts with the structure.	ASME/ANS RA-S-1.1-2022
atmospheric turbulence	Fluctuations occurring in all three velocity components and unpredictable in detail; however, statistically distinct properties of the turbulence can be identified and profitably analyzed. Turbulence exhibits a broad range of spatial and temporal scales resulting in efficient mixing of fluid properties.	ANS-3.11-2015
audit	A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, instructions, drawings, and other applicable documents, and the effectiveness of implementation. An audit should not be confused with surveillance or inspection activities performed for the sole purpose of process control or product acceptance.	ANS-3.2-1993 ANS-41.5-2012
authority having jurisdiction	The organization or individual with responsibility for administering and enforcing the provisions of this standard.	ANS-3.14-2021

Term	Description	Reference/Source
authorized individual	An individual who has been designated by the appropriate authority in writing, or by another equivalent method, to enter a protected or vital area.	ANS-3.3-1988
auto-load	The automatic application of loads to the diesel generator in a predetermined sequence.	ANS-59.52-1993 ANS-59.52-1998
Automated Surface Observing System (ASOS)	The U. S. National Weather Service's (NWS's) surface meteorological sensor network.	ANS-2.21-2022
automatic isolation valve	A valve whose closure is initiated by automatic means without any action by a plant operator upon receipt of an isolation signal from a protection system; or a simple or positive acting check valve.	ANS-56.2-1984
auxiliary fuel handling crane	A crane used for handling equipment including fuel assemblies and new fuel shipping containers.	ANS-57.1-1993 ANS-57.3-1993 ANS-57.1-1998
auxiliary shielding	The auxiliary shielding is the shielding provided for the equipment and piping that collects, processes, or stores radioactive materials external to the primary coolant system.	ANS-6.3.1-1987
auxiliary shutdown station	One location separate from the control room with information and controls available that permits actions to be taken to achieve, monitor, and maintain the safe shutdown condition. This is the primary location for activities required to maintain safe shutdown and supervise cool down following hot shutdown.	ANS-58.6-1992
auxiliary supporting features	Systems, structures, components (SSCs) that provide support services (e.g., cooling, lubrication and power) required by safety-related systems to accomplish their safety-related functions. (See ANSI/IEEE-603-1991.)	ANS-50.1-93
availability	A plant or system, structure, component (SSC) attribute defined as the probability or fraction of time that the SSC is capable of performing its function at the time of demand.	ANS-53.1-2011
availability	Non-preferred variation (1) the complement of unavailability	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
available time	The time interval from the cue to perform the manual action to the time that the analysis credits completion of the action.	ANS-58.8-2019
averaged data set	A data set prepared by averaging an evaluated data set or a processed continuous-energy data set with a specified weighting function over a specified energy group structure. The group structure and weighting functions may be selected to be application dependent. Application-independent averaged data sets for a wide range of reactor analysis, e.g., light water reactors (LWRs), are dealt with in ANSI/ANS-19.1-2019, Nuclear Data Sets for Reactor Design Calculations [2].	ANS-19.3-2011 ANS-19.3-2022 updated reference [2]
axial flux difference (AFD)	The power in the top half of the core minus the power in the bottom half, divided by the full power: $\mathrm{AFD} = \frac{\mathrm{P_{top}} - \mathrm{P_{bottom}}}{\mathrm{P_{full}}}$ The AFD is sometimes referred to as power imbalance.	ANS-19.11-2017

B

Term	Description	Reference/Source
background	Ambient signal response due to spurious electronic noise or incidental radiation in the vicinity of the detector system as recorded by measuring instruments that is independent of radioactivity contributed by the radionuclides being measured in the sample.	ANS-41.5-2012
background	Non-preferred variation (1) background noise. Same as ambient noise.	ANS-2.10-2017
background	Change to the preferred term “ambient noise”	
background radiation	Radiation from cosmic sources; naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents that contribute to background radiation and are not under the control of the licensee. Background radiation does not include radiation from source, byproduct, or special nuclear material controlled or regulated by the overseeing regulatory authority.	ANS-15.11-2016
background radiation	Non-preferred variation (1) That level of radiation which originates from sources other than the one being measured.	ANS-6.8.2-1986(W1991
background source zone	A part of the earth’s crust, usually of large areal dimension, within which potentially damaging earthquakes could occur that are not associated either with known fault sources or even with the uniform pattern, rate, or style of deformation or seismicity commonly identified with volumetric seismic source zones. In PSHA calculations, earthquakes that cannot be associated with other sources default to a background source zone.	ANS-2.27-2008 ANS-2.29-2008
backtrack	To reset the simulator to some prior time in its operation.	ANS-3.5-2009 ANS-3.5-2018
backup system	An alternate system of similar functional capability to the normally operating system. It need not be the same seismic category and safety class as the system it backs up.	ANS-57.2-D92 ANS-57.2-1999
backup system	Non-preferred variation.	ANS-54.2-1985
bias	When referring to data a bias is a systematic error. It is that portion of the total error that is solely separated from the random portion. Bias is not imprecision. In flood data collection bias is related to data acquisition and processing. In floods, for example, bias can be found in the deviation between rainfall depth measured by a radar system or by a network of gauges. When referring to modeling assumptions, bias is a systematic increase or decrease of the mean value of (a) a model parameter, (b) an input value or correlation, or (c) the results.	ANS-2.8-2019
barriers to fission product release	Those major physical barriers that are designed to contain and prevent the uncontrolled release of fission products from anywhere within the reactor coolant pressure boundary or primary coolant boundary, as applicable	ANS-58.3 ANS-58.4-90W
base year	. The year from which the demographic data used in the analysis originated. Most typically it is the most recent census data.	ANS-2.6-2018
base year	Note: Consider using the general term “BASELINE” in future standards.	
baseline concentration, local	The concentration or activity of a substance that is indicative of local site conditions prior to the operation of the nuclear power plant.	ANS-2.17-2010
baseline concentration, regional	The concentration or activity of a substance that is indicative of regional conditions prior to the operation of the nuclear power plant.	ANS-2.17-2010
baseline PRA	A PRA that has been developed consistent with the Technical Requirements of this Standard independent of an application.	ASME/ANS RA-S-1.1-2022
basic event	An event in a fault-tree model that requires no further development, because the appropriate limit of resolution has been reached.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
batch	A group of samples prepared at the same time, in the same location, using the same method, and by the same analyst.	ANS-41.5-2012

Term	Description	Reference/Source
benchmark	A well-defined experiment or mathematical construct whose results, judged by a group of experts in the area, are sufficiently accurate to be used as a calculational reference point.	ANS-19.1-2019
benchmark	Non-preferred variation (1) A representation of an experiment evaluated for use in validation. The experiment may be critical or slightly subcritical (also called exponential experiment).	ANS-8.24-2017
benchmark applicability[2)]	The benchmark parameters (e.g., material compositions, geometry, neutron energy spectra) and their bounding values from which the bias and bias uncertainty of a calculational method are established.	ANS-8.24-2017
benchmark experiment	An experiment appropriate for the validation of calculational methods applicable to the evaluation of the neutron absorber system.	ANS-8.21-1995
benevolent failure	A failure of an active or passive system component, or a structural member of the reactor or containment pressure boundary that alters accident progression in a manner that reduces the severity of current reactor or containment status or mitigates consequences of subsequent events. An example is failure of a safety/relief valve to reclose on demand, causing unintentional depressurization of the reactor coolant system (RCS). This event has the beneficial effect of reducing reactor vessel pressure, thereby reducing the potential for adverse creep rupture of the reactor coolant system (e.g., induced steam generator tube rupture (SGTR)) and (later in time) high-pressure failure of the reactor pressure vessel (RPV) lower head. Such failures are often precluded from consideration in the Level 1 PRA, but can be credited in the Level 2 analysis to facilitate a more realistic assessment of severe accident progression especially when there is a clear link to severe accident conditions causing the failure.	ASME/ANS RA-S-1.2-2015
best estimate	Predicted reference unit performance data derived from engineering evaluation or operational assessment by subject matter experts for specific conditions.	ANS-3.5-2009 ANS-3.5-2018
best estimate	Non-preferred variation (1) An engineering evaluation or judgment where realistic conditions with respect to the initial plant state are assumed and no additional conservatisms are added to the implementation or evaluation.	ANS-30.3-2022
best-estimate value	The mean value of the probability density function for the random variable of interest. Where the probability density function is not known, the best-estimate value is based on a statistical sample of data or judgment.	
best-estimate value	Variant form.	ANS-51.1/52.1-93
beyond the design basis events (BDBE)	It is preferred that the term (beyond-design-basis event (BDBE)) and the associated definition be used in ANS standards.	
beyond the design basis events (BDBE)	Non-preferred variation (1) Those events of lower probability than design basis events.	ANS-54.1-1989
beta testing	This testing follows alpha testing and is a form of user acceptance testing. The software is released to a limited group of people outside of the development team to permit further testing in order minimize the number of defects.	ANS-10.7-2013
beyond-design-basis event (BDBE)	Events that are not expected to occur during the lifetime of a large fleet of nuclear power plants but are considered to assure that the risk to the public from low-frequency events is acceptable.	ANS-30.3-2022
beyond-design-basis event (BDBE)	Non-preferred variation (1) LBEs that are not expected to occur during the lifetime of a large fleet of nuclear power plants but are considered to assure that the risk to the public from low-frequency events is acceptable. Event sequences from the PRA are classified as BDBEs when their expected frequency of occurrence is between 5×10^{-7} events/plant-year (5E−07 events/plant-year) and 1×10^{-4} events/plant-year (1E−04 events/plant-year).	ANS-53.1-2011
	Note: Future user of this definition should consider that some natural phenomena are considered design bases events event though their probabilities are above the stated range	

Term	Description	Reference/Source
	Note: It is the recommendation from the 2023 review committee that "facilities" and "power plants" can be used interchangeably.	
bias	The systematic difference between the calculated k-effective and the benchmark k-effective. A positive bias exists where the mean bias or the value of the fitted function is greater than zero.	ANS-8.24-2017
bias	Non-preferred variation (1) A fixed deviation from the true value that remains constant over replicated measurements within the statistical precision of the measurement. Synonyms are deterministic error, fixed error, and systematic error.	ANS-41.5-2012
bias uncertainty	The uncertainty that accounts for the combined effects of uncertainties in the benchmarks, the calculational models of the benchmarks, and the calculational method.	ANS-8.24-2017
binder	Solidification agent.	ANS-16.1-2003 ANS-16.1-2019
bioassay	A radioanalytical measurement to determine the amount and kind of radioactive materials present in the body or specific organs.	ANS-3.7.1-1995(W)
bioassay	Non-preferred variation (1) The determination of kinds, quantities, or concentrations and in some cases the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.	ANS-15.11-2016
biogeochemical processes	The chemical interactions that exist among the atmosphere, hydrosphere, lithosphere, and biosphere.	ANS-2.17-2010
blind fault	A blind fault is a fault that does not rupture all the way up to the surface and consequently does not have a surface trace. These features are usually associated with thrust faults, which are formed by compressive stresses. Blind thrust faults do not penetrate the uppermost layers of crust, but they cause the surface layers to fold over them as they deform, forming a tell-tale hill at the surface that reveals their presence to observers.	ANS-2.27-2008
blind fault	Non-preferred variation (1) A buried fault or fault zone that does not rupture to the ground surface but can cause surface deformation.	ANS-2.30-2015 ANS-2.27-2020
blowdown	Water intentionally discharged from a closed cycle water system to control total dissolved solids (TDS).	ANS-2.13-79
body burden	The total quantity of a radionuclide present in the whole body or body organ.	ANS-3.7.1-92
body-burden analysis/whole body counting	Measurement of the amount(s) of radioactive material(s) in the whole body or body organs.	ANS-3.7.1-1992
boiling water reactor coolant pressure boundary	The reactor coolant pressure boundary (RCPB) means all those pressure containing components of the boiling water reactor, such a pressure vessels, piping, pumps and valves which are: 1. Part of the reactor coolant system (the reactor coolant system extends to and includes the outermost containment isolation valve in the main steam and feedwater piping), or 2. Connected to reactor coolant system, up to and including any and all of the following: (a) The outermost containment isolation valve in system piping which penetrates primary reactor containment. (b) The second of two valves normally closed during normal reactor operation in system piping which does not penetrate primary reactor containment. (c) (c) The reactor coolant system safety and relief valves.	ANS-52.1-83W ANS-56.3-86
boiling water reactor coolant pressure branch run	A pipe run that originates as a branch of the main run and ends at a terminal end, another main run, another branch run or is free ended, with the exception of the following: (a) free-ended branch lines throughout which there is no significant restraint to thermal expansion may be considered part of the main run. (b) (b) branch lines which are included with the main run piping in	ANS-58.2-80

Term	Description	Reference/Source
	the stress analysis computer mathematical model (such that the levels of stress and fatigue in the branch runs are accurately determined relative to those in the main run), and are shown to have a significant effect on the main run behavior (such as when the piping sizes are similar), may be considered part of the main run.	
boundary (RCPB)	Boundary (RCPB) means all those pressure containing components of the boiling water reactor, such as pressure vessels, piping, pumps, and valves which are: 1. Part of the reactor coolant system (the reactor coolant system extends to and includes the outermost containment isolation valve in the main steam and feedwater piping), or 2. Connected to reactor coolant system, up to and including any and all of the following: (a) The outermost containment isolation valve in system piping which penetrates primary reactor containment (b) The second of two valves normally closed during normal reactor operation in system piping which does not penetrate primary reactor containment (c) The reactor coolant system safety and relief valves.	ANS-56.3-97W
bounding analysis	Analysis that uses assumptions such that the assessed outcome will meet or exceed the maximum severity of all credible outcomes.	ASME/ANS RA-Sb–2013
bounding site	A hypothetical site that is defined to bound the characteristics of a range of sites for use in the design of a standard plant. The site characteristics may be selected from site parameters from actual sites. For this bounding site, site-related parameters are defined using a set of scenarios that are chosen to provide appropriately high external hazard design parameter values and the most adverse meteorological conditions and population data for assessing off-site radiological impact.	ASME/ANS RA-S-1.4-2021
bremsstrahlung	Gamma radiation emitted by an electron when it is deflected by the Coulomb field of an atomic nucleus of charge Z; the fraction of energy radiated as photons by an electron of initial energy E (Mev) is approximated numerically by ZE/1000.	ANS-6.4.2-85
bridge tree	An event tree (or equivalent logic structure) that extends the sequences delineated in the Level 1 PRA to account for the status of containment systems. A bridge tree is sometimes used to link (or provide a “bridge” between) the Level 1 event trees (or equivalent) for core damage sequences and the Level 2 containment event tree, especially when the latter is constructed solely to reflect the potential severe accident phenomena.	ASME/ANS RA-S-1.2-2015
brittle solids	Solids that will fragment into particles upon impact or crush forces that exceed the tensile/compressive strength of the material.	ANS-5.10-98
broken rod	A rod that has been severed into two or more pieces and requires special handling.	ANS-57.10-93
buildup factor	In the passage of radiation through a medium, the ratio of the total value of a specified radiation quantity at any point to the contribution to that value from radiation reaching the point without having undergone a collision.	ANS-6.4.3-91
buildup factor, exposure, B_D	A photon buildup factor in which the quantity of interest is exposure. The energy response function is that of absorption in air.	ANS-6.4.3-91
buildup factor, energy absorption, B_A	A photon buildup factor in which the quantity of interest is the absorbed or deposited energy in the shield medium. The energy response function is that of absorption in the material.	ANS-6.4.3-91
bullet-resisting	Protection against complete penetration, passage of fragments of projectiles, and spalling (i.e., fragmentation) of barrier material that could cause injury to a person standing directly behind the barrier. Bullet-resisting barrier material meets the rating for high powered rifle	ANS-3.3-88

Term	Description	Reference/Source
	as set forth in Underwriter's Laboratories Publication, "Standard for Bullet-Resisting Equipment" UL 752.	
burnable absorber	A burnable absorber is a material added to the fuel assembly to control reactivity via neutron absorption, mainly near the beginning of the fuel life. As irradiation progresses, the burnable absorber is converted to a less absorbing material. If the burnable absorber is physically part of the fuel assembly (nonremovable), it is said to be “fixed.” Otherwise, it is said to be “removable.” Integral fuel burnable absorbers are part of the fuel inside the cladding and are a form of fixed burnable absorber. Reference to burnable absorbers in this standard unless otherwise noted is meant to address only the fixed type.	ANS-8.27-15
burnable absorber credit	Burnable absorber credit is the accounting for an overall reduction in reactivity associated with the presence of fixed burnable absorbers. Since the irradiation of fuel with burnable absorbers could result in increased reactivity early in its life, taking credit for burnable absorbers in irradiated fuel requires depletion analysis. “Gadolinium credit” is an example of burnable absorber credit.	ANS-8.27-2015
burnup	Burnup is the amount of energy released from a region of a fuel assembly per initial mass of actinides (e.g., uranium and plutonium) in that region. The region could be a complete fuel assembly or some part of the assembly. The specifications of the appropriate regions are normally clearly defined for each application to avoid ambiguity, e.g., assembly-averaged burnup, node-averaged burnup, or rod averaged burnup. Examples of units for a uranium-based fuel with this region-specific burnup are megawatt-days per tonne of initial uranium and gigawatt-days per tonne of initial uranium. Since burnup is normalized to a mass, it is also known as specific burnup.	ANS-8.27-2015
	Note: The term burnup and fuel burnup are both used in this glossary. NCSCC should review the terminology and select the preferred term for future use.	
burnup credit	Burnup credit is the accounting for an overall reduction in reactivity associated with the irradiation of fuel in a reactor and with cooling time. Burnup credit is a criticality safety control that includes both analysis and implementation.	ANS-8.27-15
byproduct material	• Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or utilizing special nuclear material; and • The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by these solution extraction operations do not constitute byproduct material within this definition; i. Any discrete source of ^{226}Ra that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity, or ii. Any material that (a) has been made radioactive by use of a particle accelerator, and (b) is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; iii. Any discrete source of naturally occurring radioactive material, other than source material, that (a) The NRC, in consultation with the Administrator of the U.S. Environmental Protection Agency, the U.S. Secretary of Energy, the U.S. Secretary of Homeland Security, and the head of any other appropriate Federal	ANS-15.11-2016

Term	Description	Reference/Source
	agency, determines would pose a threat similar to the threat posed by a discrete source of ^{226}Ra to the public health and safety or the common defense and security, and (b) Before, on, or after August 8, 2005, is extracted or converted after extraction for use in a commercial, medical, or research activity.	

C

Term	Description	Reference/Source
cable	Referring solely to “electric cables,” a construction comprising one or more insulated electrical conductors (generally copper or aluminum). A cable may or may not have other physical features such as an outer protective jacket, a protective armor (e.g., spiral wound or braided), shield wraps, and/or an uninsulated ground conductor or drain wire. Cables are used to connect points in a common electrical circuit and may be used to transmit power, control signals, indications, or instrument signals.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
cable failure mode	The behavior of an electrical cable upon fire-induced failure that may include intracable shorting, intercable shorting, and/or shorts between a conductor and an external ground. (See also hot short.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
calculational margin	An allowance for bias and bias uncertainty plus considerations of uncertainties related to interpolation, extrapolation, and trending of the bias.	ANS-8.24-2017
calculational method (method)	The mathematical procedures, equations, approximations, assumptions, and associated numerical parameters (e.g., cross sections), which yield the calculated results.	ANS-8.1-2014
calculational method (method)	Non-preferred variation 1 - The mathematical procedures, equations, approximations, assumptions, and associated numerical parameters (e.g., cross sections) that yield the calculated results (k-effective). This is typically the code package and cross-section data.	ANS-8.24-2017
calibration	The set of operations or processes conducted under specified conditions that establish the relationship between values indicated by a measuring instrument or system and the corresponding known values. The term “calibration” refers to both the first calibration after the instrument is placed in use and to any recalibrations subsequently performed.	ANS-41.5-2012
calibration	Non-preferred variation 1 - The process of verifying that a device (e.g., a strong-motion accelerometer) is operating within the instrument manufacturer’s specifications for certain measurement characteristics (e.g., gain, sensitivity, damping, etc.). Calibration procedures are based on manufacturer’s procedures when available. These processes involve testing the device at specific times (e.g., after an earthquake) using a tilt table, shake table, or other means and recording and analyzing the results (see “functional test”).	ANS-2.10-2017
calibration	Non-preferred variation 2 - The determination of response of an instrument or system over its range so that its output can be correlated, with acceptable accuracy, to true values of the measured parameter.	ANS-15.11-2016
calm	Any wind speed below the starting threshold of the wind speed or direction sensor; or any wind speed below that which is appropriate for input into plume models, whichever is greater. In the U.S., calm is typically defined as any speed less than 1 mph.	ANS-3.11-2015
canister	A container or restraints used to hold rods in a close-packed array. The canister may or may not have grids and may or may not act as a confinement barrier.	ANS-57.10-1993 ANS-57.10-1996
canning (canned)	The placement of spent fuel in a container for purposes of confinement. This also applies to plutonium metals and plutonium oxides (e.g., 3013 can)	ANS-57.9-1992

Term	Description	Reference/Source
capable fault	This definition is taken directly from Title 10, Code of Federal Regulations, Part 100 "Reactor Site Criteria," Appendix A, Seismic and Geological Siting Criteria for Nuclear Power Plants, paragraph III (g): "A 'capable fault' is a fault which has exhibited one or more of the following characteristics: (1) Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years. (2) Macro-seismicity instrumentally determined with records of sufficient precision to demonstrate a direct relationship with a fault. (3) A structural relationship to a capable fault according to characteristics (1) or (2) of this paragraph such that movement on one could be reasonably expected to be accompanied by movement on the other." In some cases, the geologic evidence of past activity at or near the ground surface along a particular fault may be obscured at a particular site. This might occur, for example, at a site having a deep overburden. For these cases, evidence may exist elsewhere along the fault from which an evaluation of its characteristics in the vicinity of the site can be reasonably based. Such evidence shall be used in determining whether the fault is a capable fault within this definition.	ANS-2.19-1989 ANS-2.7-1982
capable of measurement	Condition where the instrument system (i.e., sensor to recorded data) is within the channel accuracy specified in this standard.	ANS-3.11-2000
capability	SSC ability to maintain requirements to meet top-level regulatory criteria (TLRC) and quantitative health objectives (QHOs).	ANS-53.1-2011
capacity factor	The capacity factor is defined as the energy actually supplied by a plant in a given time interval, divided by the product of the design power and the time interval. The capacity factor may be used in assessing the annual absorbed dose, provided the principal sources are directly related to capacity.	ANS-6.6.1-2015
capillary zone	The region above the water table where pores are saturated but where the water gauge pressure is negative; also called the tension-saturated zone.	ANS-2.17-2010
categorization (safety)	For nuclear power plants, the categorization into a limited number of safety categories of the functions that are required for fulfilling the main safety functions in different plant states, including all modes of normal operation, on the basis of their safety significance [3].[4]	ANS-30.3-2022
cell	A unit for storage of an individual fuel assembly. It is a subassembly of a storage rack.	ANS-57.2-D92 ANS-57.3-2018 ANS-57.2-1999
cell and supercell	The word “cell” denotes one or more reactor components with associated coolant (and possibly additional moderator and structural material) that, for computational purposes, are assumed to form a spatially repeating array in the reactor. The simplest example of a cell is the “pin cell” in which a single fuel rod or pin is surrounded by coolant (e.g., light water, heavy water, or sodium). Another example is a bundle of fuel rods cooled by heavy water within a housing, surrounded by a heavy water moderator space. More complex geometric configurations are also used for some applications. These are often referred to as “supercells,” or sometimes “(fuel) assembly cells,” although the exact definition of the term varies greatly between reactor types and is even somewhat subjectively defined for a particular reactor type. Supercells, in the context of this standard, represent more complex cell configurations that involve a collection of contiguous cells forming an assumed repeating array within the reactor, or augmented cells incorporating additional regions to serve as a computational artifice, e.g., to account for significant spectrum effects due to compositions outside the cell, or cell configurations including a reactivity device in addition to fuel, coolant, and moderator.	ANS-19.3-2011 ANS-19.3-2022

[4] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
census block	The smallest area for which the United States collects population data. Census blocks are bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads. Generally, census blocks are small in area—for example, a block in a city bounded on all sides by streets, but census blocks in suburban and rural areas can be large. In remote areas, census blocks can encompass hundreds of square miles. Census blocks cover the United States and its territories. Census blocks nest within all other tabulated Census Bureau geographic units and are the basis for all tabulated data.	ANS-2.6-2018
census block group	A statistical division consisting of one or more census blocks generally defined to contain between 600 and 3000 people.	ANS-2.6-2018
Census Bureau geographic unit	The term means any of the following: block, block group, county, county equivalent, census county divisions, census tract, enumeration district, incorporated places (e.g., cities or villages), minor civil division (e.g., town or township), or state.	ANS-2.6-2018
census tract	A small, relatively permanent statistical subdivision of a county delineated by a local committee of census data users to provide a stable set of geographic units for the presentation of statistical data. Census tracts nest within counties, and their boundaries normally follow visible features but may also follow legal geographic boundaries.	ANS-2.6-2018
central alarm station (CAS)	A continuously manned area, which is designated a vital area, and which functions as the primary location for monitoring the security system operation.	ANS-3.3-1988
centroid	Arithmetic mean position of all the points in a plane figure or two-dimensional shape. The definition extends to any object in n-dimensional space, where its centroid is the mean position of all points in all coordinate directions.	ANS-2.6-2018
centroid method	A method of apportioning population data whereby the entire population of a census unit (e.g., census block) is assumed to be located at the centroid of the census unit (e.g., census block).	ANS-2.6-2018
certification	Documented confirmation by an individual or group of the successful completion of a qualification program.	ANS-3.1- 2014
certified reference material	A reference material, one or more of whose property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation that is issued by a certifying body [e.g., National Institute of Standards and Technology (NIST), International Atomic Energy Agency].	ANS-41.5-2012
certified standard design	See “standard design certification”.	ANS-2.2-2016
CEUS (Central and Eastern United States)	That portion of the United States east of the Rocky Mountains (east of approximately 105° W longitude).	ANS-2.27-2020 ANS-2.29-2020
CEUS (Central and Eastern United States)	Non-preferred variation 1 - That portion of the United States east of the Rocky Mountains (approximately the 104th West parallel.	ANS-2.27-2008 ANS-2.29-2008
CEUS (Central and Eastern United States)	Note: The 2023 review team suggests that this definition be removed because it is a common term.	
channel	Electrical circuitry used to achieve control or monitoring of a train of safety equipment.	ANS-58.6-1992
channel	Variant form.	ANS-4.1 ANS-6.8.2-1986
channel calibration (primary calibration)	The determination, and, if required, adjustment of an instrument, sensor, or system such that it responds within a specified range to an acceleration, velocity, or displacement input, as applicable, or responds as intended to the stimulus provided by a known input.	ANS-2.2-2016

Term	Description	Reference/Source
channel check	The qualitative verification of the functional status of the time-history acceleration sensor. This check is an "in-situ" test and may be the same as a channel functional test.	ANS-2.2-2016
channel functional test (secondary calibration)	The determination, without adjustment, that an instrument, sensor, or system responds to a known input of such character that it will verify that the instrument, sensor, or system is functioning in a manner that can be calibrated.	ANS-2.2-2016
charcoal adsorption system	A processing system incorporating activated charcoal at ambient or reduced temperatures for adsorption and decay of radioactive gases.	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
chemical attack	Detrimental influence due to chemical reaction.	ANS-58.3-1992 ANS-58.3-1998
chemical wastes	Liquid radioactive wastes having high conductivity, (i.e., greater than 200 microsiemens), variable insoluble solids content, variable radioactivity content and not containing soaps, detergents, oils, or similar organic materials.	ANS-55.6-1993 ANS-55.6-1999
circuit failure mode	The manner in which a conductor fault is manifested in the circuit. Circuit failure modes include loss of motive power, loss of control, loss of or false indication, open circuit conditions (e.g., a blown fuse or open circuit protective device), and spurious operation.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
circulating activity	Activity from radioactive isotope fission product species circulating in the primary coolant helium, such as noble gases and volatile iodine. (In a depressurization event like offset rupture, activity in the helium primary coolant is more easily released and dispersed.)	ANS-53.1-2011
class (or lung class or inhalation class)	A classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which apply to a range of clearance half-times: for Class D (days) of less than 10 days; for Class W (weeks), from 10 to 100 days; and for Class Y (years), greater than 100 days.	ANS-15.11-2016
Class A, B, and C waste	See Code of Federal Regulations (CFR) Title 10, “Energy,” Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste” [3].[5]	ANS-55.1-2021
classification (safety)	Classification of SSCs based on their nuclear safety function.	ANS-30.3-2022
classified	Designation applied to an item that has been assigned a safety and, if applicable, a pressure integrity classification.	
clean lube oil tank	The clean lube oil storage tank provides a reserve supply of lube oil for all diesel generator engines.	ANS-59.52-1993
clean steam	Steam generated by the vaporization of condensate.	ANS-55.1-1992 ANS-55.4-1993
clean steam	Non-preferred variation 1 - Steam generated by the vaporization of non-radioactive demineralized water.	ANS-55.4-1999
cliff edge effect	An instance of a sudden large variation in plant conditions in response to a small variation in an input (e.g., change in flood height, grid perturbation based on voltage or frequency exceeding a breaker trip set point).	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
closed cycle circulating water system	A system in which the same water, with the exception of that lost by evaporation, drift, leakage, and blowdown; which is replenished by makeup, is used repeatedly in the circulating water system.	ANS-2.13-79

[5] Code of Federal Regulations, Title 10, “Energy,” Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste,” U.S. Nuclear Regulatory Commission.

Term	Description	Reference/Source
closed loop boundary inside containment	A system is closed inside the containment if it meets all thefollowing: it does not communicate with either the reactor coolant system or the reactor containmentatmosphere; and its safety class is the same as for engineered safety systems; and it will withstand external pressure greater than containment design pressure; and it will withstand accident temperature, radiation, pressure, and fluid velocity transients and theresulting environment, including internal thermal expansion; and it is missile-, pipe whip–, and jet-protected as applicable. For closed loop boundaries inside containment, the boundary includes the main flow path and branch connections that are in service post-accident. Branch connections that are not required post-accident are in the closed loop boundary up to the first normally closed isolation valve or valve capable of automatic closure off the main flow path. The boundary for test, vent, and drain valves off the main flow path up to the first CIV extends to the second valve. The boundary for test, vent, and drain valves off the main flow path beyond the first CIV extends to the first valve.	ANS-56.8-2020
closed loop boundary outside containment	A system is closed outside the containment if it meets all thefollowing: it does not communicate with the atmosphere outside the containment; and its safety class is the same as for engineered safety systems; and its internal design pressure is greater than the maximum expected internal post-loss of coolant accident(post-LOCA) pressure; and it will withstand accident temperature, radiation, pressure, and fluid velocity transients and theresulting environment, including internal thermal expansion; and it is missile-, pipe whip–, and jet-protected as applicable. For closed loop boundaries outside containment, the boundary includes the main flow path and branch connections that are in service post-accident. Branch connections that are not required post-accident are in the closed loop boundary up to the first normally closed isolation valve or valve capable of automatic closure off the main flow path. The boundary for test, vent, and drain valves off the main path up to the first containment isolation valve (CIV) extends to the second valve. The boundary for test, vent, and drainvalves off the main flow path beyond the first CIV extends to the first valve.	ANS-56.8-2020
closed system	A piping system which penetrates the containment and is a closed loop either inside or outside the containment. Under normal operating conditions or loss-of-coolant accident conditions for closed systems inside containment, the fluid in the system does not communicate directly with either primary coolant or containment atmosphere.	ANS-56.2-84
code	A uniquely identifiable sequence of instructions and data that is part of a computer software module ~e.g., main program, subroutine, and macro.	ANS-10.7-2013 ANS-10.8-2015
coexistent hazard	A hazard that is secondary to and/or concurrent with another hazard.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
cohort	A subset of the off-site population that mobilizes for, or moves differently from others, in the modeling of emergency response actions.	ASME/ANS RA-S-1.3-2017
coincident occurrence	An occurrence that takes place simultaneously with an initiating occurrence but is independent of the initiating occurrence. A coincident occurrence is not the single failure or common cause failure defined elsewhere herein.	ANS-50.1-93
cold shutdown	The condition in which the reactor is sub-critical and the reactor coolant system average temperature is below the required temperature to permit major maintenance, consistent with technical specification operational limits.	ANS-58.14-93
cold shutdown	Variant form.	ANS-51.1/52/1-1993 ANS-58.6-92
cold shutdown	Non-preferred variation 1 - A set of POSs during which the reactor is subcritical with the primary system depressurized at relatively low	ANS/ASME-58.22-2015

Term	Description	Reference/Source
	temperature (<200ºF) and the reactor vessel intact (head on), with heat removal via RHR shutdown cooling. Cold shutdown is defined by Technical Specifications (Mode 5 for PWRs, Mode 4 for BWRs) for the condition with the primary temperature below 200ºF and with the reactor vessel head tensioned.	
collective design dose equivalent	The design dose equivalent of a group obtained by summing the anticipated dose equivalents of the individuals comprising that group.	ANS-6.7.1-1985
collective dose	The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation. The units of collective dose are the person- rem and the person-sievert.	ANS-15.11-2016
collective qualifications.	Sum of individual qualifications for the people of that functional level in the organization.	ANS-3.1-1987
collocated worker	For the purposes of this standard, a collocated worker is a site worker outside the immediate facility and normally located there for an 8-hour day. A typical distance to consider is 100 meters from a facility (building perimeter) or estimated release point.	ANS-58.16-2014
combined event	An event consisting of the simultaneous occurrence of two or more natural or external man-made hazards.	ANS-2.12-1978
combined standard uncertainty (CSU)	The standard (1σ) uncertainty of a calculated result obtained by propagating the standard uncertainties of a number of input values of the measurement process. The value is sometimes referred to as total propagated uncertainty (TPU).	ANS-41.5-2012
combustible material	Material that does not meet the definition of non-combustible or limited combustible.	ANS-59.4-79W86
commercial codes and standards	Standards that would be used in the design of conventional or commercial industrial components or sub-components. Examples of commercial standards include the following: Power Piping, ANSI/ASME-B31.2-1989; ANSI/ASME Boiler and Pressure Vessel Code-1992, Section VIII, "Pressure Vessels," Division 1; Valves--Flanges, Threaded and Welding End, ANSI/ASME-B16.34-1988; Overhead Hoists, ANSI/ASME B30.1601987; and "Specification for Electric Overhead Traveling Cranes," CMAA-70-1988.	ANS-57.1-1992
commercial grade (C)	A procurement classification applied to an item that is intended to be used as a safety-related item and: is not subject to design or specification requirements that are unique to NRC licensed facilities or activities; and is used in applications other that NRC licensed facilities or activities; and is to be ordered from the manufacturer or supplier on the basis of specifications set forth in the manufacturer's published product description (e.g., catalog). (Commercial grade items are dedicated* prior to use in a safety-related application.) (See 10 CFR 21.) *For guidance on the dedication of commercial grade items, see EPRI NP 5652, "Guideline for the Utilization of Commercial Grade Items in Nuclear Safety-Related Applications" (NC16-07) and NRC Generic Letters 89-02 and 91-05. (ANS-50.1). Note: The last two paragraphs are effectively requirements and need to be deleted from the definition and moved to the body of the standard.	
	An item satisfying (a), (b), and (c) below: not subject to design of specification requirements that are unique to nuclear facilities; used in applications other than nuclear facilities; is to be ordered from the manufacturers' published product description (e.g., catalog)	ANS-58.14-92 ANS-7-4.3.2-92
commercial grade item (ASME NQA-1)	Variant form.	ANS-7.10-93
commercial grade dedication	A process of evaluating, including testing, and accepting commercial grade items to ensure their suitability for safety application.	ANS-58.14-92 ANS-7-4.3.2-92
commercial-grade supplier performance	Performance to commercial-grade contract specifications not nuclear safety quality specification.	ANS-53.1-2011

Term	Description	Reference/Source
commercial nuclear power plant	A commercial electrical generating facility using a nuclear reactor as its heat source to provide steam to a turbine generator.	ANS-2.17-2010
commercial standards	It is preferred that the term (commercial codes and standards) and the associated definition be used in ANS standards.	
commercial standards	Non-preferred variation 1 - Standards that would be used in the design of conventional or commercial industrial facilities in the vicinity of an Independent Spent Fuel Storage Installation (ISFSI). Examples include ANSI/ACI 318-1989, ANSI/ASME B31.1-1989, ANSI/API 620.-1986, and ANSI/API 650-1988].	ANS-57.9-1992
commitment period	Length of time used to calculate the dose accrued to individuals from intake of radioactive sources (e.g., ingestion, inhalation).	ASME/ANS RA-S-1.3-2017
committed dose equivalent ($H_{T,50}$)	The dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake. The units of committed dose equivalent are the rem and the sievert (Sv).	ANS-15.11-2016
committed effective dose	The sum of the products of the committed organ or tissue equivalent doses and the appropriate tissue weighting factors (w_T), where τ is the integration time in years following the intake. The commitment period is taken to be 50 years for adults and to age 70 years for children.	ANS-10-15
committed effective dose equivalent ($H_{g,50}$)	The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues ($H_{g,50} = \Sigma w_T H_{T,50}$). The units of committed effective dose equivalent are the rem and the sievert (Sv).	ANS-15.11-2016
common-cause events	An event that adversely impacts the performance of two or more components during a short time interval as a result of a single shared cause.	ANS-53.1-2011
common cause failure	Multiple failures of structures, systems, or components (SSCs) as a result of a single phenomenon.	ANS-51.1/52.1-1983 ANS-30.3-2022
common cause failure	Non-preferred variation 1 - Multiple failures attributable to a common cause.	ANS-54.1-1989
common cause failure	Non-preferred variation 2 - A failure of two or more components during a short period of time as a result of a single shared cause.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
commonly usable domain	Within any zone of the plant, it includes all areas of the zone that can be physically reached by an individual without the use of portable ladders, scaffolding, or other special equipment.	ANS-6.7.1-1985
community distribution	For any specific expert judgment, the distribution of expert judgments of the entire relevant (informed) technical community of experts knowledgeable about the given issue.	ASME/ANS RA-Sb–2013 ASME/ANS RA-1.4-2021 ASME/ANS RA-S-1.1-2022
compactible solid waste	Solid waste that can be compressed by applying external pressure less than 1000 psi.	ANS-40.37-2009
comparable facility	A commercial power reactor of the same type, e.g. a boiling water reactor (BWR) design, regardless of vendor or vintage within that reactor design type.	ANS-3.1-2014
complementary cumulative distribution function	Complementary cumulative distribution function (CCDF): complement of cumulative distribution function; plot of consequence parameter being calculated against its frequency of exceedance.	ASME/ANS RA-S-1.4-2021
complementary cumulative distribution function	Non-preferred variation 1 - Plot of consequence parameter being calculated against its probability or frequency of exceedance (commonly referred to as a CCDF).	ASME/ANS RA-S-1.3-2017
complementary cumulative distribution function	Non-preferred variation 2 - Complement of cumulative distribution function.	ASME/ANS RA-S-1.4-2013
complex flow	A non-uniform atmospheric flow field.	ANS-2.15-2013
complex terrain	Variations in terrain elevation within the study region that generate flow features that significantly influence the transport and diffusion of pollutants in the air.	ANS-2.15-2013

Term	Description	Reference/Source
compliance verification	Compliance verification is the process of determining whether the data are complete, correct, consistent, and in compliance with established standards or written analytical specifications [e.g., statement of work (SOW), contract, project plans]. The process of compliance verification is independent of validation. The compliance verification is conducted at various levels both internal and external to the data generator. The output of verification is a data set ready for data validation.	ANS-41.5-2012
component	An item that performs a specific function within a system (usually has a component-level plant unique identification code) and can be either an assembly of interconnected parts or a single part.	ANS-58.14-2011 ANS-58.16-2014
component	Non-preferred variation 1 - An item in a nuclear power plant, such as a vessel, pump, valve, or circuit breaker.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
composite variability	The composite variability includes the randomness uncertainty (β_R) and the modeling and data uncertainty (β_U). The logarithmic standard deviation of composite variability, β_C, is expressed as $(\beta_R^2 + \beta_U^2)^{1/2}$.	ASME/ANS RA-S-1.1-2022
composite variability	Non-preferred variation 1 - The composite variability includes the aleatory (randomness) uncertainty (β_R) and the epistemic (modeling and data) uncertainty (β_U). The standard deviation of composite variability β_C is expressed as $\sqrt{\beta_R^2 + \beta_U^2}$.	ASME/ANS RA-S-1.4-2021
composite variability	Non-preferred variation 2 - The composite variability includes the aleatory (randomness) uncertainty (β_R) and the epistemic (modeling and data) uncertainty (β_U). The logarithmic standard deviation of composite variability, β_c, is expressed as $(\beta_R^{\ 2} + \beta_U^{\ 2})^{1/2}$. (Note: The subscripts and superscripts are needed for clarity).	ASME/ANS RA-Sb–2013
computed values	Parameters representing the state of reference unit systems or components that the simulator mathematical models calculate.	ANS-3.5-2009 ANS-3.5-2018
computer code system	A calculational method, computer hardware and software (e.g., operating system) that impacts the calculational results.	ANS-8.24-2017
computer program	It is preferred that the term (computer software) and the associated definition be used in ANS standards.	
computer program	Non-preferred variation 1 - A schedule or plan that specifies actions that may or may not be taken, expressed in a form suitable for execution by a programmable digital computer.	ANS-7-4.3.2-1990-W2000
computer software	A set of ordered instructions and data that specify operations in a form suitable for execution by a digital computer.	ANS-10.7-2013
computer software	Non-preferred variation 1 - Computer code and associated documentation and data.	ANS-10.8-2015
computer system	A system that includes computer hardware, software, firmware, and interfaces.	ANS-10.7-2013
concealed fault	A fault that once ruptured to the earth's surface but that has subsequently been buried by deposition of material atop the surface trace during the period between surface ruptures.	ANS-2.27-2008 ANS-2.27-2020
concentration	The relative amount of a particular gas within a gas mixture may be expressed in terms of a volumetric concentration. Volumetric concentration is the ratio of the partial volume of the gas considered to the total gases comprising the volume mixture, XG = NG/NTG Where; XG = volumetric concentration of gas NG = volume of gas (SCM) NTG = Total volume of gases (SCM)	ANS-56.1-85
concentration	Non-preferred variation 1 - The quantity of radioactive material stated in terms of activity (or mass) per unit of volume or mass of a medium.	ANS-41.5-2012
conceptual site model (CSM)	An abstract, qualitative representation of the relevant flow and transport FEPs that affect subsurface radionuclide transport at the site. The CSM is best presented as a set of two-dimensional graphics (plan and profile)	ANS-2.17-2010

Term	Description	Reference/Source
	or a three-dimensional graphic (isometric), which qualitatively present the interrelationships among the FEPs, along with supporting text.	
concurrent hazard	A hazard that occurs simultaneously with the occurrence of another hazard as a result of a common cause (e.g., high winds concurrent with storm surge event caused by a hurricane or a moderate wind event concurrent with a large rainfall event).	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
concurrent hot short	The occurrence of two or more hot shorts such that the shorts overlap in time (e.g., a second hot short occurs before a prior hot short has self-mitigated or has been mitigated by an operator action).	ASME/ANS RA-Sb–2013
condemnation	Permanent denial of the use of land or buildings following contamination by radioactive material released from a facility.	ASME/ANS RA-S-1.3-2017
condition adverse to quality	An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and non-conformances. A significant condition adverse to quality is one which, if uncorrected, could have a serious effect on safety or operability.	ANS-3.2-1993
condition monitoring	A process of monitoring parameters or observing general conditions of a structure or component in order to identify a significant change in the condition that is indicative of potential failure.	ANS-3.14-2021
condition restoration time	The maximum time allowed to restore process parameters, set points for automatic protection devices, or inoperable equipment to within the specified conditions.	ANS-58.4-W90
conditional core damage frequency	The frequency per year of core damage given the occurrence of a specific plant configuration at a given instant in time; e.g., a plant operating state, external hazard damage state, or a component out of service.	ANS/ASME-58.22-2015
conditional core damage probability (CCDP)	The probability of core damage given the occurrence of a specific plant configuration (e.g., a plant operating state, external hazard damage state, or a component out of service) over a limited period of time.	ANS/ASME-58.22-2015 ANS-30.3-2022
conditional large early release probability (CLERP)	The probability of large early release given the occurrence of a specific plant configuration (e.g., a plant operating state, external hazard damage state or a component out of service) over a limited period of time.	ANS/ASME-58.22-2015
conditional license.	A license issued by the NRC with specific restrictions to accommodate and adequately control identified physical or mental health situations that do not meet the minimum requirements of this standard.	ANS-3.4-2013
conduction cooldown events, pressurized or depressurized	An event involving a loss of forced circulation heat removal in which core heat removal is accomplished via thermal conduction, convection, and radiation heat transfer from the reactor core to the RPV walls and thermal radiation and convection heat transfer to the reactor cavity and/or reactor cavity cooling system (RCCS). Conduction cooldown may occur with the reactor pressurized or depressurized and with or without operation of the RCCS.	ANS-53.1-2011
confidence level	The probability that the true leakage rate does not exceed the upper confidence limit (UCL).	ANS-56.8-2002
confinement	A safety function that involves the retention of radioactive material, or mitigation of release, using one or more radionuclide transport barriers.	ANS-53.1-2011
confinement	Non-preferred variation 1 - The structure, system or component (SSC) provided for the purpose of controlling the release of radioactive particulate matter. It may be either a physical barrier or a high efficiency filtration system.	ANS-57.9-1992 ANS-57.10-1993
confinement	Non-preferred variation 2 - The SSC provided for the purpose of controlling the release of hazardous particulate matter. It may be either a physical barrier or a high-efficiency filtration system.	ANS-58.16-2014
confinement	Non-preferred variation 3 - Enclosure or component designed to limit the release of radioactive material. It is implied that it is not sealed.	ANS-15.11-2015
confinement system	It is preferred that the term (Confinement) and the associated definition be used in ANS standards.	
confinement system	Non-preferred variation 1 - A barrier and its associated systems, including ventilation, that are placed around an area containing	ANS-54.1-1989

Term	Description	Reference/Source
	radioactive materials to prevent the uncontrolled release of those materials.	
confining layer	A geologic unit within the saturated or unsaturated zones that has a distinctly lower hydraulic conductivity than the underlying and overlying geologic units; also called an aquitard when in the saturated zone.	ANS-2.17-2010
consensus method/model	A method or model that the regulatory body has used or accepted for the specific risk-informed application for which it is proposed.	ASME/ANS RA-S-1.1-2022
consequence	The effects of a radiological release to the atmosphere that can include doses to an individual or population, health effects or individual risk of health effects, contaminated land areas, and economic costs.	ASME/ANS RA-S-1.3-2017 ANS-30.3-2022
consequence assessment	Evaluation of the radiological consequences of an accident. In this standard, consequences are assessed in terms of integrated radiological dose exposure to an individual (e.g., the public) at the exclusion area boundary (EAB).	ANS-53.1-2011
conservative	The application of uncertainties in the values of analysis input parameters, analysis models, or results in a manner which will tend to ensure the adequacy of structures, systems, or components (SSCs) to perform their intended function.	ANS-56.10-1987
conservative	Variant form.	ANS-56.4-83
conservative	Non-preferred variation 1 - Use of information (e.g., assumptions) such that the assessed outcome is meant to be less favorable than the expected outcome.	ASME/ANS RA-S-1.1-2022
conservative	Non-preferred variation 2 - Use of information (e.g., assumptions) such that the assessed outcome is meant to be less realistic in a cautious manner as compared to the expected outcome.	ASME/ANS RA-S-1.4-2021
consumable	Materials or supplies consumed or expended during installation, operation, testing, maintenance or repair of plant structures, systems components or parts such as: • items consumed or expended during the operation of components or routinely replaced during maintenance (e.g., diesel fuel, o-rings, gaskets, hydraulic fluid, lubricating oil, grease, packing, and paint); • items consumed or expended in maintaining the chemical control of system process fluids (e.g., resins, additive chemicals and gases such as boron, pH buffer, bromophenol blue, and nitric acid); or • items consumed or expended during maintenance, installation, and modification activities that are generally used throughout the plant and might not be included in the above (e.g., solvents, layout fluid, welding rods, lead-testing fluid, tape, and penetrant testing materials).	ANS-51.1/52.1 ANS-58.14-2011
container	The primary receptacle forming an isolation boundary between the contained waste and the environment.	ANS-55.1-1992 ANS-55.1-2021
containment	It is preferred that the term (Primary containment) and the associated definition be used in ANS standards. See “primary containment” and “secondary containment.”	ANS-2.2-2016
containment	See also, primary reactor containment.	ANS-56.1-1985 ANS-56.5-1987 ANS-56.10-1987
containment	Non-preferred variation 1 - A physical barrier to limit radioactive release to the environment associated with zero leakage and testing on the containment to assure its function. Containments are used for more than reactors. They also are used for shipping and storage of radioactive materials. See ASME B&PVC, Section III, Division 3.	
containment	Non-preferred variation 2 - For the purposes of this standard, the principal enclosure that acts as a leak-tight barrier, to prevent the release of radioactive material from the SSC containing the radioactive material under DBE conditions.	ANS-58.16-2014

Term	Description	Reference/Source
containment	Non-preferred variation 3 - Enclosure or component designed to prevent the release of radioactive material. It is implied that it is sealed.	ANS-15.11-2016
containment atmosphere	Free volume enclosed by the primary reactor containment. Note: use of the term “primary containment“ is recommended	ANS-56.1-1985 ANS-56.2-1984
containment atmosphere mass weighted average temperature (T)	The temperature derived from weighing each temperature sensor reading by the mass it represents.	ANS-56.8-2002
containment boundary	A physical boundary capable of preventing or limiting the escape of radioactivity which may be released into the primary containment. This boundary may be different than that of the primary containment as defined in ANS-51.1-1983 and ANS-52.1-1983. For example, closed systems outside of the primary containment may serve as a boundary.	ANS-58.12-1985
containment bypass	A direct or indirect flow path that may allow the release of radioactive material directly to the environment bypassing the containment.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
containment capacity analysis	Deterministic analysis of a containment structure to determine its capacity (or capability) to withstand defined internal or external loads, or a specific challenge to its integrity.	ASME/ANS RA-S-1.2-2015
containment challenge	Severe accident conditions (e.g., plant thermal hydraulic conditions or phenomena) that may result in compromising containment integrity. These conditions or phenomena can be compared with containment capability to determine whether a containment failure mode results.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
containment event tree (CET)	A logic diagram that begins with a Level 1 PRA end state (e.g., accident sequence or plant damage) and progresses through a series of branches: (1) that represent expected system or operator performance that either succeeds or fails; (2) that delineate the chronological and physical progression of core damage; (3) that characterize containment response; and, (4) that represent processes affecting fission product release to the environment. The end states of the CET can be associated with release categories.	ASME/ANS RA-S-1.2-2015
containment failure	Loss of integrity of the containment pressure boundary from a core damage accident that results in unacceptable leakage of radio nuclides to the environment.	ASME/ANS RA-Sb-2013 ANS-30.3-2022 ASME/ANS RA-S-1.1-2022
containment failure mode	The manner in which a containment radionuclide release pathway is created. It encompasses both those structural failures of containment induced by containment challenges when they exceed containment capability and the failure modes of containment induced by human failure events, isolation failures, or bypass events such as interfacing systems LOCA.	ASME/ANS RA-Sb-2013 ASME/ANS RA-S-1.1-2022
containment foundation	The foundation of the containment or reactor building including adjacent foundations if they are constructed integrally with the containment foundation.	ANS-2.2-2016
containment integrated leakage rate test (CILRT)	The leakage rate test performed on the primary reactor containment by simulating some of the conditions (e.g., penetrations vented, drained, flooded, or in operation) that exist during a design-basis accident (DBA). The CILRT consists of the following phases or activities: inspecting the primary containment; pressurizing the primary containment system; stabilizing the containment atmosphere; conducting a Type A test; conducting a verification test; depressurizing the primary containment system. Note: Use of the term “primary containment” is recommended (ANS-56.8-2020)	ANS-56.8-02
containment isolation	Closure of mechanical barrier(s) in appropriate fluid systems penetrating the containment which could otherwise represent open paths to the environment for fission products from inside the containment.	ANS-56.2-1984

Term	Description	Reference/Source
containment isolation valve	A valve that is relied upon to perform a containment isolation function.	ANS-56.2-1984 ANS-56.8-2002 ANS-56.8-2020
containment leakage rate test program	The comprehensive testing of the primary containment system that includes Type A, Type B, Type C and leakage rate verification tests.	ANS-56.8-2002 ANS-56.8-2020
containment performance	A measure of the response of a nuclear plant containment to severe accident conditions.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
containment pressures tests	Those periodic and one time tests, including the integrated leak rate test (ILRT) and structural integrity tests (SITs), conducted to verify containment design leakage and structural integrity.	ANS-56.6-1986
containment, primary containment, or reactor containment	It is preferred that the term (Primary containment) and the associated definition be used in ANS standards. For the purpose of this standard, a structure or vessel that encloses the reactor vessel and other components of the reactor coolant pressure boundary and which provides an essentially leak-tight barrier against the uncontrolled release of fission products to the environment.	ANS-56.2-1984
contamination	Occurrence of material in a location where it is not considered indigenous to its surroundings.	ANS-2.17-2010
contamination	Non-preferred variation 1 - A radioactive substance dispersed in materials or places where it is undesirable.	ANS-15.11-2016
continuous communications	The capacity, through the availability of adequate equipment, to transmit information from one point to another at any given time.	ANS-3.3-1988
continuous leakage monitoring system	A permanently installed, on-line pneumatic measurement system that continuously monitors the leakage rate of containment system penetrations at a pressure not less than P_a.	ANS-56.8-2002 ANS-56.8-2020
continuous occupancy	State in which operating personnel could be required to be present continuously during the accident duration (e.g., the control room).	ANS-5.6.1-1990
Control Air System (CAS)	Instrument quality air, nitrogen or other inert gas. ()	ANS-59.3-1992
Control Air System (CAS)	Non-preferred variation 1 - Variant form.	ANS-59.3-1983
control components	Items that control coolant flow or reactivity and must be handled or shifted in position during fuel loading or refueling. Examples are: control rods, flow limiting orifices, burnable absorbers.	ANS-57.2-1992 ANS-57.3-2018 ANS-57.2-1999
control components	Non-preferred variation 1 - Variant form.	ANS-57.1-1992
control components change mechanism	Handling equipment used to move control components from one fuel assembly or core location to another or to a temporary storage location.	ANS-57.1-1992
control height	The term control height is a guidance height of two to three meters above the floor as used by station radiation protection personnel.	ANS-6.3.1-1987
control Raschig rings (control sample)	Raschig rings that are periodically removed from service for scheduled measurements, and then are returned to service after these short test periods.	ANS-8.5-1996
control rod (rod)	One or more reactivity control members mechanically attached to a single fixture.	ANS-19.6.1-2019
control rod (rod)	Non-preferred variation 1 - One or more control members mechanically attached to a single fixture. For the purposes of this standard, the length of the neutron absorber material in the control member is nearly equal to the length of the fuel in the core, i.e., “full length.” This definition excludes “partial-length” control rods.	ANS-19.11-2017
control rod group (bank)	One or more control rods that are inserted or withdrawn simultaneously during normal operation.	ANS-19.11-2017
control transfer device	A device that is used to select and isolate the location of control and eliminates the potential for simultaneous control from the Alternate Shutdown Station and the control room.	ANS-58.6-92
control volume	The smallest geometric subdivision for which thermodynamic states are computed.	ANS-56.4-1983
controlled access	Access to areas that are controlled for purposes of radiation protection.	ANS-5.6.1-1990

Term	Description	Reference/Source
controlled access	Variant form.	ANS-6.7.1-85
controlled area	That portion of a nuclear facility, including outside yard areas, enclosed equipment, systems, and facilities which may contain radioactive material by definition or design. Controlled area does not normally, but may temporarily, include portions of secondary system areas of the plant.	ANS-55.6-1993 ANS-55.6-1999
controlled area	Non-preferred variation 1 - An area, outside of a restricted area but inside the site boundary, access to which can be limited by the owner/operator or licensee for any reason.	ANS-15.11-2016
controlled condition	The state of the plant that is achieved when the "subsequent action" portion of the plant emergency procedures is implemented and the critical safety functions are being accomplished or maintained by the control room operator.	ANS-4.5
controlled parameter	A parameter that is kept within specified limits.	ANS-8.1-2014
controlled shutdown and cooldown	A shutdown and cooldown condition in which the fuel and reactor coolant pressure boundary conditions might exceed technical specification limits and implementation of plant emergency procedures might be required.	
controlled manual shutdown	A POS evolution during which the reactor power level is decreased from full power to low power and finally to zero power with control rods inserted.	ANS/ASME-58.22-2015
controllers	Personnel who direct the conduct of the scenario.	ANS-3.8.4-1995
controls	Apparatus and mechanisms, the manipulation of which, directly affect the reactivity, power level, cooling, containment, and other requirements for safe operation of the nuclear reactor.	ANS-3.4-1987
controls	Non-preferred variation 1 - When used with respect to a nuclear reactor means apparatus and mechanisms the manipulation of which directly affects the reactivity or power level of the reactor.	ANS-15.4-2016
convective eddy formation	Movement of air parcels under the influence of density differences (e.g., buoyancy).	ASME/ANS RA-S-1.3-2017
conversion	Modification of existing software to enable it to operate with similar functional capability in a different hardware/software environment.	ANS-10.2-1988
coolable core geometry	A geometry that maintains sufficient core cooling to prevent extensive fuel melting and relocation.	ANS-54.1-2020
cooling water	Water provided to transfer the heat absorbed by the containment heat removal system to the ultimate heat sink.	ANS-56.5-1987
cooling time	The time following fuel irradiation during which radioactive decay results in changes in fuel composition.	ANS-8.27-2015
Cooperative Observer Program	National program of the NWS for collection and reporting of weather data from volunteer observers in the United States (i.e., COOP Network).	ANS-2.21-2022
core damage	Any physical disruption of the nuclear core including fuel, fission products, and containing geometry consisting of cladding, structure, and flow alignment that could release significant amounts of radioactivity from fission products by being undercooled or overreactive.	ANS-53.1-2011
core damage	Non-preferred variation 1 - Any physical disruption or change in radionuclide retention in the fuel of the nuclear core including fuel, fission products, and containing geometry consisting of cladding, structure, and flow alignment that could release significant amounts of radioactivity from fission products by being undercooled or overactive.	ANS-30.3-2022
core damage	Non-preferred variation 2 - Uncovery and heatup of the reactor core to the point at which prolonged oxidation and severe fuel damage are anticipated and involving enough of the core, if released, to result in offsite public health effects.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
core damage frequency (CDF)	Expected number of core damage events per unit of time.	ASME/ANS RA-Sb–2013 ANS-30.3-2022 ASME/ANS RA-S-1.1-2022
core damage frequency (CDF)	The sum of the frequencies of those accidents that result in heat-up of the reactor core to the point at which extensive fuel melting and relocation are anticipated.	ANS-54.1-2020

Term	Description	Reference/Source
	core recovery. An expression in percentage of core recovered during drilling operation. (ANS-2.19-1989) (ANS-2.11-1978) $CR \text{ in } \% = 100 \times \frac{\text{total length of core recovered}}{\text{length of core run}}$	
core release fraction	The fraction of the total core radioactive inventory released during an accident with similar chemical or physical properties (e.g., noble gases, halogens).	ANS-5.6.1-1990
corner frequency of a filter	The frequency point where the output signal is attenuated to a given proportion of the power of the input signal value. It usually corresponds to the input signal attenuated to 0.707 of the input signal value.	ANS-2.10-2017
correction factor, shield-tissue interface	A correction factor to be applied to the basic infinite medium exposure buildup factor to correct for the scattering in a tissue phantom after emerging from a shield.	ANS-6.4.3-91
corrective actions	Those measures taken to terminate or mitigate the consequences of an emergency at or near the source of the emergency.	ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.6-1995
corrective actions	Non-preferred variation 1 - Variant form.	ANS-3.7.2-1979 ANS-3.2-1993
corrective actions	Non-preferred variation 2 - Activities undertaken to manage or remediate the occurrence or movement of subsurface radionuclides.	ANS-2.17-2010
coseismic	A term that relates an occurrence of a phenomenon to the simultaneous occurrence of earthquake waves.	ANS-2.27-2020
coseismic	Non-preferred variation 1 - A term that relates an area or occurrence of a phenomenon to the simultaneous arrival of earthquake waves.	ANS-2.27-2008
coseismic deformation	Movement of the ground surface due to fault displacement during an earthquake.	ANS-2.30-2015
cover gas	Gas in liquid storage tanks pressurized to prevent in-leakage of air.	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
crane	1. Auxiliary Fuel Handling Crane - a crane used for handling equipment including fuel assemblies and new fuel shipping containers. 2. Cask Crane - a crane designed for handling spent fuel shipping casks.	ANS-57.2-D92 ANS-57.2-1999
credible event	For the purposes of this standard, an event (external or internal) that must be considered because of the feasibility of its occurrence.	ANS-58.16-2014
credible passive failure	The passive failure of a piping system or single structural steel load bearing member at a discontinuity; the integrity of which has not been verified by volumetric examination (e.g., radiographic, ultra-sonic).	ANS-57.7-1992
critical area	Those areas which contain nuclear safety-related structures, systems, or components (SSCs).	ANS-59.4-70W83
critical characteristics	Important design, material, and performance attributes of an item that, once verified, will provide reasonable assurance that the item will perform its intended safety function.	ANS-53.1-2011
critical level (L_c)	The minimum measured analyte quantity or concentration (a posteriori result) required to give a stated confidence that a positive amount of the analyte is present. For this standard, the stated confidence level will be assumed to be 95%. Correspondingly, the probability of a Type I error (probability of erroneously concluding a radionuclide is detected in a sample that is blank) is set at 0.05. However, other confidence levels may be established by the MQOs. See “decision level.”	ANS-41.5-2012

Term	Description	Reference/Source
critical outcome	. A long-term, strategic goal, stated in terms of the expected results, that captures the essence of the desired end state to be achieved.	ANS-2.17-2010
critical parameters	. (1) Those parameters that require direct and continuous observation to operate the power plant under manual control. (2) Input parameters to plant safety systems.	ANS-3.5-85
critical safety functions	. Those safety functions that are essential to prevent a direct and immediate threat to the health and safety of the public. These are the accomplishing or maintaining of: reactivity control; reactor core cooling; reactor coolant system integrity; primary reactor containment integrity; and, radioactive effluent control.	ANS-4.5
critical SSC	System, Structure Component (SSC), with critical characteristics that performs critical safety functions, failure of which causes significant safety risks.	ANS-53.1-2011
critical (sub-critical) flow	A fluid flow regime in which the fluid velocity is equal to (less than) the velocity of sound in the fluid at local fluid state conditions, or which is (is not) at its maximum value with respect to some other parametric restraint.	ANS-56.4-1983 ANS-56.10-1987
critical time period	The time frame over which relevant meteorological data are evaluated to determine that a particular type of ultimate heat sink design (e.g., cooling lakes, rivers, spray ponds, mechanical draft cooling towers, and natural draft cooling towers) will be able to perform its critical function.	ANS-2.21-2012
criticality accident (accident)	The release of energy as a result of accidentally producing a self-sustaining or divergent neutron chain reaction.	ANS-8.1-2014 ANS-8.3-1997 ANS-8.6-1983 ANS-8.10-2015 ANS-8-20-1991
criticality accident (accident)	Non-preferred variation 1 - The release of energy as a result of accidental production of a self-sustaining or divergent neutron chain reaction.	ANS-8.3-2022
criticality accident (accident)	Note: The 2023 review team clarified that the term “radiation” is equivalent to the term “energy” for the purposes of defining this type of accident.	
criticality safety staff	The collection of criticality safety engineers, senior criticality safety engineers, criticality safety engineers in training, and other criticality safety technical support personnel.	ANS-8.26-2008
criticality safety staff	Non-preferred variation 1 - Specialists skilled in the techniques of nuclear criticality safety assessment and familiar with plant operations while, to the extent practicable, administratively independent of process supervision.	ANS-8.20-1991
Cross-Section Evaluation Working Group (CSEWG)	Comprising representatives from organizations participating in the cooperative effort of developing the state-of-the-art evaluated data set (ENDF, the Evaluated Nuclear Data File, currently ENDF/B-VIII.0 [2][6].) The CSEWG secretariat is the National Nuclear Data Center (NNDC) at Brookhaven National Laboratory.	ANS-19.1-2019
cross-section processing code	A computer code that converts data in ENDF-6 [2][7] format to a form that is appropriate for use in applications. A cross-section processing code performs calculations such as resonance reconstruction, Doppler broadening, and multigroup averaging.	ANS-6.1.2-2013
crud	Insoluble particulate materials in the process streams.	ANS-55.6-1993 ANS-55.6-1999

[6] D. A. BROWN et al., “ENDF/B-VIII.0: The 8th Major Release of the Nuclear Reaction Data Library with CIELO-Project Cross Sections, New Standards and Thermal Scattering Data,” Nucl. Data Sheets, 148, 1–142 (2018); https://doi.org/10.1016/j.nds.2018.02.001.

[7] CROSS SECTION EVALUATION WORKING GROUP, “ENDF-6 Formats Manual, Data Formats and Procedures for the Evaluated Nuclear Data Files ENDF/B-VI and ENDF/BVII,” CSEWG Document ENDF-102, BNL-90365-2009 Rev. 2, National Nuclear Data Center, Brookhaven National Laboratory (Dec. 2011).

Term	Description	Reference/Source
crud	Non-preferred variation 1 - Variant form.	ANS-57.10-1993
cryogenic adsorption systems	Processing systems utilizing an adsorbent at cryogenic temperatures for separation or adsorption and decay of radio-active gases.	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
cryogenic distillation units	Equipment employing cryogenic temperature distillation for separation of noble gases from waste gas streams.)	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
CSMIP	The California Strong Motion Instrumentation Program in the California Geological Survey (CGS). The main office is in Sacramento.	ANS-2.10-2017
cumulative absolute velocity (CAV)	The time integral of absolute acceleration over the duration of the strong shaking. There is a “Standardized CAV” algorithm in EPRI TR-100082 (2) that ignores small amplitude shaking and is, therefore, more stable; it is preferred for seismic instrumentation. This quantity has been shown to be a good indicator of the damage potential of an earthquake time history.	ANS-2.2-2016
cumulative absolute velocity (CAV)	Non-preferred variation 1 - The integral of absolute acceleration over the duration of the strong shaking. The “standardized CAV” algorithm in EPRI report TR-100082, “Standardization of the Cumulative Absolute Velocity” [6], ignores small-amplitude shaking and is therefore more stable. This quantity has been shown to be a good indicator of the damage potential of an earthquake ground motion. In this standard, CAV means standardized CAV.	ANS-2.10-2017
cumulative absolute velocity (CAV)	Note: EPRI Reports should not be part of a definition unless such document is readily available at no cost.	
cumulative distribution function	Integral of the probability density function; it gives the probability of a parameter of being less than or equal to a specified value.	ASME/ANS RA-S-1.4-2013 ASME/ANS RA-S-1.4-2021
cumulative fraction leached	Sum of the fractions leached during the specimen rinse and all test intervals.	ANS-16.1-2019
cumulative fraction leached	Non-preferred variation 1 - The sum of the fractions leached during all previous leaching intervals, plus the fraction leached during the last leaching interval, using the initial amount of the species of interest present in the specimen as unity (100%) and assuming no radioactive decay.	ANS-16.1-2003
cumulative fraction leached	Note: The 2023 review team considers this definition unique to this standard.	
current value	That magnitude of a variable that is associated with the present time and is available for display with-in the response time limits of an information display channel.	ANS-4.5
cycles of concentration	The ratio of total dissolved solids (TDS) in the water in a closed cycle cooling system to the TDS in the makeup water.	ANS-2.13-1979
cyclostrophic wind	The cyclostrophic wind is the horizontal wind velocity for which the centrifugal force exactly balances the horizontal pressure gradient force. The cyclostrophic wind is a good approximation of the real wind in cases of very great wind speed and strong curvature such that the centrifugal force is clearly dominant over nonpressure gradient forces (e.g., Coriolis force). Note: Recommended change to “non-pressure” to correct typographical error	ANS-2.3-2011

D

Term	Description	Reference/Source
damage criteria	Those characteristics of the fire-induced environmental effects that will be taken as indicative of the fire-induced failure of a damage target or set of damage targets.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
damage target	See target.	ASME/ANS RA-Sb-2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
damage threshold	The values corresponding to the damage criteria that will be taken as indicative of the onset of fire-induced failure of a damage target or set of damage targets.	ASME/ANS RA-Sb-2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
damaged rod	A rod which exhibits visible evidence of structural change to the fuel cladding that would compromise the rod consolidation process or fuel confinement.	ANS-57.10-1993
damaged fuel	Fuel units that exhibit visible evidence of structural damage to the fuel rod cladding or container.	ANS-57.9-1992
damped natural wavelength	A characteristic of a wind vane empirically related to the delay distance and the damping ratio.	ANS-3.11-2015
damping	The more or less steady diminishing in time or space (or both) of the amplitude of any physical quantity.	ANS-3.11-2015
damping ratio	Ratio of the actual damping, related to the inertial-driven overshoot of wind vanes to direction changes, to the critical damping, the fastest response where no overshoot.	ANS-3.11-2015
dasymetric mapping method	A geospatial technique that distributes data that have been assigned to arbitrary boundaries, such as census blocks, using additional information, such as land use data, to apportion population by land use and cover.	ANS-2.6-2018
data	A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation or processing by a programmable digital computer.	ANS-7-4.3.2-1982
data acquisition unit (DAU)	A subsystem of the seismic monitoring system (SMS) that acquires, stores, and transmits digital data from one or more sensors. A DAU typically consists of amplifiers, an analog-to-digital converter, a storage device, telemetry, and a timing source [for instance, a global positioning system (GPS) or network time protocol].	ANS-2.2-2016
data processing	The preparation and compilation of recorded data for subsequent evaluation.	ANS-2.10-1990
data quality assessment (DQA)	The last phase of the data collection process, which consists of a scientific and statistical evaluation of the data set to assess its validity and usability. The focus of DQA is the evaluation of the data relative to their intended use.	ANS-41.5-2012
data quality objective(s) [DQO(s)]	Qualitative and quantitative statements derived from the DQO process that clarify the study objectives, define the most appropriate type of data to collect, determine the most appropriate conditions from which to collect the data, and specify tolerable limits on decision error rates. Because DQOs will be used to establish the quality and quantity of data needed to support decisions, they should encompass the total uncertainty resulting from all data collection activities, including analytical and sampling activities.	ANS-2.17-2010
data quality objective(s) [DQO(s)]	Non-preferred variation (1) The qualitative and quantitative statements that specify the type and quality of data required to support decisions for any process requiring radiochemical analysis (radioassay).	ANS-41.5-2012
data quality objective process	A systematic, strategic-planning tool based on the scientific method that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use. DQOs are the qualitative and quantitative outputs from the DQO process.	ANS-2.17-2010

Term	Description	Reference/Source
data set	Non-preferred variation (1) A reading of the values of each sensor used in the calculation of containment dry air mass.	ANS-56.8-1993 ANS-56.8-2020
data set	Non-preferred variation (2) The set of readings from all primary test instrumentation for a CILRT taken over a single scan of the data acquisition system (DAS) or CILRT software.	ANS-56.8-2002
data set	Non-preferred variation (3) A collection of microscopic cross sections and nuclear constants encompassing the range of materials and reaction processes needed for the application area of interest.	ANS-19.3-2011; R2017 ANS-19.1-2019 ANS-19.3-2022
data set	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
deaggregation	A process used to determine the contribution to the seismic hazard from potential seismic sources. The contribution is typically binned in terms of magnitude, distance, and epsilon for a range of frequencies. Epsilon is the number of standard deviations that the binned ground motion is above or below the predicted median ground motion for the given magnitude and distance.	ANS-2.29-2020
deaggregation	Non-preferred variation (1) Determination of the functional contribution of each magnitude-distance pair to the total seismic hazard. To accomplish this, a set of magnitude and distance bins are selected, and the annual frequency of exceeding selected ground motion parameters from each magnitude-distance pair is computed and divided by the total probability.	ASME/ANS RA-Sb–2013
deaggregation	Non-preferred variation (2) Process used to determine the fractional contribution of each magnitude-distance (M-D) pair or of each seismic source zone, to the total seismic hazard. To accomplish the M-D deaggregation, a set of magnitude and distance bins are selected and the annual probability of exceeding selected ground acceleration parameters from each M-D pair is computed and divided by the total probability of exceedance for all modeled earthquakes.	ANS-2.29-2008
decision level (DL) (also L_c)	The minimum measured analyte quantity or concentration (a posteriori result) required to give a stated confidence that a positive amount of the analyte is present. For this standard, the stated confidence level will be assumed to be 95%. Correspondingly, the probability of a Type I error (probability of erroneously concluding a radionuclide is detected in a sample that is blank) is set at 0.05. However, other confidence levels may be established by the MQOs.	ANS-41.5-2012
declared pregnant woman	A woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.	ANS-15.11-2016
decontamination factor (DF)	The ratio of the concentration of the radioactive material in the influent stream to its concentration in the effluent.	ANS-55.1-1992 ANS-55.6-1999ANS-55.4-1999
decontamination wastes	Liquid radioactive wastes generated by decontamination of radioactive plant components, equipment and tools other than personnel protective clothing and equipment.	ANS-55.6-1993 ANS-55.6-1999
dedicated shutdown	Systems and equipment provided specifically for maintaining the reactor in a safe shutdown condition, to compensate for a fire in one or more fire areas which could otherwise affect the safe shutdown capability.	ANS-58.6-1992
dedicated shutdown	See alternate shutdown (ANS-58.6-1992 proposed)	
deep bed plants	Those plants utilizing deep bed demineralizers in the condensate polishing system.	ANS-55.6-1993 ANS-55.6-1999
deep-dose equivalent (H_d)	Applies to external whole-body exposure, the dose equivalent at a tissue depth of 1 cm (1000 mg/cm^2). The units of deep-dose equivalent are the rem and the sievert (Sv). ()	ANS-15.11-2016
default value	The value assigned to a variable by the program when that value is not specified by the user.	ANS-10.5-1979
defense-in-depth (DID)	An approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials.	ANS-54.1-2020

Term	Description	Reference/Source
	The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer, no matter how robust, is exclusively relied upon. Defense-in-depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.	
defense-in-depth (DID)	Non-preferred variation (1) An established safety philosophy in which multiple lines of defense and safety margins are applied to the design, operation, and regulation of plants to assure that public health and safety are adequately protected. This standard focuses on those aspects of DID of interest in the design of modular helium-cooled reactors (MHRs) that include both deterministic and probabilistic elements. As used in this standard, plant capability DID is reflected in the reactor design, programmatic DID is in the requirements and regulations, and risk-informed evaluation of DID is the process of evaluating the adequacy of DID measures. Note that the NRC statement of DID is a safety philosophy that employs successive compensatory measures to prevent accidents or lessen the effects of damage if a malfunction or accident occurs. (1) The NRC's safety philosophy ensures that the public is adequately protected and that emergency plans surrounding a nuclear facility are well conceived and will work. Moreover, the safety philosophy ensures that safety will not be wholly dependent on any single element of the design, construction, maintenance, or operation of a nuclear facility. Footnote: (1) The NRC's statement of DID derives from Speech No. S-04-009, presented at the 3rd Annual Homeland Security Summit Session, "The Best-Laid Plans: A Case Study in Preparedness Planning; The Very Best-Laid Plans (the NRC's Defense-in-Depth Philosophy)," Remarks of Nils J. Diaz, Chairman, U.S. Nuclear Regulatory Commission, June 3, 2004, "Preparedness and Defense-in-Depth": http://pbadupws.nrc.gov/docs/ML0415/ML041550865.pdf (page last reviewed/updated March 29, 2012).	ANS-53.1-2011
defense-in-depth (DID)	Non-preferred variation (2) The concepts of providing access controls and multiple physical barriers to radionuclide release, successive measures to prevent an accident or mitigate the consequences of an accident, and the use of redundancy and diversity to accomplish key safety functions.	ANS/ASME-58.22-2015
defense-in-depth (DID)	Non-preferred variation (3) A hierarchical deployment of different levels of diverse equipment and procedures to prevent the escalation of AOOs and to maintain the effectiveness of physical barriers placed between a radiation source or radioactive material and workers, members of the public, or the environment, in operational states and, for some barriers, in accident conditions [3].[8]	ANS-30.3-2022
definitive care	The complete medical and surgical treatment of persons exposed or contaminated as a result of an incident involving radioactive material.	ANS-3.7.1-1992
definitive care	Variant form	ANS-3.7.1-1995
delay distance	The distance that air flowing past a wind vane moves while the vane is responding to 50% of the step change in the wind direction.	ANS-3.11-2015
demand-based initiating event	An initiating event that is linked to a specific activity as opposed to occurring randomly in time over the plant operating state duration. For example, in a PWR, the initiator "over-draining while reducing RCS level to mid-loop" that leads to a loss of decay heat removal would be considered a demand-based initiating event since the activity for drain down to mid-loophas been associated with historical over-draining events.	ASME/ANS RA-S-1.4-2021
demineralized water	Water purified by ion exchange to a quality at least equal to Type IV in American National Standard Specification for Reagent Water, ANSI/ASTM D1193-77.	ANS-57.2-1992 ANS-57.2-1999

[8] This reference is to "IAEA Safety Glossary," 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
demonstrably conservative	Use of input information or assumptions that provides high confidence that the assessed outcome is as conservative as it is portrayed to be. (Note: Definition almost identical to “demonstrably conservative analysis” from ASME/ANS RA-S-1.4-2021 below.)	ASME/ANS RA-S-1.1-2022
demonstrably conservative analysis	The use of information that provides high confidence that the assessed outcome is as conservative as it is portrayed to be.	ASME/ANS RA-S-1.4-2021
demonstrably conservative analysis	Non-preferred variation (1) Analysis that uses assumptions such that the assessed outcome will be conservative relative to the expected outcome.	ASME/ANS RA-Sb–2013
departure from nucleate boiling (DNB)	In the PWR, the onset of the transition from nucleate to film boiling.	
departure from nucleate boiling ratio (DNBR)	In the PWR, the ratio of the heat flux ratio (DNBR) required to cause departure from nucleate boiling (DNB) to the actual channel heat flux for given conditions.	
dependency	A requirement external to an item and upon which its function depends and that is associated with dependent events that are determined by, influenced by, or correlated to other events or occurrences.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
dependent events	Event combinations for which the occurrence of one event gives information about (i.e., increases or decreases) the possibility of the occurrence of the other event. For example, the occurrence of a hazard such as an earthquake may increase the chance of an explosion at a nearby industrial facility.	ANS-2.12-1978
depletion analysis	Analysis of the change of the concentration of one or more specified nuclides in a material or one of its constituents.	ANS-8.27-2015
depressurization event	An event that results in loss of helium primary coolant pressure to the surrounding building atmosphere resulting from a breach in the helium pressure boundary (HPB).	ANS-53.1-2011
derived air concentration (DAC)	The concentration of a given radionuclide in air that, if breathed by the reference man for a working year of 2000 hours under conditions of light work (inhalation rate 1.2 m3 of air per hour), results in an intake of one ALI or, in the case of submersion nuclides, that concentration that results in an external exposure equal to the dose limit. DAC values are given in 10 CFR 20, Secs. 20.1001 to 20.2401, Appendix B, Table 1, column 3 [1]. See “Note 1” at the end of this section.	ANS-15.11-2016
derived air concentration (DAC)	**Note:** ” DAC values are given in 10 CFR 20, Secs. 20.1001 to 20.2401, Appendix B, Table 1, column 3 [1]. See “Note 1” at the end of this section” should be removed from the definition and included in the requirements section of the standard.	
derived air concentration-hour (DAC-hour)	The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the DAC for each radionuclide) and the time of exposure to that radionuclide, in hours. An owner, operator, or licensee may take 2000 DAC-hours to represent one ALI, equivalent to a committed effective dose equivalent of 5 rem (0.05 Sv).	ANS-15.11-2016
design	The process and result of developing a concept, detailed plans, supporting calculations, and specifications for a facility and its parts that describe the facility, using an engineering process. The description may include specifications, engineering drawings, reports demonstrating compliance with regulatory requirements, and other relevant documentation.	ANS-53.1-2011
design	Non-preferred variation (1) Technical and management processes which lead to and include the issuance of design output documents such as drawings, specifications and other documents defining technical requirements and performance of radiation shields.	ANS-6.4-1985
design bases	Information that identifies the specific functions to be performed by facility SSCs and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (a) restraints derived from generally accepted “state-of-the-art” practices for achieving functional goals or (b) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which the SSC is relied upon to function.	ANS-53.1-2011

Term	Description	Reference/Source
design basis	All the related specifications and detailed plans that support calculations for a facility from an initial design concept and its parts extending through its fulfillment as a detailed design constructed as a plant. The range of conditions and events explicitly taken into account in the design of a facility, according to established criteria, such that the facility can withstand them without exceeding authorized limits by the planned operation of safety systems.	ANS-53.1-2011 ANS-30.3-2022
design basis	Non-preferred variation (1) Information that identifies the specific functions to be performed by an SSC of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design.	ANS-3.14-2011
design basis accident (DBA)	Event sequences deterministically selected for the purpose of performing conservative deterministic safety analyses to demonstrate that [DBA] dose requirements can be achieved by assuming that only safety-related SSCs perform as required.	ANS-53.1-2011 ANS-56.8-2020
design basis accident (DBA)	Non-preferred variation (1) A postulated accident (PA) leading to accident conditions for which a facility is designed in accordance with established design criteria and conservative methodology, and for which releases of radioactive material are kept within acceptable limits [3].[9]	ANS-30.3-2022
design basis accident (DBA)	Non-preferred variation (2) The accident initiated by a single component failure or operator error, as described in the safety analysis of the plant, that results in the maximum primary containment internal peak pressure and in fission product release to the containment atmosphere.	ANS-56.8-2002
design basis accident (DBA)	Non-preferred variation (3) An event that is a condition of normal operation including an anticipated operational occurrence, a design-basis accident (or transient), an external event, or a natural phenomenon, for which the plant must be designed to ensure that the three basic safety-related functions are achievable (see definition of safety function).	ANS-58.16-2014
design basis accident (DBA)	**Note:** The preferred term was selected with the recommendation to remove the “DBA” from the definition put in brackets.	
design basis accident events	It is preferred that the term (Design Basis Event (DBE)) and the associated definition be used in ANS standards	
design basis accident events	Those events postulated in the plant safety analyses, any one of which may occur during the lifetime of a particular plant, excluding those events (defined as "normal" and "anticipated operational occurrences" in 10 CFR 50) expected to occur more frequently than once during the lifetime of a particular plant; and those events not expected to occur but postulated in the plant safety analyses because their con-sequences would include the potential for release of significant amounts of radio-active material to the environs.	ANS-4.5-W96
design basis accidents and transients	It is preferred that the term (Design Basis Event (DBE)) and the associated definition be used in ANS standards.	
design basis accidents and transients	Those design basis events that are accidents and transients initiated by a single component failure or operator error and are described in the safety analyses of the plant([3]) and are used in the design to establish acceptable performance requirements for structures, systems and components (SSCs). Design basis accidents and transients that are applicable to the plant are identified in the plant licensing basis documentation (LDB). Footnote: (3) These descriptions are primarily in the accident analyses chapter of the FSAR or SSAR.	ANS-58.14-1993
design basis documentation (DBD)	The set of documents that is controlled and contain the specifications for the design of the plant. The design basis documentation typically includes design specifications, piping and instrumentation drawings, electrical schematics and safety analyses.	ANS-58.14-1993
design-basis earthquake (DBE)	A commonly employed term for the safe shutdown earthquake (SSE), defined separately below.	ASME/ANS RA-Sb–2013

[9] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
design basis event (DBE)	(See, also design events)	
design-basis event (DBE)	An event that is a condition of normal operation, including AOOs, PAs, external events, or natural phenomena, for which the plant must be designed to ensure that the three basic safety-related functions are achieved. See “nuclear safety function.”	ANS-30.3-2022
design-basis event (DBE)	Non-preferred variation (1) An event that is a condition of normal operation, including anticipated operational occurrences, design basis accidents (or transient), external events, or natural phenomena for which the plant must be designed to ensure the three basic safety-related functions are achieved. See the definition for “safety-related” for a description of the three basic safety-related functions.	ANS-58.14-2011
design-basis event (DBE)	Non-preferred variation (2) An event that is a condition of normal operation including an anticipated operational occurrence, a design basis accident (or transient), an external event, or a natural phenomenon, for which the plant must be designed to ensure that the three basic safety-related functions are achievable. (See10 CFR 50.49(b)1.for the functions.)	ANS-58.14-93 ANS-58.6-92 ANS-58.11-93 ANS-59.52-93 ANS-59.52-98
design-basis event (DBE)	Non-preferred variation (3) Those LBEs that are not expected to occur during the lifetime of a single plant but may be encountered during the lifetime of a population of plants. Event sequences from the PRA are classified as DBEs when their expected frequency of occurrence is between 1×10^{-4} events/plant-year (1E−04 events/plant-year) and 1×10^{-2} events/plant-year (1E−02 events/plant-year).	ANS-53.1-2011
design-basis event (DBE)	Non-preferred variation (4) An event that is a condition of normal operation, including anticipated operational occurrences, design-basis accidents (or transients), external events, or natural phenomena for which the plant must be designed.	ANS-58.8-2019
design-basis hazard event	A particular hazard event having the characteristics of the hazard severity and type that are specified in the plant design basis, and against which the plant is designed. If no specific characteristics are specified in the plant design basis for a specific hazard, then there is no design-basis hazard event for that hazard. Examples include wind speed (for high winds and tornadoes); peak ground acceleration, spectral shape, and time history (for seismic); and maximum rate and duration of precipitation (for rainfall or snowfall).	ASME/ANS RA-Sb–2013
design-basis functions	Functions performed by SSCs that are (a) required by or otherwise necessary to comply with regulations, license conditions, orders, or technical specifications or (b) credited in licensee safety analyses to meet regulatory requirements.	ANS-53.1-2011
design basis hurricane	The design basis hurricane is a postulated hurricane used for design purposes only, having characteristics with a frequency of exceedance commensurate with the facility safety goal.	ANS-2.3-2011
	Note: Corrected spelling of “exceedance”	
design basis radioactivity concentrations	Concentration of radiochemical constituents provided in reference Safety Analysis Report (SAR) by Nuclear Steam supply system (NSSS) supplier.	ANS-55.6-1993 ANS-55.6-1999
design basis tornado	The design basis tornado is a postulated tornado, used for design purposes only, having characteristics consistent with a frequency of exceedance commensurate with the facility safety goal.	ANS-3.2-1993ANS-2.3-2011
design change	Any revision or alteration of the technical requirements defined by approved and issued design output documents and approved and issued changes thereto.	
design dose equivalent rate	The design dose equivalent rate is the radiation level determined by the designer.	ANS-6.3.1-1987
design database	The design documents, performance data, records, assumptions, simplifications, derivations, and other definable data that form the basis of the design of the simulator hardware and software.	ANS-3.5-2009

Term	Description	Reference/Source
design life	Plant life estimation used for design aging calculations to support the licensed plant life.	ANS-53.1-2011
design margins	Additional performance capability above required design parameters that system design specifies to compensate for uncertainties at any design stage or to provide additional capacity or reliability.	ANS-53.1-2011
designer	The organization that has the responsibility for preparing the fuel assembly design.	ANS-57.5-1996
design events	The purpose of categorizing Design Events is to provide a means of establishing design requirements to satisfy operational and safety criteria of the installation. These Design Events are; normal operation (Design Event I), classified on the basis of expected frequency of occurrence (Design Events II and III), or postulated because their occurrence may result in the maximum potential impact on the immediate environs (Design Events IV). Evaluation of the consequences of any such event can then be used to specify the performance requirements of the systems and subsystems within the installation. Design Event I. Definition—Design Event I consists of that set of events that are expected to occur regularly or frequently in the course of normal operation at the installation. Examples are: (1) Cask receipt, inspection, unloading, and maintenance; (2) Fuel unit transfer from cask to pool or pool to cask; (3) Collection and disposal of air or waterborne radionuclide generated during ISFSI operation; and, (4) Fuel rod consolidation, if performed at the Independent Spent Fuel Storage Installation (ISFSI).	ANS-57.7-1992 ANS-57.7-1997
design Event II - Definition	Design Event II consists of that set of events, that although not occurring regularly, can be expected to occur with moderate frequency or on the order of once during any calendar year of installation operation. Examples are: (1) Failure of any single active component to perform its intended function upon demand; (2) Spurious operation of certain active components; (3) A loss of external power supply for a limited duration; (4) Minor leakage from flanges piping or component connections; and, (5) A single operator error followed by proper corrective action.	ANS-57.7-1992 ANS-57.7-1997
design Event III - Definition	Design Event III consists of that set of infrequent events that could reasonably be expected to occur once during the lifetime of the installation. Examples are: (1) A credible passive failure of a radioactive liquid retaining boundary; and, (2) A loss of external power for an extended interval.	ANS-57.7-1992 ANS-57.7-1997
design Event IV - Definition	Design Event IV consists of the events that are postulated because their consequences may result in the maximum potential impact on the immediate environs. Their consideration establishes a conservative design basis for certain systems with important confinement features. Typically this set of events will consist of site specific design events as defined in Design Phenomena. By adherence to the requirements of this standard, the designer may exclude such events as criticality, total loss of pool water, and dropped cask as Design Event IV possible events.	ANS-57.7-1992 ANS-57.7-1997
design events	Variant form.	ANS-57.9-1992 ANS-57.10-1993
design function	A principal function for which a SSC was included in the plant design. Design functions, as they relate to safety-related items, support one or more of the three basic safety-related functions. For example, the emergency core cooling system (ECCS) is included in the plant design to perform the primary design function of providing coolant to the reactor vessel during or following a loss-of-coolant accident (LOCA), in order to maintain the unit in a safe shutdown condition.	ANS-58.14-2011
design input	Those criteria, parameters, bases, or other design requirements upon which detailed final design is based.	ANS-3.2-1993

Term	Description	Reference/Source
design maturity	A qualitative measure of the knowledge of the design performance under operating and accident conditions. The design's maturity is accounted for in performing the PRA used for risk-informing the design. Specifically, the level of detail of the PRA is chosen to account for the design's maturity. Application of the above definition for "design maturity" in this standard shall be consistent with the following two performance definitions: undue risk to the public health and safety. The risk and risk management goals of Sec. 1.3 are considered the performance indicators that shall be used to determine acceptable risk. performance demonstration. "Performance demonstration" in the "principal design criteria" definition herein shall be demonstrated using 10 CFR 50.43(e) [15]	ANS-54.1-2020
design output	Documents, such as drawings, specifications, and other documents, defining technical requirements of structures, systems, and components (SSCs).	ANS-3.2-1993
design parameters	Material properties, dimensional characterizations, or physical response phenomena necessary to describe or evaluate fuel assembly behavior.	ANS-57.5-1996
design phenomena	Those natural phenomena and man-induced low probability events for which an ISFSI is designed. Title 10 CFR Part 72 "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (ISFSI)", Subpart E, "Siting Evaluation Factors," or ANS-2.19-1981(R1990) provides the requirement for identification and evaluation of design basis natural or man-induced events. 10 CFR 72, Subpart F provides the general design criteria for structures, systems, and components (SSCs) that are important to confinement.	ANS-57.9-1992 ANS-57.7-1997
design requirements	. A design requirement is the limiting value of a design parameter that ensures that the consequences of any DBE do not result in: (1) Violation of plant nuclear safety criteria (including off-site radiological dose criteria); and, (2) Unacceptable degradation of plant components that are required to mitigate the consequences of a DBE.	ANS-58.8-1992
designated rating	That rating required by the fire hazard analysis without any other consideration to its construction capability for purposes of other perils such as tornadoes, radiation, earthquake, etc.	ANS-59.4-1979W83
designated local hospital	A hospital located near a nuclear plant where formal arrangements have been made in advance for the emergency care of personnel who have been injured, contaminated, or exposed, and may also provide definitive care if appropriate facilities and staff are available.	ANS-3.7.1-1995
designated medical examiner	A licensed medical practitioner designated by the facility operator to perform nuclear reactor operator medical examinations.	ANS-3.4-1987
designated medical examiner	Non-preferred variation (1) A licensed medical practitioner, either a Doctor of Medicine or a Doctor of Osteopathy, familiar with the medical provisions of this standard and the general responsibilities and work environment of the examinee.	ANS-15.4-2016
designated vehicle	A vehicle limited to use to onsite plant functions that remains within the protected area except for operational, maintenance, repair, security and emergency purposes. A vehicle, for purposes of this definition, is any motorized prime mover with sufficient power and mechanics to permit its use as an instrument of radiological sabotage; other means of transport, such as electric or gasoline driven carts, jitneys, or trams commonly used within the protected area for the conveyance of material and supplies, are not vehicles.	ANS-3.3-1988
desk audit	An off-site or remote review of laboratory-submitted documents.	ANS-41.5-2012
detergent waste	Liquid radioactive waste containing detergents, soaps, or similar organic materials.	ANS-55.6-1993 ANS-55.6-1999
deterministic	Based on an exact model (in contrast with stochastic: based on a probabilistic model).	ANS-53.1-2011

Term	Description	Reference/Source
deterministic safety analysis	Engineering analysis of the plant response using computer models, calculations, and data that predict the transient response of the plant to an event sequence, mechanistic source term, and radiological consequences using validated models and data.	ANS-53.1-2011 ANS-30.3-2022
development environment	The system and environment (including all supporting software components and software development tools) on which the software is developed and maintained by the development organization.	ANS-10.7-2013
dew point temperature	The temperature to which a given air parcel must be cooled at constant pressure and constant water vapor content in order for saturation to occur.	ANS-3.11-2015
dewatered	Liquid or slurry wastes that have had excess water removed to meet applicable burial site criteria.	ANS-55.1-92 ANS-55.1-2020
diagnostic models	Models that map multiple observations taken all at the same time onto a field that spans the geographical location of the observations. Diagnostic models are not able to forecast conditions into the future except by persistence.	ANS-2.15-2013
differential boron worth (DBW)	The change in reactivity per unit change in soluble boron concentration.	ANS-19.11-2017
differential measurement	A measurement that involves small changes in two operating parameters. In most differential measurements, one of these parameters is core reactivity.	ANS-19.4-2017
diffusion	The spreading of gaseous and/or particulate matter caused by turbulent motions in the atmosphere.	ANS-2.15-2013
diffusion, dispersion	That component of dispersion that addresses the variation of the concentration of material in a medium along the path of transport.	ANS-3.8.6-1995
direct gamma rays	The term direct gamma rays is used to denote those gamma rays that do not undergo scattering interactions in transit from the source volume to the receptor location. It differs from “uncollided gamma rays” in that scattering internal to distributed sources (such as a pipe containing radioactive fluid) may be included in the direct category.	ANS-6.6.1-2015
disaggregation	A technique that computes the relative contribution of an individual contributor to the total integrated risk, or risk from a specific hazard, radionuclide source, or plant operating state or key parameters (e.g., earthquake magnitude, distance) to the total integrated risk, or risk from a specific hazard, radionuclide source, or plant operating state.	ASME/ANS RA-S-1.4-2021
discrepancy	Any difference in the physical attributes or dynamic response between the simulator and the reference unit that is distinguishable by an observer and confirmed by a subject matter expert.	ANS-3.5-2018
discrete time points	The time points during the time course of a DBE that define the time intervals evaluated in this analysis. These points are defined below and are illustrated in Figure 1 of ANS-58.8. (1) start of event (t_{ST}). The time at which the DBE is initiated. (2) indication of event (t_{IND}). The time at which the DBE is identified to the plant operators by readily available information, e.g., one or more alarm(s) or display indication(s). (3) earliest credited action (t_{ECA}). The earliest time following t_{IND} at which credit for safety-related operator actions can be taken. (4) manual action initiated (T_{MAI}). The time which cannot occur prior to t_{ECA} selected by the designer for initiation of a safety-related operator action. (5) safety-related action completed (t_{SAC}). The time at which the safety-related operator action is evaluated to be completed. (6) safety-related function completed ($_{SFC}$). The time at which an indication is received that a safety-related system is operating as necessary to achieve its safety-related function. (7) design requirement limit (t_{LIM}). The time at which a design requirement would be exceeded if a safety-related function has not been completed.	ANS-58.8-92

Term	Description	Reference/Source
dispersion	The combined influence of both the transport of material in a medium (e.g., atmosphere, body of water) and the diffusion of the material during the transport. (See diffusion)	ANS-3.8.6-1995
dispersion	Non-preferred variation (1) The sum of the processes of transport and diffusion.	ANS-2.15-2013
dispersion coefficient (L^2T^{-1})	A measure of the spreading of a flowing substance due to the nature of the porous medium, with its interconnected channels distributed at random in all directions.	ANS-2.17-1989
dispersivity (L)	A geometric property of a porous medium which determines the dispersion characteristics of the medium by relating the components of pore velocity to the dispersion coefficient.	ANS-2.17-1989
displacement	"The relative movement of the two sides of a fault, measured in any chosen direction. In addition, the specific amount of such movement." (See Glossary of Geology, American Geological Institute, 1972). As used here, the term applies to either slip or separation as measured or inferred along a fault.	ANS-2.7-1982
disqualifying condition	A medical or psychological condition that precludes approval for nuclear power plant reactor operator or senior operator licensure.	ANS 3.4-1994
preferred variation	Something that precludes unconditional medical approval for research reactor operator licensing.	ANS-15.4-2016
preferred variation	Non-preferred variation (1) A physical or mental health condition that prohibits the approval of an operator license.	ANS-3.4-2013
distance constant	The distance that air flows past a rotating anemometer during the time it takes the cup wheel or propeller to reach 63 percent of the equilibrium speed after a step change in the wind speed.	ANS-3.11-2000
distribution coefficient($M^{-1}L^3$)	The quantity of the radionuclide absorbed by the solid per unit weight of solid divided by the quantity of radionuclide dissolved in the water per unit volume of water.	ANS-2.17-1989
distribution system	Piping, raceway, duct, or tubing that carries or conducts fluids, electricity, or signals from one point to another.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
diversity	Use of different design principles in functionally redundant components in order to reduce susceptibility to common-cause failures.	ANS-53.1-2011 ANS-30.3-2022
document	Any written or pictorial information de-scribing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results. A document is considered to be a Quality Assurance Record when it is complete and furnishes evidence of the quality of items or services affecting quality.	ANS-3.2-1993
domain	The geographical region of interest for a modeling study.	
Doppler temperature coefficient of reactivity (DTC)	The change in reactivity per unit change in the fuel temperature.	ANS-19.11-2017
dose	A quantity of energy absorbed in a reference medium per unit mass. There are several different units of dose in current use: 1. The Gray (Gy) is a measure of the dose of any ionizing radiation in terms of the energy absorbed per unit mass. One Gray (Gy) is equal to the absorption of one Joule per kilogram (1 Gy = 100 rad). 2. The Sievert (SV) is a measure of the dose of any ionizing radiation to body tissues in terms of its estimated biological effect relative to a dose of one Roentgen (R) of x-rays. (1 Sv = 100 rem).	ANS 5.6.1-90 ANS-30.3-2022 but only the 1st sentence
dose	Non-preferred variation (1) Variant form.	ANS-6.4-85
dose	Non-preferred variation (2) A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or TEDE, as defined in other paragraphs of this section.	ANS-15.11-2016

Term	Description	Reference/Source
	Note: Definitions should be self-contained and not reference other sections of the standard.	
dose equivalent (H)	The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest within the body. The units of dose equivalent are the rem and the sievert (Sv).	ANS-15.11-2016
dose equivalent (H)	Non-preferred variation (1) The product of the absorbed dose (D), the quality factor (Q), and the modifying factor (N): H = DQN, where: N is the product of all modifying factors specified by the International Commission on Radiation Protection (ICRP) (i.e., see Publication 26 and Report 33). Such factors might, for example, take account of absorbed dose rate and fractionalization. At present, the ICRP has assigned the value of 1 to the factor N. The special name for the unit of dose equivalent is the sievert (Sv); 1 Sv = 1 J/kg.	ANS-6.1.1-91
dose conversion factor	A parameter describing the energy from particles and waves deposited in an organ, tissue, or body.	ASME/ANS RA-S-1.3-2017
dose equivalent rate	Dose equivalent rate is used as defined by the International Commission on Radiation Units and Measurements (ICRU), "Radiation Quantities and Units," ICRU Report No. 33-1980 and the unit is millirem per hour, mrem/h (10 □Sv/h). (In System International, SD Units, 100 rem = 1 sievert).	ANS-6.3.1-87
dose rate and absorbed dose	It is preferred that the term (dose equivalent (H)) and the associated definition be used in ANS standards	
dose rate and absorbed dose	Non-preferred term: dose rate and absorbed dose. The term dose is used herein to refer to either exposure (i.e., roentgens), absorbed dose (i.e., rad or gray), dose equivalent (i.e., rem or seivert), or ambient dose equivalent (rem or seivert). These later terms are specifically defined in Report No 51 of the International Commission on Radiation Units and Measurements. For gamma rays, to the degree of approximation acceptable, for practical purposes, and for the purposes of this standard, the absorbed dose, dose equivalent, and dose equivalent index may be considered numerically equivalent.	ANS-6.6.1-2015
	Notes: 1. Consider deleting the “i.e.” s. The text including the measurement units is sufficient. 2. Delete the term” index” 3. Standard has “The term dose is used herein to refer to either exposure (roentgens), absorbed dose (rad or gray), dose equivalent (rem or seivert), or ambient dose equivalent (rem or seivert). These later terms are specifically defined in Report No 51 of the International Commission on Radiation Units and Measurements. For gamma rays, to the degree of approximation acceptable, for practical purposes, and for the purposes of this standard, the absorbed dose, dose equivalent, and **ambient** dose equivalent may be considered numerically equivalent. may be considered numerically equivalent.”gamma rays, to the degree of approximation acceptable, for practical purposes, and for the purposes of this standard, the absorbed dose, dose equivalent, and **ambient** dose equivalent may be considered numerically equivalent.””	
dosimeter	An instrument used for measuring or evaluating the absorbed dose, exposure, or similar radiation quantity.	ANS-3.7-1995
dosimetry processor	An individual or organization that processes and evaluates individual monitoring equipment in order to determine the radiation dose delivered to the equipment (see also “National Voluntary Laboratory Accreditation Program”).	ANS-15.11-2016
drawdown (L)	The lowering of the water level caused by withdrawal of water, with reference to some datum and to the time since withdrawal began.	ANS-2.9-1989
drift	Water lost from a cooling tower as liquid droplets (i.e., aerosols) entrained in the exhaust air. In the case of spray systems, drift comprises the liquid droplets which become airborne and fall outside the spray collection system.	ANS-2.13-1979

Term	Description	Reference/Source
drift loss	It is preferred that the term (Drift) and the associated definition be used in ANS standards.	
drift loss	Non-preferred term: drift loss**.** The emission of small water droplets entrained in the cooling tower air flow. The droplets contain the dissolved solids found in the circulating water.	ANS-2.21-2012
drill	Supervised instruction period intended to test, develop, and maintain skills in a particular operation. A drill is often a component of an exercise.	ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.5-D92 ANS-3.8.4-1995 ANS-3.8.3-1995
drill	Non-preferred variation (1) A supervised instruction period aimed at developing and maintaining skills in a particular operation. A drill is often a component of an exercise.	ANS-3.7.3-1979
drill	Non-preferred variation (2) Supervised instruction intended to test, develop, maintain, and practice the skills required in a particular emergency response activity. A drill may be a component of an exercise.	ANS-8.23-2007 ANS-8.23-2019
dry active waste (DAW)	Radioactively contaminated compactible and noncompactible material, such as rags, paper, plastic, and rubber (compactible) and wood, glass, concrete, and metal (noncompactible).	ANS-55.1-2021
dry active waste (DAW)	Non-preferred variation (1) Radioactively contaminated compactable and non-compactable material (e.g., rags, paper, plastic, rubber, and wood, glass, concrete, metal).	ANS-55.1-1992
dry basis	A measurement or a calculation performed on the assumption that there is no water vapor or steam present.	ANS-56.1-1985
dry-bulb temperature	The temperature registered by the dry-bulb thermometer of a psychrometer or simply the temperature of the air.	ANS-2.21-2012
dry cleaning waste	Liquid solvent wastes generated in the operation of dry cleaning laundry equipment.	ANS-55.6-1993 ANS-55.6-99
dry, combustible solid waste	Solid waste, including materials that contain incidental amounts of drainable liquids, that can be easily oxidized by conventional incineration techniques.	ANS-40.37-2009
dry, noncombustible solid waste	Solid waste that cannot be easily oxidized by conventional incineration techniques.	ANS-40.37-2009
dry primary containment	Concept that relies on the volumetric and thermal capacitance of the enclosed free volume as well as the energy removal capabilities of the Containment Heat Removal System (CHRS) to mitigate the consequences of postulated pipe breaks.	ANS-56.4-1983
drywell	In a boiling water reactor, the innermost structure surrounding the reactor coolant pressure boundary.	ANS-56.4-1983
dual porosity model	A flow and transport model applied to a porous medium composed of two porosity fractions or domains. One fraction stores and transmits solute (mobile flow domain), while the second fraction only stores solute (immobile domain). Fluid and solute exchange between the mobile and immobile domains occur as functions of the hydraulic head and concentration gradient between the two, respectively.	ANS-2.17-2010
duplicate	A second aliquot of the sample (equally sized, prepared, and analyzed as part of the same batch) used to measure the overall precision of the sample measurement process beginning with laboratory subsampling of the field sample.	ANS-41.5-2012

E

Term	Description	Reference/Source
early fatalities	Deaths from the acute effects of radiation that may occur within a few months of the exposure.	ASME/ANS RA-S-1.3-2017
economic factors	Expressions of the costs of various aspects of actions following a release of material to the environment. For instance, costs can be incurred for evacuation or relocation of population, decontamination of land or buildings, or interdiction of foodstuffs, or condemnation of land.	ASME/ANS RA-S-1.3-2017
edit	The action of processing data into a meaningful order for subsequent use or disposition to an output medium.	ANS-10.5-1979
education	Successful completion of the requirements established by an accredited educational institution.	ANS-3.1-2014
Effective dose (**E**)	Defined as a weighted sum of tissue equivalent doses: $E = \sum_T w_T H_T$, (Eq. 2) where w_T is the tissue weighting factor for tissue T, H_T is the tissue equivalent dose, and $\sum_T w_T = 1$. The summation leading to effective dose is over fourteen tissues and organs specified in ICRP Publication 103 [2].	ANS-6.1.1-2020
Effective dose (**E**)	*Non-preferred variation (1)* The sum of the products of the equivalent dose received by the body (*HT*) and the appropriate tissue weighting factor (*WT*). It includes the dose from radiation sources internal and or external to the body. This term was introduced in the ICRP 60 [3] methodology and should be used in place of effective dose equivalent when appropriate. The units of effective dose are the rem or sievert (Sv).	ANS-15.11-2016
	Note: The sentence “This term was introduced in the ICRP 60 [3] methodology and should be used in place of effective dose equivalent when appropriate” does not belong in the definition. It may be included as a footnote.	
effective dose equivalent (H_E)	.The sum of products, of the form $\sum_T w_t H_T$, where: W_T is the weighing factor specified by the ICRP to represent the proportion of the stochastic risk resulting from irradiation of tissue T to the total risk when the whole body is irradiated uniformly, and H_T is the average dose equivalent in tissue T. The values of W_T recommended by the ICRP are given in Table 2 of ANS-6.1.1-1991. The remainder organs or tissues are taken to be the five not specifically listed that received the highest dose equivalents; a weighing factor (W_T) of 0.066 is applied to each of them, including various portions of the gastrointestinal tract, which are treated as separate organs. The weighing factor values given in Table 2 are under review by the ICRP and are subject to change during the projected life of this standard. The special name for the unit of effective dose equivalent is the sievert (Sv): 1Sv = 1J/kg. In this standard the terms "dose" and "fluence-to-dose" are used to denote "effective dose equivalent" and "fluence-to-effective dose equivalent," respectively. ()	ANS-6.1.1-1991
effective dose equivalent (H_E)	*Non-preferred variation (1)* The sum of the products of the dose equivalent to the organ or tissue (*HT*) and the weighting factors (*wT*) applicable to each of the body organs or tissues that are irradiated (*HE* = Σ*wTHT*). The units of effective dose equivalent are the rem and the sievert (Sv).	ANS-15.11-2016
effective multiplication factor (k_{eff})	Physically, the ratio of the total number of neutrons produced during a time interval (excluding neutrons produced by sources whose strengths are not a function of fission rate) to the total number of neutrons lost by absorption and leakage during the same interval. Mathematically (computationally), the eigenvalue number that, when divided into the actual mean number of neutrons emitted per fission in an assembly of	ANS-8.1-2014

Term	Description	Reference/Source
	material, would make the calculated result for the nuclear chain reaction of the assembly critical.	
effluent concentration limit	The concentration values (given in columns 1 and 2 of Table 2 in 10 CFR 20, Appendix B [1],(1)) equivalent to the radionuclide concentrations that, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (50 millirem or 0.5 mSv). Footnote: (1) Numbers in brackets refer to corresponding numbers in Sec. 8, “References.”	ANS-2.17-2010
effluent discharge (radioactive)	The emission of an effluent (i.e., containing plant-related, licensed radioactive material) into the unrestricted area.	ANS-2.17-2010
effluent monitor	Instrument used to determine the level of radioactivity in any path which discharges to the environment.	ANS-6.8.2-1986
effluents	Airborne and liquid radioactive releases from a facility.	ANS-15.11-2016
electrical overcurrent protective device	An active or passive device designed to prevent current flow from exceeding a predetermined level by breaking the circuit when the predetermined level is exceeded (e.g., fuse or circuit breaker).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
embryo or fetus	The developing human organism from conception until the time of birth.	ANS-15.11-2016
emergency	Any unplanned situation which activates the plant's radiological emergency response plan.	ANS-3.8.1-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995 ANS-3.8.3-1995
emergency	Non-preferred variation (1) An emergency is a condition that calls for immediate action, beyond the scope of normal operating procedures, to avoid an accident or to mitigate the consequences of one.	ANS-15.16-2015
emergency action level (EAL)	A parameter or criterion used as a basis for emergency classification.	ANS-3.8.3-1993 ANS-3.8.6-1994 ANS-3.8.3-1995
emergency action level (EAL)	Non-preferred variation (1) Specific instrument readings, or observations; radiological dose or dose rates; or specific contamination levels of airborne, waterborne, or surface-deposited radioactive materials that may be used as recognized conditions that result in actions such as (a) establishing emergency classes and (b) initiating appropriate emergency measures.	ANS-15.16-2015
emergency classes	Four emergency classes have been established. These classes are as follows: (1) notification of unusual event (NUE). Events which are in progress or have occurred, which indicate a potential degradation of the level of safety of the plant. Notification of Unusual Events are non-routine occurrences which may be of interest to government authorities or to the public. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. (This is no longer used.) (2) alert. Events which are in progress or have occurred, which involve actual or potential substantial degradation of the level of safety of the plant. Any radiological re-leases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Protective Action Guideline, “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA 400-R-92-001, Environmental Protection Agency” exposure levels. (3) site area emergency. Events which are in progress or have occurred, which involve actual or likely major failures of plant functions needed for protection or station personnel and the public. Any radioactive re-leases are not expected to exceed	ANS-3.8.1-1993 ANS-3.8.2.-1993 ANS-3.8.3-1993 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.3-1995

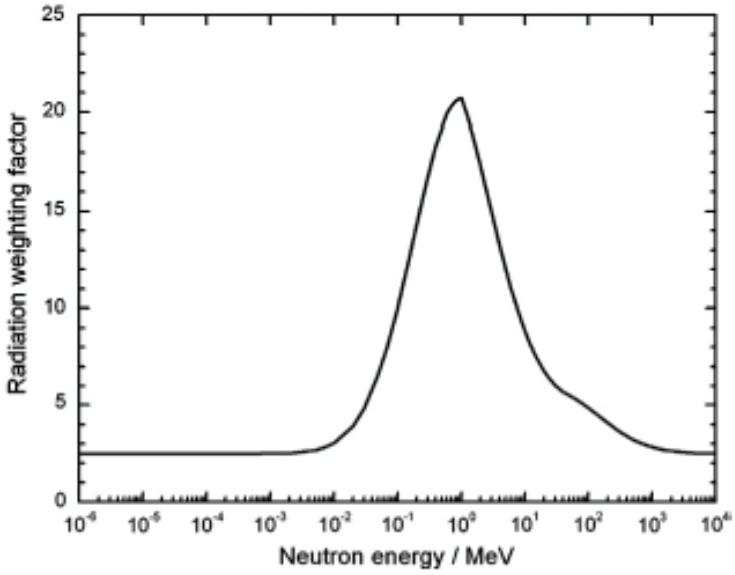
Term	Description	Reference/Source
	EPA Protective Action Guideline exposure levels except near the site boundary. (4) general emergency. Events which are in progress or have occurred, which involve actual or imminent substantial core degradation with potential for loss of containment integrity. Radiological releases can reasonably be expected to exceed EPA Protective Action Guide-line exposure levels offsite.	
emergency classes	*Non-preferred variation (2).* Emergency classes are classes of accidents grouped by severity level for which predetermined emergency measures should be taken or considered.	ANS-15.16-2015
emergency control center (ECC)	A facility operated by the licensee for the purpose of evaluating and controlling emergency situations and coordinating emergency responses.	ANS-3.7.2-1979
emergency coordinator	A person authorized to direct the overall emergency response.	ANS-8.23-2007 ANS-8.23-2019
emergency diesel generator	A diesel generator unit designed in accordance with "IEEE Standard Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations", ANSI/IEEE Standard 387) and installed to provide a standby power supply in accordance with "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations", ANSI/IEEE Standard 308. The diesel generators provide standby electric power to comply with the pertinent requirements of 10 CFR 50, Appendix A General Criterion 17, Electric Power Systems.	ANS-59.51-1989 ANS-59.52-1993 ANS-59.52-1998
emergency plan	An emergency plan is a document that provides the basis for actions to cope with an emergency. It outlines the objectives to be met by the emergency procedures and defines the authority and responsibilities to achieve such objectives.	ANS-15.16-2015
emergency planning zone (EPZ)	Area for which emergency planning is needed to assure that prompt and effective actions can be taken to protect the public. (See also Plume EPZ and Ingestion EPZ.)	ANS-3.8.1-1987 ANS-3.8.5-D92 ANS-3.8.2-1995
	Non-preferred variation (1) Two areas surrounding a production or utilization facility, for the U.S. one is about 16.09 km (ten miles) in diameter (called the plume exposure pathway emergency planning zone, EPZ) in which detailed planning to enhance the health and safety of the close-in population is required for protection from plume exposure, and the second is about 80.45 km (50 miles) in diameter (called the ingestion exposure pathway emergency planning zone) where preparation to interdict or condemn food and water for protection of the population is required.	ASME/ANS RA-S-1.3-2017
emergency planning zone (EPZ)	*Non-preferred variation (2)* An area surrounding a plant with a well-defined boundary for which emergency planning is provided including provisions for protective actions such as evacuation and sheltering.	ANS-53.1-2011
emergency planning zone (EPZ)	*Non-preferred variation (3)* Area for which off-site emergency planning is performed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The EPZ size is dependent on reactor power level and the distance beyond the site boundary at which the protective action guides could be exceeded.	ANS-15.16-2015
emergency procedures	Emergency procedures are documented instructions that detail the implementation actions and methods required to achieve the objectives of the emergency plan.	ANS-15.16-2015
emergency procedures	Non-preferred variation (1) Actions taken by offsite populations to cope with the health and safety aspects of an incident at a production or utilization facility.	ASME/ANS RA-S-1.3-2017 ANS-30.3-2022
emergency procedures	Non-preferred variation (2) Actions taken from the time of indication of a criticality accident, through response to the emergency, to stabilization and start of recovery operations.	ANS-8.23-2019
emergency procedures	Non-preferred variation (3) Actions taken from the time of identification of a suspected, imminent, or actual criticality accident to stabilization of the event, including the assumption that an accident has occurred, response to the emergency, and actions to begin subsequent recovery operations.	ANS-8.23-2007

Term	Description	Reference/Source
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
emergency response facility (ERF)	An area or collection of areas designated for emergency use that include: 1. control room (CR): Onsite facility from which the nuclear power plant is operated. The control room is normally the facility where basic response functions are initially performed. 2. emergency news center (ENC): Facility outside protected area where designated Public Information Officers, from licensee and government agencies provide media updates and respond to information requests. 3. emergency operations facility (EOF): Facility outside the protected area from which the overall accident management and coordination with offsite response organizations are performed. 4. operations support center (OSC): Facility outside the protected area from which the overall accident management and coordination with offsite response organizations are performed 5. technical support center (TSC): Onsite facility separate from the control room where technical analysis, direction, communications, and other designated emergency functions are performed	ANS-3.8.1-1993 ANS-3.8.1-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995 ANS-3.8.3-1995
emergency response plan	It is preferred that the term (Emergency Plan) and the associated definition be used in ANS standards.	
emergency response plan	Non-preferred variation (1) A licensing document which describes the licensee's overall emergency response functions, organization, facilities, and equipment, as well as appropriate state, county or local plans. This document is supplemented by specific implementing procedures.	ANS-3.8.1-1987
Emergency Response Planning Guideline (ERPG)	For the purposes of this standard, ERPGs provide estimates for concentration ranges where a person may reasonably anticipate observing adverse effects as a consequence of exposure to the chemical in question. The three ERPG tiers are defined as follows: ERPG-3 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects; ERPG-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action; ERPG-1 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient health effects or perceiving a clearly defined, objectionable odor [4].	ANS-58.16-2014
emergency start and operation	Automatic start and subsequent running or loading of the diesel engine, or both, in response to a safety signal such as emergency core cooling or loss of offsite power.	ANS-59.52-1998
emergency ventilation system (EVS)	An engineered safety feature consisting of fans, gas absorbers, and particulate filters used to reduce the secondary containment atmosphere's pressure below environmental conditions following a Loss of Coolant Accident (LOCA) for the purpose of dose suppression. This system is referred to as the standby gas treatment system (SGTS) in BWR units.	ANS-56.4-1983
ENDF/B	An evaluated nuclear data file developed by CSEWG, prepared according to a specified format, for use in a computer-oriented system that creates, stores, and retrieves evaluated data sets.	ANS-19.1-2019
ENDF/B-n	The n'th CSEWG-approved version of ENDF/B series of evaluated data sets. Starting with the fourth release of the ENDF/B series, the version index n consists of the major release number given as a Roman numeral and the update number given as Arabic numeral, separated by a dot (e.g., the version released in February 2018 is denoted ENDF/B-VIII.0).	ANS-19.1-2019

Term	Description	Reference/Source
end fitting (nozzle)	The portion of the spent fuel assembly which defines the upper and lower extremities. Removal of an end fitting allows access to the individual rods.	ANS-57.10-1993
end state	The set of conditions at the end of an event sequence that characterizes the impact of the sequence on the plant or the environment. In most PRAs, end states typically include success states (i.e., those states with negligible impact) and release categories.	ASME/ANS RA-S-1.4-2021
end state	Non-preferred variation (1) A stable plant state configuration from which conditions will not deteriorate without a new, separate event; the plant state at the end of an event sequence modeled in a PRA. Examples of end states include successful termination and release of radioactive material in a specified release category.	ANS-53.1-2011
end state	Non-preferred variation (2) The set of conditions at the end of an accident sequence that characterizes the impact of the sequence on the plant or the environment. In most PRAs, end states typically include success states (i.e., those states with negligible impact), plant damage states for Level 1 sequences, and release categories for large early release frequency (LERF) sequences.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
energetic event	An event that generates a sufficient amount of energy over a brief period (such as less than one minute) to result in the airborne suspension of the material-at-risk, and damages equipment and systems that might result in loss of confinement.	ANS-5.10-1998
energy dependence	Change in instrumentation response with respect to radiation energy for a constant fluence or fluence rate (flux density).	ANS-6.8.2-1986
energy deposition cross section	The net energy deposited in the medium due to interactions of particles per unit path length. It is reported in units of energy per unit of distance (e.g., eV/cm). The energy deposition cross section is more commonly known as the linear energy deposition attenuation coefficient.	ANS-19.3.4-2022
energy deposition rate density	The amount of energy deposited per unit volume per unit time (watts/cm3).	ANS-19.3.4-2022
engineered barrier	A man-made cover, wall, or device used to prevent fluid flow or contaminant migration.	ANS-2.17-2010
engineered safety feature (ESF)	A nuclear safety-related structure, system, or component (SSC) that serves to control and limit the consequences of releases of energy or radioactivity if an event were to occur to the extent that the worker and public health and safety might be impaired if these energy or radioactivity releases were not additionally restrained.	ANS-51.1 ANS-56.4-1983 ANS-30.3-2022 ANS-51.10-2020
engineered safety feature (ESF)	Non-preferred variation (1) A structure, system, or component (SSC) that is relied upon during or following design basis events to ensure the capability to prevent or mitigate the consequences of those events that could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 100.11 excluding reactor coolant pressure boundary (RCPB) and reactor protection system (PRS) items.	ANS-58.14-1993
engineered safety feature (ESF)	Non-preferred variation (2) A SSC (structure, system or component) that is relied upon during or following a DBE to ensure the capability to prevent or mitigate the consequences of that DBE that could result in potential off-site exposures comparable to the guideline exposures in applicable regulations,(3) excluding reactor coolant pressure boundary (RCPB) and reactor trip system (RTS) items. Footnote: (3) Refer to the definition of “safety-related” in Sec. 2.2 for further information regarding “guideline exposures in applicable regulations.”	ANS-58.14-2011
engineered safety feature (ESF)	Non-preferred variation (3) For the purpose of this standard, system(s) which is (are) required to prevent, arrest, or mitigate the consequences of an accident or LOCA.	ANS-56.2-1984
engineered safety feature (ESF)	Non-preferred variation (4) A safety class structure, system, or component that serves to control and limit the consequences of releases of energy and radioactivity in the event of Plant Condition 3,4, or 5	ANS-51.10-2002

Term	Description	Reference/Source
	events to the extent that the public health and safety might be impaired if these energy and radioactivity releases were not additionally restrained.	
engine-driven oil pump	A pump which receives its motive power directly from the diesel engine and provides proper lubricating oil circulation under all operating conditions.	ANS-59.52-1998
engine lubricating oil cooler	A heat exchanger that provides cooling of the lubricating oil to maintain temperature within specified operating limits. ()	ANS-59.52-1998
Enhanced Fujita (EF) Scale	A rating system originally devised (Fujita [1]) to facilitate categorizing tornadoes according to the damage they produce and later modified (Enhanced Fujita [2]) and adopted by the National Weather Service as shown in Table 2-1. Enhanced Fujita (EF) scale winds are defined to apply at the 33 ft (10 m) height. ()	ANS-2.3-2011
entity or entities	Formal and informal rock-stratigraphic units, soil-stratigraphic units and bio-stratigraphic units (see American Commission on Stratigraphic Nomenclature, mineral deposits, structural features, geomorphic features, and artificial structures.	ANS-2.7-1982
entrance or access point	Any location through which an individual could gain access to radiation areas or to radioactive materials. This includes entry or exit portals of sufficient size to permit human entry, regardless of their intended use.	ANS-15.11-2016
enumeration	A census.	ANS-2.6-1981D
environment	The pressure, temperature, and humidity conditions of the outdoor ambient atmosphere at the nuclear power plant site.	ANS-56.4-1983
environmental qualification	Testing and analytical demonstration that equipment is suitable for its intended purpose and environment.	ANS-53.1-2011
epicenter	The point on the earth’s surface directly above the focus (i.e., hypocenter) of the earthquake source.	ANS-2.29-2008 ANS-2.29-2020
epistemic uncertainty	Non-preferred variation (1) Uncertainty attributable to incomplete knowledge about a phenomenon that affects the ability to model it. Epistemic uncertainty is captured by considering a range of model parameters within a given expert interpretation or multiple expert interpretations each of which is assigned an associated weight representing statistical confidence in the alternatives. In principle, epistemic uncertainty can be reduced by the accumulation of additional information associated with the phenomenon. The uncertainty in the parameters of the probability distribution of a random phenomenon is epistemic.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.30-2015
epistemic uncertainty	Non-preferred variation (2) Uncertainty attributable to incomplete knowledge about a phenomenon that affects the ability to model it. Epistemic uncertainty is captured by considering a range of model parameters within a given expert interpretation or multiple expert interpretations, each of which is assigned an associated weight representing statistical confidence in the alternatives. In principle, epistemic uncertainty can be reduced by the accumulation of additional information associated with the phenomenon or by refining models. The uncertainty in the parameters of the probability distribution of a random phenomenon is epistemic. Uncertainty in model structure (i.e., processes included in the model and how they are represented) is considered epistemic.	ANS-2.8-2019
epistemic uncertainty	Non-preferred variation (3) The uncertainty attributable to incomplete knowledge about a phenomenon that affects our ability to model it. Epistemic uncertainty is reflected in ranges of values for parameters of a particular model, a range of viable models, the level of model detail, multiple expert interpretations, and statistical confidence. In principle, epistemic uncertainty can be reduced by the accumulation of additional information. Note that epistemic uncertainty is sometimes also called “modeling uncertainty.”	ANS-2.27-2020 ANS-2.29-2020
epistemic uncertainty	Non-preferred variation (4) The uncertainty attributable toincomplete knowledge about a phenomenon that affects ourability to model it. Epistemic uncertainty is represented by ranges of values for parameters, a range of viable models, thelevel of model detail, multiple expert	

Term	Description	Reference/Source
	interpretations, and statistical confidence. In principle, epistemic uncertainty canbe reduced by the accumulation of additional information. This definition is used in the context of seismic hazard and fragility. (ASME ANS RA-S-1.1-2022) (ASME/ANS RA-S-1.4-2021 does not include the last sentence but includes the following parenthetical "(Epistemic uncertainty is typically manifested as parameter, modeling, and completeness uncertainty.)"	
epistemic uncertainty	Non-preferred variation (5) The uncertainty attributable to incomplete knowledge about a phenomenon that affects our ability to model it. Epistemic uncertainty is reflected in ranges of values for parameters, a range of viable models, the level of model detail, multiple expert interpretations, and statistical confidence. In principle, epistemic uncertainty can be reduced by the accumulation of additional information. (Epistemic uncertainty is sometimes also called "modeling uncertainty.")	ASME/ANS RA-Sb–2013
	Note: The definitions are so similar that no one definition is preferred.	
equipment	A constituent of components, a component, an assemblage of components, a system, or a structure having at least one function.	ANS-51.1-1988
equipment	Non-preferred variation (1) A term used to broadly cover the various components in a nuclear power plant. Equipment includes electrical and mechanical components (e.g., pumps, control and power switches, integrated circuit components, valves, motors, fans), and instrumentation and indication components (e.g., status indicator lights, meters, strip chart recorders, sensors). "Equipment," as used in this Standard, *excludes* electrical cables.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
equipment qualification	The generation and maintenance of data and documentation to demonstrate that equipment is capable of operating under the conditions of a qualification test, or test and analysis.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022 ASME/ANS RA-Sb–2013
equivalent dose (H_T)	: The product of average absorbed dose ($D_{R,T}$) in a tissue or organ (T) and a radiation weighting factor (W_R). This term was introduced in the ICRP 60 methodology and should be used in place of dose equivalent when appropriate. The units of equivalent dose are the rem or seivert (Sv).	ANS-15.11-2016
	Note: The sentence: "This term was introduced in the ICRP 60 methodology and should be used in place of dose equivalent when appropriate" should not be part of the definition. It may be included as a footnote.	

Term	Description	Reference/Source
equivalent dose (*HT*)	*Non-preferred variation (1)* defined as the mean dose to a tissue or organ, D_T, multiplied by the dimensionless radiation weighting factor, w_R, that accounts for the biological effectiveness of the radiation type (relative to photons). The unit of equivalent dose is J/kg, and its special name is sievert (Sv). The radiation weighting factor for photons is unity by definition. The factor for neutrons varies with energy, and the latest values recommended by the ICRP in Publication 103 [2] are shown in Figure 1.  Image reproduced courtesy of ICRP Figure 1 – ICRP Publication 103 radiation weighting factors, $\boldsymbol{w_R}$, for neutrons as a function of energy [2]. Note: It is recommended that definitions do not include figures.	ANS-6.1.1-2020
equivalent test	A test method utilized in place of a standard or reference test which achieves the same end result.	ANS-6.4.2-1985
essentially unshielded	As used in this standard, essentially unshielded relative to air scattering means less than one mean-free-path of attenuation for the dominant energy. If the users of this standard choose to use an alternative definition in the calculations, the users should clearly define its use in documenting the calculations.	ANS-6.6.1-2015
estimate	A population estimate is a substitute for a complete count of the population as of a current or past date. Usually the estimate utilizes contemporary data.	ANS-2.6-81D
Eulerian method	A method of studying atmospheric motions in which one considers volume elements at fixed locations in space across which material flows.	ANS-2.15-2013
evacuation	A response to an emergency at a facility involving removal of a selected portion of the population surrounding the facility. Evacuation is usually described in the emergency plans of a facility for the close-in population within the plume exposure pathway Emergency Planning Zone (usually about 16 km (10-miles) from the site) and is often planned to be accomplished in advance of the release of material as a means of dose avoidance.	ASME/ANS RA-S-1.3-2017
evacuation occurrence	A circumstance that prevents attaining or maintaining safe shutdown condition from the control room. The circumstance is only that adequate control from the control room is no longer considered possible or desirable.	ANS-58.6-1992
evaluated data set	A data set that is completely and uniquely specified over the ranges of energy and angles important to reactor calculations. Such a data set is an evaluation of information available (experimental measurement results and nuclear theories) as to the best physical descriptions of the	ANS-19.1-2019

Term	Description	Reference/Source
	interaction processes. An evaluated data set is intended to be independent of specific reactor compositions, geometries, energy group structures, or spectra.	
evaluated data set	Non-preferred variation (1) A data set that is completely and uniquely specified over the ranges of energy and angles important to reactor calculations. Such a data set is based upon available information (experimental measurement results and nuclear theories) and employs a judgment as to the best physical description of the interaction processes. An evaluated data set is intended to be independent of reactor composition, geometries, energy group structures, and spectra.	ANS-19.3-2011 ANS-19.3-2022
	Note: The definitions are considered technically identical, but the 2019 version was chosen because it is more recent.	
evaluated nuclear cross-section data	Microscopic cross-section representation derived from basic experimental data, from nuclear models and systematic, and from consideration of integral measurements.	ANS-6.1.2-2013
evaluated nuclear data file	Evaluated nuclear data file stored using a specified format and procedure. Examples are ENDF/B-VII.1, JEFF-3.1.2, and JENDL-4.0.	ANS-6.1.2-2013
evaluated nuclear data file/B (END F/B)	A U.S.-evaluated nuclear data file prepared and reviewed by subject matter experts that is coordinated and maintained by the Cross Section Evaluation Working Group (CSEWG) and the National Nuclear Data Center (NNDC) at Brookhaven National Laboratory.	ANS-6.1.2-2013
evaluator expert	An expert who is capable of evaluating the relative credibility of multiple alternative hypotheses, and who is expected to evaluate all potential hypotheses and bases of inputs from proponents and resource experts, to provide both evaluator input and other experts' representation of the community distribution.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1.2022
evaluators	Personnel responsible for assessing the planning, preparation, implementation, and conduct of the drill or exercise.	ANS-3.8.4-1995
event	A condition that deviates from normal operation, i.e., an initiating occurrence or an initiating occurrence plus single failure or coincident occurrence combination. See also "event sequence family."	ANS-53.1-2011
event	Non-preferred variation (1) A describable situation that must be accounted for in design.	ANS-57.5-1996
event	Non-preferred variation (2) Variant form	ANS-51.1
event	Non-preferred variation (3) For the purposes of this standard, a condition of plant operation that is postulated for deterministic analysis purposes. An event might consist of an initiating occurrence, coincident occurrence, single failure, or common-cause failure, including the consequential effects or combinations thereof. Events that are selected for detailed analysis in design-basis documentation become DBEs.	ANS-58.16-2014
event family	It is preferred that the term (event sequence family) and the associated definition be used in ANS standards.	
event family	Non-preferred term: event family. See "event sequence family."	
event frequency	The expected number of occurrences of an event such as an initiating event or event sequence per unit of time, normally expressed in events per plant-operating- year (or reactor-operating-year) or events per plant-calendar-year (or reactor-calendar-year). In the context of this standard, a plant may include one or more reactors. For PRAs that are performed on multi-reactor plants, event frequencies are normally measured on a per-plant-year basis, whereas PRAs that are performed on a single reactor are normally measured on a per-reactor-year basis.	ASME/ANS RA-S-1.4-2021
event frequency	Non-preferred variation (1) *The* expected number of occurrences of an event such as an initiating event or event sequence per unit of time, normally expressed in events per plant (or reactor) operating year or events per plant (or reactor) calendar year. For PRAs that are performed on multi-unit plants, event frequencies are normally measured on a per plant year basis, whereas PRAs that are performed on a single reactor unit are normally measured on a per reactor year basis.	ASME/ANS RA-S-1.4-2013 ANS-30.3-2022

Term	Description	Reference/Source
event sequence	A representation of a scenario in terms of an initiating event defined for a set of initial plant conditions (characterized by a specified p*lant operational state* (POS)) followed by a sequence of system, safety function and operator failures or successes, with sequence termination with a specified end state (e.g., prevention of release of radioactive material, or release in one of the reactor specific release categories (See *release category*). An event sequence may contain many unique variations of events (*minimal cutsets*) that are similar in terms of how they impact the performance of safety functions along the event sequence.	ASME/ANS RA-S-1.4-2013 ASME/ANS RA-S-1.4-2021 ANS-30.3-2022
event sequence	Non-preferred variation (1) A specific event tree pathway in a PRA model that begins with an initiating event in a specified plant operating state and describes the successful and unsuccessful responses of the SSCs that perform safety functions in response to the initiating event and ends in a well-defined end state.	ANS-53.1-2011
event sequence analysis	An analysis that is performed as part of a PRA to determine the possible plant responses to an initiating event by constructing event trees, defining event sequences and end states, determining the success criteria for each event tree top event, and defining the end states.	ANS-53.1-2011
event sequence analysis	Non-preferred variation (1) The process to determine the combinations of plant operating states, initiating events, safety functions, system failures and successes, and end states that may involve a release of radioactive material.	ASME/ANS RA-S-1.4-2021
event sequence family	A group of event sequences with similar initiating events, safety function responses, and end states. As used in this standard, many LBEs are defined by organizing individual event sequences from the PRA into event sequence families to avoid having to process too many event sequences and to prevent the subdivision of event sequences with similar consequences for application of the acceptable frequencies and consequences expressed by the TLSC curve. As used in this definition, the term “event” commonly refers to an event sequence family. When event sequences are combined into event sequence families, the frequency classification is based on the total frequency of the family.	ANS-53.1-2011
event sequence family	Non-preferred variation (1) A grouping of event sequences with similar challenges to the plant safety functions, response of the plant in the performance of each safety function, response of each radionuclide transport barrier, and end state. An event sequence family may involve a single event sequence or several event sequences grouped together. Each release category may include one or more event sequence families. When event sequence models are developed in great detail, identification of families of event sequences with common or similar source, initiating event and plant response facilitates application of the event sequence modeling requirements in this Standard and development of useful risk insights in the identification of risk contributors. Each event sequence family involving a release is associated with one and only one release category. (See event sequence and release category.)	ASME/ANS RA-S-1.4-2021
event sequence family	Non-preferred variation (2) A grouping of event sequences with a common or similar plant operating state, initiating event, hazard group, challenges to the plant safety functions, response of the plant in the performance of each safety function, response of each radionuclide transport barrier, and end state. An event sequence family may involve a single event sequence or several event sequences grouped together. Each *release category* may include one or more event sequence families. Event Sequence families are not required to be explicitly modeled in a PRA. Each event sequence family involving a release is associated with one and only one release category. (See *event sequence* and *release category*.)	ASME/ANS RA-S-1.4-2013
event sequence, risk-significant	See risk-significant event sequence.	ASME/ANS RA-S-1.4-2021
event tree	A logic diagram that begins with an initiating event or condition and progresses through a series of branches that represent expected system	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
	or operator performance that either succeeds or fails and arrives at either a successful or failed end state.	ASME/ANS RA-S-1.1-2022
event tree	Non-preferred variation (1) A logic diagram that begins with an initiating event and progresses through a series of branches that represent the possible system or operator responses including successful and unsuccessful performance of safety functions in response to the initiating event and termination of each branch in a well-defined end state.	ANS-53.1-2011
event tree top event	The conditions (i.e., system behavior or operability, human actions, or phenomenological events) that are considered at each branch point in an event tree.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021
examining physician	A licensed physician (Medical Doctor or Doctor of Osteopathy) who is responsible for evaluating applicants and operators and who has the ultimate responsibility for certifying that the medical examination was conducted in accordance with this standard and that the individual meets the physical and mental health requirements of this standard. The examining physician shall be conversant with this standard and shall have a general understanding of the routine and emergency activities required of a nuclear power plant reactor operator.	ANS-3.4-2013
excessive radiation dose	Any dose to personnel corresponding to an absorbed dose from neutrons and gamma rays equal to or greater than 0.12 Gy (12 rad) in free air.	ANS-8.3-1997
exchange capacity (ion exchange capacity)	The amount of exchangeable ions measured in milligram equivalents per gram of solid material at a given pH,	ANS-2.17-1989
exclusion area	That area surrounding the reactor in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. See 10 CFR 100.3(a). "Definitions."	ANS-3.7.2-1979
exclusion area	Non-preferred variation (1) Variant form.	ANS-3.6-1981
exempt quantity	A quantity determined by the licensing or chartering authority to be exempt from selected regulatory requirements.	ANS-15.11-2016
exercise	A planned event that is used to evaluate the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations.	ANS-3.8.4-1995 3.8.3-1995
exercise	Non-preferred variation (1) An event that tests a major portion of the basic elements existing within an Emergency Plan and the Emergency Response Organization. This event should demonstrate the capability of the emergency preparedness organization to cope with a radiological or hazardous chemical emergency which could result in offsite consequences. ()	ANS-3.7.3-1979
exercise	Non-preferred variation (2) An event that tests the integrated capability and a major portion of the basic elements existing within emergency plans and emergency response organizations.	ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.1-1987 ANS-3.8.5-1992
exercise	Non-preferred variation (3) An activity that tests one or more portions of the integrated capability of emergency response plans, equipment, and organizations.	ANS-8.23-2007 ANS-8.23-2019
expected basis radioactivity concentrations	Radiochemical constituents as provided in American National Standard, ANS-18.1-84[10], "Radio-active Source Terms for Normal Operation of Light Water Reactors".	ANS-55.6-1993 ANS-55.6-1999
experience	Applicable work in Power Plant design, construction, preoperational and start-up testing activities, operation, maintenance, onsite activities, or technical services. Observation of others performing work in the above areas is not experience.	ANS-3.1-1987

[10] ANS-18.1 was revised and reissued as ANS-18.1-2016.

Term	Description	Reference/Source
experimental benchmark	An experiment for which conclusions can be drawn as to the accuracies of calculational models and the underlying nuclear data. An experimental benchmark contains the following: • a complete description of the conditions under which the experiment took place, including input data such as reactor geometry, material compositions, core power distribution, relevant material temperatures, and experimental conditions specified in sufficient detail to model or to replicate the experiment; • measured data and their associated uncertainties along with a complete specification of data correlations. An experimental benchmark can provide “integral” or “differential” metrics. ”Integral” pertains to integral quantities such as reaction rates, while “differential” provides energy-dependent spectral information.	ANS-6.1.2-2013
experimental data	Non-preferred variation (1) Any experimentally measured quantity or quantities; as such, this term is applied herein to both energy generation and deposition measurements relevant to this standard.	ANS-19.3.4-2022
experimental data	Non-preferred variation (2) Any experimentally measured quantity or quantities. As such, it is applied herein to both differential cross-section measurements and integral measurements (e.g., control rod worth) obtained from reactor experiments or operations.	ANS-19.3-2011; R2017 ANS-19.3-2022
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard. It is recommended to use only the definition up to the word “quantities.”	
experiments	Performance of those plant operations carried out under controlled conditions in order to establish characteristics or values not previously known.	ANS-3.2-2012
expert elicitation	A formal, highly structured, and documented process whereby expert judgments, usually of multiple experts, are obtained.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
expert judgment	Information provided by a technical expert, in the expert’s area of expertise, based on opinion, or on an interpretation based on reasoning that includes evaluations of theories, models, or experiments.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
exposed structural steel	Structural steel elements that are not protected by a passive fire barrier feature (e.g., fire retardant coating) with a minimum fire-resistance rating of 1 hr.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
exposure	The exposure, X, is the quotient of dQ by dm, where dQ is the absolute value of the total charge (Coulombs) of the ions of one sign produced in air when all the electrons (i.e., negatrons and positrons) are liberated by photons in a volume element of air having mass dm are completely stopped in air. X = dQ/dm Coulombs kg^{-1} The special unit of exposure rate is the roentgen (R) R = 2.58 x 10-4 Coulombs kg-1.	ANS-6.8.1-81
exposure	Non-preferred variation (1) Being exposed to ionizing radiation or to radioactive material.	ANS-15.11-2016
exposure pathway	A mechanism by which radioactive material is transferred from the (local) environment to humans. There are three commonly recognized exposure pathways: inhalation, ingestion, and direct radiation. For example, ingestion is an exposure pathway, and it might include dose contributions from one or more routes of exposure. For example, one route of exposure that might contribute to the ingestion exposure pathway is often referred to as grass-cow-milk-infant-thyroid route of exposure.	ANS-2.17-2010
exposure period	Length of time used to calculate the dose accrued to exposed individuals from external radioactive sources (e.g., cloudshine, groundshine).	ASME/ANS RA-S-1.3-2017

Term	Description	Reference/Source
exposure rate	The exposure rate, x, is the quotient of dx by dt, where dx is the increment of exposure in the time interval dt. $x = dx/dt$ Coulombs s^{-1}·kg^{-1} The special unit of exposure rate is the roentgen per second (Rs^{-1}) or the roentgen per hour (Rh^{-1}).	ANS-6.8.1-1981
exposure rate	Non-preferred variation (1) Variant form.	ANS-6.3.1-1987
exogenous	Originating from outside.	ANS-2.6-1981
extended test interval	The maximum allowable Type A, Type B, or Type C test interval following the demonstration of good performance history.	ANS-56.8-2002
external data files	The data files which exist prior to or after execution of a computer program.	ANS-10.2-1988
external data files	Non-preferred variation (1) Variant form.	ANS-10.5-1979
external dose	That portion of the dose equivalent received from radiation sources outside the body.	ANS-15.11-2016
external event	An event originating outside a nuclear power plant that directly or indirectly causes an initiating event and may cause safety system failures or operator errors that may lead to core damage or large early release. Events such as earthquakes, tornadoes, and floods from sources outside the plant and fires from sources outside the plant are considered external events. (See also *internal event*.) By historical convention, loss of offsite power (LOOP) not caused by another external event is considered to be an internal event.	ASME/ANS RA-Sb–2013 ANS-30.3-2022
external event	Non-preferred variation (1) An event originating outside an NPP that directly or indirectly causes an initiating event and may cause equipment failures, operator errors, or both, that may lead to an event sequence modeled in the PRA. Events such as earthquakes, tornadoes, and floods from sources outside the plant and fires from sources outside the plant are considered external events. (See also internal event.) By historical convention, LOOP not caused by another external event is considered to be an internal event.	ASME/ANS RA-S-1.4-2021
external event	Non-preferred variation (2) (also referred to as external plant hazard event): An event originating from an external plant hazard outside a plant that causes safety system failures, operator errors, or both, that in turn may lead to an initiating event, an event sequence, and a radioactive material release source term. Events such as earthquakes, tornadoes, and floods from sources outside the plant and fires from sources outside the plant are considered external events (see also “internal event” and “internal plant hazard”). By convention, loss of off-site power not caused by another external event is considered to be an internal event. Note that external events may or may not involve an external event induced initiating event. (For example, an external event may occur without damage to the plant with continued plant operation.)	ANS-53.1-2011
external event	Non-preferred variation (3) For the purposes of this standard, an event caused by man involving vehicles, equipment, or structures that occur external to a facility and has the potential for causing damage to the facility or the environment.	ANS-58.16-2014
	Note: Although a preferred term was selected, the 2023 Glossary Review Team agreed that all are too specific in their application to the source standard.	
external flood hazard mechanism (flooding mechanism)	The physical processes by which a natural or manmade flood-forcing phenomenon can lead to overflow or accumulation of water on or near a site.	ASME/ANS RA-S-1.1-2022
external hazard	A hazard originating outside a nuclear power plant that directly or indirectly causes an initiating event and may cause safety system failures or operator errors that may lead to core damage or large early release. Hazards such as earthquakes, tornadoes, and floods from sources outside the plant and fires from sources outside the plant are considered external hazards. (See also internal event.) By historical convention, LOOP not caused by another external hazard is considered to be an internal event.	ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
external man-made hazard	Results from an accident created by man involving vehicles, equipment, or structures, which occur external to an ISFSI and has the potential for causing damage.	ANS-2.19-1989
external plant hazard	/t is preferred that the term (external event) and the associated definition be used in ANS standards.	
	Non-preferred term: external plant hazard. A hazard located outside the plant that can cause an external event. Examples of external hazards include earthquake faults, chemical or process plants, and airports. See “external event” and “internal plant hazard.”)	ANS-53.1-2011
extracameral effect	Response of an instrument caused by the influence of radiation on any portion of the system other than the detector.	ANS-6.8.1-1981 ANS-6.8.2-1986
extreme environmental load	Load which is credible, but highly improbable.	ANS-2.12-1978
extremely rare event	One that would not be expected to occur even once throughout the world nuclear industry over many years (e.g., <1E-6/plant-yr).	ASME/ANS-RA-Sb–2013 ASME/ANS RA-S-1.4-2021
extreme winds	Wind motions other than winds caused by a tornado. They include winds resulting from hurricanes, cyclones, thunderstorms, and due to orographic effects.	ANS-2.19-8199
extremities	Hand, elbow, arm below the elbow; foot, knee, and leg below the knee.	ANS-15.11-2016

F

Term	Description	Reference/Source
F scale	A six-tier rating system devised by Fujita to facilitate categorizing tornadoes according to the damage they produce, F-0 to F-6. F-scale winds are defined to apply at the 33 ft (10 m) height. Although wind speeds are associated with each F-scale rating, rigorous justification for them has not been firmly established.	ANS-2.3-1983
facilitator/integrator	A single entity (individual, team, company, etc.) who is responsible for aggregating the judgments and community distributions of a panel of experts to develop the composite distribution of the informed technical community (herein called “the community distribution”).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
facility	This word is used throughout the standard in a manner consistent with existing, operating facilities; however, it is also intended to apply to facilities that have ceased operations (i.e., in the decommissioning phase), facilities that have not yet been built (i.e., in the design stage), operations with fissionable materials outside structures (e.g., below-grade storage and disposal sites), and the movement of materials between on-site facilities.	ANS-8.26-2007
facility	Non-preferred variation (1) A defined area where fissionable material is located.	ANS-8.23-2007 ANS-8.23-2019
facility licensee	An applicant for, or holder of, a license for a nuclear facility.	ANS-3.4-1994
facility licensee	Non-preferred variation (1) The organization that holds the facility license issued under 10 CFR 50.1 or 10 CFR 52.1.	ANS-3.4-2013
facility operator	An authorized representative of a holder of a license pursuant to 10 CFR 50, "Licensing of Production and Utilization Facilities", or any government, public, or private organization which is the owner and operator or is the designated responsible operator of a nuclear facility.	ANS-3.4-1987
facility worker	For the purposes of this standard, facility workers are those who are inside the facility and who can be in very close proximity to the hazardous materials, often directly manipulating them. These workers perform their duties in accordance with procedures, are trained in those operations, are knowledgeable of the hazards, and are trained in emergency response in case of upsets.	ANS-58.16-2014
failed fuel	A fuel assembly with a perforation of, or a defect in, the fuel cladding, or any distortion or break causing a structural change that requires, due to the fuel condition, any of the following: • Use of abnormal fuel handling procedures or equipment, • Premature replacement of a fuel assembly, • Replacement of its component parts, or restrictions on plant operation.	ANS-57.2-1993 ANS-57.2-1999
failed fuel	Non-preferred variation (1) Fuel with a perforation of, or a defect in, the fuel cladding or any distortion or break causing a structural change that requires use of abnormal fuel unit handling procedures or equipment, premature replacement of a fuel assembly, replacement of its component parts, or restrictions on plant operation.	ANS-57.1-1992 ANS-3.8.x
failure	The inability of an item to accomplish its design function.	ANS-50.1 ANS-58.11-93 ANS-58.14-2011 ANS-30.3-2022
failure	Variant form.	ANS-4.1
failure	Non-preferred variation (1) The inability to perform an action or function at the proper time or performance of an action at an improper time. An alternate is a change from an operable state meeting specified requirements to an inoperable state that does not meet specified requirements.	ANS-53.1-2011
failure, common mode	It is preferred that the term (common cause failure) and the associated definition be used in ANS standards.	

Term	Description	Reference/Source
failure, common mode	A specific functional manifestation of a failure (i.e., the means by which an observer can determine.	
failure mechanism	Any process that results in failure modes, including chemical, electrical, mechanical, physical, thermal, and human error; a failure mode and its associated cause.	ANS-53.1-2011
failure mechanism	Non-preferred variation (1) Any of the processes that results in failure modes, including chemical, electrical, mechanical, physical, thermal, and human error.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
failure mode	A specific functional manifestation of a failure (i.e., the means by which an observer can determine that a failure has occurred) by precluding the successful operation of a piece of equipment, a component, or a system (e.g., fails to start, fails to run, leaks).	ANS-53.1-2011
failure mode	Note: In the context of Fire PRA, spurious operation is also considered a failure mode above and beyond failures that preclude successful operation.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
failure mode	Non preferred variation (1) The manner or state in which an SSC fails [3].[11]	ANS-30.3-2022
failure mode and effects analysis (FMEA)	A process for identifying failure modes of specific components and evaluating their effects on other components, subsystems, and systems.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
failure mode and effects analysis (FMEA)	Non-preferred variation (1) A procedure for analysis of potential failure modes within a system for classification by severity or determination of the failure's effect upon the system. Widely used in the manufacturing industries in various phases of the product life cycle. Failure causes are any errors or defects in process, design, or item, especially ones that affect the customer, and can be potential or actual. Effects analysis refers to studying the consequences of those failures.	ANS-53.1-2011
failure, passive	(See passive failure).	
failure probability	The likelihood that an SSC will fail to operate upon demand or fail to operate for a specific mission time.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022 ANS-30.3-2022
failure rate	The expected number of failures per unit time, evaluated, for example, by the ratio of the number of failures in a population of components to the total time observed for that population.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
failure, undetected	It is preferred that the term (undetected failure) and the associated definition be used in ANS standards.	
fast time	A function of the simulation software that increases the rate of simulation for some or all computed values with respect to real time.	ANS-3.5-2018
fast time	Non-preferred variation (1) To increase the rate of simulation for some or all computed values with respect to real time.	ANS-3.5-2009
fault	A fracture in the earth along which blocks of crust on either side have moved with respect to one another.	ANS-2.27-2008 ANS-2.29-2008
fault	Non-preferred variation (1) A "fault" is a surface or zone of rock fracture along which there has been displacement. Included are structures such as the "growth faults" in the thick sequences of poorly consolidated sediments of the Gulf Coastal Plain. Excluded are surfaces or zones along which there has been displacement related to surficial or near-surface processes such as glacial-shove features, landslides, karst terrain, or features related to activities of man such as mining, or withdrawal or addition of subsurface fluids.	ANS-2.7-82 ANS-2.19-89
fault	Variant form.	ANS-2.11-78
fault/fault zone	A fracture in the earth along which blocks on either side have moved with respect to one another. Faulting can occur along multiple planes. The area encompassing this faulting is a fault zone.	ANS-2.27-2020 ANS-2.29-2020

[11] This reference is "IAEA Safety Glossary," 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
fault/fault zone	Non preferred variation (1) A fracture in the earth along which blocks on either side have moved with respect to one another. Faulting may occur along multiple planes (see Fault Displacement) and includes secondary faulting. The area encompassing this faulting is a fault zone.	ANS-2.30-2015
fault displacement	The relative movement of the two sides of a fault, measured in any chosen direction; also, the specific amount of such movement. As used here, the term applies to either slip or separation as measured or inferred along a fault. Principal faulting occurs along a main plane (or planes) that is (are) the locus of release of seismic energy. Secondary or distributed faulting is rupture that occurs in the vicinity of the principal faulting, possibly on splays of the main fault or antithetic faults.	ANS-2.30-2015 ANS-2.27-2020 ANS-2.29-2020
fault source	In a seismic source model (SSM), a fault or zone for which the tectonic features causing earthquakes have been identified. These are usually individual faults, but they can be zones comprising multiple faults or regions of faulting if surface evidence of these faults is lacking but the faults are suspected from seismicity patterns, tectonic interpretations of crustal stress and strain, and other evidence.	ANS-2.27-2020 ANS-2.29-2020
fault source	Non preferred variation (1) A fault or zone for which the tectonic features causing earthquakes have been identified. These are usually individual faults, but they may be zones comprising multiple faults or regions of faulting if surface evidence of these faults is lacking but the faults are suspected from seismicity patterns, tectonic interpretations of crustal stress and strain, and other evidence. Regions of blind thrust faults are a good example of the latter.	ANS-2.27-2008 ANS-2.29-2008
fault tree	A deductive logic diagram that depicts how a particular undesired event can occur as a logical combination of other undesired events.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
features, events, and process(es) [FEP(s)]	An assessment of the relevant (a) features, which are identified physical characteristics of the total system, and how they behave over time; (b) events, which are occurrences of abnormal radionuclide releases; and (c) processes, which include physical, chemical, and biological processes that govern radionuclide transport.	ANS-2.17-2010
few-group	An energy group (typically two-group) structure that is adopted for a particular application. The few-group constants for a region are dependent on a specific reactor composition and geometry through a calculated energy spectrum and are also dependent on temperature.	ANS-19.3-2011 ANS-19.3-2022
field monitoring	The outdoor measuring and sampling activities conducted to determine the exposure rate and contamination level to people and the environment during and after an emergency.	ANS-3.8.6-1994 ANS-3.8.2-1995 3.8.3-1995
field monitoring	Variant form.	ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.5-D92
figure of merit	The quantitative value, obtained from a PRA, used to evaluate the results of a PRA application (e.g., CDF or LERF).	
figure of merit	Non-preferred variation (1) The quantitative value, obtained from a PRA analysis, used to evaluate the results of an application (e.g., CDF or LERF).(*)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021*
	*Note: ASME/ANS RA-S-1.4-2021 has a different parenthetical – (e.g., RCF) but is otherwise the same.	
fill line (neck)	Those components, including piping, valves, and filters used to provide a means to replace fuel oil into the supply tank.	ANS-59.51-1989
fine-group	An energy group structure (typically 50 to 250 groups) that is adopted for a particular application. The fine-group constants are dependent on nuclide composition and temperature.	ANS-19.3-2022
fire analysis tool	As used in this Standard, “fire analysis tool” is broadly defined as any method used to estimate or calculate one or more physical fire effects (e.g., temperature, heat flux, time to failure of a damage target, rate of flame spread over a fuel package, heat release rate for a burning material, smoke density) based on a predefined set of input parameter values as defined by the fire scenario being analyzed. Fire analysis tools	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
	include, but are not limited to, computerized compartment fire models, closed-form analytical formulations, empirical correlations such as those provided in a handbook, and lookup tables that relate input parameters to a predicted output.	
fire area	That portion of a building or plant that is separated from other areas by boundary fire barriers (e.g., walls, floors, or roofs).	ANS-59.4-79W83
fire area	Non-preferred variation (1) A portion of a building or plant that is separated from other areas by rated fire barriers adequate for the fire hazard. (Note: A rated fire barrier is a fire barrier with a fire-resistance rating.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
fire barrier	A physical barrier, such as a floor, wall, or partition with penetrations or openings properly protected, which prevents the spread or fire from one side to the other.	ANS-59.4-79W83
fire barrier	Non-preferred variation (1) A continuous vertical or horizontal construction assembly designed and constructed to limit the spread of heat and fire and to restrict the movement of smoke (NFPA 805 [1-4]).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
fire compartment[1]	A subdivision of a building or plant that is a well-defined enclosed room, not necessarily bounded by rated fire barriers. A fire compartment generally falls within a fire area and is bounded by noncombustible barriers where heat and products of combustion from a fire within the enclosure will be substantially confined. Boundaries of a fire compartment may have open equipment hatches, stairways, doorways, or unsealed penetrations. This is a term defined specifically for fire risk analysis and maps plant fire areas and/or zones, defined by the plant and based on fire protection systems design and/or operations considerations, into compartments defined by fire damage potential. For example, the control room or certain areas within the turbine building may be defined as a fire compartment (This definition is derived from NUREG/CR-6850–EPRI TR-1011989 [1-5]). In this Standard, “physical analysis unit” is used to represent all subdivisions of a plant for Fire PRA. Physical analysis units include fire compartments. Footnote: (1) It is noted that the term “fire compartment” is used in other contexts, such as general fire protection engineering, and that the term’s meaning as used here may differ from that implied in an alternate context. However, the term also has a long history of use in Fire PRA and is used in this Standard based on that history of common Fire PRA practice. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.4-2021 includes the footnote but the definition stops at the parenthetical.) (ASME/ANS RA-1.1-2022 also includes the footnote but the definition stops at the parenthetical.)	
fire extinguishing (suppression) system	A fixed system utilizing an appropriate agent such as water, carbon dioxide, halogenated agents, foam, etc. for control or extinguishment, or both, of fire within the system's designated area of influence. The system may be either automatic or manual in operation.	ANS-59.4-79W83
fire-induced initiating event	That initiating event assigned to occur in the FPRA plant response model for a given fire scenario (adapted from NUREG/CR-6850–EPRI TR-1011989). (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.1-2022 is identical but does not include the parenthetical about NUREG.) (ASME/ANS RA-S-1.4-2021 definition is identical but recognizes the “Internal Fire Plant Response” instead of the “FPRA plant response” and does not include the parenthetical.)	
fire modeling	As used in this Standard, “fire modeling” refers to the process of exercising a fire analysis tool including the specification and verification of input parameter values, performance of any required supporting calculations, actual application of the fire analysis tool itself, and the interpretation of the fire analysis tool outputs and results.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
fire protection feature	Administrative controls, fire barriers, means of egress, industrial fire brigade personnel, and other features provided for fire protection purposes.	ASME/ANS RA-S-1.4-2021
fire protection program	The integrated effort involving equipment, procedures, and personnel used in carrying out all activities of fire protection. It includes system and	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
	facility design, fire prevention, fire detection, annunciation, confinement, suppression, administrative controls, fire brigade organization, inspection and maintenance, training, quality assurance, and testing.	ASME/ANS RA-S-1.1-2022
fire protection program element	Fire Rating (Fire Resistance Rating) - The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as established in accordance with the test procedures of NFPA 251-1972, "Standard Methods of Fire Tests of Building Construction and Materials," ASTM E119-76, "Methods of Fire Tests of Building Construction and Materials," or other recognized rating tests.	ANS-59.4-79W83
fire protection program element	Non-preferred variation (1) fire-resistance rating. The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as established in accordance with an approved test procedure appropriate for the structure, building material, or component under consideration (NFPA 805).	ASME/ANS RA-Sb–2013
fire protection system	Fire detection, notification, and fire suppression systems designed, installed, and maintained in accordance with the applicable NFPA codes and standards.	ASME/ANS RA-S-1.4-2021
Fire-resistance rating	Time, in minutes or hours, that materials or assemblies have withstood a fire exposure as established in accordance with an approved test procedure appropriate for the structure, building material, or component under consideration.	ASME/ANS RA-S-1.4-2021
fire scenario	A set of elements that describes a fire event. The elements usually include a physical analysis unit, a source fire location and characteristics, detection and suppression features to be included, damage targets, and intervening combustibles.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
fire scenario selection	The process of defining a fire scenario to be analyzed in the fire PRA that will represent the behavior and consequences of fires involving one or more fire ignition sources. Fire scenario selection includes the identification of a fire ignition source (or set of fire ignition sources); secondary combustibles and fire spread paths; fire damage targets, detection and suppression systems and features to be credited; and other factors that will influence the extent and timing of fire damage. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.1-2022) (ASME/ANS RA-S-1.4-2021 but with the word “internal” before “fire PRA”)	
fire suppression system	Generally refers to permanently installed fire protection systems provided for the express purpose of suppressing fires. Fire suppression systems may be either automatically or manually actuated. However, once activated, the system should perform its design function with little or no manual intervention.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
fire wrap	A localized protective covering designed to protect cables, cable raceways, or other equipment from fire-induced damage. Fire wraps generally provide protection against thermal damage.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
firmware	The combination of software and data that reside on read-only memory.	ANS-7-4.3.2-1992
first-order error	A linearly accumulating error.	ANS-2.10-2017
fissile assembly (assembly)	A system consisting of fissile material and other components that significantly influence the reactivity.	ANS-8.6-1983
fissile material	A material, other than natural uranium, that is capable of sustaining a neutron chain reaction.	ANS-8.7-1975
fission product barrier	A physical barrier that prevents the release of radioactive materials to the environment (e.g., fuel cladding, reactor coolant pressure boundary, primary containment).	
fission product barriers	The fuel cladding, reactor coolant pressure boundary, and primary containment.	ANS-51.1 ANS-30.3-2022
fission product removal	The process of removing fission products from the post-accident containment atmosphere.	ANS-56.5-1987

Term	Description	Reference/Source
fitting function, Taylor	A buildup factor function of distance from the source in the form: $B(E,x)= A_1\exp(-a_1x)+A_2\exp(-a_2x)$ (1) where: x is the distance from the source in mean free paths and parameters A_1, a_1, and a_2 are functions of the attenuating medium and the source energy, E. The fourth parameter, A_2, is constrained to equal 1 - A_1. (ANS-6.4.3-1991) fitting function, G-P (Geometric Progression). A build up factor function of distance from the source in the form: $B(E,x)=1=(b-1)/(K-1)$ for K=1 and $B(E,x)=1=(b-1)x$ for K=1 (2) $K(E,x)= cx^a =d[\tanh(x/X_k-2)-\tanh(-20]/[1-\tanh(-2)$. (3) Where: x is the distance from the source in mean free paths (mfp) and b is the value of the buildup factor at 1 mfp. The variation of parameter K with penetration represents the photon dose multiplication and change in the shape of the spectrum from that at 1 mfp, which determined the value of b. Equation (3) represents the dependence of K on x; a,c,d, and X_K are fitting parameters that depend on the attenuating medium and source energy, E.	ANS-6.4.3-1991
fixed continuous monitor	Any area radiation monitor which operates continuously in a specified location.	ANS-6.8.1-1981
fixed moderator	A moderator with an established geometric relationship to the locations occupied by the fixed neutron absorber and fissionable material.	ANS-8.21-1995
fixed neutron absorber	Neutron absorbers in solids with an established geometric relationship to the locations occupied by fissionable material.	ANS-8.21-1995
flame spread rating	The numbers or classifications obtained according to NFPA 255-1972. "Method of Test of Surface Burning Characteristics of Building Materials."	ANS-59.4-79W83
flood area	An area within a plant that is defined for the purpose of performing a flood assessment PRA. Flood areas are normally defined in terms of one or more of the following: building types; location within a building or the site; and the physical barriers that delay, restrict, or prevent the propagation of floods to adjacent areas. Flood areas refer to areas of buildings or of the site that may be flooded due to internal or external flooding sources. (ASME/ANS RA-S-1.1.2022) (ASME/ANS RA-S-1.4-2021 includes an additional sentence at the end that reads: “Flood areas refer to areas of buildings or of the site that may be flooded due to internal or external flooding sources.”)	
flood area	Non-preferred variation (1) An area within a plant that is defined for the purpose of performing an internal-flooding PRA. Flood areas are normally defined in terms of one or more of the following: building types; location within a building; and the physical barriers that delay, restrict, or prevent the propagation of floods to adjacent areas.	ASME/ANS RA-Sb–2013
flood event duration (external flooding)	Defines the period of time that a flood hazard affects the site. Flood event duration typically begins with conditions being met for entry into a flood procedure or notification of an impending flood and ends when flood waters have receded from the site. It typically includes warning time (if available) and period of inundation and recession.	ASME/ANS RA-S-1.1-2022
flood hazard (external flooding)	Those hydrometeorological, geoseismic, or structural failure phenomena (or combination thereof) that may produce flooding at or near nuclear power plant site.	ASME/ANS RA-S-1.1-2022
flood-induced accident sequence	An accident sequence that includes a flood-induced initiating event and the potential for undesired consequences, with a specified end state, e.g., core damage.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
flood-induced event sequence	An event sequence that includes a flood-induced initiating event and the potential for undesired consequences, with a specified end state.	ASME/ANS RA-S-1.4-2021
flood-induced failure mechanism	The failure mechanism of an SSC induced by a flood. Possible SSC failure mechanisms include, but are not limited to, shorting out of electrical connections, blockage of air intakes, and structural damage from flood loads. In the context of external flooding, flood-induced failure	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
	mechanisms may include additional factors such as blockage of sumps (e.g., due to debris) and overtopping of barriers.	
flood-induced failure mechanism	Non-preferred variation (1) The failure mechanism of an SSC induced by a flood. Possible SSC failure mechanisms include shorting out of electrical connections, blockage of air intakes, and structural damage from flood loads.	ASME/ANS RA-Sb–2013
flood-induced initiating event	An initiating event that is caused by a flood either directly (e.g., loss of system function caused by diversion of flow associated with the flood) or indirectly (e.g., plant shutdown caused by the loss of function of one or more flood-damaged SSCs). In the context of external flooding, flood-induced initiating events also include initiating events due to damage of SSCs from the floodwaters. (ASME/ANS RA-Sb–2013 without the last sentence)	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood initiating area (internal flooding)	The area from which the flood originates.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood propagation path	A physical pathway that would allow the progression of a flood within and among different flood areas. In the context of external flooding, flood propagation paths may begin with floods that originate from a source external from the plant.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood propagation path	Non-preferred variation (1) A physical pathway that would allow the progression of a flood and associated flood damage within and among different flood areas.	ASME/ANS RA-Sb–2013
flood rate	The flow rate of water or steam across the breach or opening in the pressure boundary of the flood source during the flood event. In the context of external flooding, the flood rate may also include the rate of flow of external flood water into a flood area. Depending on the context, the flood rate may be a time-dependent rate, a maximum rate, or an average rate over the duration of the flood.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood rate	Non-preferred variation (1) The flow rate of water or steam across the breach or opening in the pressure boundary of the flood source during the flood event. Depending on the context, the flood rate may be a time-dependent rate, a maximum rate, or an average rate over the duration of the flood.	ASME/ANS RA-Sb–2013
flood response SSCs (external flooding)	SSCs that may be used to maintain key safety functions during conditions that might occur during an external flood scenario, including SSCs that are indirectly related to maintenance of key safety functions (e.g., barriers that protect SSCs from floodwaters or other related effects).	ASME/ANS RA-S-1.1-2022
flood scenario	A description of an event that results in a flood-induced initiating event. The factors considered in the definition of a flood scenario include flood area; flood source; flood rate; flood propagation path; impact on plant SSCs; human actions included in flood initiation, mitigation, and termination; and means of detection (sensors, alarms, indications, etc.).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood source	An inventory of water or steam normally contained within a system, tank, component, reservoir, river, lake, or ocean that provides the potential for flooding-induced failure of SSCs in the event the flood source container or pressure or retention boundary is breached.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
flood termination	As used in the definitions of flood scenario and flood volume, the cessation of the flood rate by isolation of the flood source or exhaustion of the flood source inventory.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021
flood volume	The total flood volume of water released from the source from flood initiation to termination or to a specific point in time during a flood scenario; unless specified as the localized volume in specific flood areas for scenarios that involve multiple flood areas. Flood volume is normally used to calculate the nominal flood height, which is associated with the submergence failure cause. Water-spray volumes are generally different from flood volumes, but spray water may accumulate and contribute to flood volumes.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
flood-coastal	Abnormally high water on open and semi-enclosed bodies of water resulting from storm surge and tsunami, precipitation, tide, wind-wave activity, and possible flood at nearby stream.	ANS-2.12-1978
flooding	The abnormal presence of a quantity of fluid, either in the form of accumulation, flow, or spray, in buildings which contain structures, systems or components (SSCs) necessary for safe shutdown, emergency core cooling capability, or whose failure could result in offsite radiological consequences comparable to the guideline exposures of 10 CFR 100, "Reactor Site Criteria".	ANS-56-11-1988
flood-lake	Abnormally high water on enclosed bodies of water resulting from high lake level, storm surge and seiche, precipitation, wind-wave activity, and possible flood of nearby stream.	ANS-2.12-1978
flood-river	Abnormally high water on an inland stream resulting from precipitation and snow melt runoff, possible ice blockage, wind-wave activity, and possible dam failure or stream diversion.	ANS-2.12-1978
fluence-to-dose factor. (h_T)	The quotient of effective dose equivalent (H_E) by fluence □ (theta) at a specific energy $h_E = H_E/$□.	6.1.1-1991
flux (specific discharge, darcy velocity) (LT^{-1})	The volumetric or mass discharge per unit cross-sectional area of medium (solids plus pores); called the Darcian flux when applied to water movement.	ANS-2.17-2010
forecast	A population projection that is useful for analytical, planning, or policy purposes accompanied by a judgment regarding its accuracy.	ANS-2.6-2018
forecast year	Year for which the demographic data are needed for siting purposes. The forecast year is typically the year when construction starts.	ANS-2.6-2018
forced outage	An unscheduled plant shutdown that is required due to administrative or hardware issues. See “outage types” for further discussion.	ANS/ASME-58.22-2015
foundation input response spectra (FIRS)	FIRS are the site-specific performance-based design response spectra characterized by horizontal and vertical spectra at the foundation level of the structure in the free-field. FIRS are defined as an outcrop motion (see also Sec. 2.5 of ASCE/SEI 4-16 [5]). A plant may have multiple FIRS depending on the number of Seismic Category I structures and the foundation depth for each structure. The FIRS serve the basis to develop input motion for soil-structure–interaction (SSI) analysis and making a one-to-one comparison of the generic seismic design basis of the standard design and the site-specific seismic demand for a site. The FIRS for the vertical direction is obtained using the vertical-to-horizontal ratios appropriate for the site (see also Sec. 2.5 of ASCE/SEI 4-16) or other applicable methods for development of vertical design motion.	ANS-2.2-2016
fractile hazard curve	A hazard curve representing a particular percentile associated with the epistemic uncertainty distribution. For example, a spectral acceleration at the 95th fractile level means that 5% of all the spectral acceleration values, computed from all branches of the logic tree for epistemic uncertainty, are greater than that value.	ANS-2.29-2020
fractile hazard curve	Non preferred variation (1) Epistemic uncertainty is expressed by a distribution of exceedance probability values, a distribution of hazard curves, rather than a single value, or a single curve. In a fractile hazard curve, all the points on the curve correspond to the same fractile of the distribution of the probability of exceedance. A 5% percentile hazard curve indicates that we have a 5% confidence that the calculated hazard would be less than that given by the curve. A 95% percentile hazard curve indicates that we are 95% confident that the hazard is below the hazard given by the hazard curve.	ANS-2.29-2008
fractile hazard curve	Non-preferred variation (2) A set of hazard curves used to reflect the uncertainties associated with estimated hazard. A common family of hazard curves used in describing the results of a probabilistic seismic hazard analysis (PSHA) consists of curves of fractiles of the probability	ASME/ANS RA-Sb–2013

Term	Description	Reference/Source
	distributions of estimated seismic hazard as a function of the level of ground motion parameter.	
fraction leached	A portion of a constituent of a specimen or waste form that has been released from the specimen or waste form during the leaching process, using the quantity present initially as unity (100%).	ANS-16.1-2003
fragility	Fragility of an SSC is the conditional probability of its failure at a given hazard input level. The input could be earthquake motion, wind speed, or flood level. The fragility model used in seismic PRA is known as a double lognormal model with three parameters, which are the median acceleration capacity, the logarithmic standard deviation of the aleatory (randomness) uncertainty in capacity, and the logarithmic standard deviation of the epistemic modeling and data uncertainty in the median capacity.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
frazil ice	Ice crystals that form in supercooled water that is too turbulent to permit coagulation into sheet ice.	ANS-2.21-2012
free-fall spill	An elevated release of powder or liquid as a slug of material that falls without obstruction and impacts a hard, essentially unyielding surface.	ANS-5.10-98
free-field	The free-field is defined as a location on the ground surface or in the site soil column that is sufficiently distant from the site structures to be essentially unaffected by the site structures. In the context of this standard, an earthquake sensor is located in the free-field records of the free-field ground motion.	ANS-2.2-2016
free-field	Non-preferred variation (1) A location on the ground surface or in the site profile that is sufficiently distant from the site structures to be essentially unaffected by the vibration of the site structures but has essentially the same site condition as the site under the structure. It represents the site profile prior to construction of the structure. In the context of this standard, an earthquake sensor located in the free-field records approximately the free-field ground motion.	ANS-2.10-2017
free liquid	Uncombined liquid not bound by the solid matrix of the solid waste mass, such as liquid that can be drained from a container.	ANS-55.1-1992 ANS-55.1-2021
free volume	The total enclosed gas volume of a structure or an enclosed space minus the volumes occupied by solid material (e.g., internal walls, pipes, machinery) and liquids (e.g., sumps, suppression pools, etc.)	ANS-56.1-D85
freeze	The controlled pause of simulation.	ANS-3.5-2009 ANS-3.5-2018
frequency of exceedance	The frequency that a specified level of seismic hazard is expected to be exceeded at a site or region during a specified exposure period (e.g., once every 50 years).	ANS-2.30-2015
frequency of exceedance	Non preferred variation (1) The number of times within a particular time period that a specified amplitude of ground motion is exceeded. Many past seismic hazard studies have referred to this as a “probability of exceedance.” When the frequency of exceedance is low (e.g., 0.01 or less), it is numerically the same as the exceedance probability during the same time period. However, the frequency of exceedance can be greater than 1 (e.g., for very low amplitudes), but the exceedance probability cannot.	ANS-2.27-2020 ANS-2.29-2020
frequency-consequence (F-C) curve	A curve of frequency based on consequences that defines operating limits for facility events based on the frequency and severity of consequences.	ANS-53.1-2011
frequency mean value	The mean of an uncertainty distribution that expresses uncertainty in the estimate of an event frequency.	ANS-53.1-2011
frontline system	A system (safety or non-safety) that is capable of directly performing one of the accident mitigating functions (e.g., core or containment cooling, coolant makeup, reactivity control, or reactor vessel pressure control) modeled in the PRA.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
frontline system	Non-preferred variation (1) A system (safety or non-safety) that is capable of directly performing one of the release-mitigating functions	ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
	(e.g., core heat removal, reactivity control, or reactor vessel pressure control) modeled in the PRA.	
fuel assembly	A contained matrix array of fuel rods, or plates, which is normally treated as a unit for handling and accountability purposes.	ANS-57.8-2020
fuel assembly	Non-preferred variation (1) A matrix array of fuel rods which is normally treated as a unit for handling and accountability purposes.	ANS-57.8-1993
fuel assembly	Non-preferred variation (2) The smallest modular unit comprised of individual fuel rods and associated integral component parts for handling, control, support, and maintenance of the unit's geometry. For boiling water reactors, the channel that encloses the fuel bundle and channel fastener is included as part of the fuel assembly for design purposes.	ANS-57.5-1996
fuel assembly	Non-preferred variation (3) A grouping of fuel rods (fuel pins) that are mechanically or metallurgically joined together in a fixed geometrical arrangement. The reactor core is made up of an array of fuel assembly types.	ANS-19.4-2017
fuel assembly type	All fuel assemblies that have the same external dimensions, design values for initial mass, composition, and spatial distribution of fuel, burnable poison, structural material, and other materials that make up the fuel assembly.	ANS-19.4-2017
fuel burnup	The fuel burnup unit as used throughout this standard is megawatt days per kilograms of uranium (MWd/kg U) local pellet average. Because of subtle differences between other variables (e.g., with subscripting), the other variables are defined in the text where they first appear.	ANS-5.4-2011
fuel burnup	Non-preferred variation (1) As used throughout this standard, this term is megawatt-days per metric ton of heavy metal (MWd/t), because of subtle differences between other variables (e.g., with subscripting), the other variables are defined in the text where they first appear.	ANS-5.4
	Note: also see burnup (FWDCC should standardize on one term.)	
fuel cladding damage	Perforation or excessive distortion or rupture of fuel rod cladding which would permit the release of fission products to the reactor coolant. (ANS-50.1) [Developed for 51.1/52.1]	
fuel damage	Any fuel relocation, fuel–clad interaction, or clad degradation that limits the fuel lifetime or power level or compromises assumptions in the safety analysis.	ANS-54.1-2020
fuel damage	Non-preferred variation (1) Damage to a fuel assembly that breaches the cladding or distorts or disrupts spacer grids, fuel rods, end fittings or overall envelope dimensions, rendering it unfit for service in a reactor.	ANS-57.3-1993 ANS-57.2-1999
fuel damage limits	It is preferred that term (fuel design limits) and the associated definition be used in ANS standards fuel damage limits.	
fuel damage limits	Non-preferred variation (1) Those limits such as cladding strain, amount of fuel melting, amount of cladding deformation or melting, and fractional fuel failure beyond which the accident consequences are unacceptable. Different fuel damage limits are sometimes specified for different postulated accidents or different type of fuels.	ANS-54.1-1989
fuel design limits	Those limits such as cladding strain, amount of fuel melting, amount of cladding deformation or melting, and fractional fuel failure beyond which the accident consequences are unacceptable. Different fuel damage limits are sometimes specified for different postulated accidents or different type fuels.	ANS-54.1-1989 ANS-30.3-2022
fuel element	A curved fuel assembly, such as one in the shape of a circle or an arc of a circle.	ANS-57.8-2020
	Note: The 2023 Glossary Review Team does not recommend this definition for general use.	
fuel failure	The release of fission products from the fuel kernel by an modular helium-cooled reactor (MHR) tri-isotopic (TRISO) fuel coating particle failure mechanism.	ANS-53.1-2011
fuel handling accident	An accident involving nuclear fuel handling having the potential to adversely impact nuclear safety.	ANS-57.3-1993

Term	Description	Reference/Source
fuel handling accident	Non-preferred variation (1) An accident associated with nuclear fuel handling procedures having the potential to adversely impact nuclear safety by increasing k_{eff} or causing radioactivity release.	ANS-57.2-1999
fuel handling accident	Variant form.	ANS-57.2-D92
fuel handling equipment	Equipment used for moving new fuel during receipt and inspection, transporting to storage in-plant and loading this fuel and control components in the reactor.	ANS-57.3-2018
fuel handling machine	Any equipment operating over the spent fuel pool [specifically] designed for handling fuel units and control components.	ANS-57.1-1992 ANS-57.2-D92 ANS-57.2-1999
fuel handling system	Handling equipment used for receiving and inspecting new fuel and fuel containing recycled uranium or irradiated fuel and control components in the reactor, and removing from the reactor, transporting to storage, and inspecting irradiated fuel and loading casks for shipment of irradiated fuel from or storage on the site.	ANS-57.1-1992
fuel oil subsystem	That portion of the fuel oil system which supplies fuel to a single diesel generator unit.	ANS-59.51-1989
fuel oil system	The set of equipment including pumps, tanks, piping, valves and fill and vent lines required to supply fuel to the emergency diesel generators installed in a nuclear power plant. As used here "system" includes the fuel oil equipment for all of the diesel generators for a nuclear unit.	ANS-59.51-1989
fuel power	Power deposited directly in the fuel, as opposed to being deposited in the cladding, moderator, or structural materials.	ANS-19.11-2017
fuel preparation machine	A device consisting of a work platform, frame, and movable carriage used for stripping reusable channels from spent fuel and for rechanneling new fuel in boiling water reactors (BWRs). It is normally mounted on the wall of the spent fuel pool.	ANS-57.1-1992
fuel rod	Those items of a fuel assembly that are long, thin-walled tubes closed by end caps. A fuel rod may contain fuel (e.g., uranium, plutonium, and fission products) and non-fuel material (springs, inert gas, and so forth). (ANS-57.1-1992) (ANS-57.8-2020 also includes “(fuel pin)” as part of the term.)	
fuel rod	Variant form.	ANS-57.9-1992
fuel rod	Non-preferred variation (1) fuel rod (fuel pin). The smallest component of a reactor fuel assembly which encapsulates the fuel.	ANS-57.8-1993
fuel rod	Non-preferred variation (2) A long slender column of material containing fissile nuclides, normally encapsulated by metallic tubing.	ANS-8.17-2004
fuel transfer mechanism	Handling equipment used to move fuel units between the spent fuel pool and the reactor area.	ANS-57.1-1992
fuel unit	An item to be handled that contains fuel rods. It can be a fuel assembly, canned spent fuel assembly, or a canister of consolidated fuel rods.	ANS-57.1-1992
fuel unit	Non-preferred variation (1) The fundamental item to be stored in the ISFSI. It can be a spent fuel assembly, canned spent fuel assembly, or consolidated fuel rods.	ANS-57.9-1992 ANS-57.7-1997
fuel unit	Non-preferred variation (2) The fundamental item to be handled, stored, or transported. Examples include an assembly of fuel rods, canned spent fuel, or consolidated fuel rods.	ANS-8.17-2004
full power or nominal full power	A POS during which the reactor power is at or near its normal designed value. In this POS, the primary system configuration (power level, pressure, temperature, boundaries, etc.) is maintained essentially constant. The “low power” state is defined to include all at-power operations below nominal full power.(ASME/ANS RA-S-1.4-2021 uses “full power” and does not include the last sentence as directed in Note 2.) Notes: 1. Defined term should be changed to “nominal full power” 2. “Low power state” should be moved to a separate definition.	ANS/ASME-58.22-2015
full-scope probabilistic risk assessment	A PRA that accounts for all known plant operating states, initiating events and their causes including those from internal and external plant	ANS-53.1-2011

Term	Description	Reference/Source
	hazards, and event sequences whose end states are sufficiently developed to support and include an estimation of mechanistic source terms and off-site radiological consequences. Full-scope PRAs include a definition of event sequences, quantification of sequence frequencies and consequences, and quantification of uncertainties in the frequency and consequence estimates that is sufficient to account for all risk-significant contributions to each modeled end state.	
full scope simulator	A simulator incorporating detailed modeling of systems of the reference plant with which the operator interfaces in the control room environment. The control room operating consoles are included. Such a simulator demonstrates expected plant response to normal and off-normal conditions.	ANS-3.5-1985
function	A design specification for what an SSC is expected to accomplish in order to serve a plant operation, maintenance, or safety purpose.	ANS-53.1-2011 ANS-30.3-2022
functional analysis	Analysis of functions provided by SSCs. For safety functions, the analysis of the effects of safety-related SSCs on accident analysis.	ANS-53.1-2011
functional performance requirements	A qualitative or quantitative determination of acceptable operability by observation of system or component behavior during operation.	ANS-53.1-2011
functional requirement	Functional description of requirements that the designs provide. Expressed functionally, designers can translate system requirements into hardware designs.	ANS-53.1-2011 ANS-30.3-2022
functional requirement	Non-preferred variation (1) One of the several required capabilities of a fuel assembly that is necessary to meet its design function.	ANS-57.5-1996
functional test	A qualitative or quantitative determination of acceptable operability by observation of system or component behavior during operation.	ANS-56.5-1987
functional test	Non-preferred variation (1) A specialized signal that a sensor generates, on operator command, to determine if the accelerograph system is functioning according to the technical specifications from the manufacturer. This is typically performed, on site or remotely, during periodic instrument maintenance and after the recovery of an earthquake record, to ensure the accelerograph is functioning properly (see “calibration”).	ANS-2.10-2017
functionally simulated hardware	Hardware which has dynamic interface with the real-time simulation.	ANS-3.5-1985
Fussell-Vesely (FV)	For a specified basic event, Fussell-Vesely importance is the fractional contribution to the total of a selected figure (e.g., RCF) of merit for all accident sequences containing that basic event. For PRA quantification methods that include nonminimal cutsets and success probabilities, the Fussell-Vesely importance measure is calculated by determining the fractional reduction in the total figure of merit brought about by setting the probability of the basic event to zero.(ASME/ANS RA-S-1.4-2021 same definition but added “(e.g., RCG)” after the word “figure” in the first sentence.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022

G H

Terms	Description	Reference/Source
gain	An amplification factor applied to an input signal, such as from a pre-amplifier.	ANS-2.10-2017
gaseous waste	The waste streams of non-condensable fluids that are radioactively contaminated with gases, condensable vapors, entrained liquids, or particles.	ANS-40.37-2009
gas inventory	A quantity of gas contained in a free volume.	ANS-56.1-D85
gas stripper	Degassing equipment to remove dissolved gases from liquids.	ANS-55.1-92 ANS-55.4-1993 ANS-55.4-1999
Gaussian plume model	An atmospheric dispersion model where the effluent is assumed to have a Gaussian mass distribution vertically and horizontally across the plume centerline.	ANS-2.15-2013
Gaussian plume model	Non-preferred variation (1) A one-dimensional model for ATD that assumes that a plume moves downwind at the speed of the wind. Dispersion actually takes place in three dimensions, as the plume broadens in the cross-wind direction and grows taller in the vertical direction as it is transported downwind, based on assumed functional descriptions.	ASME/ANS RA-S-1.3-2017
general design criteria	The set of design criteria given in 10, CFR 50, "Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants".	ANS-56.2-1984
geographic coordinate system	The use of a three-dimensional spherical surface to define locations on the Earth, including a horizontal, a vertical, and an elevation measurement.	ANS-2.6-2018
geographic information system (GIS)	A mapping system, typically computer-based, used to visualize, question, analyze, and interpret geospatial data and display it in useful ways.	ANS-2.6-2018
glass volume fraction	The fraction of the interior volume of a Raschig ring-filled vessel that is occupied by the glass in the rings.	ANS-8.5-1996
government agency	Any Federal, State, or local government organization designated in the plant's radiological emergency response plan.	ANS-3.7.1-1995 ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.4-1995 ANS-3.8.3-1995
gradient transfer model	First-order closure model based on K-theory, of which the Gaussian model is a solution.	ASME/ANS RA-S-1.3-2017
graphite oxidation	An exothermic chemical oxidation reaction of graphite with oxygen or endothermic reaction of graphite with water.	ANS-53.1-2011
grapple	The action attaching to or the device making the attachment to a fuel assembly or control component.	ANS-57.1-1992 ANS-57.3-1993
gravity wave	A wave disturbance in which buoyancy acts as the restoring force on parcels displaced from hydrostatic equilibrium.	ANS-3.11-2015
gray	A unit of measure for radiation absorbed dose in SI units (1 Gy = 1 joule/kg = 100 rads).	ASME/ANS-RA-S-1.3-2017
greater safety	Preferred configuration of a system or position of an isolation valve from the overall safety viewpoint in the event of a LOCA or any other accident having the same containment isolation requirements as the LOCA.	ANS-56.2-1984
gripper	The device used for engaging a fuel unit or control component.	ANS-57.1-1992
ground acceleration	Acceleration at the ground surface produced by seismic waves. Typically expressed in units of gravity (g), the vertical acceleration of gravity at the earth's surface (standard conventional value of 9.80665 m/s^2).	ANS-2.27-2020 ANS-2.29-2020

Terms	Description	Reference/Source
ground acceleration	Non preferred variation (1) Acceleration at the ground surface produced by seismic waves. Typically expressed in units of g, the vertical acceleration of gravity at the earth's surface. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.4-2021 and ASME/ANS RA-S-1.1-2022 have the same definition but do not include “vertical.”)	ANS-2.29-2008
groundwater	All water contained in pores, fractures, or voids at or below the water table (also called the phreatic surface); also identifies water in the phreatic zone.[2] Footnote: (2) Regulatory agencies and industry might consider groundwater to include all subsurface water, so that all contaminants in the subsurface are evaluated, not only those in the phreatic zone.	ANS-2.17-2010
groundwater recharge	The process involved in the addition of water to the phreatic zone; also the amount of water added to the saturated zone.	ANS-2.17-2010
group quarters	As defined by the U.S. Bureau of the Census. These include: juvenile homes, boarding houses, barracks, etc.	ANS-2.6-1981
group-averaged nuclear data	Evaluated data averaged over energy groups (intervals) as weighted by specified functions.	ANS-6.1.2-2013
grout	A fluid mixture of cement, water, and possibly some fine aggregate.	ANS-6.4-85
guard	A uniformed individual, armed with a loaded firearm, whose primary duty is the protection of a plant against malevolent acts (e.g., toxicological and radiological sabotage).	ANS-3.3-1988
guidelines	Particular provisions, which are considered good practice, but which are not mandatory in programs intended to comply with this standard. The term "should" denotes a guideline; the term "shall" denotes a mandatory requirement. This definition is taken from American National Standard Quality Assurance Program Requirements for Nuclear Facilities, ANSI/ASME NQA-1-1986.	ANS-10.2-1988 ANS-10.5-1979
gust	According to U.S. weather observing practice, gusts are reported when the peak wind speed reaches at least 16 knots and the variation in wind speed between the peaks and lulls is at least 9 knots. The duration of a gust is usually less than 20 s.	ANS-3.11-2015
habitable	Capable of providing for continued occupancy during emergency conditions within pre-established radiological and occupational limits set by the 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," Appendix A, and General Design Criteria for Nuclear Power Plants.” Criterion 19, "Control Room."	3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.2-1995 ANS-3.8.3-1995
handling equipment	It is preferred that the term (Fuel handling equipment or fuel handling system) and the associated definition be used in ANS standards”	
handling equipment	Non-preferred term (1) Manually or power-operated devices used for performing relocation operations on rods, spent fuel assemblies or canisters.	ANS-57.10-1993
halogens	Five non-metallic elements (i.e., fluorine, chlorine, bromine, iodine, and astatine) in Group 17 of the periodic table. Radionuclide halogens include both vapor and aerosol (particle) forms.	ASME/ANS RA-S-1.3-2017
handling tools	Portable, manually or power-operated devices used for handling or performing operations on fuel assemblies or control components.	ANS-57.1-92 ANS-57.3-1993
	Note: It is suggested that a change to the term “fuel handling tools“ be considered	
harden	To strengthen against unfavorable environmental conditions.	ANS-58.3-92 ANS-58.3-1998
harsh environment	An abnormal environment (e.g., high or low temperature, humidity, corrosive conditions) expected as a result of postulated accident conditions appropriate for the design basis or beyond design basis accidents.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
harsh environment	Non-preferred variation (1) An abnormal, severe environment (e.g., high or low temperature, humidity, corrosive conditions) expected as a result of the event sequences modeled in the PRA.	ASME/ANS RA-S-1.4-2021

Terms	Description	Reference/Source
hazard	An event or a natural phenomenon that poses some risk to a facility. Internal hazards include events such as equipment failures, human failures, and flooding and fires internal to the plant. External hazards include events such as flooding and fires external to the plant, tornadoes, earthquakes, and aircraft crashes.	ASME/ANS RA-Sb–2013 ANS-30.3-2022
hazard	Non preferred variation (1) A phenomenon that challenges the safe operation of a facility. A hazard is a subset of a hazard group and a superset of hazard events. Hazards in the internal events hazard group include LOCAs breaches and LOOPs. In some cases, a hazard group may consist only of one hazard (i.e., the seismic hazard), in which case the hazard and hazard group are considered to be synonymous. (ASME/ANS RA-S-1.4-2021 changed “LOCAs” to “RCB breaches”)	ASME/ANS RA-S-1.1-2022
hazard analysis	The determination of material, system, process, and plant characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to hazardous material releases. The hazard analysis examines the complete spectrum of potential events that could expose members of the public, on-site workers, facility workers, and the environment to hazardous materials.	ANS-30.3-2022
hazard analysis	Non-preferred variation (1) For the purposes of this standard, the determination of material, system, process, and plant characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to hazardous material releases. The hazard analysis examines the complete spectrum of potential events that could expose members of the public, on-site workers, facility workers, and the environment to hazardous materials.	ANS-58.16-2014
hazard analysis	Non-preferred variation (2) the process to determine an estimate of the expected frequency of exceedance (over some specified time interval) of various levels of some characteristic measure of the intensity of a hazard (e.g., peak ground acceleration to characterize ground shaking from an earthquake). The time period of interest is typically 1 yr, in which case the estimate is called the annual frequency of exceedance.	ASME/ANS RA-Sb-2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
hazard controls	For the purposes of this standard, controls that include safety SSCs and SACs categorized as SC-1, SC-2, and SC-3.	ANS-58.16-2014
hazard curve	A numerical plot that shows the frequency of exceedance for a certain ground motion parameter [e.g., peak ground acceleration, peak ground velocity, response spectral values, fault displacement]. Hazard curves are generally generated for periods of exposure of 1 year, and they give annual frequencies of exceedance (AFEs).	ANS-2.29-2020
hazard curve	Non-preferred variation (1) Curve that gives the probability of a certain ground motion parameter (usually the PGA, PGV, or response spectral values) being exceeded. Hazard curves are generally generated for periods of exposure of one year, and they give annual probabilities of exceedance.	ANS-2.27-2008 ANS-2.29-2008
hazard curve	Non-preferred variation (2) Numerical plot that shows the frequency of a certain seismic hazard parameter (e.g., ground motion or fault displacement) being exceeded.	ANS-2.30-2015
hazard event	An event brought about by the occurrence of the specified hazard. A hazard event is described in terms of the specific levels of severity of impact that a hazard can have on the plant. For example, an internal flood event would be expressed in terms of the specific flood source and its local impact, such as the resulting water levels in affected plant areas or the extent of the area subjected to spray; a seismic event would be expressed in terms of spectral acceleration and associated spectral shape; a transient event would be expressed in terms of the plant systems affected by the event.	ASME/ANS RA-Sb-2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
hazard group	A group of hazards that result in similar effects on or challenges to a facility. A hazard group is a subset of a hazard type and a superset of	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Terms	Description	Reference/Source
	hazards. The hazards in a given hazard group may be assessed using a common approach, methods, and likelihood data for characterizing the effect on the plant. Examples of hazard groups include internal events, internal floods, seismic events, and high wind events. In some cases, a hazard group may consist only of one hazard (i.e., the seismic hazard), in which case the hazard group and hazard are considered synonymous.	
hazard group	Non-preferred variation (1) A group of similar hazards that are assessed in a PRA using a common approach, methods, and likelihood data for characterizing the effect on the plant. Typical hazard groups considered in a nuclear power plant PRA include internal events, internal floods, seismic events, internal fires, high winds, external flooding, etc.	ASME/ANS RA-Sb–2013
hazard, intrinsic	A hazard that is inherent to the reactor's safety design approach and is considered in the development of event sequence models, quantification of event sequence frequencies, and development of mechanistic source terms. Intrinsic hazards include chemical and physical interactions that are associated with the inherent features of the reactor. Examples include core and graphite oxidation associated with air or water ingress into an HTGR reactor coolant system, sodium water reactions in sodium cooled reactors, and adverse chemical reactions in molten salt reactors. The treatment of intrinsic hazards is within the scope of the internal events PRA model.	ASME/ANS RA-S-1.4-2021
hazard type	A hazard type is a superset of hazard groups. Internal hazards include hazard groups such as internal events, and internal fire and external hazards include hazard groups such as the seismic hazard and external flooding.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
hazardous waste	Waste that either: (1) is listed as a hazardous waste in Subpart D of 40 CFR 261 or, (2) exhibits any of the hazardous characteristics identified in Subpart C of 40 CFR 261 or, (3) is otherwise identified as a hazardous waste by applicable state regulations.	ANS-55.1-1992 ANS-55.1-2021
health effects	Impacts on populations exposed to releases of radioactive material. Health effects often used as metrics include early fatalities, latent cancer fatalities, and individual risk of both measures. Dose or effective dose can also sometimes be used as metrics, although neither one is strictly a health effect.	ASME/ANS RA-S-1.3-2017 ANS-30.3-2022
HCLPF capacity	Refers to the High Confidence of Low Probability of Failure capacity, which is a measure of seismic margin. In seismic PRA, this is defined as the earthquake motion level at which there is a high (95%) confidence of a low (at most 5%) probability of failure. Using the lognormal fragility model, the HCLPF capacity is expressed as Am exp[-1.65β_R + β_U)]. When the logarithmic standard deviation of composite variability β_c is used, the HCLPF capacity could be approximated as the ground motion level at which the composite probability of failure is at most 1%. In this case, HCLPF capacity is expressed as A_m exp[-2.33β_c]. In deterministic SMAs, the HCLPF capacity is calculated using the CDFM method. () (Note: subscripts and superscripts are needed for clarity.)	ASME/ANS RA-Sb–2013
helium pressure boundary (HPB)	The pressure boundary for the primary helium coolant including the RPV, piping, vessels, valves, and heat exchangers required to maintain primary helium pressure and act as a barrier to fission product releases to the reactor building.	ANS-53.1-2011
heat utilization system	The ultimate heat load that uses the thermal energy (heat output) from a reactor for energy production or process purposes.	ANS-53.1-2011
heterogeneity	The properties or conditions of isotropy or anisotropy vary from point to point in the medium.	ANS-2.9-1989 ANS-2.17-1989
hidden failure	Failure of a component or system that does not become evident until the affected component or system is called upon to function.	ANS-53.1-2011
high efficiency particulate air (HEPA) filter	A disposable dry-type filter having minimum efficiency of 99.97% for 0.3 micron particles.	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
high energy arcing fault	An electrical arc that leads to a rapid release of electrical energy in the form of heat, vaporized copper, and mechanical force.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021

Terms	Description	Reference/Source
		ASME/ANS RA-S-1.1-2022
high energy line	Any line, or portion of a line, where the maximum operating pressure exceeds 275 psig, or the maximum operating temperature exceeds 200°F, during normal plant operating conditions. Those lines that operate above these limits for only a relatively short portion (i.e., less than approximately two percent) of the period of time to perform their intended function, may be classified as moderate energy. An example of such a system could be the residual heat removal (RHR) systems in some plant designs.	ANS-56.4-83 ANS-56.10-87
high energy line	Non-preferred variation (1) A pipe or piping system component is classified as high energy if it contains water or steam at maximum operating temperature exceeding 200°F or maximum operating pressure exceeding 275 psig.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
high energy line break (HELB)	A break or breach in a high energy line.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
higher order closure models	An approximation to turbulence that retains prognostic equations for mean variables (e.g., potential temperature and wind) as well as for some of the higher-order statistics including variance (e.g., turbulence kinetic energy or temperature variance) or covariance (e.g., kinematic fluxes such as for heat and momentum).	ASME/ANS RA-S-1.3-2017
high-hazard fire source	A fire source that can lead to fires of a particularly severe and challenging nature. High-hazard fire sources would include, but are not limited to, catastrophic failure of an oil-filled transformer, an unconfined release of flammable or combustible liquid, leaks from a pressurized system containing flammable or combustible liquids, and significant releases or leakage of hydrogen or other flammable gases. (ASME/ANS RA-S-1.4-2021 added “risk” before significance.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
high integrity container (HIC)	A U.S. Nuclear Regulatory Commission (NRC)-approved or state-approved container that provides waste stability for near-surface disposal in accordance with 10 CFR 61 [3].	ANS-55.1-2021
high integrity container (HIC)	Non-preferred variation (1) A NRC- or state-approved container which provides waste stability for near surface disposal in accordance with 10 CFR 61.	ANS-55.1-1992
	Note: The 2023 Glossary Review Team recommends to consider using DOT’s or NRC’s definition.	
high-integrity software	Software that needs to be trusted to work dependably as part of a process that provides critical functions or predictions and whose failure to do so may have catastrophic results, such as serious injury, loss of life or property, vital mission failure, damage to the environment, or breach of national security.	ANS-10.7-2013 ANS-10.8-2015
	Note: Add a reference number referring to NUREG/CR-6263 in the reference section of the standard as the source of this definition	
high-level language	A type of programming language that allows software to be written in a more readily understandable form than object code through use of powerful control and data handling constructs.	ANS-10.7-2013
high purity (clean) wastes	Liquid radioactive wastes of low conductivity, normally less than 50 microsiemens, and low insoluble solids content, normally less than 20 ppm.	ANS-55.6-1993 ANS-55.6-1999
high radiation area	Any area, accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any one hour a dose equivalent in excess of 100 mrem.	ANS-6.8.1-1981) (W91)
high radiation area	Non-preferred variation (1) An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 mSv) in 1 hour at 30 cm from the radiation source or 30 cm from any surface that the radiation penetrates.	ANS-15.11-2016
high school diploma	High school diploma or successful completion of the General Education Development (GED) test.	ANS-3.1

Terms	Description	Reference/Source
high-temperature gas-cooled reactor (HTGR)	A reactor with graphite moderator, helium coolant, and coated particle fuel with core outlet temperatures normally above 750°C. HTGRs with passive core heat removal and reactivity control capabilities in steel RPVs and of modular design are referred to as modular HTGRs or modular helium-cooled reactors (MHRs).	ANS-53.1-2011
high winds	Tornadoes, hurricanes (or cyclones or typhoons as they are known outside the U.S.), extratropical (thunderstorm) winds, and other wind phenomena depending on the site location.	ASME/ANS RA-Sb–2013 ANS-30.3-2022 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
high winds	Tornadoes, hurricanes (or cyclones or typhoons as they are known outside the United States), extratropical (thunderstorm) winds, and other wind phenomena depending on the site location.	ASME/ANS RA-S-1.1-2022
high wind equipment list	The SSCs whose performance may be impaired as a consequence of the HW hazard.	ASME/ANS RA-S-1.1-2022
Holocene	The geologic epoch referring to a period of time between the present and approximately 10,000 years before present. Applied to rocks or faults, this term indicates the period of rock formation or the time of most recent fault slip.	ANS-2.27-2008
Holocene	Non-preferred variation (1) The geologic epoch referring to a period of time between the present and approximately 11,700 years before present.	ANS-2.30-2015 ANS-2.27-2020
holding time	The elapsed time expressed in days from the date of collection (rather than receipt by the laboratory) of the sample until the date of analysis.	ANS-41.5-2012
homogeneity	The properties or conditions of isotropy or anisotropy are constant from point to point in the medium.	ANS-2.9-1989 ANS-2.17-1989
homogeneous	The condition in which the waste and radionuclides are uniformly distributed throughout the package.	ANS-55.1-2021
homogeneous equilibrium model	A critical flow correlation that is based on the assumptions of equal phase velocities, a homogeneous mixture (i.e., both phase and component), phases and components which are in thermal equilibrium, and isentropic flow of the mixture.	ANS-56.4-1983 ANS-56.10-1987
horizontal wind direction	The direction from which the wind is blowing relative to the horizon. Values are reported in degrees azimuth measured clockwise from true north and ranging from 0 to <360 degrees azimuth (i.e., north is 0 degrees azimuth; east is 90 degrees azimuth; south is 180 degrees azimuth; west is 270 degrees azimuth).	ANS-3.11-2015
horizontal wind speed	The ratio of the distance covered by the movement of air to the time taken to cover it relative to the horizon.	ANS-3.11-2015
hot full power (HFP)	The licensed core thermal power level (also known as “full power” and “rated thermal power”).	ANS-19.6.1-2019
hot full power (HFP)	Non-preferred variation (1) The licensed core thermal power level.	ANS-19.11-2017
hot particle	A discrete radioactive fragment that is insoluble in water, is no larger than approximately 1 millimeter in any dimension, and can expose very small amounts of tissue to very large, highly non-uniform doses.	ANS-3.7.1-1995
hot short	Individual conductors of the same or different cables coming in contact with each other where at least one of the conductors involved in the shorting is energized resulting in an impressed voltage or current on the circuit being analyzed.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
hot shutdown - BWR	In the BWR, the condition in which the reactor is sub-critical and the reactor coolant system average temperature is above the temperature required to permit major maintenance consistent with Technical Specification operational limits.	ANS-58.6-1992
hot shutdown - PWR	In the PWR, the condition in which the reactor is subcritical and the reactor coolant system average temperature is also below the required temperature to permit operation of the residual heat removal system, consistent with Technical Specification operational limits.	ANS-58.14-1993
hot shutdown	A set of POSs during which the reactor is subcritical with the primary temperature between 200ºF and 350°F and with the reactor vessel intact.	ANS/ASME-58.22-2015

Terms	Description	Reference/Source
	Hot shutdown is defined by Technical Specifications (Mode 4 for PWRs, Mode 3 for BWRs).	
hot standby	In the PWR, the condition in which the reactor is subcritical and the reactor coolant system average temperature is above the required temperature to permit operation of the low-pressure residual heat removal (RHR) system, consistent with technical specification operational limits.	ANS-51.1-1993 ANS-58.6-1992 ANS-58.14-1993 ANS-51.10-2002 ANS-51.10-2020
hot standby	Non-preferred variation (1) A POS (or set of POSs) during which the reactor is subcritical with the primary temperature above 350ºF, and the reactor vessel intact. Hot standby is defined by Technical Specifications (Mode 3 for PWRs, not used for BWRs).	ANS/ASME-58.22-2015
hot zero power (HZP)	A reactor operating state where the core is not producing measurable heat from nuclear fission and the primary coolant system is at the no-load operating design temperature and pressure.	ANS-19.11-2017
hot zero power (HZP)	Non-preferred variation (1) A reactor operating state where the core is essentially critical but is not producing measurable heat from nuclear fission, the reactivity due to xenon is negligible, and the primary coolant system is at design temperature and pressure for zero power. At HZP, the flux signal should be high enough so that the reactivity computer can account for contamination sources, such as noise, gamma background, and leakage.	ANS-19.6.1-2019
human error	Any human action that exceeds some limit of acceptability, including inaction where required, excluding malevolent behavior.	ASME/ANS RA-Sb–2013 ANS-30.3-2022 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
human error probability (HEP)	A measure of the likelihood that plant personnel will fail to initiate the correct, required, or specified action or response in a given situation, or by commission performs the wrong action. The HEP is the probability of the human failure event.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
human failure event (HFE)	A basic event that represents a failure or unavailability of a component, system, or function that is caused by human inaction, or an inappropriate action.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
human reliability analysis (HRA)	A structured approach used to identify potential human failure events and to systematically estimate the probability of those events using data, models, or expert judgment.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
human response action	A post-initiator operator action, following a cue or symptom of an event, taken to satisfy the procedural requirements for control of a function or system.	ASME/ANS RA-Sb–2013 ANS-30.3-2022 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
HVAC systems, related to safety	It is preferred that the term (HVAC systems, safety-related) and the associated definition be used in ANS standards”	
HVAC systems, related to safety	Non-preferred term: HVAC systems that are required to accomplish the objectives listed in 1.2 of this standard.	ANS-59.2-1985
HVAC systems, safety-related	HVAC systems that are required to accomplish the objectives listed in 1.2 of this standard.	ANS-59.2-1992
hydraulic conductivity (LT^{-1})	[1].A medium has a hydraulic conductivity of unit length per unit time if it will transmit in unit time a unit volume of ground water at the prevailing viscosity through a cross section of unit area, measured at right angles to the direction of flow, under a hydraulic gradient of unit change in head through unit length of flow. [2]. The term "hydraulic conductivity" has been called permeability, coefficient of permeability, field coefficient of permeability, and conductivity.	ANS-2.9-1989 ANS-2.17-1989
hydraulic gradient	The change in hydraulic head with distance.	ANS-2.17-2010
hydraulic head	One of several measures of the energy content of water (in this case, energy per unit weight), expressed as a height of freshwater above a datum. In fresh groundwater, the hydraulic head is commonly found using the water surface elevation in an open borehole, well, or piezometer.	ANS-2.17-2010

Terms	Description	Reference/Source
Hydrogen Control System (HCS)	The system or sub-systems and components provided expressly for the purpose of monitoring and controlling post-accident hydrogen or oxygen accumulation in a primary reactor containment.	ANS-56.1-1985
hydrogeologic unit	Any soil, rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of ground water.	ANS-2.9-1989 ANS-2.17-1989
hydroseism	Ground water level fluctuations or surges resulting from seismic events.	ANS 2.9-1989
hydrostratigraphy	A conceptual framework that classifies geologic materials of considerable lateral extent into reasonably distinct hydrologic systems.	ANS-2.17-2010
hypocenter	The point of the earth’s crust where a rupture initiates, creating an earthquake.	ANS-2.29-2008 ANS-2.27-2020 ANS-2.29-2020

I J K

Term	Description	Reference/Source
ignition frequency	Frequency of fire occurrence generally expressed as fire ignitions per reactor-year.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
ignition source	A piece of equipment or activity that causes fire (RG 1.189).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
immediate evacuation zone	The area surrounding a potential criticality accident location, posing immediate danger to life and health, that must be evacuated without hesitation.	ANS-8.23-2019
impact area	The area inside a circle of radius 50 miles with the reactor at the center.	ANS-2.6-81D
implementation	The installation and demonstration of operability of a computer program on a given hardware/software configuration.	ANS-10.2-1988
important to confinement (Important Confinement Features)	Those features of the ISFSI whose function is: (1) To maintain the conditions required to store spent fuel safely (e.g., heat removal system if provided), or (2) To prevent damage to the spent fuel during handling and storage (e.g., transportation package [cask] unloading equipment), or (3) To provide reasonable assurance that spent fuel can be received, handled, stored, and retrieved without undue risk to the health and safety of the public. Dose commitment criteria provided in American National Standard Guidance for Defining Safety-Related Features of Nuclear Fuel Cycle Facilities, ANSI N46.1-1980 [7] are available for use in determining systems, structures, and components that have important confinement features with respect to public health and safety.	ANS-57.7-1997
important to confinement (Important Confinement Features)	Non-preferred variation (1) Variant form.	ANS-57.9-1992
important to safety	As used in this standard, SSCs with this designation are safety-related SSCs as classified by the applicant or designer, SSCs that meet the definition of “safety-related” in 10 CFR 50.2 [16] as applicable to the design, or those SSCs classified as risk-significant (those that perform functions that are risk-significant) or required to support defense-in-depth considerations.	ANS-54.1-2020
in-column motion	In-column motion (as opposed to an outcrop motion) is the calculated or the recorded (from downhole instrumentation) motion within the soil column at any depth.	ANS-2.2-2016
in situ experiment (experiment)	Neutron multiplication, other nuclear reactivity-multiplication, or other nuclear reactivity-determining measurement on a sub-critical fissile assembly where protection of personnel against the consequences of a criticality accident is not provided.	ANS-8.6-1983
incapacity	The medical or psychological condition of the individual does not meet the minimum health requirements of this standard and accommodation is not possible.	ANS-3.4-1994
incendiary device	A self-contained device intended to create an intense fire that can damage normally flame-resistant or retardant materials.	ANS-3.3-1988
incremental fraction leached	Fraction of the contaminant released during a test interval.	ANS-16.1-2019
induced radioactivity	Radioactivity due to the interaction of an external neutron radiation field with the nuclides of a material.	ANS-6.4.2-1985
independence	For the purposes of this standard, the state in which there is no mechanism by which any single DBE, such as a flood, can cause redundant equipment to be inoperable.	ANS-58.16-2014
independent	The freedom from and insusceptibility to failure resulting from interaction among redundant safety-related components and systems.	ANS-56.5-1987 ANS-30.3-2022

Term	Description	Reference/Source
independent assessment	It is preferred that the term (independent review) and the associated definition be used in ANS standard.	
independent assessment	Non-preferred variation (1) A review of a criticality safety evaluation by a competent individual(s), other than the originator, that confirms the adequacy of the evaluation. The reviewer(s) may be from the same organization as the originator.	ANS-8.17-2004
independent events	Event combinations for which the occurrence of one event does not give information about (i.e., increasing or decreasing) the probability of the occurrence of the other. If two events A and B are independent, the conditional probability for the occurrence of A given the occurrence of B is simply the probability for the occurrence of A alone (i.e., unaffected by the occurrence of B).	ANS-2.12-1978
independent review (alternate)	Review completed by personnel not having direct responsibility or direct involvement in the work function under review.	ANS-3.2-2012
Independent Spent Fuel Storage Installation (ISFSI)	A complex designed and constructed for the storage of spent fuel and other materials associated with spent fuel storage. An ISFSI that is located on the site of another facility can/may share common utilities and services with such other facility and still be considered to be independent, provided that such sharing of utilities and services or physical connections does not (1) Increase the probability or consequences of an accident or malfunction involving components, structures, or systems that are important to confinement, or (2) Reduce the margin of safety as defined in the bases for any technical specifications of either facility.	ANS-57.7-1992 ANS-57.9-1992
Independent Spent Fuel Storage Installation (ISFSI)	Non-preferred variation (1) Variant form.	ANS-2.19-1989
individual	Any human being.	ANS-15.11-2016
individual monitoring devices (individual monitoring equipment)	Devices designed to be worn by a single individual for the assessment of dose equivalent, such as film badges, thermoluminescent dosimeters (TLDs), pocket ionization chambers, and personal (“lapel”) air sampling devices.	ANS-15.11-2016
industrial or military facility accident	Explosion, deflagration, missile, fire, toxic gas release or other potential hazard from a fixed facility.	ANS-2.12-1978 ANS-2.19-1989
inert atmosphere	A gas or gaseous mixture limited in oxygen and other substances that are chemically reactive with sodium or sodium- potassium NaK.	ANS-54.1-1989
inerted containment	A primary reactor containment in which the containment atmosphere is diluted, usually with nitrogen, during normal plant operation.	ANS-56.1-D85
inertial effect	In sub-compartment pressure and temperature transient analysis, a characteristic of the pressure transient caused by the fluid acceleration term in the momentum equation.	56.10-1987
infiltration	The movement of water from above the ground surface into the vadose zone.	ANS-2.17-2010
infiltration	Non-preferred variation (1) The process of downward movement of water from the surface into underlying materials.	ANS-2.9-1989 ANS-2.17-1989
information display channel	An arrangement of electrical and mechanical components or modules, or both, from measured process variable to display device as required to sense and display conditions within a generating station.	ANS-4.5
ingestion EPZ	An area of approximately 50 miles radius surrounding a nuclear power plant where actions could be necessary to protect the public from the ingestion of contaminated water or foods.	ANS-3.8.2-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.2-1995
initial condition	A set of data that represents the status of the reference unit from which real-time simulation can begin.	ANS-3.5-2009 ANS-3.5-2018
initial test interval	The allowable Type A, Type B, or Type C test interval prior to the demonstration of good performance history.	ANS-56.8-2002

Term	Description	Reference/Source
initialization condition.	A set of data that represents the status of the referenced plant from which real-time simulation can begin.	ANS-3.5-8195
initiating event	A perturbation during a plant operating state that challenges plant control and safety systems, whose failure could potentially lead to core damage or core damage with radioactivity release. An initiating event could require a response or degrade the reliability of a normally operating system, cause a standby mitigating system to be challenged, or require that the plant operators respond in order to mitigate the event or to limit the extent of plant damage caused by the initiating event.	ANS/ASME-58.22-2015 ANS-30.3-2022
initiating event	Non-preferred variation (1) An initiating event is a single occurrence, including its consequential effects, that places the plant or some portion of the plant in an off-normal condition. An initiating event and its resulting occurrences are not the single failure defined herein. An initiating event can be a single equipment failure, natural phenomenon, or external man-made hazard.	ANS-58.9-1994
initiating event	Non-preferred variation (2) Initiating Event - Any event, observed or postulated, either internal or external to the plant, that perturbs the steady-state operation of the plant or steady-state maintenance of the plant safety functions, thereby initiating an abnormal event such as transient or HPB breach within the plant. Initiating events trigger sequences of events that challenge plant control and safety systems whose failure could potentially lead to a significant release of radioactive material. Internal events, internal plant hazards, or external plant hazards, defined for specific plant operating states, can cause initiating events. In a PRA, initiating events that occur in specified plant operating states are used as a starting point to define event sequences and LBEs. Used for analytical purposes, the (postulated) event that initiates an event sequence culminating in an analytical outcome for safety analysis.	ANS-53.1-2011
initiating event	Non-preferred variation (3) A perturbation to the steady-state operation of the plant that challenges plant control and safety systems whose failure could potentially lead to core damage. An initiating event is defined in terms of the change in plant status that results in a condition requiring a reactor trip (e.g., loss of main feedwater system, small LOCA), or a manual trip prompted by conditions other than those in the normal shutdown procedure when the plant is at power. An initiating event may result from human causes, equipment failure from causes internal to the plant (e.g., hardware faults, floods, or fires) or external to the plant (e.g., earthquakes or high winds), or combinations thereof.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
initiating event	Non-preferred variation (4) A perturbation to the plant during a plant operating state that challenges plant control and safety systems whose failure could potentially lead to an undesirable end state and/or radioactive material release. An initiating event is defined in terms of the change in plant status that results in a condition requiring a response to mitigate the event or to limit the extent of plant damage caused by the initiating event. An initiating event may result from human causes, equipment failure from causes internal to the plant (e.g., hardware faults, flood, or fires) or external to the plant (e.g., earthquakes or high winds), or combinations thereof.	ASME/ANS RA-S-1.4-2021
initiating occurrence	It is preferred that preferred term (initiating event) and the associated definition be used in ANS standards.	
initiating occurrence	Non-preferred variation (1) A single occurrence and its consequential effects that causes a design basis event. An initiating occurrence is not the single failure defined elsewhere herein. An initiating occurrence can be a manual action, automatic action, an equipment failure, a human error, a natural hazard or a man-made hazard.	ANS-51.1/52.1-1983 ANS-51.10-2002
initiator	See initiating event.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
injection mode	In the context of this standard with regard to the spray subsystem, the operating condition in which water is sprayed into the containment atmosphere from the injection water supply. With regard to the additive	ANS-56.5-1987

Term	Description	Reference/Source
	subsystem, the operating condition in which an additive is added to the spray water.	
injection water supply (PWR)	A water storage structure from which water is drawn for the injection mode.	ANS-56.5-1987
input	Data received by a program.	ANS-10.5-1979
in-service verification	Periodic verification of the integrity of the neutron absorber system subsequent to installation.	ANS-8.21-1995
insights	Information that provides an understanding and explanation of what is and is not important to the analysis.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
inspection	Examination or measurement to verify whether an item or activity conforms to specified requirements.	ANS-3.2-1993
instruction	A meaningful expression in a computer programming language that specifies an operation to a digital computer.	ANS-7.4.3.2
instrument quality air	Clean, dry, oil-free air that will not prevent or degrade any system equipment or component from operating. Recommended air quality limits are contained in ANSI ISA0S73-1981.	ANS-59.3-1992
instrument system	All components from sensor to and including data recording and display.	ANS-3.11-2015
instrumentation station	An assembly including supporting and housing structure, of one or more instruments that can provide any function or a combination of defined functions [see “seismic monitoring system (SMS),” “acceleration sensor,” “recorder,” and “seismic trigger (S/T)”]. Supports, foundation, housing, and ancillary equipment are also considered to be a part of the instrumentation station.	ANS-2.2-2016
instrumentation system	It is preferred that the term (Instrument system) and the associated definition be used in ANS standards.	
instrumentation system	Non-preferred variation (1) All components from sensor to and including data recording, display, and reduction. (Herein referred to as "system.")	ANS-3.11-2000
Integrated Surface Database (ISD)	A surface weather dataset compiled by the National Centers for Environmental Information (NCEI) from multiple sources.	ANS-2.21-2022
integration tests	Tests performed during the hardware-software integration process prior to computer system-validation to verify compatibility of the software and the computer system hardware.	ANS-7.4.3.2-1990
integrator	A single entity (individual, team, company, etc.) who [that] is ultimately responsible for developing the composite representation of the informed technical community (herein called “the community distribution”). This sometimes involves informal methods such as deriving information relevant to an issue from the open literature or through informal discussions with experts, and sometimes involves more formal methods.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
intensity	A measure of the impact of a hazard.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
Intercable (as in “intercable conductor-to-conductor short circuit”)	Electrical interactions (shorting) between the conductors of two (or more) separate electrical cables. (See also intracable.)	ASME/ANS RA-Sa–2009 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
interdiction	Temporary denial of the use of land or buildings for some time following contamination by radioactive material released from a facility. It also is associated with the collection of contaminated food prior to ingestion by the general public.	ASME/ANS RA-S-1.3-2017
interface requirements	Requirements pertaining to all the connections facilitating all mass and energy flow to and from an MRWP system. Also included are health, safety, and chemistry support requirements.	ANS-40.37-2009
interfacing systems LOCA (ISLOCA)	A LOCA when a breach occurs in a system that interfaces with the RCS, where isolation between the breached system and the RCS fails. An ISLOCA is usually characterized by the over-pressurization of a low-pressure system when subjected to RCS pressure and can result in containment bypass.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
intermediate coolant boundary	The pressure containing portion of those components which are: (1) part of the intermediate coolant system or, (2) connected to the intermediate coolant system up to and including any and all of the following: (a) The first valve normally closed or capable of automatic actuation during normal reactor operation in piping which does not penetrate reactor containment; (b) The outermost containment isolation valve in piping which penetrates reactor containment; and, (c) A passive barrier between the intermediate coolant and the working fluid of a heat extraction system.	ANS-54.1-1989
intermediate coolant system	Those components such as heat exchangers, pumps, tanks and connecting piping which contain intermediate coolant and are necessary to transport reactor core heat from the reactor coolant system to the principal heat extraction system.	54.1-1989
intermediate point of compliance	A location used as a reference point for the purpose of protecting the groundwater resource, where there are no immediate existing receptors but where contamination is regarded as undesirable.	ANS-2.17-2010
intermediate state	The grouping of event sequences at some point short of the final end states as a way of organizing the PRA, typically to aid in developing intermediate results (e.g., fuel damage, plant damage states, etc.). Sometimes referred to in PRA modeling as “pinch point”. (ASME/ANS RA-S-1.4-2021 added “final” before “end states” which was added above.)	ASME/ANS RA-S-1.4-2013
internal dose	That portion of the dose equivalent received from radioactive material taken into the body.	ANS-15.11-2016
internal event	An initiating event resulting from equipment failure, operator action, or other error internal to the plant. These events include equipment mis-operation.	ANS-53.1-2011 ANS-30.3-2022
internal event	Non-preferred variation (1) A hazard group that encompasses events other than floods or fires that result from or involve mechanical, electrical, structural, or human failures from causes originating within a nuclear power plant or losses of off-site power (except when caused by another hazard) that directly or indirectly cause an initiating event and may cause safety system failures or operator errors that may lead to core damage.	ASME/ANS RA-S-1.1-2022
internal event	Non-preferred variation (2) A hazard group that encompasses events other than floods or fires that result from or involve mechanical, electrical, structural, or human failures from causes originating within a nuclear power plant or losses of off-site power (except when caused by another hazard) that directly or indirectly cause an initiating event and may cause safety system failures or operator errors that may lead to a release of radioactive materials.	ASME/ANS RA-S-1.4-2021
internal event	Non-preferred variation (3) A hazard group that encompasses events that result from or involve mechanical, electrical, structural, or human failures from causes originating within a nuclear power plant that directly or indirectly cause an initiating event and may cause safety system failures or operator errors that may lead to core damage. By historical convention, loss of offsite power, which may result from causes within or outside the plant, is considered an internal event (except when the loss is caused by another evaluated hazard group). Also by historical convention, internal flood and internal fire are separate hazard groups and thus not considered internal events.	ASME/ANS RA-Sb–2013
internal fire PRA plant response model	A representation of a combination of equipment, cable, circuit, system, function, and operator failures or successes of an event sequence that when combined with a fire-induced initiating event can lead to undesired consequences with a specified end state (e.g., release category).[2] Footnote 2: This definition has been adapted to suit internal fire analysis needs from the definition of “event sequence.” A variety of equivalent terms has been used in other fire PRA-related documents including, but not limited to, post-fire safe shutdown model, internal fire PRA model, and post-fire plant response model.	ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
internal plant hazard	A hazard located inside the plant that could be the source of an internal plant hazard event. Examples of internal plant hazards are rotating machinery, high-energy piping, large-volume water tanks, and sources of combustible material.	ANS-53.1-2011
internal plant hazard event	An event originating from an internal plant hazard external to modeled SSC supporting safety functions, which could cause an initiating event and/or prevent SSCs from performing safety functions, in response to the initiating event. This event category includes internal fires, internal floods, turbine missiles, high-energy line breaks, and other events that may impact or damage equipment in a spatially connected area in a manner that causes an initiating event, impacts the performance of a safety function, or both.	ANS-53.1-2011
intracable (as in “intracable conductor-to-conductor short circuit”)	Electrical interactions (shorting) between the conductors of one multiconductor electrical cable. (See also intercable.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
intraplate and interplate	Intraplate pertains to processes within the interior of the earth’s crustal plates (far from plate boundaries), while interplate pertains to processes at the interface between the plates (close to or at plate boundaries).	ANS-2.27-2020
intraplate and interplate	Non-preferred variation (1) Intraplate pertains to processes within the earth's crustal plates, while interplate pertains to processes at the interface between the plates.	ANS-2.27-2008
intraslab, interface	Terms used to describe seismic sources of subduction zones. Intraslab pertains to processes within the subducting plate, while interface pertains to the boundary between subducting and overriding plates.	ANS-2.27-2020
intrinsic permeability (L2)	The measure of the ability of a rock or soil to transmit fluid under a fluid potential gradient (see definition of hydraulic conductivity).	ANS-2.9-89 ANS-2.17-1989
intrusion alarm	A tamper-indicating, electrical, electromechanical, electro-optical, electronic or similar device which will detect intrusion into a building, protected area or vital area, and alert guards or watchmen by means of visible and audible signals.	ANS-3.3-1988
ion exchanger and filter waste	Liquid radioactive wastes generated as a result of backflushing, regeneration, transfer or replacement of filters and ion exchange resins.	ANS-55.6-1993 ANS-55.6-1999
ionizing radiation	Subatomic particles or electromagnetic waves that are energetic enough to detach electrons from atoms or molecules and producing radiation capable of causing damage to cells.	ASME/ANS RA-S-1.3-2017
irradiation	The exposure to ionizing radiation within the reactor. Irradiation refers to the exposure of the fuel (including burnable absorbers) to neutrons, and the subsequent results of fission and transmutation within the fuel.	ANS-8.27-2015
isolation barrier(s)	Mechanical means for preventing passage or release of fluid through fluid systems which penetrate the containment (e.g., valves, closed systems, blind flanges).	ANS-56.2-1984
isolation barrier protection	Protection of the isolation barrier against loss of function from external events such as missiles, pipe whip, jet force, or natural phenomena.	ANS-56.2-1984
isolation pressure	That pressure value below which a selected portion(s) of the air system is automatically isolated from the remainder of the air system to protect the air pressure integrity therein.	ANS-59.3
isolation valve seal system	A system which provides for control of leakage past the isolation barrier(s).	ANS-56.2-1984
isolation zone	Any area adjacent to a physical barrier that is cleared of all objects which could conceal or shield an individual.	ANS-3.3-1988
isothermal temperature coefficient of reactivity (ITC)	The change in reactivity per unit change in the fuel and moderator temperature when the fuel and moderator are at the same temperature.	ANS-19.6.1-2019
isothermal temperature coefficient of reactivity (ITC)	Non-preferred variation (1) The change in reactivity per unit change in the fuel and moderator temperature when the fuel and moderator are maintained at the same temperature.	ANS-19.11-2017

Term	Description	Reference/Source
isotropic	The properties at any point within a medium are the same in all directions.	ANS-2.9 ANS-2.17-1989
item	Any plant structure, system, component, or part, including consumable.	ANS-58.14-1993 ANS-58.14-2011
job task analysis	The analysis process used to determine the performance areas and tasks comprising a particular job.	ANS-3.1-1987
keep-warm oil pump	An electric motor driven pump that circulates warm oil through the engine when the unit is in standby.	ANS-59.52-1998
keep-warm heater	A heater used to warm the lubricating oil to within specified limits while the engine is in standby, to enhance engine starting reliability.	ANS-59.52-1998
kerma	The sum of the initial kinetic energies of all the charged particles liberated by uncharged ionizing radiation in a sample of matter, divided by the mass of the sample. Kerma is expressed in units of grays (1 Gy = 1 J kg−1).	ANS-19.3.4-2022
kernel density	Kernel density estimation is a non-parametric approach to defining a probability distribution. It is created by centering a kernel density function (e.g., Gaussian distribution) at each data point, then summing and renormalizing these individual density functions to create the composite density function. The smoothness of the final composite density is controlled by the size of the individual kernel densities placed at each data point. Kernel density estimation is used in a seismic hazard evaluation to smooth the mapped distribution of past earthquakes that is used as a predictor of the spatial distribution for future earthquakes.	ANS-2.27-2008
key assumption	An assumption made in response to a key source of uncertainty in the knowledge that an alternative assumption would produce different results, or an assumption that results in an approximation made for modeling convenience in the knowledge that a more detailed model would produce different results. The term “different results” refers to a change in the plant risk profile (e.g., RCF, the set of initiating events, and event sequences that contribute most to the RCF) and the associated changes in insights derived from the changes in risk profile.	ASME/ANS RA-S-1.4-2021
key assumption	Non-preferred variation (1) An assumption made in response to a key source of uncertainty in the knowledge that a different reasonable alternative assumption would produce different results, or an assumption that results in an approximation made for modeling convenience in the knowledge that a more detailed model would produce different results. For the base PRA, the term “different results” refers to a change in the plant risk profile (e.g., release category frequency, the set of initiating events and event sequences that contribute most to the release category frequency) and the associated changes in insights derived from the changes in risk profile. A “reasonable alternative” assumption is one that has broad acceptance within the technical community and for which the technical basis for consideration is at least as sound as that of the assumption being challenged.	ASME/ANS RA-S-1.4-2013
key safety functions	The minimum set of safety functions that must be maintained to prevent core damage and large early release. These include reactivity control, reactor pressure control, reactor coolant inventory control, decay heat removal, and containment integrity in appropriate combinations to prevent core damage and large early release.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
key safety functions	Non-preferred variation (1) The minimum set of safety functions that must be maintained to prevent a radioactive material release. These include reactivity control, preservation of barriers to release, and DHR in appropriate combinations to prevent a large release. The specific set of safety functions necessary to prevent each release category is reactor specific.	ASME/ANS RA-S-1.4-2021
key source of uncertainty	A source of uncertainty is considered to be key to a risk-informed decision when it could impact the PRA results that are being used in a decision and, consequently, may influence the decision being made. An impact on the PRA results could include the introduction of a new functional event sequence or other changes to the risk profile (e.g., total integrated risk, risk of a source, plant operating state, and hazard group,	ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
	frequency of an event sequence or event sequence family, importance measures). Key sources of uncertainty are identified in the context of an application (note that for certain applications, the base model is used).	
key source of uncertainty	Non-preferred variation (1) A source of uncertainty that is related to an issue for which there is no consensus approach or model and where the choice of approach or model is known to have an impact on the risk profile (e.g., release category frequency, the set of initiating events and event sequences that contribute most to the frequency of release) or a decision being made using the PRA. Such an impact might occur, for example, by introducing a new functional event sequence or a change to the overall release category frequency estimates significant enough to affect insights gained from the PRA.	ASME/ANS RA-S-1.4-2013

L

Term	Description	Reference/Source
L_{4h} [wt%/24 hr]	The measured leakage rate calculated using the previous 4 hours of data during the Type A test.	ANS-56.8-2020
L_a (weight%/24 h)	The maximum allowable Type A test leakage rate at pressure P_a.	ANS-56.8-02 ANS-56.8-2020
L_{am} (weight%/24 h)	Estimate of leakage rate, derived as a function of the least squares slope and intercept, for the Type A test at pressure P_a obtained from testing the primary containment system by simulating some of the conditions that would exist under DBA conditions (e.g., vented, drained, flooded or pressurized).	ANS-56.8-2002 ANS-56.8-2020
L_c (weight%/24 h) L_c [wt%/24 hr]	The composite primary containment leakage rate measured during the verification test after L_o is superimposed.	ANS-56.8-2020
L_c (weight%/24 h) L_c [wt%/24 hr]	Non-preferred variation (1) The composite primary containment leakage rate measured using the CILRT instruments after L_o is superimposed.	ANS-56.8-2002
L_o (weight%/24 h)	The known leakage rate superimposed on the primary containment during verification test.	ANS-56.8-02 ANS-56.8-2020
laboratory control sample (LCS)	A standard material of known composition, or an artificial sample (created by fortification of a clean material similar in nature to the environmental sample), that is prepared and analyzed in the same manner as the environmental sample.	ANS-41.5-2012
lag storage	In-process surge storage of fuel units.	ANS-57.9-1992
Lagrangian method	A method of studying atmospheric motions in which one considers volume elements that are carried along within the atmosphere and across whose boundaries material does not flow.	ANS-2.15-2013
lake	As used in this standard, a lake is a natural body of water whose outlet is not controlled.	ANS-2.13-1979
land use	Parameters used to determine the doses to the public consuming food and residing in areas where radioactive materials have deposited.	ASME/ANS RA-S-1.3-2017
land-water circulation	Coastal winds that flow from land to large bodies of water and vice-versa caused by differential heating of the two areas.	ANS-2.15-2013
large early release	The rapid, unmitigated release of airborne fission products from the containment to the environment occurring before the effective implementation of off-site emergency response and protective actions such that there is a potential for early health effects.	ASME/ANS RA-Sb–2013 ANS-30.3-2022
large early release	Non preferred variation (1) A large release occurring before the effective implementation of off-site emergency response and protective actions and there is the potential for early health effects.	ASME/ANS RA-S-1.1-2022
large early release frequency (LERF)	Expected number of large early releases per unit of time.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
large early release frequency (LERF) analysis	Evaluation of containment response to severe accident challenges and quantification of the mechanisms, amounts, and probabilities of subsequent radioactive material releases from the containment.	ASME/ANS RA-S-1.1-2022
large release	The release of airborne fission products to the environment such that there are significant off-site impacts. Large release and significant off-site impacts may be defined in terms of quantities of fission products released to the environment, status of fission product barriers and scrubbing, or dose levels at specific distances from the release, depending on the specific analysis objectives and regulatory requirements.	ASME/ANS RA-S-1.1-2022
large release	Non-preferred variation (1) A release of radioactive material for which off-site protective actions that are limited in terms of times and areas of application are insufficient for protecting people and the environment [3].[12]	ANS-30.3-2022

[12] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
large release frequency	The sum of the frequencies of those accidents leading to unmitigated release of fission products from the containment to the environment such that there is the potential for early health effects assuming no off-site protective measures are taken.	ANS-54.1-2020
latching	Physically attaching a tool to a fuel assembly or control component in such a manner as to preclude accidental release.	ANS-57.1-1992 ANS-57.3-2018
latent cancer fatalities	Deaths from cancer that were caused by chronic effects of radiation exposure; latent cancer fatalities may occur years after the exposure.	ASME/ANS RA-S-1.3-2017
latin hypercube sampling (LHS)	A method of stratified sampling developed to generate a distribution of plausible collections of parameter values from a multi-dimensional distribution. The sampling method is often applied in uncertainty analysis to obtain a representative sample.	ASME/ANS RA-S-1.3-2017 NOTE LINKS
lattice or lattice cell	Normally refers to a fuel assembly cell with its associated immediate environment, such as the volume of moderator associated with it.	ANS-19.3-2011 ANS-19.3-2022
layers of defense	Those plant capabilities and programmatic elements that provide, collectively, independent means for the prevention and mitigation of adverse events. The actual layers and number are dependent on the actual source and hazard posing the threat. (See “defense-in-depth.”)	ANS-30.3-2022
leachability	A value used to quantify the release of a species of interest from a material under defined environmental conditions.	ANS-16.1-2019
leachability	Non-preferred variation (1) A rate constant (or a combination of several rate constants) that describes the leaching of a nuclide from a material under a given set of conditions.	ANS-16.1-2003
leachability index	A value used to represent the leaching characteristics of a species from a solidified waste material as measured by the test method defined in this standard.	ANS-16.1-2019
leachability index	Non-preferred variation (1) An index value related to the leaching characteristics of solidified waste materials as measured by the leach test defined in this standard. In this standard, the Leachability Index has an exact theoretical meaning only for homogeneous, chemically inert materials, for which bulk diffusion is the predominant rate-determining process during leaching.	ANS-16.1-2003
leachant	The liquid added to the test vessel in a leach test.	ANS-16.1-2019
leachant	Non-preferred variation (1) The liquid that contacts the specimen during the course of a leaching test or contacts a solid waste form at a disposal site.	ANS-16.1-2003
leachate	Leachant after use.	ANS-16.1-2003
leachate	Leachant that has reacted with the test specimen over a leaching interval.	ANS-16.1-2019
leaching interval	The length of time during which a given volume of leachant is in contact with a specimen or solid waste form.	ANS-16.1-2003
leaching rate/leach rate	The amount of a constituent of the specimen that is released from a host matrix during a time interval, divided by a time interval (e.g., g/day or µCi/s).	ANS-16.1-2019
leaching rate/leach rate	Non-preferred variation (1) The amount of the constituent of the specimen or solid waste form that is leached during one time unit (e.g., g/day or µCi/s). It is frequently expressed per unit of exposed surface area [e.g., $gcm^{-2}(day)^{-1}$.	ANS-16.1-2003
leach test specimen/leach specimen	The solid body that is immersed into the leachant during the leach test. This body must be representative of the solid that is formed by the combination of waste with the solidification agent.	ANS-16.1-2003
leach test/leaching test	Procedure to be followed for the determination of the Leachability Index.	ANS-16.1-2003
leak	An opening that allows the passage of fluid through it.	ANS-56.8-2002 ANS-56.8-2020
leak before break	The principle that early detection of small leaks in piping will occur and corrective action will be taken well before propagation into a large break.	ANS-54.1-1989

Term	Description	Reference/Source
leakage	The quantity of fluid escaping from a leak or leaks.	ANS-56.8-2002? ANS-56.8-2020
leakage rate	The rate at which the contained fluid escapes from the test volume at a specified test pressure.	ANS-56.8-2002 ANS-56.8-2020
lens dose equivalent (LDE)	The external exposure of the lens of the eye taken as the dose equivalent at a tissue depth of 0.3 cm (300 mg/cm^2). The units of LDE are the rem and the sievert (Sv).	ANS-15.11-2016
LERF (Large Early Release Frequency) analysis	Evaluation of containment response to severe accident challenges and quantification of the mechanisms, amounts, and probabilities of subsequent radioactive material releases from the containment.	ASME/ANS RA-Sb–2013
level 1 analysis	Identification and quantification of the sequences of events leading to the onset of core damage.(ANS-54.1-2020 has same definition for term “Level 1 PRA analysis”)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
level 2 PRA analysis	Evaluation of containment/confinement response to severe accident challenges and quantification of the mechanisms, amounts, and probabilities of subsequent radioactive material releases to the environment.	ANS-54.1-2020
level 3 PRA analysis	Estimation of the consequences of the release to the environment from radioactive materials, as identified in the Level 1 and/or Level 2 analyses.	ANS-54.1-2020
level of detail	The degree to which (i.e., amount of) information is discretized and included in the model or analysis.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
license	A permit or other similar authorization issued by the competent responsible authority.	ANS-15.11-2016
license	Non-preferred variation (1) The written authorization, by the responsible authority, for an individual to carry out the duties and responsibilities associated with a position requiring licensing.	ANS-15.4-2016
licensee	The organization that holds the operating license for the facility.	ANS-58.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995 3.8.3-1995
licensee	Non-preferred variation (1) An individual licensed operator or senior operator.	ANS-3.4-1994
licensee	Non-preferred variation (2) An owner or operator holding a permit or license issued by the competent responsible authority.	ANS-15.11-2016
licensee	Non-preferred variation (3) An individual or organization holding a license.	ANS-15.4-2016
licensee-controlled area	Areas of the plant site that are directly controlled by the nuclear power plant licensee.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
licensed duties	The functions of an operator including but not limited to the manipulation of apparatus and mechanisms that directly affect the reactivity, power level, cooling, containment, and other requirements for safe operation of the nuclear power plant during normal and emergency operations.	ANS-3.4-2013
licensed operator	Any individual who possesses an operator's license pursuant to 10 CFR 55, "Operators' Licenses.”	ANS-3.1-2014
licensed senior operator	Any individual who possesses a senior operator's license pursuant to 10 CFR 55.	ANS-3.1-2014
licensed senior operator	Use alternate term “licensed operator” and its definition in lieu of this term.	
licensing	The confirmation by the responsible authority of the experience, education, medical condition, training, and testing pertinent to a specific job assignment.	ANS-15.4-2016

Term	Description	Reference/Source
licensing basis documentation (LBD)	The set of documents that specify the licensing requirements and commitments that form the basis used by the U.S. Nuclear Regulatory Commission (NRC) to license a nuclear power plant or a standard plant design. For example, the LBD may include: (1) the latest version of either the Final Safety Analysis Report (FSAR) or the Standard Safety Analysis Report (SSAR); (2) NRC safety evaluation reports; (3) operating license, combined license, final design approval, or design certification, including the technical specifications; (4) correspondence between NRC and the licensee that contains licensing requirements or commitments for the design or operation of the nuclear power plant or standard plant design.	ANS-58.14-2011 ANS-58.8-2019
licensing-basis events (LBEs)	Non-preferred variation (1) Events selected from the event sequences modeled PRA to form part of the basis for the derivation of licensing requirements. LBEs include AOOs, DBEs, BDBEs, and deterministically selected DBAs.	ANS-53.1-2011
licensing-basis events (LBEs)	Non-preferred variation (2) The collection of design-basis events (DBEs) and special events (SEs) for the plant design. At a minimum, DBEs shall consist of AOOs and PAs.	ANS-30.3-2022
licensing-basis events (LBEs)	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition.	
licensing commitment	A commitment specified in the plant LBD (e.g., a commitment to apply specific design criteria to an item or to implement the licensing guidance provided by NRC in a Generic Letter or Regulatory Guide).	ANS-58.14-2011
licensing guidance	A NRC recommendation of an acceptable way to comply with a licensing requirement.	ANS-58.14-2011
licensing requirement	A regulation or a requirement stemming directly or indirectly from a regulation established by a state or federal regulator (e.g., the CFR, a license, or an order).	ANS-30.3-2022
licensing requirement	Non-preferred variation (1) A regulation or a requirement stemming directly or indirectly from a regulation established by NRC (e.g., the Code of Federal Regulations, a license, or order).	ANS-58.14-2011
lifetime (of a fuel assembly)	The period starting at the time of shipment from the fabricator's facility and ending when the assembly is destroyed or dismantled, and is no longer identifiable as an assembly.	ANS-57.8-93 ANS-57.8-2020
liftoff	The physical disturbance and re-entrainment of deposited fission product material caused by rapid flows and shear forces during high-rate-of-depressurization events resulting from a large line break or penetration failure in a modular helium-cooled reactor (MHR).	ANS-53.1-2011
light water reactor (LWR)	A reactor with metal-clad core fuel elements cooled principally by light water.	ANS-53.1-2011
limit	A bounding value of a variable or parameter in design, which is established to ensure that one or more aspects of a functional requirement are satisfied.	ANS-57.5 ANS-57.5-1996
limits (dose limits)	The permissible upper bounds of radiation doses.	ANS-15.11-2016
limited air	The storage atmosphere that limits the inventory of oxygen such that if all the oxygen is assumed to react chemically with the fuel pellets, the fuel rod cladding would not be damaged.	ANS-57.9-1992
limited combustible material	Material not complying with the definition of non-combustible material, which in the form in which it is used, has a potential heat value not exceeding 3,500 Btu per pound (8,14l kJ/kg), and complies with one of the following paragraphs (1) or (2). Materials subject to increase in combustibility or flame spread rating beyond the limits herein established through the effects of age, moisture, or other atmospheric condition shall be considered combustible. (1) Materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 1/8 inch (3.2 mm) which has a flame spread rating not greater than 50.	ANS-59.4-1979, W1986

Term	Description	Reference/Source
	(2) Materials, in the form and thickness used, other than as described in (1) having neither a flame spread rating greater than 25 nor evidence of continued progressive combustion and of such composition that surfaces that would be exposed by cutting - through the material on any plane would have neither a flame spread rating greater than 25 nor evidence of continued progressive combustion.	
limited scope simulator	A simulator incorporating limited modeling of a generic plant or subsystem design. Such a simulator demonstrates basic operational principles.	ANS-3.5-1985
limit state	The limiting acceptable deformation, displacement, or stress that a structure, system, or component (SSC) can experience during or following an earthquake and still perform its safety function. Four limit states are identified and used by ANSI/ANS-2.26-2004 (R2017) [1] and ASCE/SEI 43-19 [4].	ANS-2.27-2020
limit state	Non-preferred variation (1) The limiting acceptable deformation, displacement, or stress that a Structure, System, and Component (SSC) may experience during or following an earthquake and still perform its safety function. Four Limit States are identified and used by ANS-2.26-2004 [1] and ASCE/SEI 43-05 [2].	ANS-2.27-2008 NOTE REF TO 2.26 BUT NO "LIMIT STATE" WITH 2.26 APPEARS IN GLOSSARY
limiting conditions for operation	The lowest functional capability or performance levels of equipment required for continued operation of the facility without undue risk to the health and safety of the public. (From American National Standard Protection Criteria for Systems and Components Important to Safety, N283-1976 ANS-58.3).	ANS-4.1
limits of detection	The extreme of detection or quantification for the radioactivity of interest by the instrument as a whole or an individual readout scale. The LLD is the minimum quantifiable instrument response or reading. The Upper Limit of Detection (ULD) is the maximum quantifiable instrument response or reading.	ANS-6.8.2-1986
line source	A one-dimensional source of emissions that is defined by its length. Line sources are often used to model emissions from roadways and railroads. Alternatively, an array of pollutant sources along a defined path that can be treated in dispersion models as an aggregate uniform release of pollutants along a line.	ANS-2.15-2013
linear non-threshold (theory)	A dose-response model that assumes induction of cancer proportional to dose, no matter how small the dose.	ASME/ANS RA-S-1.3-2017
liquefaction	A phenomenon that occurs in cohesionless soils that involves the transfer of overburden stress from the soil skeleton to the pore fluid under undrained conditions, with the associated increase in pore water pressure and reduction in effective stress and strength. For earthquake-induced liquefaction, this transfer is due to the contractive tendencies of the soil skeleton during earthquake shaking.	ANS-2.27-2020 ANS-2.29-2020
liquefaction	Non-preferred variation (1) The sudden loss of shear strength and rigidity of saturated, cohesionless soils, due to steady state groundwater flow or vibratory ground motion. The term seismic liquefaction (or cyclic mobility) is used in this Standard for liquefaction phenomena associated with seismic motions.	ANS-2.27-2008 ANS-2.29-2008
liquid radioactive waste	Aqueous wastes and/or other fluids containing radioactive materials that result from the operation of a nuclear facility. Radioactive contaminated water is the predominant volumetric waste form generated by nuclear facilities, but liquid radioactive waste can include other liquids or be aqueous solutions containing a combination of chemical species.	ANS-40.37-2009
liquid radioactive waste	Non-preferred variation (1) Liquids containing radioactive material resulting from operation of a nuclear power reactor which by design, definition, operating practice, or procedure, are intended to be processed prior to final disposition.	ANS-55.6-1999
local	Any location at or adjacent to the detector.	ANS-6.8.1-81
local leakage rate test (LLRT)	The leakage test performed on Type B and Type C components.	ANS-56.8-2002

Term	Description	Reference/Source
local redundant system	Is a means of meeting redundancy requirements with local safety-related air supplies. Some examples of local safety-related air sources are stand-by air compressors, isolated reservoirs (i.e., accumulators) operating at system pressure, or high pressure compressed gas bottles.	ANS-59.3
local control station(s)	One or more locations in the plant (such as breaker panels) that are separate from the control room and that may be separate from the Alternate Shutdown Station: such locations have instrumentation or controls, or both, that may be used for cool-down of the plant or to supply support functions to plant systems and components needed to establish and maintain a safe shutdown or provide for cooldown.	ANS-58.6-1996
local intense precipitation	A locally heavy rainfall event that is typically defined by specifying three parameters: rainfall depth, rainfall duration, and spatial extent (area). LIP is typically associated small-scale events over geographic areas on the order of 1 to 10 square-miles and by an assumption that the rainfall rate is aerially uniform, although the rainfall rate (intensity) typically varies over the rainfall event. Although total duration of the LIP-caused flooding event depends on the scenario and site-specific characteristics (e.g., site drainage, susceptibility to ponding of water), LIP events are typically associated with a short duration (e.g., 1 to 6 hrs) of intense rainfall. These intense rainfall events may be imbedded within longer rainfall events and (depending on site drainage characteristics) may affect a site for longer durations. In the context of this Standard, LIP is defined generically and is not limited to stylized deterministic events, such as the so-called 1-hr, 1-square-mile, probable maximum precipitation event.	ASME/ANS RA-S-1.1-2022
local leakage rate test (LLRT)	The leakage rate tests performed on Type B and Type C components.	ANS-56.8-2020
localization	The isolation of related tasks, which perform a well-defined function, within a single sub-program.	ANS-10.2-1988
location of interest	That accessible location in an unrestricted area or controlled area where the highest dose or concentration of airborne radioactivity is likely to occur.	ANS-15.11-2016
long-term	In the context of the single failure criterion, that period of time that a safety-related system must operate starting at 24 hours following the initiating occurrence, during which its safety-related function is required. For purposes of the emergency core cooling system and containment spray systems, the long-term might start upon transfer of these systems to the long-term cooling mode. (Note: The concept of short term and long term does not apply to electrical systems or components.)	ANS-58.11-1993
long-term	Non-preferred variation (1) Variant form.	ANS-56.10.87 ANS-51.1/ANS-52.1-83 ANS-56.5-87 ANS-58.9-94 NOTE FIRST DEF IN TERMS OF SINGLE FAILURE ARE THESE ALSO? IF NOT THEN NOT A VARIENT
loss of reactor coolant (LOCA)	The loss of reactor coolant, at a rate in excess of the reactor coolant normal makeup rate, from breaks or openings in the RCPB, up to and including a break equivalent in size to the largest pipe rupture justified in 10 CFR 50 Appendix K [2]—or, in the absence of justification, a double-ended rupture of the largest pipe—in the RCPB. (See 10 CFR 50, Appendix A [3], or Regulatory Guide 1.157, Position 3.1).	ANS-58.14-2011
loss of reactor coolant (LOCA)	Non-preferred variation (1) The loss of reactor coolant at a rate in excess of the reactor coolant normal make-up rate from breaks or openings in the reactor coolant pressure boundary up to and including a break equivalent in size to the largest 10 CFR 50 Appendix K justified pipe rupture, or in the absence of justification, a double-ended rupture of the largest, in the reactor coolant pressure boundary (see Appendix A of 10 CFR 50.).	ANS-51.1/52.1-1983

Term	Description	Reference/Source
loss of reactor coolant (LOCA)	Non-preferred variation (2) Variant form.	ANS-51.2-1992 ANS-56.2-1984 ANS-58.3
long-lived SSCs	SSCs that are usually passive and designed to last the design life of the facility.	ANS-3.14-2021
long-wave radiation	A term used loosely to distinguish radiation at wavelengths longer than approximately 4 m, usually of terrestrial origin, from those at shorter wavelengths (shortwave radiation), usually of solar origin.	ANS-3.11-2015
LOCA	Loss of coolant accident It is preferred that the term (loss of reactor coolant (LOCA)) and the associated definition be used in ANS standards.	
LOCA: loss of coolant accident	This includes “traditional” full power accident initiators such as pipe break and relief valve opening but also includes maintenance-induced flow diversions, RCS boundary failure due to drain down events and other potential losses of RCS inventory that are unique to shutdown conditions (and typically more likely than pipe breaks when at low system pressure).	ANS/ASME-58.22-2015
loss of core coolable geometry	The inability to cool the core sufficiently to maintain it in its original core location (i.e., prevent core geometry changes that could significantly affect core flow distributions or increase core reactivity).	ANS-54.1-1989
low-level radioactive waste (LLW)	Radioactive waste that is not classified as either high-level radioactive waste, transuranic waste, spent nuclear fuel, or by-product material (uranium or thorium tailings and waste) as defined in Section IIe (2) of the Atomic Energy Act of 1954, as amended [1] and not greater than class C concentration limits as defined under 10 CFR 61.	ANS-40.37-2009
low-level radioactive waste (LLW)	Non-preferred variation (1) Radioactive (low level) waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in Section II.e of the Atomic Energy Act (e.g., uranium or thorium tailings and waste).	ANS-55.1-1992
low-level waste	Radioactive waste (radwaste) not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or by-product material as defined in Section 11e.(2) of the Atomic Energy Act of 1954 [5] (uranium or thorium tailings and waste).	ANS-55.1-2021
low population zone (LPZ)	Primarily the sub-area of the impact area immediately surrounding the exclusion area. See section 3B and 11a of 10 CFR 100. (Not currently used)	
low power	A plant operating state (or set of plant operating states) during which the reactor is at reduced power, below nominal full-power conditions. In these plant operating states, the power level may be changing as the reactor is shutting down, starting up, or transitioning to a new power level required by a plant evolution (e.g., online refueling, online maintenance, etc.), or the power level may be constant at a reduced level. The power level that distinguishes nominal full power from low power is the power level below which there may be a significant increase in the likelihood of a plant trip.	ASME/ANS RA-S-1.4-2021
low power	Non-preferred variation (1) A POS (or set of POSs) during which the reactor is at reduced power, below nominal full-power conditions. In these POSs, the power level may be changing as the reactor is shutting down or starting up, or the power level may be constant at a reduced level. The power level that distinguishes nominal full power from low power is the power level below which there may be a significant increase in the likelihood of a plant trip; e.g., taking manual control of feedwater level.	ANS/ASME-58.22-2015 NOTE UNDEFINED ACRONYMS
LPSD evolution	A series of connected or related activities, such as a reduction in power to a low level, or plant shutdown, followed by the return to full-power plant conditions. LPSD evolutions are modeled as a series of POSs. Outage types are sub-types of a LPSD evolution, though not all LPSD evolutions involve an outage. A refueling outage is a specific example of a LPSD evolution. Reducing power to 30% in order to conduct maintenance or an operational activity is another example of a low power evolution. LPSD evolutions may be described by a transition down to the	ANS/ASME-58.22-2015

Term	Description	Reference/Source
	POS where the activity is conducted, followed by a transition back to full power.	
low pressure system	Any system or portion of a system connected to or part of the reactor coolant pressure boundary whose design pressure is less than the design pressure of the reactor vessel.	ANS-56.3-1986
low purity waste (e.g., floor drains)	Liquid radioactive wastes of normally moderate conductivity (50-200 micro-siemens) and moderate insoluble solids content (20-500 ppm).	ANS-55.6-1993 ANS-55.6-1999
lower bounding (upper bounding)	Parameter value assumed for the analysis so that the result will be the minimum (maximum) of the set of values that might reasonably be expected to exist in the configuration to which the analysis is to be applied.	ANS-56.4-1983 ANS-56.10-1987
lower bound wind speed, V_L	The lower bound wind speed used to define the wind speed threshold for HWs in an HWPRA. Wind speeds less than V_L are assumed to be unable to produce damage to risk-significant SSCs at the plant.	ASME/ANS RA-S-1.1-2022
low-ruggedness relays	Electromechanical relays that may chatter at low levels of earthquake excitation or on impact, causing malfunction of electrical circuits.	ASME/ANS RA-S-1.1-2022
lube oil cooler	A heat exchanger provides the ability to maintain the lube oil temperature within operating limits while the engine is operating.	ANS-59.52-1993
lube oil heater	A heater that warms the lube oil in order to enhance starting reliability and rapid pressurization of the system following an engine start.	ANS-59.52-1993
lube oil system	The set of equipment which provides warmed, if necessary, filtered oil to the diesel generator engine before operation, during normal and emergency starting, and after operation for the purpose of filling and pressurizing internal oil passages and to recirculate cooled, filtered oil through the engine during operation for lubrication and heat removal. The system may also contain a means for draining used oil from the engine and replacing with clean oil.	ANS-59.52-1993
lumped pseudo fission product	A fictitious fission product that is used in depletion calculations to represent a combination of certain minor fission products that are not tracked in an explicit fission product model. A lumped pseudo fission product is characterized by effective neutron cross sections and decay constant.	ANS-19.3-2022

M N

Term	Description	Reference/Source
macroseismicity	Recurring earthquakes having a Richter Scale magnitude of approximately three or greater.	ANS-2.7-1982 ANS-2.19-1989
main run	A pipe run that interconnects terminal ends.	ANS-58.2
maintenance	Those activities necessary to maintain or restore systems to within specified design limits. Maintenance consists of repair, rework, replacement, adjustment, cleaning or other actions necessary to maintain an item in or restore an item to acceptable conditions. (ANS-3.2-93) (replaced “maintenance and modification procedures”)	
management	Those persons within the research reactor organization whose responsibility and authority include the radiation protection program. The levels of management are as described in ANS-15.1- 2007 [4].	ANS-15.11-2016
Managerial and administrative controls	It is preferred that the term (administrative controls) and the associated definition be used in ANS standards.	
Managerial and administrative controls	Non-preferred term:. Orders, instructions, procedures, policies, practices, and designation of authority and responsibility.	ANS-3.2-2012
magnitude	A parameter that characterizes the relative size of an earthquake. Traditionally, magnitude has been based on measurement of the maximum motion recorded by a seismograph. Several scales have been defined, but the most commonly used are (a) local magnitude (M_L), commonly referred to as “Richter magnitude”; (b) surface-wave magnitude (M_S); (c) body-wave magnitude (m_b); and (d) moment magnitude (M). Scales M_L, M_S, and m_b have limited range and applicability and do not satisfactorily measure the sizes of the largest earthquakes. The moment magnitude scale, based on the concept of seismic moment, is a more physical measure, is uniformly applicable to all sizes of earthquakes, and, as such, should be used as the magnitude scale for siting critical facilities. All magnitude scales yield approximately the same value for earthquakes of about magnitude 5; however, for larger events, m_b, then M_L, and finally M_S progressively diverge and increasingly underestimate the size of the earthquake compared to M. It is important, therefore, to specify the magnitude scale being referenced, especially for larger earthquakes.	ANS-2.27-2020 ANS-2.29-2020
magnitude	Non-preferred variation (1) A number that characterizes the size of an earthquake. It is related to the energy released in the form of seismic waves. Magnitude is based on measurement of the maximum motion recorded by a seismograph. Several scales have been defined, but the most commonly used are: (1) local magnitude (ML), commonly referred to as "Richter magnitude," (2) surface-wave magnitude (MS), (3) body-wave magnitude (mb), and (4) moment magnitude (Mw or M). Scales 1 through 3 have limited range and applicability and do not satisfactorily measure the size of the largest earthquakes. The moment magnitude scale, based on the concept of seismic moment, is uniformly applicable to all sizes of earthquakes but is more difficult to compute than the other types. All magnitude scales yield approximately the same value for earthquakes of about magnitude 5, but for larger events, mb, then ML, and finally, MS, progressively diverge and increasingly underestimate the size of the earthquake compared to Mw. It is important, therefore, to specify the magnitude scale being referenced, especially for larger earthquakes.	ANS-2.27-2008 ANS-2.29-2008
magnitude	Non-preferred variation (2) A parameter that characterizes the relative size of an earthquake. Magnitude is based on measurement of the maximum motion recorded by a seismograph. Several scales have been defined, but the most commonly used are: (a) local magnitude (ML), commonly referred to as “Richter magnitude”, (b) surface-wave magnitude (MS), (c) body-wave magnitude (mb), and (d) moment magnitude (Mw or M). Scales (a), (b), and (c) have limited range and applicability and do not satisfactorily measure the sizes of the largest earthquakes. The moment magnitude scale, based on the concept of	ANS-2.30-2015

Term	Description	Reference/Source
	seismic moment, is uniformly applicable to all sizes of earthquakes but is more difficult to compute than the other types. All magnitude scales yield approximately the same value for earthquakes of about magnitude 5; however, for larger events, mb, then ML, and finally MS progressively diverge and increasingly underestimate the size of the earthquake compared to Mw. It is important, therefore, to specify the magnitude scale being referenced, especially for larger earthquakes.	
make-up	Water added to the circulating water system to replace that lost by evaporation, drift, blowdown, and leakage.	ANS-2.13-1979
malfunction	Failure or degradation in performance of plant equipment.	ANS-3.5-1985
malfunction	Non-preferred variation (1) A simulator feature or capability that provides for instructor-controlled degradation of performance of simulated plant components, equipment, or systems. Override capability is not considered a malfunction.	ANS-3.5-2009 ANS-3.5-2018
manipulation	A discrete element of an action.	ANS-58.8-1992
man-made hazard	A condition involving vehicles, equipment, material, or structures created by man that occurs outside of a unit and has the potential for causing damage to safety related structures, systems, or components of the unit.	
man-made hazard	Non-preferred variation (1) Variant form	ANS-51.1/52.1-1983
manual	Operation of an isolation barrier by manual physical force, such as turning a hand wheel on a valve.	ANS-56.2-1984
manual action	An action which is taken, as directed in a written emergency procedure, to initiate, allow or facilitate a system or component to perform a function.	ANS-58.12-1985
manual start	The starting of a diesel engine by operation action.	ANS-59.52-1998
	Note 1: Change “operation” to “operator”	
margin	A quantitative relationship between a design evaluation result for a given event and a limit associated with a functional requirement.	ANS-57.5 ANS-57.5-1996
margin of subcriticality	An allowance beyond the calculational margin to ensure subcriticality.	ANS-8.24-2017
Markov Chain Monte Carlo	Various methods, which include random walk Monte Carlo,, based on a class of algorithms for sampling from probability distributions from the construction of a Markov chain that has the desired distribution as its equilibrium distribution. The state of the chain after a large number of steps is then used as a sample from the desired distribution. The quality of the sample improves as a function of the number of steps.	ASME/ANS RA-S-1.3-2017
marker gas	Marker gases are added to enable odorless gases to be detected by olfactory sensing. An example of a marker gas is the gas ~mercaptans—a sulfur compound! Commercially added to natural gas giving it a “mark” that enables the gas to be smelled.	ANS-3.4-2013
master logic diagram	Summary fault tree constructed to guide the identification and grouping of initiating events and their associated sequences to ensure completeness.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
material-at-risk (MAR)	The amount of radioactive material available to be acted upon by the physical stresses generated by the accident conditions.	ANS-5.10-1998
mathematical model	A quantitative representation of the relevant flow and transport FEPs that affect subsurface radionuclide transport at the site. The mathematical model can be an algebraic equation for simple, homogeneous systems, or it can be a computer model in more complicated systems.	ANS-2.17-2010
matrix spike sample (MSS)	An aliquot or aliquant of a sample spiked with a known concentration of target analyte(s) prior to sample preparation. The recovery of the target analyte(s) from the MSS is used to determine the bias of the method in the specific sample matrix.	ANS-41.5-2012
maximum magnitude (Mmax)	The largest earthquake that a seismic source is assessed to be capable of generating. The maximum magnitude is the upper bound to recurrence curves.	ANS-2.27-2020 ANS-2.29-2020
maximum pathway leakage rate (MXPLR)	The maximum leakage rate attributed to a penetration leakage path. The MXPLR is the larger, not the total, leakage of two barriers in series, except when the leakage rate is determined by pressurizing between the	ANS-56.8-2020

Term	Description	Reference/Source
	inboard and outboard barriers. In this case, the pathway's MXPLR is the total measured leakage rate.	
	Note: Definition includes footnote to see example in Fig. 1.	
maximum pathway leakage rate (MXPLR)	Non-preferred variation (1) The maximum leakage rate attributed to a penetration leakage path. The MXPLR is the larger, not the total, leakage of the two barriers in series.	ANS-56.8-2002
may	It is preferred that the terms (Shall, Should and May) be provided in a single location at the beginning of the definitions section in a standard. Using the combined definition provided in this glossary.	
may	Non-preferred variation (1) May Denotes permission, neither a requirement nor a recommendation.	ANS-3.3-1988 ANS-16.1-2003 ANS-58.2-1984 ANS-59.2-1985 ANS-59.2-D92
may	Non-preferred variation (2) Used to state an option to be implemented at the user's discretion.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
MCR-directed at-initiating event activity	A planned interaction directed by the operators in the main control room (MCR) or other command and control location, such as to realign the plant operating configuration or to change the plant operating parameters, which leads to an initiating event (at-initiator), and the same operators will also direct the post-initiating event response. Thus, there is the potential for a human reliability dependency between the initiating event and the plant response since both are directed by operators from a controlling station (typically the MCR).	ASME/ANS RA-S-1.4-2021
mean free path	The average distance that photons of a given energy travel before an interaction in a given medium occurs. It is equal to the reciprocal of the attenuation coefficient. Thus, the distance x, in ordinary units can be converted into the dimensionless distance ux, the number of "mean-free-path (mfp) lengths."	ANS-6.4.3-1991
mean hazard curve	Corresponds to the mean of the probability distribution of hazard curves.	ANS-2.29-2008 ANS-2.29-2020
median hazard curve	Corresponds to a 50%, or the 50th fractile, hazard curve.	ANS-2.29-2008 ANS-2.29-2020
measurement quality objective (MQO)	Quantitative or qualitative statements of performance objectives or requirements for a particular method performance characteristic such as the method uncertainty, detection capability, range, specificity, ruggedness, etc. The MQOs may be viewed as the analytical portion of the DQOs and are, therefore, project- or program-specific.	ANS-41.5-2012
measuring and test equipment (M&TE)	Devices or systems used to calibrate, measure, gage, test, or inspect in order to control or acquire data to verity conformance to specified requirements.	ANS-3.2-1993
mechanistic source term	See source term, mechanistic.	ASME/ANS RA-S-1.4-2021
member of the public	Any individual, except when that individual is receiving occupational dose.	ANS-15.11-2016
mesonet	A network of stations designed to observe meteorological phenomena on a scale of tens to hundreds of kilometers.	ANS-2.21-2022
mesoscale	The scale of atmospheric phenomena having overall horizontal dimensions from a few kilometers to several hundred kilometers with time scales from approximately 1 hour to 12 hours and vertical extents from tens of meters to the depth of the troposphere.	ANS-3.11-2015
metal-water reaction	The amount of hydrogen generated due to the reaction of water or steam with zirconium cladding is a function of time and temperature.	ANS-56.4-1983
meteorological network	A collection of meteorological observations from multiple sites and sources.	ANS-2.15-2013
method	An analytical approach used to satisfy a Supporting Requirement or collection thereof in the PRA. An analytical approach is generally a	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
	compilation of the analyses, tools, assumptions, and data used to develop a model.	
method blank	A prepared sample of a matrix as similar as practical to the associated samples that is free, to the extent possible, of the radionuclides of interest that is carried through the entire analytical process to evaluate potential contamination from the measurement process for determination of the DL and the MDC. The method blank may also be used to determine the standard deviation of the net blank.	ANS-41.5-2012
methods of calculation (method)	The mathematical equations, approximations, assumptions, associated numerical parameters, and calculational procedures that yield the calculated results. When more than one step is involved in the calculation, the entire sequence of steps comprises the “calculation method.”	ANS-19.3-2011 ANS-19.3-2022
midloop	A POS (or set of POSs) in a PWR during which the water level in the reactor vessel is drained below the top of the hot legs. This evolution occurs to support primary system maintenance, such as steam generator tube inspection during a refueling outage. This is termed “hot” or “early” midloop when it occurs early in an outage prior to fuel offload, with decay heat levels relatively high. This is contrasted with “cold” midloop or “late” midloop which refers to this evolution occurring toward the end of the outage, following fuel reload.	ANS/ASME-58.22-2015
minimum accident of concern	The smallest accident, in terms of fission yield and dose rate, that a criticality alarm system is required to detect.	ANS-8.3-1997
minimum accident for system design (MASD)	The smallest credible criticality accident in the facility where the criticality accident alarm system will be installed and active that the system will be designed to detect. For existing systems, the smallest accident that the system was intended to detect when installed.	ANS-8.3-2022
minimum critical power ratio (MCPR)	In the BWR, the lowest value of the ratio of critical bundle power (i.e., that bundle power which results in transition boiling) to the bundle power at the same location.	ANS-52.1-1992
minimum delivered flow	The amount of flow that must be delivered to the intact steam generator(s).	ANS-51.10-2002 ANS-51.10-2020
minimum detectable concentration (MDC)	The minimum quantity or concentration of a radionuclide required (a priori) to give a stated confidence that the measurement result would be above the DL (detected). For this standard the stated confidence level will be 95%. Correspondingly, the probability of a Type II error (probability of erroneously not concluding a radionuclide is detected in a sample that has the MDC quantity or concentration) is set at 0.05. For this standard the alpha (Type I) and beta (Type II) probabilities are both set at 0.05.	ANS-41.5-2012
minimum diesel generator capacity	The minimum electrical output from the diesel generators to assure the operation of the minimum plant equipment required to prevent unacceptable consequences for any design basis event including the capacity to power the nuclear safety-related systems and components.	ANS-59.51-1995
minimum pathway leakage rate (MNPLR)	The minimum leakage rate that can be attributed to a penetration leakage path (e.g., the smaller of either the inboard or outboard barrier’s individual leakage rates). The pathway’s MNPLR is equal to one-half of the measured leakage rate when the leakage rate is measured by pressurizing between the inboard and outboard barriers.	ANS-56.8-2020
	Note: Definition includes footnote to see example in Fig. 1.	
minimum pathway leakage rate (MNPLR)	Non-preferred variation (1) The minimum leakage rate that can be attributed to a penetration leakage path (e.g., the smaller of either the inboard or outboard barrier’s individual leakage rates). The pathway’s MNLPR can be determined by one-half of the total measured leakage rate when tested by pressurizing between the inboard and outboard barriers.	ANS-56.8-2002
minimum recirculation flow	The amount of flow that must be provided at all times that the pump is operating to protect the pump from overheating and accelerated aging.	ANS-51.10-2002 ANS-51.10-2020
minimum required storage capacity	The minimum required quantity of lubricating oil to provide for engine consumption and operating needs during safety-related functions.	ANS-59.52-1998

Term	Description	Reference/Source
minimum shift staffing	The minimum complement of required personnel per shift, typically defined in the facility administrative procedures.	ANS-58.8-2019
minor	An individual less than 18 years of age.	ANS-15.11-2016
miscellaneous liquid wastes	Liquid radioactive wastes which may not be readily amenable to processing and reuse as reactor coolant makeup water.	ANS-55.6-1993 ANS-55.6-1999
missile	A mass that has kinetic energy and is unrestrained.	ANS-2.12-1978 ANS-51.1-1992 ANS-52.1-1992 ANS-58.1 ANS-59.1
missile barrier	A physical barrier that protects the containment isolation barriers from potential missiles created by, or that could cause an event that would require containment isolation.	ANS-56.2-1984
missile fragility	Fragility of SSCs for a given missile impact.	ASME/ANS RA-S-1.1-2022
missile protection	The protection afforded structures, systems or components (SSCs) against missiles (including jet forces and pipe whip) by physical barriers, restraints, or design configuration.	ANS-56.2-1984
mission time	The time period that a system or component is required to operate to successfully perform its function.	ASME/ANS RA-1.4-2021 ASME/ANS RA-S-1.1-2022
mission time	Non-preferred variation (1) The time period that a system or component is required to operate in order to successfully perform its function.	ASME/ANS RA-Sb–2013
mitigating SSC	An SSC that performs a function to mitigate the consequences of an event such as by protecting a radionuclide transport barrier, performing a safety function, or limiting or preventing a release of radioactive material from a source.	ASME/ANS RA-S-1.4-2021
mitigating SSC	Non-preferred variation (1) An SSC that performs a function to mitigate the consequences of an event such as by protecting a barrier to radionuclide transport, performing a safety function, or limiting or preventing a release of radioactive material from a source.	ASME/ANS RA-S-1.4-2013
mitigation	Actions that are taken to arrest degradation if it starts to occur.	ANS-3.14-2021
mixed-oxide (MOX) fuel	A type of nuclear fuel that contains plutonium oxide mixed with uranium oxide.	ANS 57.3-2018
mixed waste	Waste that meets both the definition of a low-level radioactive waste and the definition of a hazardous waste.	ANS-55.1-92 ANS-55.1-2021
mixed waste	Non-preferred variation (1) Low-level radioactive waste that is co-contaminated with hazardous waste as defined in 40 CFR 261, 40 CFR 262, and 40 CFR 268.	ANS-40.37-2009
mixing depth	The vertical distance between the ground and the altitude to which pollutants are mixed by turbulence caused by convective currents, vertical shear in the horizontal wind, or mechanical mixing.	ANS-2.15-2013
mixing height	The height above ground to which pollutants are mixed by turbulence caused by convective currents, vertical shear in the horizontal wind, or mechanical mixing.	ANS-3.11-2015
mobile low-level radioactive waste processing (MRWP) system	Any radioactive waste processing system or component that is designed to be transportable and that is not considered permanently installed as used in Regulatory Guide 1.143 (RG 1.143), “Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants,” Rev. 2.	ANS-40.37-2009
mode, operating	Definitive configuration of the plant as the plant operates, from defueled to shutdown cooled down, to various startup configurations (auxiliary feedwater), to power operation configurations (synchronized and making electricity). Modes are significant operating points that define operating configurations. Consequently, plant accident analysis depends greatly on the operating state (mode) at the start of an event.	ANS-53.1-2011
mode	Status of plant operation, as defined by plant technical specifications.	ANS/ASME-58.22-2015 ASME/ANS RA-S-1.4-2021
model	Non-preferred variation (1) Mathematical algorithms that describe the physical processes involved in dose assessments which can be	ANS-3.8.6-94

Term	Description	Reference/Source
	represented as a set of tables, graphs, map overlays, worksheets or computer programs.	
model	Non-preferred variation (2) A calculation framework for evaluating the behavior of a system or the physical phenomena of interest.	ANS-10.7-2013
model	Non-preferred variation (3) A calculation framework for evaluating the behavior of a system or the physical phenomena of interest. A model includes computer software and other information necessary for application of the calculation framework to the specific problem, such as the conceptual, mathematical, and numerical models used; geometrical representations; boundary and initial conditions; spatial and temporal approximations; assumptions included in the software; a procedure for treating the software input and output information; specification of those portions of the analysis not included in the software; and values of parameters, uncertainties, and other information necessary to specify the calculation procedure.	ANS-10.8-2015
model	Non-preferred variation (4) Qualitative or quantitative representation that is constructed to portray the inherent characteristics and properties of what is being represented (e.g., a system, component or human performance, theory, or phenomenon). A model may be in the form, for example, of a structure, schematic, or equation. Method(s) are used to construct the model under consideration.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
model	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
model, mechanistic	Models based on fundamental mechanistic knowledge of process model interactions to constitute system analogs that define the model structure, allowing experiments to be performed to validate the model. In contrast, an empirical model uses a trial-and-error approach based on cause-effect relationships and real data, iteratively adjusting until an acceptable model has been established. Empirical models do not require understanding underlying physical processes but determine structure by the observed relationships among experimental data.	ANS-53.1-2011
model, phenomenological	A model based on faithfully modeling a phenomenon. Modeling success depends on validating the observed phenomenon with the model. Phenomenological modeling combines elements of both mechanistic and empirical modeling.	ANS-53.1-2011
model, validation, verification	It is preferred that the separate terms (model validation, model verification) and the associated definition be used in ANS standards rather than combining them into one definition.	
model, validation, verification	Validation is the process of checking if a model satisfies an accuracy criterion. Validation usually addresses meeting the needs of an external customer or product or service user. Verification is an internal quality process that determines compliance with a regulation or specification. Validation is ensuring that “you built the right product,” and verification is ensuring that “you built the product right.”	ANS-53.1-2011
model validation	The process of determining the degree to which a verified model is an accurate representation of the real world (e.g., phenomenon, system, process, or problem of interest) from the perspective of the intended uses of the model.	ANS-10.8-2015
	Note: Reference to non-ANS standards should be by footnote or reference insertion.	
model verification	The process of determining that a computational model accurately represents the underlying mathematical model and its solution.	ANS-10.8-2015
	Note: Reference to non-ANS standards should be by footnote or reference insertion.	
moderate energy piping system	Any system, or portion of a system, where neither the maximum operating pressure exceeds 275 psig nor the maximum operating temperature exceeds 200°F during normal plant operating conditions. All piping systems not classified as high energy shall be classified as moderate energy piping systems.	ANS-58.2

Term	Description	Reference/Source
moderate-energy line	It is preferred that the term (moderate energy piping system) and the associated definition be used in ANS standards.	
moderate-energy line	Any line, or portion of a line, where neither the maximum operating pressure exceeds 275 psig nor the maximum operating temperature exceeds 200°F during normal plant operating conditions. All piping not classified as high energy shall be classified as moderate energy lines.	ANS-56.4-1983 ANS-56.10-1987
moderation	The process of decreasing the energy of neutron through successive collisions with moderator nuclei without appreciable competing capture.	ANS-8.22-1997
moderator	A material that reduced neutron energy by scattering without appreciable capture. Materials of prime concern are those containing light nuclei with larger scattering cross section and relatively low absorption cross section.	ANS-8.22-1997
moderator	Non-preferred variation (1) A material that reduces the energy of neutrons by scattering them. (Neutron absorption is normally enhanced at lower neutron energies.)	ANS-8.21-1995
moderator control engineered barrier	A physical feature of a system specifically identified and used to limit or control the introduction of moderators for nuclear criticality safety.	ANS-8.22-1997
moderator temperature coefficient of reactivity (MTC)	The change in reactivity per unit change in the average moderator temperature. For the purposes of this standard, the MTC includes all reactivity effects associated with a change in the average moderator temperature, whether direct or indirect. (An alternative definition used in portions of the commercial nuclear industry limits the reactivity effects to those resulting directly from the change in the average moderator temperature and the associated change in the moderator density.)	ANS-19.11-2017
modification	A change in the physical design or functional characteristic of a component or system.	ANS-3.2-1993
modification	Non-preferred variation (1) Any change to software.	ANS-10.2-1988
modular	Unitized; addable in discrete, repetitious units.	ANS-53.1-2011
module	A program subset which performs a specific function.	ANS-10.5-1979
monitor	Instrumentation and hardware consisting of an appropriate sampler plus a channel or channels.	ANS-6.8.2-1986
monitoring (radiation monitoring, radiation protection monitoring)	The measurement of radiation levels, concentrations, surface area concentrations, or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.	ANS-15.11-2016
Monin-Obukhov similarity	A relationship describing the vertical behavior of non-dimensional mean flow and turbulence properties within the atmospheric surface layer (the lowest 10% or so of the atmospheric planetary boundary layer).	ASME/ANS RA-S-1.3-2017
motive power failure	A loss of actuating power.	ANS-56.2-1984
motor-driven clean lube oil transfer pump	The clean lube oil transfer pump delivers oil from the clean lube oil storage tank to the lube oil sump or sump tank.	ANS-59.52-1993
motor-driven keep warm pump	While the diesel generator is in standby, the keep warm pump operates to maintain the engine passages in a warmed and lubricated state.	ANS-59.52-1993
motor driven oil pre-lube pump	A motor driven pump used to supply oil to engine bearing surfaces prior to a planned maintenance or start of surveillance.	ANS-59.52-1998
mountain-valley circulation	Diurnal winds that form in a complex terrain area, consisting of mountain-plain, along-valley, cross-valley, and slope wind systems. Differential heating and cooling of the terrain causes the pressure gradients that create the flow fields.	ANS-2.15-2013
movable storage racks	Structures designed to store spent fuel and capable of being moved while containing stored fuel assemblies.	ANS-57.3 ANS-57.7-1992
moving squall line	A line or narrow band of active thunderstorms having a pressure jump with the cold front providing the initial piston-like impetus, and a mature instability line that is located in the warm sector of a wave cyclone about 50 to 200 miles in advance of the cold front usually oriented roughly parallel to the cold front and moving in about the same direction and speed as the cold front.	ANS-2.8-1992

Term	Description	Reference/Source
MPC-Hours	A concept which sums airborne radioactive concentration times the time that concentration exists. In the case where $f_{MPC}(t)$ is a fraction or multiple of a Maximum Permissible Concentration (MPC) for a given radioisotope at a given time, and dt is the time over which that airborne concentration continues to exist, MPC-hours is given by: $\int_t f_{MPC}(t)^* dt$ where: t is the time of interest in hours. For purposes of this standard, MPC's for various isotopes shall be those concentrations as listed in 10 CFR 20, Appendix B, Table 1, Column 1. MPC-hours is not defined for $f_{MPC}(t) <1$, nor for $t <0.1$ hour.	ANS-6.8.2-1986
multicompartment fire scenario	A fire scenario involving targets in a room or fire compartment other than, or in addition to, the one where the fire was originated.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
multigroup cross-section data	Cross-section data that have been determined by averaging the continuous-energy cross-section data over many discrete energy intervals using specified weighting functions.	ANS-19.1-2019
multi-person facility	A facility where it is mandatory that more than one qualified individual be present in the control room or other specified control areas when the reactor is operating.	ANS-3.4-1987
multi-(reactor) module plant	A nuclear power plant comprised of multiple reactor units that are designed and constructed using a modular design approach.	ASME/ANS RA-S-1.4-2013
multi-(reactor) unit plant	A nuclear power plant comprised of multiple reactor units.	ASME/ANS RA-S-1.4-2013
multiple barriers	More than one barrier to the environmental release of fission products. For a modular helium-cooled reactor (MHR) this includes multiple fuel particle coatings, graphite support matrix, RPV boundary, and building structure (or citadel).	ANS-53.1-2011
multiple spurious operations	Concurrent spurious operations of two or more equipment items.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
mutually exclusive	It is preferred that the term (mutually exclusive events) and the associated definition be used in ANS standards.	
mutually exclusive	Non-preferred term: Two or more events which cannot physically occur simultaneously.	ANS-2.12-1978
mutually exclusive events	A set of events where the occurrence of any one precludes the simultaneous occurrence of any remaining events in the set.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
name spread rating	The numbers or classifications obtained according to NFPA 2551972, "Method of Test of Surface Burning Characteristics of Building Materials."	ANS-59.4
National Climatic Data Center (NCDC)	The previous U. S. repository of historical weather data. NCDC was the predecessor to NCEI within NOAA.	ANS-2.21-2022
National Voluntary Laboratory Accreditation Program (NVLAP)	A program administered by the National Institute of Standards and Technology to accredit dosimetry laboratories for producing accurate and precise dosimetry data through participation in proficiency testing, on-site assessments, and technical evaluations by reviewers [5].	ANS-15.11-2016
National Warning System (NAWAS)	A full period private line voice telephone network designed and maintained to alert the states to a nuclear attack. It is mainly used to disseminate weather threats.	
National Warning System (NAWAS)	Non-preferred variation (1) A full period private line voice telephone network.	ANS-3.7.2-1979
natural hazard	A natural phenomenon that has the potential for causing damage to the safety-related structures, systems, or components (SSC) of a plant.	ANS-51.1/ 52.1-1983
natural hazard	Non-preferred variation (1) Variant form.	ANS-56.5-1997 ANS-2.12-1988 ANS-2.19- 2000
natural phenomena	Environment conditions external to a plant that are not manmade, some examples of which are earthquakes, tornadoes, flooding, lightning,	ANS-51.1/52.1-1983 ANS-57.2-1999 ANS-57.3-2018

Term	Description	Reference/Source
	hurricanes, snow, and ice. (Natural phenomena accommodated by nuclear power plant design criteria are termed natural hazards).	ANS-30.3-2022
natural phenomena	Non-preferred variation (1) Variant form.	ANS-57.2-1993 ANS-57.3-1993 ANS-59.1-1996
natural uranium	Reference throughout this standard to natural uranium shall be interpreted to mean uranium in which the concentration of the 235U isotope is equal to or less than 0.71 wt%.	ANS-8.12-1987
negative training	Training on a simulator whose configuration or performance leads the operator to an incorrect response to or understanding of the reference unit.	ANS-3.5-2009 ANS-3.5-2018
Neogene	The geologic period from 2.6 Mya to 23 Mya. This period and the Paleogene period were formerly referred to as the Tertiary period, a term that is no longer endorsed by the International Commission on Stratigraphy.	ANS-2.27-2020
net radiation	The downward radiation (i.e., direct and diffuse solar radiation) minus the upward radiation reflected and upwelling long-wave radiation emitted from a surface, also known as terrestrial radiation.	ANS-3.11-2015
neurovascular symptoms	Effects arising from the impact of ionizing radiation on the nerves and the blood vessels in the body.	ASME/ANS RA-S-1.3-2017
neutrons	(1) Fast Neutrons. Neutrons of kinetic energy greater than some specified value. This value can vary over a wide range and will be dependent upon the application. In concrete shield analyses, the specified value is normally 0.1 MeV when calculating tissue doses and 1 MeV when determining radiation damage to materials. (2) Intermediate Energy Neutrons. Neutrons greater in energy than thermal neutrons and less than the energy associated with fast neutrons. This range also includes the resonance neutron energy range in which many nuclides exhibit strong neutron absorption, referred to as resonance absorption. (3) Thermal Neutrons. Very low energy neutrons that are in thermal equilibrium with the atoms, or molecules, of the medium in which they are present at a temperature of 20°C, thermal neutrons having an average velocity of 2,200 meters/second and a corresponding energy of 0.025 eV.	ANS-6.4-2006
neutron absorber	A neutron-capture material, also referred to as a neutron poison.	ANS-8.14-04
neutron absorber	Variant.	ANS-8.21-95
neutron absorber system	Any combination of fixed neutron absorbers, fixed moderators, and other materials with an assigned nuclear criticality safety function.	ANS-8.21-95
neutron and gamma-ray cross sections	Cross sections for the interactions of neutrons and gamma rays with matter, including cross sections for the secondary emission of neutrons and gamma rays as well as cross sections for the effects of neutrons and gamma rays on materials (e.g., heating or helium generation). The cross sections may be averaged over energy groups for use in radiation protection analyses.	ANS-6.1.2-2013
neutron multiplication (multiplication)	Neutron multiplication signifies a neutron counting rate that is sensitive to reactivity change. This rate is often normalized to the counting rate that would result if there were no fissions. (In other contexts, this term has a different meaning. Not to be confused with neutron multiplication factor in reactor physics.)	ANS-8.6-2010
new fuel	A nuclear fuel assembly that has not been used for power generation.	ANS-57.3-2018
new fuel elevator	Equipment, usually installed in the spent fuel pool, to allow new fuel to be introduced from a shipping container or new fuel storage racks, and lowered for transfer to the fuel storage racks or transfer canal.	ANS-57.1-1992
new fuel elevator	Non-preferred variation (1) Equipment usually installed in the spent fuel pool or fuel transfer canal to allow new fuel, from either a shipping container, a new fuel inspection stand, or the new fuel storage racks, to be lowered for handling by the fuel handling equipment.	ANS-57.3-2018
new fuel elevator	Non-preferred variation (2) Variant form.	ANS-57.1

Term	Description	Reference/Source
		ANS-57.3
new fuel storage rack enclosure	The boundary structures of the new fuel storage facility that protect the new fuel from the environment and from damage, theft, and sabotage. Such an enclosure may consist of a vault around the racks, a covered storage room or an open storage pit housed in a building, or an entire building in which the new fuel is being stored.	ANS-57.3-2018
newly developed method	A method used in a PRA that has either been developed separately from a state-of-practice method or is one that involves a fundamental change to a state-of-practice method. A newly developed method is not a state-of-practice or a consensus method.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
NI power	Core power, as indicated by ex-core NI.	ANS-19.11-2017
no loss of nuclear safety function	It is preferred that the term (no loss of safety-related function) and the associated definition be used in ANS standards.	
no loss of nuclear safety function	Non-preferred term: no loss of operability. The capability of unit structures, systems, and components (SSCs) to accomplish nuclear safety functions required to accommodate normal operations or a specified event within applicable nuclear safety criteria.	ANS-51.10-2002
no loss of safety function	Preferred usage is 'no loss of safety-related function.'	
no loss of safety-related function	The capability of an item to accomplish safety-related functions required to accommodate a design basis event within applicable nuclear safety criteria.	
no loss of safety-related function	Non-preferred variation (1) Variant form.	ANS-51.1/52.2-1983 ANS-54.1-89 ANS-51.10-2002
nominal full power	See full power.	ASME/ANS RA-S-1.4-2021
no solo operations	A license restriction issued when an individual does not meet the minimum requirements of this standard and accommodation is possible with the presence of another licensed operator and or someone capable of summoning assistance.	ANS-3.4-2013
node volume	The geometric subdivision assumed in the analysis for which pressures and temperatures are computed.	ANS-56.10-87
nonaccessible instruments	Instruments or sensors in locations that do not permit ready access during plant operation because of a risk of violating applicable plant operating safety regulations, such as OSHA, or regulations dealing with plant security or radiation protection safety.	ANS-2.2-2016
non-capable fault	A non-capable fault is one that is not capable of surface rupture. Primary criteria for determining non-capability are that the fault exhibits the following three characteristics: (1) Has had no displacement at or near the ground surface in the past 35,000 years and no recurring displacements in the past 500,000 years, (2) has had no directly relatable seismicity of tectonic origin, and, (3) has structural relationship to a capable fault such that displacement on one might be accompanied by displacement on the other.	ANS-2.7-1992
non-combustible material	A material which in the form in which it is to be used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Material that has passed the test of the American Society of Testing Materials (ASTM) E 136-1973, "Standard Method of Test for Non-Combustibility of Elementary Materials shall be considered a non-combustible material.	ANS-59.4-79W83
noncompactible solid waste	Solid waste that cannot be compressed by applying external pressure less than 1000 psi. (The 1000 psi value is based on current technology.)	ANS-40.37-2009
non-conformance	A deficiency in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.	ANS-3.2-1993
nonconservative	Unconservative; assumptions or errors in a nonconservative direction increase proximity to margins and thus increase safety risk.	ANS-53.1-2011
nondetectable failures	Failures that cannot be identified through periodic testing or revealed by alarm or anomalous indication. Assuming adequate design and quality	ANS-58.14-2011

Term	Description	Reference/Source
	assurance programs, training, control room design, and procedures, nondetectable failures do not include common-mode failures resulting from failures due to external environmental effects or design deficiencies or errors due to manufacturing, maintenance, or operations.	
non-essential systems	Those systems which are neither engineered safety feature systems nor systems which accomplish a function similar to an engineered safety feature system.	ANS-56.2-1984
non-fuel-bearing components (NFBC)	All components of a spent fuel assembly except the fuel rods (e.g., end fittings, spacer grids, control rod guide tubes, water rods, springs).	ANS-57.10-1993
nonhabitable lands	Lands within a study area that ordinarily would be considered as part of the denominator of a population density calculation but are inappropriate for consideration because they cannot be reasonably considered suitable for human habitation in the foreseeable future, such as large water bodies, national park lands, and similar large tracts.	ANS-2.6-2018
	Note: Review whether the term nonhabitable lands should be hyphenated.	
non-interruptible	Once required to operate, cannot be cut off by an event external of the site.	ANS-57.3 ANS-57.7-1992
Non-Nuclear Safety (NNS)	Classification of structures, systems, or components (SSCs) that are not in Safety Classes 1, 2, or 3.	ANS-51.1/52.1-1988 ANS-59.2-1985
non-nuclear safety class equipment	Equipment that has been classified as non-nuclear safety based upon the normal plant safety analysis. Equipment classification is not dependent on its use for station blackout.	ANS-58.12-1985
non-nuclear safety-related	Those requirements, not considered to be nuclear safety-related, whose goal is equipment reliability, unit availability, industrial safety, or good engineering practice.	ANS-2.13-1979
non-real-time software	Software that produces results that do not have an immediate effect on physical systems.	ANS-10.7-2013 ANS-10.8-2015
non-safety-related (N)	Classification applied to an item that is neither safety-related nor supplemental grade. See “nuclear safety–related” and “supplemented grade.”	ANS-30.3-2022
non-safety-related (N)	Non-preferred variation (1) Classification applied to an item that is not safety-related.	ANS-58.14-2011
non-safety-related (N)	Non-preferred variation (2) Classification applied to an item that is neither safety-related nor supplemental grade. [Developed for ANS-58.14-1993]	ANS-50.1
non-safety-related (N)	Non-preferred variation (3) Classification of structures, systems, or components (SSCs) that are not in Safety Classes 1,2 or 3 and, therefore, are not classified as an engineered safety feature.	ANS-59.2-1992
non-safety-related with augmented requirements (A)	Classification applied to an item that is not safety-related but that is relied upon during a special event or to which a licensing requirement or commitment applies.	ANS-58.14-2011
nonsuppression probability	The probability of failing to suppress a fire before target damage occurs.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
non-tectonic ground disruptions	Ground disruptions due to landslides, subsidence or uplift caused by man's activities, solution activity, differential settlement, or ice shove.	ANS-2.11-1978 ANS-2.19-1989
normal natural phenomena	Conditions that may reasonably be expected to occur during a few plant life times. They include high and low water level, snow and ice, wind, and earthquake.	ANS-56.2
normal operation	Steady state operation and those departures from steady state operation which are expected frequently or regularly in the course of power operation, refueling, maintenance or maneuvering of the plant It includes conditions such as start-up, normal shutdown, standby, load following, anticipated operational occurrences, limited fuel leakage, operations with specific equipment out of service as permitted by the Technical Specifications, and routine inspection, testing and maintenance of components and systems during any of these conditions, if it is consistent with the Technical Specifications.	ANS-54.1-1989

Term	Description	Reference/Source
normal operation	Non-preferred variation (1) Variant form.	ANS-56.7
normal plant operating conditions	It is preferred that (normal operation) and the associated definition be used in ANS standards.	
normal plant operating conditions	Any condition (excluding testing) in the course of system startup, operation in the design power range, hot standby, and system shutdown.	ANS-58.2
normal radionuclide release	The emission of an effluent containing plant-related, licensed radioactive material. The known, planned, or controlled release of radionuclides to the environment, including controlled releases of low-level radioactive materials. The effluent discharge performed in accordance with RETS.	ANS-2.17-2010
normal shutdown and cooldown	A shutdown and cooldown in which normal operational systems can be used, the fuel and reactor coolant pressure boundary conditions are within technical specification operational limits, and no automatic actuation of any engineered safety feature is required.	ANS-51.1/52.1-1983
normalized inputs	The design basis values for a plant of specific power rating.	ANS-55.1-1992 ANS-55.1-2021
North American Datum of 1927 (NAD 27)	The use of mathematical triangulation of about 250,000 survey stations across the United States and Canada to precisely identify the position of any other position in North America. Most historical United States Geological Survey (USGS) topographic maps and projects by the U.S. Army Corps of Engineers used NAD 27 as a national reference system.	ANS-2.6-2018
North American Datum of 1983 (NAD 83)	A unified horizontal or geometric datum and successor to NAD 27 providing a spatial reference for Canada and the United States. It is the most current datum being used in North America and provides latitude, longitude, and elevation information to form the basis of latitude and longitude coordinates for all horizontal positions for Canada and the United States.	ANS-2.6-2018
no solo operation	Operation of or directing the operation of the controls, during all modes of operation including emergency conditions with another qualified person present in the control room or in other specified control areas, such as the refueling console.	ANS-3.4-1994
noticeable difference	Any difference in the physical attributes or dynamic response between the simulator and the reference unit that is distinguishable by an observer and confirmed by a subject matter expert.	ANS-3.5-2009
nuclear accident	An operating event in the beyond-abnormal-operating-occurrence range accompanied by loss of fission product barriers and increased risk of release of radioactive materials to the environment.	ANS-53.1-2011
Nuclear Air Treatment System (NATS)	Synonym for Air Cleaning Systems. A system designed to remove radioactive gaseous (i.e., adsorption) and/or particulate contaminants (i.e., filtration). Such a system contains one or both of the high efficiency gas cleaning components referred to as High Efficiency Particulate Air (HEPA) filters and nuclear-grade absorbers.	ANS-59.2-1992
nuclear criticality safety evaluation (NCSE)	A formal, technically reviewed analysis that establishes the technical bases, limits, and controls for the nuclear criticality safety of a given operation.	ANS-8.26-2007
nuclear criticality safety	Protection against the consequences a criticality accident, preferably by prevention of the accident.	ANS-8.1-2014
nuclear criticality safety	Non-preferred variation (1) Variant form.	ANS-8.12-1987 ANS-8.14-2004 ANS-8.15-1981 ANS-8.20-1991 ANS-8.21-1995 ANS-8.26-2008 ANS-57.7-1992
nuclear cross-section covariance matrix	A matrix representation providing the uncertainty of the nuclear cross sections and the correlation between the evaluated nuclear cross sections for a set of incident particle/neutron energies.	ANS-6.1.2-2013
nuclear experience	Experience acquired in reactor facility start-up activities or operation. Experience in design, construction, maintenance, or related technical services that are job-related may also be considered. On-the-job training	ANS-15.4-2016

Term	Description	Reference/Source
	at the reactor facility may qualify as equivalent nuclear experience on a one-for-one–time basis. Appropriate research or teaching or both may be includable as nuclear experience.	
nuclear facility	Any facility that, as a result of its operation, generates waste material containing or potentially containing radioactive materials. This includes, but is not limited to, nuclear power plants, hospitals, fuel fabrication facilities, fuel reprocessing facilities, radioactive waste disposal facilities, industrial facilities, and research facilities.	ANS-40.37-2009 ANS-2.10-2017
nuclear facility	Non-preferred variation (1) Structures, buildings, and systems provided which utilize or process fissionable material (i.e., nuclear power plant, reprocessing plant).	ANS-57.9-1992
nuclear facility	Variant form.	ANS-57.7-1992
nuclear power plant	A nuclear power plant is any plant using a nuclear reactor to produce electric power, process heat, or space heating.	ANS-3.4-1987
nuclear power plant	Non-preferred variation (1) Variant form.	ANS-3.1-2014 ANS-3.2
nuclear power plant experience	Applicable work performed in a nuclear power plant (commercial or military) during preoperational, startup testing, construction, or operational activities.	ANS-3.1-2014
nuclear power unit	One or more nuclear power reactors and associated equipment necessary for electric power generation, including those structures, systems, and components (SSCs) required to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.	ANS-54.1-8199
nuclear power unit	Non-preferred variation (1) Variant form.	ANS-3.1-1987
nuclear reactor	Any assembly of fissionable material which is designed to achieve a controlled, self-sustaining neutron chain reaction.	ANS-3.4-1987
nuclear reactor operator	An individual who manipulates the controls or directs others to manipulate the controls.	ANS-3.4-1987
nuclear safety	Safety of the nuclear fuel reactivity and fission product boundary.	ANS-53.1-2011
nuclear safety function	Any function that is necessary to ensure: a. The integrity of the reactor coolant pressure boundary, b. The capability to shut down the reactor and maintain it in a safe shutdown condition, or c. The capability to prevent or mitigate the consequences of Plant Conditions that could result in potential offsite exposures that are comparable to the guideline exposures of 10 CFR 100, "Reactor Site Criteria."	ANS-51.1/52.1 ANS-56.6-1986 ANS-57.7-1992 ANS-30.3-2022 ANS-51.10-2020
nuclear safety function	Non-preferred variation (1) Variant form.	ANS-54.1-1989 ANS-59.3-1992
Nuclear safety-related (NSR) (see safety-related)	Of significance or importance because it applies to: a. Structures, systems, or components (SSCs) designed to perform a nuclear safety function, b. Drawings, specifications or procedures, analyses, and other documents used to deter-mine or describe parameters affecting structures, systems, or components (SSCs) that are designed to perform a nuclear safety function, or c. Services to design, purchase, fabricate, handle, ship, store, clean, erect, install, test, operate, maintain, repair, refuel, and modify structures, systems, or components that are designed to perform a nuclear safety function.	ANS-51.1/52.1 ANS-54.1-1989 ANS-59.3-1992 ANS-30.3-2022
Nuclear safety-related (NSR) (see safety-related)	Non-preferred variation (1) Variant form.	ANS-2.13-1979
nuclear safety-related control air system (see safety-related control air system)	. (see safety-related control air system) Those portions of the control air system which perform a nuclear safety-related function.	ANS-59.3-1992

Term	Description	Reference/Source
nuclear safety-related equipment	Equipment that has been classified as safety-related based upon the normal plant safety analysis (e.g., per ANS-51.1-1983 or ANS-52.1-1983).	ANS-58.12-1985
numerical benchmark	Specification of a set of input quantities (e.g., composition and geometry of bulk material and radiation sources) and of reference calculated output quantities relevant to the benchmark (e.g., spatial and energy dependence of neutron or gamma-ray fluence profiles) in detail sufficient to determine the accuracies of a specified calculational method when applied to modeling of the same input specifications. Such determinations are usually made by comparison to a reference output that is an analytic solution.	ANS-6.1.2-2013
Nyquist frequency	Half of the sampling rate of a discrete digital signal processing system.	ANS-2.10-2017

O

Term	Description	Reference/Source
objective evidence	Any documented statement of fact, other information, or record, either quantitative or qualitative, pertaining to the quality of an item or activity, based on observations, measurements, or tests which can be verified.	ANS-3.2-1993
obsolescence	Refers to software or hardware of a component that is no longer supported by a supplier (usually the original equipment manufacturer).	ANS-3.14-2021
occupational dose	The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the owner/operator or licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the public.	ANS-15.11-2016
off-normal condition procedures	Written procedures which specify operator actions for restoring an operating variable to its normal controlled value when it departs from its range or to restore normal operating conditions following a transient. Such actions are invoked following an operator observation or an annunciator alarm indicating a condition which, if not corrected, could degenerate into a condition requiring action under an emergency procedure.	ANS-3.2
offsite	All areas not onsite.	ANS-3.7.1-1995 ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995 3.8.3-1995
offsite	Non-preferred variation (1) Variant form.	ANS-3.7.2-1979
offsite	Non-preferred variation (2) The geographical area that is beyond the site boundary.	ANS-15.16-2015
offsite personnel	Those personnel providing technical and operational support but not reporting directly to the Plant Manager. These personnel may be located onsite or offsite.	ANS-3.1-1987
oily radioactive waste	Liquid and slurry wastes that contain more than 5% oil, grease, and other immiscible organic liquids[3)] by weight and radioactive materials resulting from the operation of a nuclear facility. Footnote: (3) For guidance, see EPA Procedure SW-846 [7].	ANS-40.37-2009
once through circulating water system	A system in which water is used one time before it is returned to the environment.	ANS-2.13-1979
onsite	That area surrounding the reactor in which the licensee has the authority to control all activities including exclusion or removal of personnel and property.	ANS-3.7.1-1995 ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995 ANS-3.8.3-1995
onsite	Non-preferred variation (1) The geographical area that is within the site boundary.	ANS-15.16-2015

Term	Description	Reference/Source
onsite	Non-preferred variation (2) Areas within the exclusion area.	ANS-3.7.1-1992 ANS-3.7.2-1979
onsite experience	Applicable work performed at the plant for which the individual seeks qualification.	ANS-3.1-2014
onsite operating organization	Onsite personnel concerned with operation, maintenance and certain technical services.	ANS-3.2
onsite personnel	Those personnel that are assigned to the site as their normal work location reporting to the Plant Manager.	ANS-3.1-1987
on-the-job training	Participation in nuclear power plant startup, operation, maintenance, or technical services as a trainee under the direction of experienced personnel.	ANS-2.13-W98
on-the-job training	Non-preferred variation (1) A systematic, structured method using a qualified person to provide the required job-related knowledge and skills to a trainee, usually in the actual workplace, with proficiency documented.	ANS-15.4-2016
Operable (See operational)	Having the capability of performing the safety function(s) specified for a system or component. Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electric power sources, cooling or seal water, lubrication, or other auxiliary equipment that are essential for the system or component to perform its safety function(s) are also capable of performing their related support functions.	ANS-58.4-W90
operating	Performing an intended action in the required manner.	ANS-51.1/52.1
operating	Non-preferred variation (1) Variant form.	ANS-4.1
operating activities	Work functions associated with normal operation and maintenance of the plant, and technical services routinely assigned to the onsite operating organization.	ANS-3.2
operating basis earthquake (OBE)	(1) The earthquake that, considering the regional and local geology and seismology, and specific characteristic of local subsurface material, could reasonably be expected to affect the plant site during the operating life of the plant. It is that earthquake that produces the vibratory ground motion for which those safety-related items of the nuclear power plant, necessary for subsequent operation without undue risk to the health and safety of the public are designed to remain functional.	ANS-51.1/52.1 ANS-57.2-1999
operating basis earthquake (OBE)	Non-preferred variation (1) An earthquake ground motion that could reasonably be expected to occur at the plant site during the operating life of the plant considering the regional and local geology, seismology, and site-specific characteristics of local subsurface material. It is the earthquake ground motion for which those features of the nuclear power plant necessary for continued operation, without undue risk to the health and safety of the public, are designed to remain functional. The OBE-level earthquake ground motion is referred to in most international applications as the Seismic Level 1 earthquake level.	ANS-2.10-2017
operating basis earthquake (OBE)	Non-preferred variation (2) Variant form.	ANS-56.6-1986 ANS-57.2-1992 ANS-57.3-1993 ANS-2.12-1978 ANS-2.2-2002
operating basis earthquake (OBE)	Non-preferred variation (3) That earthquake for which those features of the nuclear power plant necessary for continued operation without undue risk to health and safety are designed to remain functional. In the past, the OBE was commonly chosen to be one-half of the safe shutdown earthquake (SSE).	ASME/ANS RA-Sb–2013
operating basis earthquake (OBE) ground motion	An earthquake free-field motion defined at the ground surface that could reasonably be expected to occur at the plant site during the operating life of the plant considering the regional and local geology, seismology, and specific characteristics of local subsurface material. It is that earthquake ground motion for which those features of the nuclear power plant, necessary for continued operation without undue risk to the health and safety of the public, are designed to remain functional.	ANS-2.2-2016

Term	Description	Reference/Source
operating conditions	Normal conditions of service falling within operation limits for parameters like temperature, pressure, O_2 concentration, speed of operation, load, and stroke as well as other stated conditions.	ANS-53.1-2011
operating floor	For BWR's, this term is defined as the refueling floor for MKIII containment and the grating level at the personnel hatch just above the drywell floor for MKI containment. For PWR's this term is defined as the floor at the same level as the personnel hatch.	ANS-56.5
operating organization	The onsite organization concerned with operation, maintenance, and certain technical services. This organization includes offsite personnel who provide operational support.	ANS-3.1-2014
operating procedures	Written procedures defining the normal method, means and limits of operation of a nuclear power plant, a plant system or systems, or processes, including actions to be taken by operating personnel for removal from and return to service of equipment on which maintenance is to be or has been performed (see also maintenance and modification procedures).	ANS-3.2-2006
operating procedures	Non-preferred variation (1) Controlled copies of procedures, including normal, abnormal, off-normal, emergency, surveillance, and alarm response procedures of the reference unit.	ANS-3.5-2009 ANS-3.5-2018
operating range	The range of values over which a parameter, indicative of environmental conditions, is stated to vary during the expected life of a material as it performs its intended function.	ANS-6.4.2-1985
operating time	Total time during which components or systems are performing their designed function.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
operational	It is preferred that the term (Operable) and the associated definition be used in ANS standards.	
operational	Capable of performing intended action upon command from measured variables or operator action.	ANS-4.1
operational	Variant.	ANS-56.5-87
operational environment	The system and environment (including all supporting software components intended to be present during software execution) on which the software is intended to be used, to the extent it can be replicated in the development environment.	ANS-10.7-2013
operational environment	Non-preferred variation (1) The system and environment (including all supporting software components intended to be present during software execution) in which the software is intended to be used.	ANS-10.8-2015
operational phase	That period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with commencement of fuel loading, and to end with plant decommissioning. However, this standard recognizes that certain operational type activities begin prior to fuel loading.	ANS-3.2-1993
operational procedures	Detailed instructions for the setup, execution, and use of results for a given software.	ANS-10.7-2013
operational transient	Transients included in the Conditions of Design I and II groupings. Condition of Design II is also defined in Section 2, "Definitions," and Table 3-1 of ANS-52.1.	ANS-56.7-Historical
operating floor	For BWR's, this term is defined as the refueling floor for MKIII containment and the grating level at the personnel hatch just above the drywell floor for MKII containment. For PWR's this term is defined as the floor at the same level as the personnel hatch.	ANS-56.5-1987
operating time	Total time during which components or systems are performing their designed function.	ASME/ANS RA-Sb–2013
operations boundary	The area within the site boundary such as the reactor building (or the nearest physical personnel barrier in cases where the reactor building is not a principal physical personnel barrier) where the reactor chief administrator has direct authority over all activities. The area within this boundary shall have prearranged evacuation procedures known to personnel frequenting the area.	ANS-15.16-2015

Term	Description	Reference/Source
operator	A licensed operator, or a senior licensed operator, or a person in training to be a licensed operator or senior licensed operator.	ANS-3.5-2009 ANS-3.5-2018
operator	Non-preferred variation (1) An individual licensed under 10 CFR 55 to manipulate the controls of a facility and to direct the licensed activities of licensed operators.	ANS-3.4-1994
operator error	In the context of the single failure criterion, a human error comprised of a single incorrect or omitted manipulation by a human operator attempting to perform a necessary action in response to an initiating occurrence.	ANS-51.1/52.1-1983
operator error	Non-preferred variation (1) In the context of the single failure criterion, a single incorrect or omitted action by a human operator attempting to perform a nuclear safety-related manipulation in response to an initiating occurrence.	ANS-51.10-02 ANS-51.10-2020
operator error	Non-preferred variation (2) Variant form.	ANS-58.8-1992 ANS-51.10 ANS-58.9-1994
optimal (optimum) moderation	The moderation condition that yields the highest effective multiplication factor.	ANS-57.3-2018
ordinary concrete	There are many different types of ordinary concrete. The differences are due to a variation in the mix proportions and elemental composition of the cement, sand, coarse aggregate and water. In the context of this standard, ordinary concrete means Type 04 concrete having a theoretical density of 2.35 g/cm^3. This type of designation is based on the elemental composition as defined in ANL-6443. Type 04 ordinary concrete is described in Section 5, Characterization of concrete. Argonne National Laboratory compilation ANL 6443 "A Summary of Shielding Constants for Concrete", describes other types of ordinary concrete as well.	ANS-6.4-1985
orderly shutdown and cooldown	A shutdown and cooldown in which the fuel and reactor coolant pressure boundary conditions are within technical specification operational limits. Automatic actuation of an engineered safety feature may be required.	ANS-51.1/52.1-W1983 ANS-51.10-2002
orderly shutdown and cooldown	Non-preferred variation (1) Variant form.	ANS-59.1-W1996
original seismic design bases	The seismic design criteria for which the plant was actually designed. Included, for example, are allowable seismic stress levels, seismic displacements, seismic loads, peak accelerations, etc.	ANS-2.10-2003
other defined basis	A method of meeting the requirements of the General Design Criteria 55 and 56 for specific classes of lines where the arrangements differ from the explicit requirements of the General Design Criteria.	ANS-56.2-84
other operator actions	Operator actions that are not required by plant emergency procedures following a DBE. Such actions also include those that do not improve safety performance, but that may be performed by the operator to improve a safety-related system's performance beyond the acceptable minimum.	ANS-58.8-1992
outdoor controlled area wastes	Liquids from diked areas outside plant buildings but within the controlled area of the plant.	ANS-55.6-1993 ANS-55.6-1999
outage	The entire set of POSs with the plant subcritical. This term is used interchangeably with the term “shutdown” (see discussion under “shutdown”).	ANS/ASME-58.22-2015 ASME/ANS RA-S-1.4-2021
outage types	Outage types: the term used to describe the general cause of the plant being subcritical. Different outage types result from maintenance and refueling requirements that necessitate different LPSD evolutions and resulting plant operating states. For example, a refueling outage type may involve fuel movement operations, whereas a maintenance outage conducted to repair piping would be a different outage type.	ASME/ANS RA-S-1.4-2021
outage types	Non-preferred variation (1) Term used to describe the general cause of the plant being subcritical. Different outage types result from maintenance and refueling requirements that necessitate different LPSD evolutions and resulting POSs. For example, a “refueling” outage type leads to cold shutdown with some or all of the fuel elements transferred	ANS/ASME-58.22-2015

Term	Description	Reference/Source
	out of the reactor pressure vessel; whereas a “maintenance” outage conducted at cold shutdown to repair steam piping would be a different outage type.	
outcrop motion	Free-field ground motion at the free surface of the ground or at hypothetical free surface at any depth.	ANS-2.2-2016
outer zone	That portion of the impact area outside the low population zone.	ANS-2.6-1981
overall integrated leakage rate	The total leakage through all tested leakage paths including containment welds, valves, fittings and components that penetrate the primary containment, expressed in units of weight percent of contained air mass at test pressure per 24 hours. (ANS-56.8-2020 adds the word “dry” “…contained dry air mass at…”)	ANS-56.8-02
override	To interrupt or modify the input/output (I/O) data transfer between the simulator mathematical models and the panel instrumentation.	ANS-3.5-2009 ANS-3.5-2018
owner	The holder as defined in 10 CFR 50.2 "Definitions," of a construction permit or the holder of an operating license as defined in 10.35, "Issuance of Construction Permits" or 10 CFR 50.57, "Issuance of Operating License."	ANS-2.10-1990
owner-controlled area	The area external and contiguous to a protected area which may be controlled by the owner organization for security purposes.	ANS-3.3-1988
owner organization	The organization, including the onsite operating organization, which has overall legal, financial, and technical responsibility for the operation of one or more nuclear power plants.	ANS-3.1-2014
owner organization	The organization, including the onsite operating organization, which has overall legal, financial, and technical responsibility for the operation of one or more nuclear power facilities.	ANS 3.2-2012

P

Term	Description	Reference/Source
P_a (psig or kPa)	The calculated peak containment internal pressure related to the design-basis loss-of-coolant accident (LOCA).	ANS-56.8-2002 ANS-56.8-2020
packaging	Any material or structure covering the surface of a waste such as a plastic bag, drum, concrete cask, etc., but exclusive of a coating or surface treatment.	ANS-16.1-2003 ANS-16.1-2019
	Note: This is not related to the definition in 49 CFR 173 for the Department of Transportation.	
packer test	A method of isolating a section of a borehole by inserting one or more expandable glands (i.e., packers) in order to measure hydraulic conductivity or water quality in the section.	ANS-2.9-1989
Paleogene	The geologic period from 23 Mya to 65 Mya. This period and the Neogene period were formerly referred to as the Tertiary period, a term that is no longer endorsed by the International Commission on Stratigraphy.	ANS-2.27-2020
paleoliquefaction	Prehistoric liquefaction. Information on the age, location, and extent of past liquefaction events can be used to estimate the size and location of prehistoric earthquakes.	ANS-2.27-2020
paleoseismic	Referring to the evidence for seismic events, determined by analysis of geological conditions resulting from or affected by prehistoric earthquakes.	ANS-2.27-2020
paleoseismic	Non-preferred variation (1) Referring to the history of seismic events that is determined by looking at the layers of rock and soil beneath the surface or landforms at the surface and how they have been shifted by earthquakes that have occurred in the past.	ANS-2.27-2008
paleoseismic	Non-preferred variation (2) Referring to the evidence for seismic events, determined by analysis of geologic or geomorphic conditions resulting from or affected by prehistoric earthquakes.	ANS-2.30-2015
parameter	As used in this standard, a parameter is a set or part of a set of physical properties whose values determine the characteristics or behavior of a system.	ANS-2.11-1978 ANS-2.19-1989
parameter	Non-preferred variation (1) Any specific parameter or value affecting or describing the theoretical or measurable characteristics of a unit being considered which behaves as an independent variable or which depends upon some functional interaction of other quantities in a theoretically determinable manner.	ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.2-1995
parameter uncertainty	The uncertainty in the value of an input parameter that represents the degree of belief in the range of values the input parameter may assume. Examples of parameter uncertainty include, but are not limited to, probability distributions or confidence intervals (i.e., a range of probability values within which the actual value of the input parameter is expected to reside) for an input parameter such as an initiating event frequency or a component failure probability.	ASME/ANS RA-S-1.1-2022
part	A basic element of a structure, system, or component (SSC) that ordinarily cannot be, or would not be, disassembled further for procurement or maintenance purposes, and might have a part-level plant unique identification code.	ANS-58.14-2011
part	Non-preferred variation (1) A basic element of an SSC that ordinarily cannot be, or would not be, disassembled further for procurement or maintenance purposes (and might have a part-level plant-unique identification code).	ANS-58.16-2014
partial-length control rod	One or more control members mechanically attached to a single fixture. For the purposes of this standard, the length of the neutron absorber material in the control member is a fraction of the length of the fuel in the core, i.e., “partial length.”	ANS-19.11-2017

Term	Description	Reference/Source
particle fluence	Is the quotient of dN by da, where dN is the number of particles incident on a sphere of cross-sectional area da; thus, $\Phi = \frac{\mathrm{dN}}{\mathrm{da}}$. (Eq. 3) Fluence has the dimensions m^{-2}.	ANS-6.1.1-2020
particle fluence	Non-preferred variation (1) The quotient of dN by da where dN is the number of particles incident on a sphere of cross-sectional area da. $\Phi = dN/da$ The area da must be perpendicular to each particle's direction. A sphere arranges this in the simplest manner. Alternatively, may be defined as particle track length per unit volume, or, in the case of neutrons, as nvt, where n is the (volume) density of neutrons, v is their velocity, and t is the time of passage through the volume.	ANS-6.1.1-1991
participation	Active performance in the duties and responsibilities relative to the function for which the candidate is being considered. Nonstructured observation is not considered participation.	ANS-3.1-2014
partition coefficient	The dimensionless ratio of the iodine concentration in the liquid phase to the iodine concentration in the gaseous phase at equilibrium based on volume.	ANS-56.5-1987
Pasquill-Gifford	A technique to type turbulence into discrete atmospheric dispersion categories.	ASME/ANS RA-S-1.3-2017
passive component	A component whose functioning does not depend on an external input such as actuation, mechanical movement, or supply of power [3].[13]	ANS-30.3-2022
passive component	Non-preferred variation (1) A component that is not an active component (e.g., pipe, resistor and heat tracing).	ANS-51.1/52.1-W1983 ANS-56.1-1985
passive component	Non-preferred variation (2) Variant form.	ANS-56.2-1984 ANS-56.5-1987
passive component	Non-preferred variation (3) A passive component has no moving parts and, for example, only experiences a change in pressure, temperature, or fluid flow in performing its functions. In addition, certain components that function with very high reliability based on irreversible action or change may be assigned to this category.	ANS-53.1-2011
passive failure	The blockage of a process flow path or failure of a component to maintain its structural integrity or stability, such that it cannot provide its intended nuclear safety function upon demand.	ANS-51.10-2002 ANS-51.10-2020
passive failure	Non-preferred variation (1) A failure that is not an active failure (e.g., the blockage of a process flow path or failure of a component to maintain its structural integrity or stability, such that it cannot provide its intended function upon demand).	ANS-58.11-1993
passive failure	Non-preferred variation (2) Variant form.	ANS-56.1-1985 ANS-56.5-1987 ANS-57.7-1992 ANS-56.4-1983 ANS-56.10-1987 58.9-1994
passive failure	Non-preferred variation (3) A failure of a component or system that does not become evident until the affected component or system is called upon to function.	ANS-3.5-2009
passive flood protection feature	A flood protection feature that does not require the change of state of a component in order for it to perform as intended. Examples include dikes, berms, sumps, drains, basins, yard drainage systems, walls, floors, structures, penetration seals, and external berms/barriers that are under licensee control.	ASME/ANS RA-S-1.1-2022
passive function	A function that is not an active function (e.g., the pressure-retaining function of a valve that is not required to change its position or an instrumentation and control component that is not required to change output state).	ANS-58.14-2011

[13] This reference is to "IAEA Safety Glossary," 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
passive function	Non-preferred variation (1) A function that is not an active function (e.g., the pressure-retaining function of a valve, a structural element, pipe support, cable, etc., that is not required to change position in order to perform its design function).	ANS-58.16-2014
passive malfunction	(It is preferred that (non-detectable failures) and the associated definition be used in ANS standards)	
passive malfunction	Those failures which do not become evident to the control room operator until the affected system is called upon to function.	ANS-3.5-1985
passive SSC	An SSC that performs one or more safety functions either fully or partially via passive means (i.e., relying on natural physical processes such as natural convection, thermal conduction, radiation, gravity, or pressure differentials, or depending on the integrity of a pressure boundary or structural component). Examples include piping systems that are used to maintain an inventory of fluid and deliver flow along a fluid path, and structural supports for SSCs.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
passive water-filled pathways	Pathways that remain water-filled for at least 30 days post-LOCA without the assistance of any active system or component. The water precludes the pathway from being a potential gaseous leakage pathway from primary containment.	ANS-56.8-2020
part-task simulator	A simulator incorporating detailed modeling of a limited number of specific reference plant components or subsystems. Such a simulator demonstrates expected response of those components or subsystems.	ANS-3.5-1985
pathway	A leakage path from the primary containment. Note: An individual penetration can have more than one pathway.	ANS-56.8-2002 ANS-56.8-2020
PC frequent	(See plant condition II).	
PC infrequent	(See plant conditions III and IV).	
PC limiting	(See plant condition V)	
PC normal	(See plant condition I)	
P_d (psig or kPa)	The containment design pressure.	ANS-56.8-02 ANS-56.8-2020
peak accelerograph	An instrument requiring no power source, having the capability of permanently recording peak acceleration.	ANS-2.10-1990
peak ground acceleration (PGA)	The maximum absolute value of acceleration displayed on an accelerogram, the largest ground acceleration produced by an earthquake at a site. This also refers to the spectral acceleration at a frequency of 100 Hz or higher. (ASME/ANS RA-S-1.4-2021 has same definition without the last sentence.)	ANS-2.27-2020 ANS-2.29-2020
peak ground acceleration (PGA)	Non-preferred variation (1) Maximum absolute value of acceleration displayed on an accelerogram; the largest ground acceleration produced by an earthquake at a site.	ANS-2.29-2008
peak ground acceleration (PGA)	Non-preferred variation (2) The peak absolute value of the time history of the acceleration.	ANS-2.2-2016
peak ground acceleration (PGA)	Non-preferred variation (3) Maximum value of acceleration displayed on an accelerogram; the largest ground acceleration produced by an earthquake at a site.	ASME/ANS RA-S-1.1-2022
peak ground displacement	The largest ground displacements produced by an earthquake at a site.	ANS-2.29-2008
peak ground velocity	The maximum value of the integral of an accelerogram and the largest ground velocity produced by an earthquake at a site.	ANS-2.27-2020 ANS-2.29-2020
peak ground velocity	Non-preferred variation (1) The largest ground velocity produced by an earthquake at a site.	ANS-2.29-Rev.8
peer review	The review and concurrence of the basis and findings of a document or paper by more than one individual recognized as knowledgeable in the specific technical area.	ANS-5.10-98
penetration assembly	An assembly that allows fluid lines or electric circuits to pass through a single aperture (e.g., nozzle or other opening) in the containment.	ANS-56.2-84

Term	Description	Reference/Source
Per calendar-year	Units for the frequency of an initiating event, event sequence, or release category, the calculation of which includes contributions from each plant operating state, taking into account the fraction of time spent in that plant operating state, normalized to 1 calendar-yr. Thus, the results from each plant operating state per calendar-year can be summed to give the total quantitative risk results. Also, note that the total risk per calendar-year does not represent any actual year of operation since it includes all possible plant operating states, some of which may occur only in outages that are less frequent than yearly.	ASME/ANS RA-S-1.4-2021
perched water	Subsurface water collecting on low-permeability geologic materials that are separated from an underlying main body of groundwater by an unsaturated zone. Water located above the water table whose water gauge pressure is greater than zero.	ANS-2.17-2010
performance assessment	A systematic analysis that addresses the types and likelihood of abnormal radionuclide releases, their resulting impacts, and how these impacts compare to regulatory standards.	ANS-2.17-2010
performance assessment	Non-preferred variation (1) Assessment based on performance goals, in contrast with assessments of historical documentation, processes used to achieve performance, or other indirect outcome assessments.	ANS-53.1-2011
performance-based	An approach to design or regulation that relies upon the desired, measurable results or performance outcomes based on objective criteria rather than a prescriptive process, technique, or procedure. Performance-based regulation differs from a traditional, prescriptive regulatory approach by emphasizing what is to be achieved rather than how desired results and outcomes are obtained. (ANS-30.3-2022 but just the 1st sentence)	
performance-based regulation	Regulations that are outcome oriented rather than procedure oriented. An approach to regulatory practice that establishes performance and results as the primary basis for decision making. Performance-based regulations have the following attributes: (a) measurable, calculable, or objectively observable parameters exist or can be developed to monitor performance; (b) objective criteria exist or can be developed to assess performance; (c) licensees have flexibility to determine how to meet the established performance criteria in ways that will encourage and reward improved outcomes; and (d) a framework exists or can be developed in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern.	ANS-2.17-2010
performance-based test interval	Type A, Type B, or Type C test interval whose duration is determined in part by the performance history of the containment or the component.	ANS-56.8-2002
performance-based training	The type of training that continues or is repeated until established results are achieved.	ANS-15.4-2016
performance check	A check of the response (efficiency, energy, and/or background) of a detection system to determine if changes have occurred since the last time the system was calibrated.	ANS-41.5-2012
performance criteria	The established level of quality (bias, precision, detection sensitivity, etc.) and operational commitments (turnaround times, reporting protocol, etc.) that are (a) agreed upon between the service laboratory and the customer (or intergovernmental agencies or intracompany entities) with written analytical specifications and (b) established by the service laboratory and documented within the operational or QA program manual of the laboratory.	ANS-41.5-2012
performance indicator	An observable hydrologic (e.g., water content, water flux, water quality parameter) or radiologic (e.g., tritium) parameter, the value (or change in value) of which is used to determine whether a performance objective is achieved.	ANS-2.17-2010
performance monitoring	A process of monitoring parameters or quantitative measures that provide an understanding of how a component or system is performing against established thresholds.	ANS-3.14-2021
performance objective	A targeted outcome or goal desired to achieve a successful end result (e.g., a goal to meet a defined level of environmental quality).	ANS-2.17-2010

Term	Description	Reference/Source
performance shaping factor (PSF)	A factor that influences human error probabilities as considered in a PRA's human reliability analysis and includes such items as level of training, quality/availability of procedural guidance, time available to perform an action, or so on. [etc.]	ASME/ANS RA-S-1.1-2022 ASME/ANS RA-Sb–2013 ASME/ANS RA-1.4-2021
performance threshold	A quantitative criterion for each performance indicator that defines when performance objectives are, or are not, being met.	ANS-2.17-2010
performance testing	Testing conducted to verify a simulator's performance as compared to actual or predicted reference unit performance.	ANS-3.5-2009 ANS-3.5-2018
performance testing (PT) sample	Reference materials or samples of known composition used to evaluate the performance of the laboratory.	ANS-41.5-2012
performance time	The time interval from the cue to perform the manual action until an action is or would be completed.	ANS-58.8-2019
period of record (POR)	The period of record of the observations within a dataset (e.g., number of years or date range).	ANS-2.21-2022
permanent ground deformation (PGD)	Inelastic movement of the ground surface resulting from displacement on a fault, either expressed at the surface or at depth, including (but not limited to) discrete (or distributed) fault displacement or offset ("faulting") and simple to complex changes in geometry of surface and near-surface materials ("tilting" or "folding").	ANS-2.30-2015
permanent medical condition	An injury or condition that impairs the physical and or mental ability of an operator to meet the specific minimum requirements in this standard and is, as evaluated by the examining physician, expected to extend beyond 90 days.	ANS-3.4-2013
permanent medical condition	Non-preferred variation (1) A change in the medical status of a licensed operator of probable duration greater than 90 days and for which the activities of the licensed operator may be restricted by the Level 2 person. Notification of this change shall be made to the responsible authority within 30 days of defining the condition as permanent.	ANS-15.4-2016
	Note: Definitions shall NOT contain requirements or permissions (Shall should and may should not be used in definitions.	
permanent resident population	The persons who live or sleep most of the time in a study area, which is not necessarily the same as the place of legal residence.	ANS-2.6-2018
	Note: This is not an acceptable definition for the term. It implies that people that live and or work in the area are not permanent legal residents.	
personnel monitoring	The means by which dose rate and estimation of the effective dose equivalent of ionizing radiation which an individual has received is determined, usually through use of survey instruments, dosimeters or personnel monitoring badges.	ANS-3.7.1-1995 (W2005)
personnel monitoring badge	A device worn by personnel containing film, thermo-luminescent, or other material used to evaluate the dose equivalent which a person has received.	ANS-3.7.1-1995 (W2005)
phased isolation	The sequential isolation of groups of fluid systems penetrating the reactor containment. The actuation of containment isolation is by different values of, or different combinations of measured parameters based on the ability of their fluid system to mitigate the consequences of an accident or their usefulness in maintaining the plant in safe configuration.	ANS-56.2-1984
phenomenological event	An observable event that occurs if governing physical and chemical phenomena proceed in a particular, but possibly uncertain, way. Such events are typically defined within the context of known (or assumed) initial and boundary conditions concerning the status of SSCs and actions of the operating crew. Uncertainties in such processes or events are typically governed by epistemic uncertainty in governing processes, or in the fidelity of analytical models to accurately calculate the behavior of known physical/chemical processes.	ASME/ANS RA-S-1.2-2015
photoneutron	Neutron released from an atomic nucleus in a photonuclear reaction with a gamma ray of sufficiently high energy. The threshold energy required	ANS-6.4.2-1985

Term	Description	Reference/Source
	of the gamma ray is approximately 2 Mev for beryllium and deuterium, but greater that 8 Mev for other elements.	
phreatic surface (water table)	Boundary between the zone of saturation and the zone of aeration where the pressure is atmospheric.	ANS-2.19-1989
phreatic zone	The region below the water table where water gauge pressure is greater than or equal to zero.	ANS-2.17-2010
physical analysis units	The spatial subdivisions of the plant upon which an internal flood [PRA] or an internal fire PRA is based. The physical analysis units are generally defined in terms of flood or fire areas or flood or fire compartments under the plant partitioning technical element.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
physical analysis units	Non-preferred variation (1) The spatial subdivisions of the plant upon which the fire PRA is based. The physical analysis units are generally defined in terms of flood or fire areas and/or flood or fire compartments under the plant partitioning technical element.	ASME/ANS RA-Sb–2013
physical barrier	(1) fences constructed of No. 11 American wire gauge, or heavier wire fabric, topped by three or more horizontal strands of barbed wire or similar material on brackets angled upward and outward between 30° and 45° from the vertical with an overall height of not less than eight feet including a one-foot barbed topping. (2) building walls constructed of stone, brick, cinder block, concrete, steel or comparable material (e.g., openings in which are secured by grates, doors, or covers of construction and fastening of sufficient strength such that the integrity of the wall is not compromised by any opening), not a part of a building, provided with a barbed topping described in (1), with a total height of not less than eight feet (a seven-foot wall with one foot of barbed topping). (3) ceilings and floors constructed to offer resistance to penetration equivalent to that of building walls described in [2]. (4) any other physical obstruction constructed in a manner and of materials suitable for the purpose for which the obstruction is intended.	ANS-3.3-1988
physical fidelity	The degree of similarity between the simulator and the reference unit, such as physical location of panels, equipment, instruments, controls, labels, and related form and function.	ANS-3.5-2009 ANS-3.5-2018
physical security plan	A document prepared pursuant to requirements of 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," Section 50.34(c) that describes the means by which the owner organization shall establish a security program with the objective of high assurance protection against radiological sabotage.	ANS-3.3-1988
piezometer	A non-pumping well generally of small diameter or device (tube or pipe) for measuring the elevation of a water table.	ANS-2.27-2008 ANS-2.27-2020
pipe rupture	The loss of pressure integrity of a piping run in the form of a circumferential break, longitudinal break or through-wall crack.	ANS-58.2
pipe rupture whip	The dynamic movement of a pipe due to postulated pipe rupture forces.	ANS-58.3
pipe whip	Uncontrolled motion of a ruptured pipe.	ANS-58.2
pipe whip restraint	A device, including its anchorage, utilized for preventing a pipe whip, or otherwise controlling the pipe motion within acceptable bounds following a pipe rupture.	ANS-58.2
pipeline accident	Rupture of a pipeline carrying a gas or liquid under pressure which can explode or ignite or create a toxic gas cloud or environment which incapacitates personnel or degrades equipment operation.	ANS-2.12-1978 ANS-2.19-1989
plain	Excluded are surfaces or zones along which there has been displacement related to surficial or near surface processes such as glacial-shove features, landslides, karst terrain, or related to activities of man such as mining, or withdrawal or addition of subsurface fluids.	ANS-2.19
plant	A general term used to refer to a nuclear power facility (e.g., “plant” could be used to refer to a single unit or multiunit site).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
plant	Non-preferred variation (1) A general term used to refer to a nuclear power facility (for example, “plant” could be used to refer to a single reactor or multi-reactor site).	ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
plant area	All areas of the plant, except the containment, within the exclusion area as defined for the purpose of 10 CFR 100, “Reactor Site Criteria”.	ANS-5.6.1-1990
plant boundary	Defined by the user based on the scope of plant structures.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
plant condition (PC)	Categorization of design basis events in terms of their likelihood of occurrence.	ANS 58.11-1993
plant condition (PC)	Non-preferred variation (1) Variant form.	ANS-51.1/52.1-W1983 ANS-58.9-1992
plant condition (PC)	Non-preferred variation (2) The purpose of categorizing Plant Conditions (PC) is to provide a means of establishing design requirements to satisfy operational and safety criteria of the facility. These are: defined by normal operation (PC 1), classified on the basis of expected frequency of occurrence (PC II and III), or postulated because their occurrence may result in the maximum potential impact on the immediate environs (PC IV and V). Evaluation of the consequences of any such event can then be used to specify the performance requirements of the systems and subsystems within the facility. 1. plant condition I a. Definition. PC I events are those events that are expected to occur regularly or frequently in the course of normal operation at the facility. b. Examples (1) Fuel handling (2) Spent fuel shipping (3) Storage of leaking fuel that resulted in up to ten percent of the Technical Specification limit for Reactor Coolant activity during power operation. (4) Inspection of fuel within the storage facility (5) Storage of new fuel in the spent fuel facility. 2. plant condition II a. Definition. PC II events are those events with a best estimate of frequency of occurrence (F)>10^{-1}/reactor year. b. Examples (1) Loss of a pump in the spent fuel pool cooling system (2) Spurious operation of an active element; e.g. relief valve, control valve. (3) Single error of an operator (4) Full core removal (5) Single failure in the electrical or control system (6) Loss of normal spent fuel cooling up to eight (8) hours (7) Storage of leaking fuel that resulted in up to 25 percent of the Technical Specification limit for Reactor Coolant activity during power operation (8) Minor pool liner leakage in an amount that can be handled by the radwaste system on a continuous basis. c. The facility shall be designed so that a PC II event shall not cause a loss of function of the reactor coolant system, reactor containment barriers or any other engineered safety features system or component. 3. plant condition III a. Definition. PC III events are those events with a best estimate frequency of occurrence (F) such that 10^{-1}>F≥10^{-2}/reactor year b. Examples. (1) A passive failure of a radioactive liquid retaining boundary that prevents the affected system from performing its design function (2) A loss of offsite power for up to eight (8) hours (3) Drop of a fuel assembly with its associated handling tool onto the racks from its normal operating height (4) Storage of leaking fuel that resulted in up to 100% of the Technical Specification limit for Reactor Coolant activity during power operation (5) Overfilling of the pool (6) Loss of non-Seismic Category I portion of the Spent Fuel Pool Cooling System (7) Loss of air supply to seals on gates, resulting in leakage from the pool	ANS-57.2-1983 (W-1993) (ANS-57.2-99)

Term	Description	Reference/Source
	(8) Operating Basis Earthquake (OBE) (9) Drop of the spent fuel cask from controlled normal height. 4. plant conditions IV and V a. Definition. PC IV and V consist of that set of possible events that are not expected to occur during the life of the facility, but are postulated because their consequences would include the potential for the release of significant amounts of radioactive material. These faults are the most severe that must be designed against, and thus represent the limiting design case. Best estimate frequency of occurrence (F) per year is $10^{-2}>F>10^{-6}$ b. Examples (1) Rupture of all fuel rods in a spent fuel assembly (2) Inadvertent opening of a gate (cask loading isolation or transfer canal isolation) when the adjoining area is empty resulting in reduced shielding (3) Effect of facility design basis natural phenomena (4) Drop of the spent fuel cask from maximum achievable height (5) Safe Shutdown Earthquake (SSE) (6) Loss of offsite power for up to seven (7) days.	
plant condition (PC)	Non-preferred variation (3) a measureable or observable parameter related to plant system state; e.g., RCS temperature, core decay heat level, Mode 4, SI secured, train A RHR running, or head off. A specific set of plant conditions is used to define the plant operating state modeling elements, and a larger set of plant conditions is used to define plant configurations.	ANS/ASME-58.22-2015
plant configuration	Plant conditions including mode, reactor power and decay heat level, RCS conditions (e.g., temperature, pressure), RCS status (e.g., pressure boundary open or closed), reactor building status, fire and flood barrier status, equipment alignment (e.g., number of pumps operating, number of pumps in standby), and equipment in service or out of service for test and maintenance.	ASME/ANS RA-S-1.4-2021
plant configuration	Non-preferred variation (1) The status of a specific set of plant conditions which includes all those used to define a plant operating state plus specific equipment alignments and equipment outages. These plant conditions include mode, primary system conditions (e.g., temperature, pressure), primary system status (e.g., midloop operation; vessel level during shutdown), equipment alignment (e.g. number of pumps operating, number of pumps in standby) and equipment out of service for test and maintenance. For configuration risk management, other conditions external to the plant may be defined; e.g. weather, grid-related activities, etc. One or more plant configurations may occur within the same plant operating state because they are defined in terms of more plant conditions.	ANS/ASME-58.22-2015
plant critical year	A calendar year in the operating life of a plant, assuming that the plant operated continuously for a year.	ASME/ANS RA-S-1.4-2021
plant damage state (PDS)	Group of accident sequence end states that have similar characteristics with respect to accident progression, and containment or engineered safety feature operability.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
plant damage state (PDS)	Non-preferred variation (1) Group of event sequences identifying intermediate states that have similar characteristics with respect to event sequence progression, barrier response or mitigation system operability.	ASME/ANS RA-S-1.4-2021
plant equipment	Equipment within the plant normally presumed to be operable.	ANS-53.1-2011
plant evolution	A series of connected or related activities where the plant transitions from one plant operating state to another (e.g., a transition from full-power to low-power level or shutdown), or changes to the plant conditions with various combinations of equipment out of service for maintenance. Not all plant evolutions involve a change in reactor power. Plant evolutions may be modeled as a series of plant operating states. Outage types are subtypes of a plant evolution, though not all plant evolutions involve an outage. A refueling outage is a specific example of a plant evolution. Reducing power to 30% to conduct maintenance or an operational activity is another example of a low-power evolution. Plant evolutions may be described by a transition down to the plant operating	ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
	state where the activity is conducted, followed by a transition back to full power.	
plant (nuclear)	It is preferred that the term (station (nuclear)) and the associated definition be used in ANS standards.	
plant-level safety-related function	Plant-level safety-related functions are functions performed by a system that directly supports one or more of the three basic safety-related functions during a DBE. For example, the ECCS provides the plant-level safety-related function of reactor inventory control during a LOCA, which is a safe shutdown function.	ANS-58.14-2011
plant operating organization	Site personnel responsible for operation, maintenance, and certain technical and support services.	ANS-3.2-1993
plant operating state (POS)	Non-preferred variation (1) is a standard arrangement of the plant during which the plant conditions are relatively constant, are modeled as constant, and are distinct from other configurations in ways that impact risk. POS is a basic modeling device used for a phased-mission risk assessment that discretizes the plant conditions for specific phases of a LPSD evolution. Examples of such plant conditions include: core decay heat level, primary water level, primary temperature, primary vent status, containment status, and decay heat removal mechanisms. Examples of risk impacts that are dependent on POS definition include the selection of initiating events, initiating event frequencies, definition of accident sequences, success criteria, and accident sequence quantification. (ANS-30.3-2022 but just the 1st sentence)	ASME/ANS RA-S-1.2-2015 ANS/ASME-58.22-2015
plant operating state (POS)	Non-preferred variation (2) A standard configuration of the plant during which the plant conditions are relatively constant, modeled as constant, and distinct from other configurations in ways that impact risk (e.g., core power level; HPB open/closed status, temperature, and pressure; reactor building status; and status of decay heat removal systems). A plant operating state can be a steady state or represent a transition between steady states. In a PRA model, each plant operating state provides a unique set of boundary conditions for selecting initiating events for the PRA event sequence analysis.	ANS-53.1-2011
plant operating state (POS)	Non-preferred variation (3) A standard arrangement of the plant during which the plant conditions are relatively constant, are modeled as constant, and are distinct from other configurations in ways that impact risk. Plant operating state is a basic modeling device used for a phased-mission risk assessment that discretizes the plant conditions for specific phases of plant evolution. Examples of such plant conditions include core decay heat level, reactor coolant level, coolant temperature, coolant vent status, reactor building status, and DHR mechanisms. Examples of risk impacts that are dependent on the plant operating state definition include the selection of initiating events, initiating event frequencies, definition of event sequences, success criteria, and event sequence quantification.	ASME/ANS RA-S-1.4-2021
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
plant-operating-state-year	An equivalent calendar-year of operation of a plant in a particular plant operating state.	ASME/ANS RA-S-1.4-2021
plant response model	A logic model, including the event trees and fault trees and the various SSC and human failures, that is used to delineate and evaluate the CDF/LERF accident sequences conditional on the occurrence of a hazard event (or hazard group).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
plant response model	Non-preferred variation (1) A logic model, including the event trees and fault trees and the various SSC and human failures, that is used to delineate and evaluate the modeled event sequences conditional on the occurrence of a hazard event (or hazard group).	ASME/ANS RA-S-1.4-2021
plant-specific data	Data consisting of observed sample data from the plant being analyzed.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
plant-year	A calendar-year in the operating life of a plant, regardless of power level.	ASME/ANS RA-S-1.4-2021
plateout	Deposit of lower-volatility fission products on lower-temperature surfaces. A form of physical volatile precipitation induced by temperature and pressure states.	ANS-53.1-2011
Pleistocene	The time period between about 10,000 years before present and about 1,800,000 years before present. As a descriptive term applied to rocks or faults, it marks the period of rock formation or the time of most recent fault slip, respectively.	ANS-2.27-2008
Pleistocene	Non-preferred variation (1) The geologic epoch between 11,700 and 2,600,000 years before present.	ANS-2.30-2015 ANS-2.27-2020
plug flow	In fluid mechanics, a simple model of fluid flow in which the velocity of the fluid is assumed to be constant throughout the cross section (e.g., as in a pipe). There is no mixing along the flow direction.	ANS-2.21-2022
plume	An amount of material continually released over a period of time.	ASME/ANS RA-S-1.3-2017
plume meander	Plume spreading from the centerline due to large low-frequency oscillations of the horizontal wind direction.	ANS-2.15-2013
plume emergency planning zone	An area surrounding a nuclear power plant where the principal exposure sources would be whole-body external exposure to gamma radiation from the plume and deposited material and inhalation exposure from the passing radioactive plume.	ANS-30.3-2022
plume emergency planning zone	Non preferred variation (1) An area of approximately 10-mile radius surrounding a nuclear power plant where the principal exposure sources would be whole body external exposure to gamma radiation from the plume and deposited material, and inhalation exposure from the passing radioactive plume.	ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.5-1992 ANS-3.8.6-1994 ANS-3.8.2-1995
point estimate	An estimate of a parameter in the form of a single number.	ASME/ANS RA-Sb–2013 ASME/ANS RA-1.4-2021 ASME/ANS RA-S-1.1-2022
point source	A single, identifiable, stationary source of emission that can be elevated or ground level. A point source has no geometric dimension and is often used to represent the geographic location of a plume's origin.	ANS-2.15-2013
pool	A single isolable body of water with a free surface. Examples are the spent fuel storage pool, the cask handling pool, the fuel transfer canal, and reactor refueling cavity (or well).	ANS-57.1-1992 ANS-57.2-1993 ANS-57.3-1993 ANS-57.2-1999
population	It is preferred that the term "total population" and the associated definition be used in ANS standards.	
population	Non-preferred term: population: See "total population."	ANS-2.6-2018
population density	The population (actual count or estimate) divided by the total area of the study area.	ANS-2.6-2018
population dose	The total dose summed over the population exposed to the radiological release expressed in person-rem or person-sievert.	ASME/ANS RA-S-1.3-2017
population estimate	A substitute for a complete count of a population.	ANS-2.6-2018
population projection	A calculation of the future size of a population if a given set of assumptions, such as the behavior of births, deaths, and migration, holds.	ANS-2.6-2018
pore velocity, seepage velocity (LT^{-1})	The average rate of flow in the pores of a given medium. This is approximated by dividing the flux by the effective porosity.	ANS-2.17-1989
porosity	(1) The property of containing interstices(radionuclides). Total porosity is expressed as the ratio of the volume of interstices to total volume. Effective porosity refers to the porosity through which flow occurs.	ANS-2.9-1989 ANS-2.17-1989
porosity	(1) The property of containing interstices. The ratio of the volume of pores, fractures, or voids in soil or rock to the total volume (solid plus pore volumes).	ANS-2.17-2010
porosity	Non-preferred variation (1) The property of containing interstices. Total porosity is expressed as the ratio of the volume of interstices to total	ANS-2.9-1989 ANS-2.17-1989

Term	Description	Reference/Source
	volume. Effective porosity refers to the porosity through which flow occurs.	
portability	The ability of a computer program to be transferred from one hardware/ software configuration and implemented on another with little or no modification, such that the capability of the program is not altered during the transfer.	ANS-10.2-1988
positive acting check valve	A check valve which can also be remote manually closed when isolation is required.	ANS-56.2-1984
post-accident environment	In the context of this standard, the temperature, pressure, humidity, radiation, chemistry, and contamination levels of a containment after an accident.	ANS-56.5-87 ASME/ANS RA-S-1.4-2021
post-initiator human failure events	Human failure events that represent the impact of human errors committed during response to abnormal plant conditions.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
post-initiator human failure events	Non-preferred variation (1) Human failure events that represent the impact of human errors committed during actions performed prior to the initiation of an event (e.g., during maintenance or the use of calibration procedures).	ASME/ANS RA-S-1.4-2021
postulated accidents	Those events which, although not expected to occur, are selected, in addition to normal and anticipated operational occurrences, for establishing design bases of systems, components and structures or selection of Exclusion Distance and Low Population Zone for the reactor site, or both, as defined in the 10 CFR 100.11, "Determination of Exclusion Area, Low Population Zone, and Population Center Distance". They represent bounding events which envelop variations in the types of accidents considered and are the upper bound design basis events. Postulated accidents together with normal operation, including anticipated operational occurrences, represent the total spectrum of design basis events. (ANS-30.3-2022 with editorial changes)	ANS-54.1-1989
postulated pipe rupture	A postulated circumferential break, longitudinal break, through-wall crack, or leakage crack. These definitions are explained in detail in ANS-58.2-1988.	ANS-56.11-1988
potentiometric surface	An imaginary surface representing the static head of ground water and defined by the level to which water will rise in a series of wells.	ANS-2.11–W99
potentiometric surface	Non-preferred variation (1) An imaginary surface representing the static head of ground water in a confined aquifer and defined by the level to which water will rise in a well.	ANS-2.19-1981
power block elevation (for purposes of external-flood PRA)	The as-built elevation of the ground surface in the area of the site power block. There may be more than one elevation of relevance to the external flood PRA; for example, different elevations may be relevant to different locations around the site.	ASME/ANS RA-S-1.1-2022
power coefficient (PC)	The change in reactivity per unit change in reactor power, with a constant average moderator temperature.	ANS-19.11-2017
power Doppler coefficient (PDC)	The change in reactivity per unit change in reactor power, with a constant moderator temperature distribution.	ANS-19.11-2017
power failure	A loss of actuating (i.e., motive) power.	ANS-56.2
power conversion	Conversion from thermal to mechanical and electrical power or vice versa.	ANS-53.1-2011
power level	The power level is the power production in units of thermal megawatts. In the context of this standard, the user is cautioned pertaining to scaling by power level in that specific sources of gamma radiation may not exhibit a linear relationship with power level, because of the influence of other parameters such as coolant flow rate.	ANS-6.6.1-2015
power operated valve	A valve actuated by means of a power operator.	ANS-56.2-1984
power operator	A device which uses air (i.e., air operator), electric (e.g., motor or solenoid operator), hydraulic power or spring force for mechanical actuation of the valve.	ANS-56.2-1984
power plant experience	Experience acquired in the testing, operation, and maintenance of power generating facilities, including non-nuclear facilities.	ANS-3.1-2014

Term	Description	Reference/Source
power plant staff	A manager, supervisor, or staff member responsible for the coordination and implementation of any of the following: plant equipment controls, integrated operations procedures, operations, maintenance, radiological support, modifications, maintenance planning, work control, chemistry, accredited training.	ANS-3.1-2014
PRA application	A documented analysis based in part or whole on a plant-specific PRA that is used to assist in decision making with regard to the design, licensing, procurement, construction, operation, or maintenance of a nuclear power plant.	ASME/ANS RA-Sa–2009 ASME/ANS RA-S-1.1-2022
practical sustained yield	The rate at which ground water can be continuously withdrawn without lowering water levels to critical stages or causing undesirable changes in water quality.	ANS-2.9-1989
PRA event sequence	It is preferred that the term (event sequence) and the associated definition be used in ANS standards.	
PRA event sequence	Non-preferred term: PRA event sequence. The event sequence defined by PRA for developing event families and evaluating top-level outcomes from initiating events.	ANS-53.1-2011
PRA, full scope	A PRA that accounts for all known plant operating states, initiating events and their causes including those from internal and external plant hazards, and event sequences whose end states are sufficiently developed to support and include an estimation of mechanistic source terms and off-site radiological consequences. Full-scope PRAs include a definition of event sequences, quantification of sequence frequencies and consequences, and quantification of uncertainties in the frequency and consequence estimates that is sufficient to account for all risk-significant contributions to each modeled end state.	ANS-53.1-2011
PRA maintenance	A change in the PRA that does not meet the definition of PRA upgrade.	ASME/ANS RA-S-1.1-2022
PRA maintenance	Non-preferred variation (1) The update of the PRA models to reflect plant changes such as modifications, procedure changes, or plant performance (data).	ASME/ANS RA-Sb–2013
PRA upgrade	A change in the PRA that results in the applicability of one or more SRs or Capability Categories that were not previously included within the PRA (e.g., performing qualitative screening in Part 4 when this HLR was previously not applicable or the addition of a new hazard model), an implementation of a PRA method in a different context, or the incorporation of a method not previously used.	ASME/ANS RA-S-1.1-2022
PRA upgrade	Non-preferred variation. The incorporation into a PRA model of a new methodology or significant changes in scope or capability that impact the significant accident sequences or the significant accident progression sequences. This could include items such as new human error analysis methodology, new data update methods, new approaches to quantification or truncation, or new treatment of common cause failure.	ASME/ANS RA-Sb–2013
precipitation	The amount, usually expressed in millimeters or inches of liquid water depth, of the water substance that has fallen at a given point over a specified period of time.	ANS-3.11-2015
precision	The degree of agreement of repeated measurements of a variable.	ANS-6.8.1-1981 ANS-6.8.2-1986
precision	Non-preferred variation (1) The degree of agreement or central tendency of repeated measurements of the same parameter. A measurement with small random uncertainties is said to have high precision.	ANS-41.5-2012
predictive maintenance	Maintenance that uses the properties of the SSC in order to predict possible degradation or failure and to perform necessary maintenance to prevent failure.	ANS-3.14-2021
preferred power supply	That power supply which is preferred to furnish electric energy under accident or post-accident conditions. (From IEEE Standard Criteria for Class IE Electric Systems for Nuclear Power Generating Stations, IEEE Std. 308-1974).	ANS-4.1 - Historical

Term	Description	Reference/Source
pre-initiator human failure events	Human failure events that represent the impact of human errors committed during actions performed prior to the initiation of an accident (e.g., during maintenance or the use of calibration procedures).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
preoperational testing	Tests conducted following completion of construction and construction related inspections and tests, but prior to fuel loading, to demonstrate, to the extent practical, the capability of structures, systems, and components to meet specific performance requirements to satisfy the design criteria.	ANS-3.1-2014
pressure boundary	Those portions of closed systems, components, or structures that are designed to contain a fluid and prevent or limit its leakage.	ANS-56.4-1983 ANS-58.9-1992
pressure suppression	A means to reduce containment pressure by condensation of the steam through contact with water, ice, or other cooling surfaces.	ANS-56.5-1987
pressurized gas storage tank system	A system using tanks, operating at pressures above 1.5 atmospheres absolute, for the holdup of gaseous radioactive waste prior to release or reuse.	ANS-55.1-1992 ANS-55.4-1993 ANS-55.4-1999
pressurized water reactor coolant pressure boundary	It is preferred that (reactor coolant pressure boundary) and the associated definition be used in ANS standards.	
pressurized water reactor coolant pressure boundary	Non-preferred term: pressurized water reactor coolant pressure boundary. The reactor coolant pressure boundary is defined as: 1) The reactor vessel indicating control rod drive mechanism housing 2) The reactor coolant side of the steam generators used to transfer reactor coolant system heat to the secondary system 3) Reactor coolant pumps 4) A pressurizer including heating and cooling provisions 5) Relief piping up to and including relief and safety valves (piping and associated tanks to receive discharges are considered outside the reactor coolant pressure boundary) 6) The piping, valves, and fittings needed between the principal components listed above in order to provide appropriate interconnections and flow control 7) Portions of the piping, fittings, and valves, leading to connecting systems up to and including: the outermost reactor containment isolation valve in system piping which penetrates the reactor containment; and the second of two valves normally closed during normal reactor operation in system piping which does not penetrate the reactor containment.	ANS-56.3-1986
preventive maintenance	Maintenance performed ahead of failure in order to prevent a structure or component from degrading significantly or failing.	ANS-3.14-2021
primary calibration	A procedure which is followed on each area radiation monitor channel using sources or instruments, or both, that have been standardized, using a measurement system traceable to National Institute of Standards and Technology (NIST) to ensure that the response of the channel is accurate within certain prescribed limits.	
primary calibration	Non-preferred variation (1) A procedure which is followed on each area monitor channel using sources or instruments, or both, that have been standardized, using a measurement system traceable to NIST to ensure that the response of the channel is accurate within certain prescribed limits.	ANS-6.8.1-1981
primary containment	The principal enclosure that acts as a barrier, after the RCPB, to control the release of radioactive material from the fuel in the reactor core. This boundary includes the following: (1) the primary containment structure and its access closures, penetration closures, and appurtenances; (2) those valves, pipes, closed systems, and other pressure-retaining components used to effect isolation of the primary containment atmosphere from the external environment; (3) those systems or portions of systems that, by their system functions, extend the primary containment boundary (e.g., the connecting steam and feedwater piping and isolation valves).	ANS-58.14-2011 ANS-56.8-2020
primary containment	Non-preferred variation (1) The principal enclosure that acts as the barrier, after the fuel cladding and reactor pressure boundary, to control	ANS-2.2-2016

Term	Description	Reference/Source
	the release of radioactive material. The primary containment includes (1) the containment structure and its access openings, penetrations, and appurtenances; (2) the valves, pipes, closed systems, and other components used to isolate the containment atmosphere from the environment; and (3) those systems or portions of systems that, by their system functions, extend the containment structure boundary (e.g., the connecting steam and feedwater piping) and provide effective isolation.	
primary containment	Non-preferred variation (2) The principal enclosure that acts as a leakage barrier, after the reactor coolant pressure boundary, to control the release of radioactive material from the fuel in the reactor core under DBA conditions. It consists of: (1) the primary containment structure, including access closures, penetration closures, and appurtenances; (2) those valves, pipes, closed systems, and other pressure-retaining components used to effect isolation of the primary containment atmosphere from the outside environs; (3) those systems or portions of systems that, by their system functions, extend the primary containment structural boundary. This does not include the “secondary containment,” ”containment enclosure building,” or “reactor building” surrounding some containment systems, whose function is to control primary containment leakage.	ANS-56.11985 ANS-58.14-1993
primary containment	Variant form.	ANS-56.4-1983 ANS-56.6-1986 ANS-56.8-2002 ANS-51.1/52.1
primary containment atmosphere	The portion of the net free volume contained within the primary containment pressure boundary made up of steam and non-condensible gases and, following an accident, water droplets.	ANS-56.4-1983
primary coolant boundary (PCB) (Applicable to gas cooled reactors only)	The pre-stressed concrete reactor vessel (PCRV) liner, including all cavity and penetration liners which are exposed to primary coolant, in conjunction with the pre-stressed concrete structure, forms the primary coolant boundary and includes: (1) All primary closures that seal penetrations in the PCRV liner. (2) All system piping within the PCRV liner cavity that contains primary coolant and penetrates the PCRV liner or PCRV closures, up to and including the second isolation valve. (3) All system piping within the PCRV liner cavity that is exposed to primary coolant and is not covered in 2. (4) The PCRV overpressure protection system, up to and including the second pressure relief device (e.g., rupture disc or relief valve). (5) Coolant retaining parts of mechanical components, such as shaft seals on helium circulators.	58.4-1979
primary criticality control (See primary method of criticality control)	A control parameter on which principal reliance is placed in assuring that sub-critical conditions are maintained.	ANS-57.7-1992
primary criticality control (See primary method of criticality control)	Non-preferred variation (1) Variant form.	ANS-8.5-1986
primary design function	A principle function of a structure, system or component (SSC) for which it was included in the plant design. (i.e., the emergency core cooling systems are included in the plant design to perform the primary design function of providing coolant to the reactor vessel during or following a LOCA.) [Developed for ANS-58.14-1993]	
primary hazard	Those hazards that are not the consequence of other preceding hazards.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
primary heat transport system	Heat transport within the primary coolant boundary or the primary means of heat removal from the core.	ANS-53.1-2011

Term	Description	Reference/Source
primary method of criticality control	(See primary criticality control) A control parameter on which principal reliance is placed in assuring that sub-critical conditions are maintained.	ANS-8.10-1983
primary reactor containment	It is preferred that the term (Primary containment) and the associated definition be used in ANS standards.	
primary reactor containment	Non preferred term: primary reactor containment. (See primary containment) The preferred term is primary containment.	ANS-51.1/52.1-W1983
primary reactor containment	Non-preferred variation (1) The design feature, that acts as the principal leakage barrier, after the reactor coolant pressure boundary, to prevent the release under all conditions of design, of quantities of radioactive material that would have undue radiological effect on the health of the public. The system is composed of: (1) the containment structure, including access openings, penetrations, and appurtenances; (2) those valves, pipes, closed systems, and other components used to effect isolation of the containment atmosphere from the outside environs; and, (3) those systems or portions of systems that by their functions, extend the containment structure boundary to include their system boundary. This does not include the "secondary containment," "containment enclosure building," or "reactor building" surrounding some containment systems, whose function is to control containment system leakage.	ANS-56.8-2002
primary reactor containment	Variant form.	ANS-56.1-1985 ANS-56.5-1987 ANS-56.7 ANS-56.10-1987
primary shielding	The primary shielding is the shielding provided to attenuate the neutron and gamma-ray radiation emanating from the reactor pressure vessel.	ANS-6.3.1-1987
primary source	An assured source of water capable of supplying water throughout a hot standby period of at least four hours, during which time a decision regarding the necessity of cooldown is reached, plus a cooldown period sufficient to reduce plant temperature to levels where low-temperature low-pressure decay heat removal equipment can be used assuming the concurrent loss of off-site power. This source may consist of more than one structure. Where hot standby is required to be maintained for extended periods, the primary source shall have additional capacity to meet this requirement.	ANS-51.10-08
primary test instrumentation	Instruments whose recorded values are used directly in the calculation of any values compared against test acceptance criteria.	ANS-56.8-02 ANS-56.8-2020
principal design criteria	As defined in 10 CFR 50.34 [17] and 10 CFR 52.47 [18].	ANS-54.1-2020
prior distribution (priors)	In Bayesian analysis, the expression of an analyst’s prior belief about the value of a parameter prior to obtaining sample data.	ASME/ANS-RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
probabilistic fault displacement hazard analysis (PFDHA)	An analytical methodology that estimates annual frequency of exceedance for permanent tectonic surface fault rupture at a site.	ANS-2.27-2020
probabilistic risk assessment (PRA)	A qualitative and quantitative assessment of the risk associated with plant operation and maintenance that is measured in terms of frequency of occurrence of risk metrics, such as core damage or a radioactive material release and its effects on the health of the public [also referred to as a probabilistic safety assessment (PSA)].	ASME/ANS RA-Sb–2013 ANS-53.1-2011 ANS-30.3-2022
probabilistic risk assessment (PRA)	Non-preferred variation (1) A quantitative assessment of the risk associated with plant operation and maintenance that is measured in terms of frequency of occurrence and consequences of event sequences, event sequence families, or release categories [also referred to as a probabilistic safety analysis (PSA)].	ASME/ANS RA-S-1.4-2021
probabilistic risk assessment (PRA)	Non-preferred variation (2) A quantitative assessment of the risk including all technical elements for modeled hazards associated with plant operation and maintenance that is measured in terms of frequency of occurrence of risk metrics, such as core damage or a radioactive	ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
	material release and its effects on the health of the public (also referred to as a probabilistic safety analysis).	
	Note: PRA can be used for things other than plants.	
probabilistic risk assessment (PRA) application	A documented analysis based in part or whole on a plant- specific PRA that is used to assist in decision-making regarding the design, licensing, procurement, construction, operation, or maintenance of an NPP.	ASME/ANS RA-S-1.4-2021
PRA maintenance	A change in the PRA that does not meet the definition of PRA upgrade.	ASME/ANS RA-S-1.4-2021
PRA upgrade	A change in the PRA that results in the applicability of one or more SRs or Capability Categories (e.g., the addition of a new hazard model) that were not previously assessed in a peer review of the PRA, an implementation of a PRA method in a different context, or the incorporation of a method not previously used.	ASME/ANS RA-S-1.4-2021
probabilistic seismic hazard analysis (PSHA)	An analytical methodology that estimates annual frequency of exceedance for a certain ground motion parameter [e.g., peak ground acceleration, peak ground velocity, response spectral values, fault displacement] at a site.	ANS-2.27-2020 ANS-2.29-2020
probabilistic seismic hazard analysis (PSHA)	Non-preferred variation (1) A procedure used to develop seismic hazard curves and uniform hazard response spectra for determining the ground motion at a site to be used for seismic design. Aleatory variability and epistemic uncertainty are captured in a PSHA. Criteria and guidance for conducting a PSHA are provided in ANS-2.29-2008.	ANS-2.27-2008
probabilistic tectonic deformation hazard analysis (PTDHA)	An analytical methodology that estimates annual frequency of exceedance for permanent surface deformation due to displacements along blind (buried) faults at a site.	ANS-2.27-2020
probability of exceedance	The probability that a specified level of seismic hazard will be exceeded at a site or in a region during a specified exposure time.	ANS-2.29-2008
probability of exceedance	Non-preferred variation (1) (as used in seismic hazard analysis). The probability that a specified level of ground motion for at least one earthquake will be exceeded at a site or in a region during a specified exposure time.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
probability of nonsuppression	Probability of failing to suppress a fire before target damage occurs.	ASME/ANS RA-Sb–2013
	Note: Check to see if “nonsuppression“ should be hyphenated.	
probability of occurrence	The mean annual rate of occurrence of a hazard parameter within a range of values. The limits of this range are indicated by the definition of the event. These limits can be specified to consistently cover the entire spectrum of parameter values as illustrated in Appendix A. For example, a 100-year wind means the probability of exceeding this wind speed in a year is 1/100. For purposes of this standard, all hazards have their parameter values[1] divided into segments which are characterized by discreet design events (e.g., Safe Shutdown Earthquake [SSE]). Parameter value characterizes an event as to its intensity, e.g. wind velocity for a tornado, or elevation of a flood.	ANS-2.12-1978
probable maximum flood (PMF)	The hypothetical flood (i.e., peak discharge, volume, and hydrograph shape) that is considered to be the most severe reasonably possible, based on comprehensive hydrometerological application of probable maximum precipitation and other hydrologic factors favorable for maximum flood runoff such as sequential storms and snow melt.	ANS-2.8-1992
probable maximum gradient wind	A probable gradient wind of a designated duration above the surface friction layer, of which there is virtually no risk of being exceeded. The event may be considered to have a probability of occurrence comparable to that of a probable maximum precipitation.	ANS-2.8-1992
probable maximum hurricane (PMH)	A hypothetical hurricane having that combination of characteristics that makes it the most severe that can reasonably occur in the particular region involved. The hurricane approaches the point under study along a critical path and at an optimum rate of movement which results in most adverse flooding.	ANS-2.8-1992
probable maximum hurricane (PMH)	Variant form.	ANS-2.13-1979

Term	Description	Reference/Source
probable maximum precipitation (PMP)	The estimated depth of precipitation for a given duration, drainage area, and time of year for which there is virtually no risk of exceedance. The probable maximum precipitation for a given duration and drainage area approximates the maximum that is physically possible within the limits of contemporary hydrometeorological knowledge and techniques.	ANS-2.8-1992
probable maximum windstorm (PMWS)	A hypothetical extratropical cyclone that might result from the most severe combination of meteorological storm parameters that is considered reasonably possible in the region involved. The windstorm approaches the point under study along a critical path and at an optimum rate of movement which will result in most adverse flooding.	ANS-2.8-1992
probable maximum windstorm (PMWS)	Variant form.	ANS-2.13-1979
probable minimum flow	The hypothetical minimum rate of stream flow that can occur from the most severe combination of reasonably possible hydrometeorological and geomorphic factors.	ANS-2.13-1979
probable station blackout response facilities	The added capability beyond the assured capability to withstand station blackout, which are identified in developed response scenarios and emergency procedures. These facilities might serve as alternative contingency methods of providing station blackout response functions, or extend capabilities beyond the time frame for which complete application of this standard is justified.	ANS-58.12-1985
probit	Probability unit function, defined as the inverse cumulative distribution function.	ASME/ANS RA-S-1.3-2017
procedure	A document that specifies or describes how an activity is to be performed.	ANS-3.2-1988
process conditions	The identifying characteristics of a process that have an effect on nuclear criticality safety (e.g., parameters, environment, and operations).	ANS-8.10-2015
process control program (PCP)	A systematic procedure for providing reasonable assurance that the final waste form is in accordance with disposal facility acceptance criteria.	ANS-40.37-2009
process control program (PCP)	Non-preferred variation (1) A set of procedures used to ensure a consistent waste form is produced that meets all applicable regulatory and disposal site requirements.	ANS-55.1-1992
process control program (PCP)	Non-preferred variation (2) A set of procedures used to ensure that a wet waste (concentrates, media, mechanical filters) is converted to a dry consistent waste form that meets all applicable regulatory and disposal site requirements.	ANS-55.1-2021
processed averaged data set	A data set prepared by averaging an evaluated data set or processed continuous data set with a specified weighting function over a specified detailed energy group structure. The group structure and weighting function are selected so that the averaged data set is applicable to a wide range of reactor analyses. Application-dependent collapsed data sets are dealt with in ANSI/ANS-19.3-2011 (R2017) [3]. See also “multigroup cross-section data.”	ANS-19.1-2019
processed continuous data set	A data set derived by expansion or compaction of an evaluated data set using specified algorithms. Such a data set is intended to be independent of specific reactor compositions, geometries, energy group structures, or spectra.	ANS-19.1-2019
processed continuous data set	Non-preferred variation (1) A data set prepared by expansion or compaction of an evaluated data set using specified algorithms. Such a data set is intended to be independent of reactor compositions, geometries, energy group structures, and spectra.	ANS-19.3-2011
processed continuous-energy data set	A data set prepared by expansion or compaction of an evaluated data set using specified algorithms. Such a data set is intended to be independent of reactor composition, geometries, and spectra.	ANS-19.3-2022
process evaluation	A document that identifies and defines all know criticality safety concerns; documents criticality safety assumptions, requirements, limits, and controls; and demonstrates subcriticality. The process evaluation is often referred to as a Nuclear Criticality Safety Evaluation (NCSE).	ANS-8.22-1997

Term	Description	Reference/Source
processing code	A computer program designed to generate continuous, averaged, or multigroup data sets from evaluated or continuous data sets.	ANS-19.1-2019
process monitor	Instrumentation used to determine the level of radioactivity in a stream for the purpose of evaluating the status and performance of selected plant processes.	ANS-6.8.2-1986
process piping	Piping used to collect process and discharge liquid radioactive wastes. This does not include instrumentation and sampling lines beyond the first root valves.	ANS-55.6-1993 ANS-55.6-1999
procurement document	Purchase requisitions, purchase orders, drawings, contracts, specifications, or instructions used to define requirements for purchase.	ANS-3.2-1988
prognostic models	Models that explicitly forecast conditions into the future based on an initial state and time-dependent equations of motion.	ANS-2.15-2013
program development	The processes which are involved in producing a computer program and its documentation. They are: Problem definition; Model development; Algorithm formulation; Program design; Programming; Verification; Validation; and, Modification.	ANS-10.5-2006
programmable digital computer	A device that can store instructions and is capable of the execution of a systematic sequence of operations performed on data that is controlled by internal stored instructions.	ANS/IEEE 7.4.3.2-1982
projected coordinate system	A system that projects angular latitude and longitude point locations from a sphere onto a flat surface.	ANS-2.6-2018
proponent expert	An expert who advocates a particular hypothesis or technical position.	ASME/ANS RA-Sb–2013
protected area	An area encompassed by physical barriers to which access is controlled.	ANS-3.3-1988 ANS-59.51-1989 ANS-59.52-1993
protected area	Non-preferred variation (1) The area within the site security fence and controlled under the security plan.	ANS-3.8.2-1995 ANS-3.8.6-1995
protection	The design of plant features such as distance, orientation, barriers, enclosures, restraints and hardening, in order to limit the consequences of a particular event/hazard to within acceptable limits for that event/hazard.	ANS-58.3
protection system	That part of the sense and command features involved in generating those signals used for the reactor trip system and engineered safety features.	ANS-51.1-1994 ANS-52.1/50.1
protection system	Variant form.	ANS-4.1 ANS-56.2-1984
protective action	An action taken to avoid or reduce projected dose to individuals.	ANS-3.8.1-1987 ANS-3.8.6-1994 ANS-3.8.2-1995 ANS-3.8.4-1995
protective action	Non-preferred variation (1) protective actions: Actions taken by the public to mitigate the impacts of radiological releases.	ASME/ANS RA-S-1.3-2017
protective action	Variant form.	ANS-3.7.2-1979 ANS-4.1
protective action guide (PAG)	Those specified dose levels which, if projected to be exceeded for individuals in the population, cause pre-established protective actions to be recommended. (e.g., see Environmental Protection Agency (EPA) Manual EPA-520/1-75.001, 21 CFR 1090, "Food and Drugs," EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA 400-R-92-001.	ANS-3.8.6-1994

Term	Description	Reference/Source
protective action guide (PAG)	(e.g., see EPA 400R-92-001 [1] and Title 21, “Food and Drugs” Code of Federal Regulations, Part 1090, “Accidental Radioactive Contamination of Human and Animal Feeds” [2]).	ANS-3.8.1-1995 ANS-3.8.2-1995
protective action guide (PAG)	Non-preferred variation (1) A document that sets forth specific dose levels which, if projected to be exceeded for individuals in the population, require pre-established protective actions to be recommended (e.g., see Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA-400[1][1] and Title 21, “food and Drugs,” Code of Federal Regulations, Part 1090, “Accidental Radioactive Contamination of Human and Animal Feeds” (21 CFR 1090) [2])	ANS-3.8.6-1995 ANS-3.8.3-1995
protective action guide (PAG)	Non-preferred variation (2) Variant form.	ANS-3.8.1-1987
protective action guide (PAG)	Non-preferred variation (3) protective action guides: Projected radiological dose or dose commitment values to individuals that warrant protective action following a release of radioactive material. Protective actions would be warranted provided the reduction in individual dose expected to be achieved by carrying out the protective action is not offset by excessive risks to individual safety in taking the protective action. The projected dose does not include the dose that has occurred prior to the assessment.	ANS-15.16-2015
protective active recommendation (PAR)	A recommendation to implement protective actions.	ANS-3.8.6-1994 ANS-3.8.2-1995
Protected area	The area within the site security fence and controlled under the security plan.	ANS-3.8.1-1995
protective function	The function necessary to limit the safety consequences of a design basis event (e.g., rapid reduction of reactor power, isolation of the reactor coolant system from possible leak paths, removal of heat from the core).	ANS-4.1
protective (mitigating) features	Passive and active features used to limit the effects of flooding to ensure all required functions are maintained.	ANS-56.11-1988
public	For the purposes of this standard, all individuals outside a geographic boundary within which public access is controlled and activities are governed by the operator of a nonreactor nuclear facility.	ANS-58.16-2014
public dose	The dose received by a member of the public from exposure to radiation or radioactive material released by an owner/operator or licensee, or to any other source of radiation under the control of an owner/operator or licensee. It does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with 10 CFR 35.75 [6], or from voluntary participation in medical research programs. See “Note 1” at the end of this section.	ANS-15.11-2016
puff	An amount of material released over a short, almost instantaneous, period of time.	ASME/ANS RA-S-1.3-2017

Q R

Term	Description	Reference/Source
QHO risk metric	Quantitative Health Objectives of NRC's Safety Goal Policy Statement that define goals for the average individual risk of early fatality and latent cancer fatality arising from accidents at nuclear power plants.	ASME/ANS RA-S-1.3-2017
Quantitative Health Objectives (QHOs)	U.S. Nuclear Regulatory Commission term for numerical criteria for the acceptable levels of risk to public health and safety in the population surrounding nuclear power plants that satisfy NRC's reactor safety goals. These QHOs are expressed in terms of the annual average individual probability of death due to acute radiation syndrome within one mile of the site boundary and the annual average individual probability of death due to latent cancer per year within ten miles of the site boundary of a nuclear power plant and these are set at less than 0.1% of the levels due to non-nuclear causes.	ASME/ANS RA-S-1.4-2013 ANS-30.3-2022 ASME/ANS RA-S-1.4-2021
qualification	The combination of knowledge, skill and ability required to meet specific job performance criteria.	ANS-3.1-1987
qualification	Non-preferred variation (1) The combination of education, experience, special requirements (e.g., a license), and training required to meet specific job performance criteria.	ANS-3.1-2014
qualified nonlicensed operator	Qualified for all power block and safety systems operations. Time as a qualified nonlicensed operator counts from the day the last such power block or safety system operation watch station qualification is attained.	ANS-3.1-2014
qualified seal system	A system that is capable of sealing the leakage with a liquid at a pressure no less than 1.1 P_a for at least 30 days following the DBA.	ANS-56.8-2002
quality assurance (QA)	(1) All those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component (SSC) will perform satisfactorily in service.	ANS-3.2-1993
quality assurance (QA)	Non-preferred variation (1) Variant form.	ANS-56.7-W1997 ANS-59.1-W1996
quality assurance (QA)	Non-preferred variation (2) All those planned and systematic actions necessary to provide adequate confidence that an analysis, measurement, or surveillance program is of the type and quality needed and expected.	ANS-41.5-2012
quality assurance project plan (QAPP)	A document that contains or references the QA elements established for an activity, group of activities, scientific investigation, or project and describes how conformance with such requirements is to be ensured for the activities.	ANS-41.5-2012
quality control	It is preferred that the term (quality assurance) and the associated definition be used in ANS standards	
quality control	Non-preferred term: quality control. Those actions that control and measure the attributes of the analytical process, standards, reagents, measurement equipment, components, system, or facility according to predetermined quality requirements.	ANS-41.5-2012
quality control chart	A chart developed to evaluate the response of an instrument or process to predetermined, statistically based control limits. The predetermined statistical limits are not typically developed using the overall quality performance (bias and precision) parameters for an analytical technique.	ANS-41.5-2012
quality factor (Q)	The modifying factor that is used to derive dose equivalent from absorbed dose. Values for quality factor can be found in 10 CFR 20, Sec. 20.1004 ("Units of Radiation Dose") [1].	ANS-15.11-2016
quality factor (Q)	Non-preferred variation (1) A factor that approximately accounts for the effect of the microscopic distribution of absorbed energy on biological detriment. It is defined as a function of the collision stopping power (L) in water at the point of interest. Values of Q as a function of L can be obtained from a full logarithmic interpolation of data in Table 1. The data given in this standard are based on the L-Q relationship given in Table 1.	ANS-6.1.1-1991, W-2001

	They do not account for the position taken by the ICRP in its Statement from the 1985 Paris Meeting of the International Commission on Radiological Protection, ICRP Publication 45, in which an immediate increase by a factor of two is recommended in the quality factor for neutrons. This recommendation is under review by national and international commissions on radiation protection and is subject to change during the projected life of this standard.	
quantitative health objectives (QHOs)	Numerical criteria for the acceptable levels of risk to public health and safety in the population surrounding plants that satisfy the national nuclear regulator's reactor safety goals. In the United States, the QHOs are expressed in terms of the annual average individual probability of death due to acute radiation syndrome within 1 mile of the site boundary and the annual average individual probability of death due to latent cancer per year within 10 miles of the site boundary of a plant, and these acceptance levels are set at <0.1% of the levels due to all manmade nonnuclear causes.	ANS-53.1-2011
Quaternary	The geologic period comprising about the past 1,800,000 years.	ANS-2.27-2008
Quaternary	Non-preferred variation (1) The geologic period between about 2,600,000 years before present and today. The Quaternary period includes the Pleistocene and the Holocene geologic epochs.	ANS-2.30-2015 ANS-2.27-2020
raceway	Any channel that is designed and used expressly for supporting or enclosing wires, cable, or busbars. Raceways consist primarily of, but are not restricted to, cable trays and conduits.	ANS-59.4-1979W83
raceway	Non-preferred variation (1) An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or bus bars, with additional functions as permitted by code. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquid-tight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways (RG 1.189).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
rack	A structure consisting of an assembly of cells.	ANS-56.3 ANS-57.2-1993 ANS-57.3-2018 ANS-57.2-1999
radiation (ionizing radiation)	Alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this standard, does not include nonionizing radiation, such as radiowaves or microwaves, or visible, infrared, or ultraviolet light.	ANS-15.11-2016
radiation area	Any area, accessible to personnel, in which there exists radiation at such levels that major portion of the body could receive in any one hour a dose equivalent in excess of five mrem, or in any five consecutive days a dose equivalent in excess of 100 mrem.	ANS-6.8.1-1981 (W1991)
radiation area	Non-preferred variation (1) An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (50 μSv) in 1 hour at 30 cm from the radiation source or from any surface that the radiation penetrates.	ANS-15.11-2016
radiation base point (RBP)	Radiation base points (RBPs) are numbered locations at which measurements are to be made and always recorded throughout the test programs.	ANS-6.3.1-1987
radiation dose	Energy deposited into human tissue from external, inhaled, or ingested sources of alpha, beta, or gamma radiation, measured in units of rem or sieverts (1 Sv= 100 rem).	ASME/ANS RA-S-1.4-2021
radioactive materials	Radioactive fission products, activation products, and concentrated naturally occurring radioactive substances.	ANS-40.37-2009
radiological emergency response plan (Plan)	It is preferred that the term (emergency response plan) and the associated definition be used in ANS standards	

radiological emergency response plan (Plan)	A licensing document that describes the licensee's overall emergency response functions, organization, facilities, and equipment,(as well as appropriate government agency plans. The radiological emergency response plan is implemented by specific procedures) (3.8.6-1995) as well as emergency response plan. It is implemented by specific procedures.	ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.4-1993 ANS-3.8.6-1994
radiological emergency response plan (Plan)	Non-preferred variation (1) A licensing document that describes the licensee's overall emergency response functions, organization, facilities, and equipment, as well as appropriate government agency plans. The radiological emergency response plan is implemented by specific procedures.	ANS-3.8.2-1995 ANS-3.8.4-1995 ANS-3.8.3-1995
radiological sabotage	Any deliberate act directed against a plant or component of a plant that could directly or indirectly endanger the public health and safety by exposure to radiation.	ANS-3.3-1988
radionuclide	An isotope of an element that is radioactive.	ANS-41.5-2012
radionuclide group	A set of radionuclides that are treated as a single representative species for the purposes of calculating release from fuel and transport to the environment. Physical and transport properties for the single representative species are assumed to apply to all other radionuclides within the group. The group is usually composed of all nuclides of a common element and all nuclides of other elements that have similar physical and chemical properties. A delineation of radionuclide groups used in many severe accident computational models can be found in NUREG-1465. (ASME/ANS RA-S-1.4-2021 is identical but does not include the last sentence.)	ASME/ANS RA-S-1.2-2015
radionuclide release category	See release category.	ASME/ANS RA-S-1.2-2015 ASME/ANS RA-S-1.4-2021
radionuclide transport barrier	A passive SSC designed to retain radionuclides and/or mitigate the radionuclide release source term during an accident sequence. Such barriers include physical barriers such as the fuel barrier, reactor coolant (e.g., helium) pressure boundary, and reactor building. For modular helium-cooled reactors (MHRs) such barriers normally include the coated particle fuel, graphite or carbon fuel matrix, internal HPB surfaces, the HPB itself, and the reactor building associated barriers.	ANS-53.1-2011
radionuclide transport barrier	Non-preferred variation (1) A passive SSC that is designed to retain radionuclides and/or to mitigate the radionuclide release source term during an event sequence. Such barriers include the physical barriers such as the fuel barrier, RCB, and reactor building. Barriers also include the time delays for radioactive decay, deposition, and revaporization of the released material within and between the respective physical barriers.	ASME/ANS RA-1.4-2021
radionuclide transport barrier	Non-preferred variation (2) A passive SSC that is designed to retain radionuclides and/or to mitigate the radionuclide release source term during an event sequence. Such barriers include the physical barriers such as the fuel barrier, reactor coolant pressure boundary, and reactor building, as well as provide for time delays for radioactive decay, deposition, and revaporization of the released material within and between the respective physical barriers.	ASME/ANS RA-S-1.4-2013
radionuclide transport barrier bypass	A direct or indirect flow path that may allow the release of radioactive material from the RCS directly to the environment bypassing one or more radionuclide transport barriers.	ASME/ANS RA-1.4-2021
radionuclide transport barrier challenge	The challenge to the integrity of one or more radionuclide transport barriers by severe event sequence conditions (e.g., plant thermal hydraulic conditions or phenomena) during an event sequence.	ASME/ANS RA-1.4-2021
radionuclide transport barrier failure	Loss of integrity of a radionuclide transport barrier to perform its safety functions in the mitigation of a release of radionuclides to the environment.	ASME/ANS RA-1.4-2021
radionuclide transport barrier failure mode	The manner in which a radionuclide release pathway is created by a radionuclide transportation barrier failure (e.g., structural failures, isolation failures, barrier bypass events, and human-induced failures).	ASME/ANS RA-1.4-2021

radionuclide transport barrier performance	A measure of the response of a radionuclide transport barrier to event sequence conditions.	ASME/ANS RA-1.4-2021
raising or lowering (hoisting)	Motion in a vertical direction.	ANS-57.1-1992 ANS-57.3-1993
randomness	See “aleatory uncertainty.”	ANS-2.27-2008 ANS-2.29-2008
randomness	Non-preferred variation (1) (as used in seismic-fragility analysis). The variability in seismic capacity arising from the randomness of the earthquake characteristics for the same acceleration and to the structural response parameters that relate to these characteristics.	ASME/ANS RA-Sb–2013 ASME/ANS RA-1.4-2021 ASME/ANS RA-S-1.1-2022
randomness	Non-preferred variation (2) See “aleatory variability.”	ANS-2.8-2019 ANS-2.27-2020 ANS-2.29-2020
rankine vortex	A two-dimensional circular flow in which a circular region about the origin is in solid rotation: V/R = constant. Where: V is the tangential speed and R the distance from the origin; and the region outside is free of vorticity, the speed being inversely proportional to the distance from the origin, VR = constant.	ANS-2.3-1983
Rankine combined vortex	A two-dimensional circular flow in which a circular region about the origin is in solid rotation, i.e., $\frac{V_{tr}}{R}$ = constant (1) where, V_{tr} is the tangential tornado wind speed and R the radial distance from the origin; and the region outside is free of vortex motion, the speed being inversely proportional to the radial distance from the origin, i.e., $V_{tr}R$ = constant (2)	ANS-2.3-2011
rare event	One that might be expected to occur only a few times throughout the world nuclear industry over many years (e.g., <1.0E-4/reactor-yr).	ASME/ANS RA-Sb–2013 ASME/ANS RA-1.4-2021 ASME/ANS RA-S-1.1-2022
raschig ring (ring)	A small, hollow, borosilicate-glass cylinder having approximately equal length and diameter.	ANS-8.5-1986
rate	The first time derivative of the current value.	ANS-4.5-1980
raw wastes	Waste as received by an MRWP (mobile low-level radioactive waste processing) system.	ANS-40.37-2009
reaction rate	The rate at which neutrons interact with nuclei at a point in the reactor, or as an integral over the reactor, according to the context. Examples are the reaction rate for absorption, scattering, and fission.	ANS-19.3-2011 ANS-19.3-2022
reactivity	A quantity proportional to k_{eff}-1/k_{eff}, where: k_{eff} is the effective neutron multiplication factor. The reactivity of a sub-critical fissile assembly is a negative quantity indicating the degree of sub-criticality. The reactivity of a critical assembly is zero.	ANS-8.6-1983
reactivity	Non-preferred variation (1) A measure of the deviation of k_{eff} from unity. Specifically, $\rho = \frac{k_{eff} - 1}{k_{eff}}$	ANS-19.11-2017
reactivity	In this standard, reactivity means the quantity (1 minus the eigenvalue l of the steady-state neutron balance equation, written as MF = lFF, where F is the neutron flux; F is the neutron yield operator; and M is the scattering, absorption, and leakage operator). The effective multiplication factor k_{eff} is the inverse of l. Reactivity is a unitless, pure number. It is, however, often written in terms of smaller “units,” such as milli-k º 0.001,	ANS-19.3-2011

	pcm º 0.00001 = 10^{-5}, or “dollars” (and “cents”), where 1 dollar is taken as the value of the delayed neutron fraction in the system of interest. (Only difference in ANS-19.3-2022 is the placement of the end paren. In the 2022 version the end paren is after “IFF,” not after “operator.”)	
reactivity addition	A modification of a fissile assembly that results in a positive incremental change of reactivity.	ANS-8.6-1983
reactivity computer	An analog or digital device that calculates the core reactivity by using an external signal that is proportional to the core neutron flux.	ANS-19.6.1-2019
reactivity worth	The change in reactivity due to a change in a single parameter (e.g., temperature or control rod movement): $\Delta\rho = \rho_2 - \rho_1 = \frac{k_2 - k_1}{k_2 k_1}$ where k_1 and k_2 are the effective multiplication factors for reactor states 1 and 2, respectively. Reactivity worth is sometimes given in pcm, where $1\ \text{pcm} \equiv 10^{-5}\Delta\rho$ Note: Defined term and definition do not match. Term should be changed to “reactivity worth change”	ANS-19.11-2017
reactor building	The building immediately surrounding the RPV and HPB that provides structural integrity of the core, RPV, and HPB; physical protection from internal and external events to SSCs that perform safety functions; and a barrier to radionuclides that may be released from the HPB.	ANS-53.1-2011
reactor containment	It is preferred that (Primary Containment) and the associated definition be used in ANS standards	
reactor containment	Non-preferred term: reactor containment. (Also, primary containment; primary reactor containment: the preferred term is primary containment).	ANS-51.1/52.1-1983
reactor containment	Non-preferred term: reactor containment. The principal design feature of a unit that acts as the principal barrier, after the reactor coolant pressure boundary or primary coolant boundary, to control the release of radioactive material under all plant conditions. It includes: (1) the containment structure and its access openings, penetrations and pertinences; (2) those valves, pipes, closed systems and other components used to effect isolation of containment atmosphere from the environment; and (3) those systems or portions of systems that, by their functions, extend the containment structure boundary (e.g., in a PWR, the boundaries of the secondary side of the steam generator and the connecting steam and feed water piping).	ANS-59.1
reactor containment	Variant form.	ANS-56.2-1984 ANS-54.1-1989
reactor characteristics, inherent	Intrinsic features to the type of reactor before considering safety features. Examples of inherent characteristics of modular helium-cooled reactors (MHRs) include the material properties of silicon carbide and graphite, and the thermodynamic and chemical properties of graphite and helium.	ANS-53.1-2011
reactor coolant boundary	Those components which form a leak tight barrier against the release of reactor coolant up to and including the second of two valves normally closed (a freeze seal might be shown to be acceptable as an alternate to one of the closed valves) or capable of automatic actuation during normal reactor operation.	ANS-54.1-1989
reactor coolant normal makeup	Makeup to the reactor coolant pressure boundary by the system(s) relied upon to maintain reactor coolant inventory during normal operation.	ANS-51.1/52.1-W1983 ANS-56.4-1983

reactor coolant pressure boundary (RCPB)	All pressure-containing components of light water reactor nuclear power plants, such as pressure vessels, piping, pumps, and valves, which are: (1) part of the reactor coolant system; or (2) connected to the reactor coolant system up to and including any or all of the following: a) the outermost primary containment isolation valve in system piping that penetrates the primary containment; (b) the second of two valves normally closed during normal reactor operation in system piping that does not penetrate primary containment; or (c) the reactor coolant system safety and relief valves. For a direct-cycle boiling water reactor, the reactor coolant system extends to and includes the outermost primary containment isolation valve in the main steam and feed water piping. (See 10 CFR 50.2)	ANS-58.14-1993 ANS-58.14-2011 ANS-30.3-2022
reactor coolant pressure boundary (RCPB)	Non-preferred variation (1) Variant form.	ANS-58.4-1979 ANS-56.4-1983 ANS-59.1 ANS-51.1/52.1-W1983 ANS-56.2-1984 ANS-56.7-W1997
reactor coolant pressure boundary (RCPB) breach	A breach in the reactor coolant pressure boundary that would result in a loss of reactor coolant system pressure and/or loss of coolant inventory. In light water reactors, RCPB are referred to as Loss of Coolant Accidents (LOCAs).	ASME/ANS RA-S-1.4-2013
reactor coolant pressure boundary (RCPB) breach, excessive	A breach in the reactor coolant pressure boundary that is beyond the capacity of the mitigating systems either due to its size or location.	ASME/ANS RA-S-1.4-2013
Reactor Coolant System (RCS)	Those items relied upon to (1) for a pressure-retaining boundary to contain the reactor coolant; (2) transfer heat during normal operation from the reactor core to the power conversion system or to the shutdown heat removal systems; or (3) provide system pressure relief. For a boiling water reactor (BWR), the RCS might include: (a) the reactor vessel including appurtenances such as nozzles and control rod drive housings; (b) main steam and feed water lines out to and including the outermost primary containment isolation valve; (c) safety and relief valves; (d) recirculation piping, pumps, and valves; (e) other components, such as the relief valve discharge piping and the main steam drain lines out to and including the outermost primary containment isolation valves, and (f) supports of other RCS components. For a pressurized water reactor (PWR), the RCS might include: (a) the reactor vessel including appurtenances such as nozzles and the control rod drive mechanism housings; (b) the primary side of the steam generators used to transfer reactor heat to the power conversion system; (c) reactor coolant loop piping, pumps, and valves; (d) the pressurizer, including heating and cooling provisions; (e) relief piping including relief and safety valves and associated tanks that receive discharges; (f) the piping, valves, and fittings needed between the principal components in order to provide appropriate flow paths and flow control; and (g) supports of other RCS components.	ANS-58.14-1993
Reactor Coolant System (RCS)	Non-preferred variation (1) Variant form. 1st paragraph only included as definition of RCS (ANS-58.14-2011)	ANS-54.1-1989
reactor coolant system boundary (RCB) breach	A breach in the RCB that would result in a loss of RCS pressure and/or loss of coolant inventory. In LWRs, RCB breaches are referred to as Loss-of-Coolant Accidents.	ASME/ANS RA-S-1.4-2021

reactor coolant system boundary (RCB) breach, excessive	A breach in the RCB that is beyond the capacity of the mitigating systems either due to its size or location.	ASME/ANS RA-S-1.4-2021
reactor cover gas boundary	Those components which form a leak-tight barrier against the release of reactor cover gas up to and including the second of two valves normally closed or remotely isolable during normal reactor operation.	ANS-54.1-1989
reactor critical year	A calendar year in the operating life of one reactor, assuming that the reactor operated continuously for a year.	ASME/ANS RA-S-1.1-2022
reactor makeup quality wastes	Liquids, which originate from reactor or reactor auxiliary closed systems, and are normally processed and reused as reactor coolant makeup.	ANS-55.6-1993 ANS-55.6-1999
reactor operating history	The reactor operating information accumulated or observed over the life of the reactor, which defines the state of the reactor from the nuclear performance standpoint. This information includes the reactor operating parameters (thermal power level, system pressure, coolant temperatures, coolant flow rate, coolant soluble poison concentration, control rod positions), plus fueling and refueling patterns in successive cycles, and any other information required to establish the excess reactivity, power distribution, and burnup distribution of the core.	ANS-19.4-2017
reactor-operating-state-year	An equivalent calendar year of operation in a particular plant operating state. (ASME/ANS RA-S-1.1-2022) See Note (1) in Table 2-2.1-4.	ASME/ANS RA-Sb–2013
	Note: Definitions should be self-contained. The text of a definition should not refer back to other sections of a standard.	
reactor operator	An individual who is licensed to manipulate the controls of a reactor.	ANS-15.4-2016
reactor primary coolant boundary	The SFR reactor primary system operates at low pressure. Thus, the coolant boundary design requirements differ from the traditional LWR coolant pressure boundary requirements. The use of the term “primary” implies that the design criterion is applicable to the primary cooling system, not the intermediate cooling system. The cover gas boundary is included as part of the reactor primary coolant boundary.	ANS-54.1-2020
reactor protection	That function which is performed by systems designed to: initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specific acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences; and sense accident conditions and initiate the operation of systems and components important to safety. (See 10 CFR 50, "Licensing of Production and Utilization Facilities: Appendix A, General Design Criteria for Nuclear Power Plants."	ANS-58.3
reactor trip system (RTS)	The principal system credited in the LBD for shutdown of the reactor.	ANS-58.14-2011
reactor-year	(One calendar year per nuclear power reactor unit.)	ANS-51.1/52.1-W1983
reactor-year	Non-preferred variation (1) A calendar year in the operating life of one reactor, regardless of power level. See Note (1) in Table 2-2.1-4 of ASME/ANS RA-Sb–2013. (ASME/ANS RA-Sb–2013)	ASME/ANS RA-S-1.1-2022
realism	An accurate representation (to the extent practical) of the expected response of the as-built, as-operated plant or as-designed plant.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
real time	Simulation of dynamic performance in the same time base relationships, sequences, durations, rates, and accelerations as the dynamic performance of the reference unit.	ANS-3.5-2018
real time	Non preferred variation (1) Simulation of dynamic performance in the same time base relationships, sequences, durations, rates and accelerations as the dynamic performance of the reference plant.	ANS-3.5-1985 ANS-3.5-2009
real-time measurements	Observations that are available on the order of a reading’s averaging time.	ANS-2.15-2013
rebar	The reinforcing steel bars placed in concrete to increase the structural strength. American National Standard Code Requirements for Nuclear Safety Related Concrete Structures, ANSI/ACI 349-1980 includes a discussion of this reinforcing steel. Owing to the fact that it is not homogeneously spaced throughout the shield, but rather is made up of discrete steel bars, it would require complicated shielding analysis and	ANS-6.4-1985

	hence is not usually considered as part of the attenuating property of the shield. Rebar is, however, considered as a potential source of secondary gamma radiation when the shield is a combined neutron and gamma-ray shield.	
receptor	An individual located in an unrestricted area (e.g., off-site) that might receive a radionuclide exposure via subsurface transport.	ANS-2.17-2010
rechanneling	Removal and replacement of fuel channels for BWR fuel assemblies.	ANS-57.1-1992 ANS-57.3-1993
recharge	The process of water addition to the saturated zone or the volume of the water added by this process.	ANS-2.9-1989
recirculation	Plume movement by vertical or horizontal eddies where material follows a curved path through the atmosphere back to regions previously impacted.	ANS-2.15-2013
recirculation mode	In the context of this standard, that configuration of the containment spray system, in which water is taken from a containment sump and returned to the containment atmosphere.	ANS-56.5-1987
recombiner	Equipment designed to accomplish the controlled reaction of hydrogen and oxygen by catalytic or thermal means.	ANS-55.4-1993 ANS-55.4-1999
record	A discrete data file from the seismic monitoring system (SMS) that contains recorded data from a seismic event (earthquake).	ANS-2.10-2017
recorded data	The registered output from the SMS.	ANS-2.10-2017
recorder	An instrument capable of recording the data from an acceleration sensor or sensors.	ANS-2.2-2016
recovery	Actions taken after the plant has been brought to a stable or shutdown condition, (ANS-3.8.6-94) including those taken to mitigate the emergency and ultimately return the plant to normal operation.	ANS-3.8.1-1993 ANS-3.8.4-1995 ANS-3.8.3-1993 ANS-3.8.4-1993
recovery	Non-preferred variation (1) Restoration of a function lost as a result of a failed SSC by overcoming or compensating for its failure. It is generally modeled by using HRA (Human Reliability Analysis) techniques. (ASME/ANS RA-S-1.4-2021 with editorial change added above.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
recovery action	An action taken to return to the normal situation.	ANS-3.7.2-1979
recovery period	The period of time from when either offsite power or onsite emergency AC power is recovered, to when normal safe shutdown is achieved.	ANS-58.12-1985
recurrence interval	The mean time period between earthquakes of a given magnitude.	ANS-2.27-2008
recurrence interval	Non-preferred variation (1) The time period between earthquakes of a given magnitude, fault offset of a given amount, or deformation of a given measure.	ANS-2.30-2015 ANS-2.27-2020
recycled fuel	A new fuel assembly containing, in whole or in part, fissile material from reprocessed fuel. Its chemical composition may consist of mixed oxides of uranium and plutonium.	ANS-57.3-1993
redundant component, system or subsystem	It is preferred that (Redundant Structure, System or Component) and the associated definition be used in ANS standards.	
redundant component, system or subsystem	(See also redundant structure, system or component) A component, system or subsystem that independently duplicates the essential function of another identical component, system or subsystem.	ANS-57.2-1993 ANS-59.1 ANS-59.3-1993 59.4-1979
redundant component, system or subsystem	variant form.	ANS-56.7
redundant component, system or subsystem	Non-preferred variation (1) A component, system or subsystem that independently duplicates the function of another component, system or subsystem.	ANS-57.2-1999
redundant equipment or system	It is preferred that (Redundant Structure, System or Component) and the associated definition be used in ANS standards.	
redundant equipment or system	Equipment or system(s) that duplicate(s) the essential function of other equipment or system(s) to the extent that either may perform the	ANS-59.3

	required function regardless of the state of operation or failure of the other.	
redundant component, system or subsystem	Non-preferred variation (2) Equipment or system that duplicates the essential function of another piece of equipment or system to the extent that either may perform the required function regardless of the state of operation or failure of the other.	ANS-58.16-2014
redundant structure, system, or component	A structure, system or component (SSC) that independently duplicates the function of another component, system, or subsystem.	ANS-56.5-1987 ANS-51.1/52.1-W1983 ANS-59.4 ANS-58.14-2011 ANS-30.3-2022
redundant component, system or subsystem	Non-preferred variation (1) Variant form.	ANS-56.2-1984 ANS-54.2-1985 ANS-57.1-1992
redundant system	(See redundant structure, system or component; and redundant component, system or subsystem).	
reference data	Published, peer-reviewed, and readily available tabulations of values and associated uncertainties of physical constants as determined by state-of-the-art methods. In order to minimize transcription errors, these data should be made available in electronic form.	ANS-6.1.2-2013
reference plant	The specific nuclear power plant from which the simulator control room configuration, system control arrangement and simulator data base is derived.	ANS-3.5-1985
reference material (standard)	A material or substance one or more properties of which are sufficiently well established (within specified uncertainty limits) to be used for the calibration of an apparatus, assessment of a measurement method, or assigning of values to materials.	ANS-41.5-2012
reference measurement	A reference measurement is intended for use in verifying a nuclear analysis computational system. For the purposes of this standard, a reference measurement is publicly available and meets the requirements of this standard.	ANS-19.4-2017
reference unit	Non-preferred variation (1) The specific nuclear power plant unit, identified by a unique docket number, from which the simulator control room configuration, system control arrangement, and simulator design database are derived.	ANS-3.5-2009
reference unit	Non-preferred variation (2) The specific nuclear power plant unit from which the simulator control room configuration, system control arrangement, and simulator design data are derived.	ANS-3.5-2018
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
reference wind speed	Refers to a set of specified wind parameters associated with the use of wind speed as the independent hazard and fragility parameter in HWPRAs. The parameters required to define the reference wind (based on wind speed) include averaging time, surface roughness, height above ground, and direction.	ASME/ANS RA-S-1.1-2022
reflection	A process in which radiation enters a region through a surface and partially returns through the same surface.	ANS-6.4-1985
refueling machine	Any equipment operating over the reactor refueling cavity, or well, and fuel transfer canal and designed for handling fuel and control components.	ANS-57.1-1992
refueling outage	An outage type that occurs on a periodic basis, during which a portion of the spent nuclear fuel is replaced with new (unburned) fuel.	ANS/ASME-58.22-2015 ASME/ANS RA-S-1.4-2021
refueling shutdown	The cold shutdown condition in which the reactor coolant system is depressurized for the purpose of replacing fuel, consistent with technical specification operational limits.	ANS-51.1/52.1-1983 ANS-58.6-1992
regression testing	Systematic repetition of testing to verify that only desired changes are present in modified software.	ANS-10.7-2013

regression testing	Non-preferred variation (1) Selective testing to detect errors introduced during modification of computer software or to verify that modified computer software still meets its specified requirements.	ANS-10.8-2015
regulating group (or control bank)	It is preferred that the term “control rod group (bank)” and the associated definition be used in ANS standards	
regulating group (or control bank)	Non-Preferred term: regulating group (or control bank). The control rod group that is partially inserted in the core during full-power operation to provide shaping of the core power distribution and to regulate boron shim requirements.	ANS-19.11-2017
related experience	Experience in performing job duties similar to that for which the individual seeks qualification, and may or may not be at a nuclear power plant.	ANS-3.1-2014
related science	Related science programs include course work in the physical, mathematical, or engineering sciences.	ANS-3.1-2014
related technical training	Formal training beyond the high school level in technical subjects associated with the position in question, such as acquired in training schools or programs conducted by the military, industry, utilities, universities, vocational schools, or others. Such training programs shall be of a scheduled and planned length and include text material and lectures.	ANS-3.1-1999
release category	A grouping of event sequences into an event sequence family based on a common potential for release of radioactive material as characterized by its mechanistic source term. This common potential is based on common initiating events, combination of successful and failed safety functions, release magnitude, release timing and location, and radionuclide species that are released from the plant as a result of an event sequence. A release category may comprise one or more licensing basis events (LBEs).	ANS-53.1-2011 ANS-30.3-2022
release category	Non-preferred variation (1) The grouping of one or more event sequences or event sequence families based on common or similar mechanistic source terms. In this context, “similar” depends on the level of fidelity of the analysis and the number of release categories used to span the entire spectrum of possibilities within the scope of the PRA model. Similarity is generally measured in terms of the overall (cumulative) release of activity to the environment, the time at which the release begins, and (in certain applications) other physical characteristics of the source term.	ASME/ANS RA-S-1.-4-2021
release category	Non-preferred variation (2) A group of accident progression sequences that would generate a similar source term to the environment. Similarity in this context depends on the level of fidelity of the analysis and the number of release categories used to span the entire spectrum of possibilities. Similarity is generally measured in terms of the overall (cumulative) release of activity to the environment, the time at which the release begins and (in certain applications) other physical characteristics of the source term.	ASME/ANS RA-S-1.2-2015
release category frequency	The expected number of occurrences of a specified release category per unit time.	ASME/ANS RA-S-1.4-2021
release, accidental	A release of radioactivity that is uncontrolled and unplanned.	ANS-2.17-1989
release fraction	The “release fraction” or R/B as used in this standard is defined as the fraction of the non-decayed inventory that resides in the pellet-cladding gap (i.e., free volume outside of the fuel pellet but inside of the fuel rod cladding). The R/B for a fuel rod is determined from the sum of each radial node i for each axial node m and then the sum of each axial node as per Equation 2. For stable nuclides, this fraction is the total release divided by the total production; for radioactive nuclides, decay shall be taken into account in terms of both amount released, R, as well as produced, B. The following equations for R/B take into account decay with the decay constant, λ.	ANS-5.4-2011
release, routine	A release of radioactivity that is either continuous (e.g., leakage from a cooling pond containing trace quantities of radioactivity), or a periodic controlled release of low-level radioactive liquids. (No longer used in current standard)	

reliability	The probability that a device or system will perform a required function under stated conditions during a stated period of time.	ANS-4.1-Historical
reliability	Non-preferred variation (1) The complement of unreliability.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
relied upon	Non-preferred variation (1) The dependence on the successful functioning of the SSCs in the following manner: (1) for DBEs, the SSCs that are necessary and sufficient to ensure each of the required safety functions; (2) for SEs, the SSCs that are necessary and sufficient to ensure required functions in the presence of postulated failures (including common cause) related to the specific SE.	ANS-30.3-2022
relied upon	Non-preferred variation (2) Dependence on the successful functioning of the SSCs in the following manner: (1) for DBEs: the SSCs that are necessary and sufficient (i.e., the minimal subset of SSCs) to assure each of the three basic safety-related functions in the presence of a postulated single failure plus any other coincident occurrence assumed in the safety analysis; (2) for special events: the SSCs that are necessary and sufficient (i.e., the minimal subset of SSCs) to assure required functions in the presence of postulated failures (e.g., common cause) related to the specific special event.	ANS-58.14-2011
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
relief pressure	That pressure value above which the air system or portion thereof is relieved to the atmosphere for protection of system pressure integrity.	ANS-59.3-2002
relocatable components	A generic term meant to include items within the reactor vessel, excluding the vessel internals, which must be handled or shifted in position during, preparing for or recovering from fuel loading or refueling. Some examples are: control rods, flow limiting orifices, and shields.	ANS-54.2-1985
remaining fraction	Unity minus cumulative fraction leached (i.e., the fraction still remaining with the specimen or waste form after leaching) assuming no decay of the radioactivity.	ANS-16.1-2003
remote	Any location not at or adjacent to the detector.	ANS-6.8.1-1981
remote indicating instrument	Instrument whose output is transmitted to a location separate from the sensor or whose data can be remotely viewed through a digital network.	ANS-2.2-2016
remote manual actuation	Initiation of a power operated component by a discrete manual action such as operation of a control switch predominantly in response to intelligence or signals indicating requirement of such action.	ANS-56.2-1984
repair	(1) The process of restoring a non-conforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still does not conform to the original requirement.	ANS-3.2-1993
repair	Non-preferred variation (1) Restoration of a failed SSC by correcting the cause of failure and returning the failed SSC to its modeled functionality; generally modeled by using actuarial data.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
repair or adjustment	Any action performed on the primary containment that affects its leakage characteristics.	ANS-56.8-2002 ANS-56.8-2020
repair time	The period from identification of a component failure until it is returned to service.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1.2022
repeatability	Non-preferred variation (1) The closeness of agreement among several consecutive measurements of the output for the same input under the same operating conditions, approaching from the same direction for full-range traverses.	ANS-56.8-2020
repeatability	Non-preferred variation (2) The closeness of agreement among a number of consecutive measurements of the output for the same value of the input under the same operating conditions, approaching from the same direction for full range traverses.	ANS-56.8-2002

repeatability	Non-preferred variation (3) The capability of the simulator to have successive tests of its dynamic performance conducted in the same time base relationships, sequences, durations, rates, and accelerations that, in turn, produce the same results within the limits required by this standard.	ANS-3.5-2009 ANS-3.5-2018
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
replay	The recording of a simulator training session in such a way that all or a portion of a simulator training exercise can be played back.	ANS-3.5-2009 ANS-3.5-2018
replicate	One of multiple aliquots or aliquants of a sample taken during the first stage of the analytical process.	ANS-41.5-2012
representative	"…the extent to which a set of measurements taken in a space-time domain reflects the actual conditions in the same or different space-time domain taken on a scale appropriate for a specific application." [3][14]	ANS-2.21-2022
representative concentration pathway (RCP)	Pathway assumed for climate change modeling. "Scenarios that include time series of emissions and concentrations of … greenhouse gases and aerosols and chemically active gases, as well as land use/land cover. The word representative signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics." [4][15]	ANS-2.21-2022
required detection level (RDL)	The minimum detection capability for a method required by the MQOs and/or SOW.	ANS-41.5-2012
required function	A function which, following any initiating event resulting in flooding, is necessary to assure safe plant shutdown, maintain core cooling capability consistent with the minimum requirements of Appendix A, "General Design Criteria for Nuclear Power Plants," of 10 CFR 50, "Domestic Licensing of Production and Utilization Facilities," or maintain offsite radiological consequences below the guide-line exposures of 10 CFR 100.	
requirement management	The process of documenting, analyzing, contextualizing, organizing, tracing, prioritizing, and agreeing on requirements and then controlling change and communicating to relevant stakeholders. It is a continuous process throughout a project.	ANS-30.3-2022
required structures, systems, and components (SSCs)	Those structures, systems, and components (SSCs) which are used to accomplish the required functions following postulated flooding events. These include the protective and mitigating features, such as detection, isolation, barriers, sumps and pumps. (from ANS-58.2-1988 and equivalent to NUREG-0800 Sections 3.6.1 and 3.6.2)	ANS-56.11-1988
required time	The time needed by operators to successfully perform and complete a human action.	ASME/ANS RA-Sb–2013
research reactor	A device designed to support a self-sustaining neutron chain reaction for research, developmental, educational, training, or experimental purposes and that may have provisions for production of non-fissile radioisotopes. Variant form.	ANS-15.16-2015 ANS-15.21-2012 ANS-15.11-2016 ANS-15.4-2016
research reactor facility	Includes all areas within which the owner or operator directs authorized activities associated with the reactor.	ANS-15.4-2016 ANS-15.11-2016
reserve lubricating oil storage tank	A vessel which supplies a reserve supply of lubricating oil for one or more EDG engines.	ANS-59.52-1998
reserve lubricating oil transfer pump	A motor driven pump used to transfer oil from the clean lubricating oil storage tank to the lubricating oil sump or sump tank.	ANS-59.52-98
reserve lubricating oil transfer pump	Non-preferred variation (1) A designated area to which personnel access is controlled.	ANS-59.52-1998
reserve lubricating oil transfer pump	Variant form.	ANS-3.8.1-1987 ANS-3.8.6-1994

[14] This reference is to C. J. NAPPO et al., "The Workshop on the Representativeness of Meteorological Observations, June 1981, Boulder, Colo.," Bull. Am. Meteorol. Soc., 63, 7, 761 (July 1982); https://doi.org/10.1175/1520-0477-63.7.761.
[15] This reference is to "IPCC Data Distribution Centre," Intergovernmental Panel on Climate Change; https://www.ipcc-data.org/#data. See also https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html (accessed Aug. 18, 2020).

	There seems to be a glossary error in the last two definitions.	
reservoir	As used in this standard, a reservoir is an artificial impoundment or a lake with a controlled outlet.	ANS-2.13-1979
resident population	Those persons whose usual place of abode, as defined by the U.S. Bureau of the Census, is in the area. In general, this is the place where the persons live or sleep most of the time and is not necessarily the same as the place of legal residence.	ANS-2.6-1981
residual heat	The total heat source remaining in a shutdown reactor, including after-heat (i.e., heat from radioactive decay of fuel plus heat stored in structural components).	ANS-58.3-1998
residual liquid	Free liquid present in the specimen container at the time the specimen is removed from the container.	ANS-16.1-2003 ANS-16.1-2019
resolution	Non-preferred variation (1) The degree to which equal values of a quantity can be discriminated.	ANS-56.8-2020
resolution	Non-preferred variation (2) The degree to which equal values of a quantity can be discriminated by the device.	ANS-56.8-2002
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
resource expert	A technical expert with knowledge of a particular technical area of a PRA.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
respirable fraction (RF)	The fraction of material made airborne, present in particulate form, that could be transported through the air, inhaled, and be deposited in the deep lung.	ANS-5.10-98
response	A reaction to a cue for action in initiating or recovering a desired function.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
response force	An onsite team that includes guards, and may include other armed response individuals, with the duty to provide initial response, follow-up response or reinforcement for the purpose of neutralizing a security threat.	ANS-3.3-88
response models	Representation of post-initiator control room operator actions, following a cue or symptom of an event, to satisfy the procedural requirements for control of a function or system.	ASME/ANS RA-S-1.4-2021
response spectrum	Non-preferred variation (1) A curve calculated from an earthquake accelerogram that gives the value of peak response of a damped linear oscillator, with a given damping ratio, as a function of its period or frequency of vibration. Peak response is given in terms of acceleration, velocity, or displacement or is given in terms of derived parameters, such as pseudo-acceleration and pseudo-velocity.	ANS-2.29-2020
response spectrum	Non-preferred variation (2) A curve calculated from an earthquake accelerogram that gives the value of peak response in terms of acceleration, velocity, or displacement of a damped linear oscillator (with a given damping ratio) as a function of its period (or frequency).	ANS-2.27-2008 ANS-2.29-2008 ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
response spectrum recorder	An instrument having the capability of sensing motion and permanently recording the spectral acceleration at specified frequencies and damping.	ANS-2.10-1990
response time	The time required for the output to reach 90 percent of the final output value in response to a step input.	ANS-4.5-1980
responsible authority	A governmental or other entity with the authority to issue licenses, charters, permits, or certificates.	ANS-15.4-2016
responsible nuclear power plant experience	Responsible nuclear power plant experience for a licensed senior operator is having actively performed as a licensed operator, a qualified	ANS-3.1-2014

	nonlicensed operator or as power plant staff involved in day to day activities at a commercial nuclear plant facility.	
restoration models	Representation of pre-initiator actions for returning systems or components back to an operational readiness state following tests, maintenance, calibrations or other causes of unavailability according to procedures.	ASME/ANS RA-S-1.4-2013
restricted area	It is preferred that (Radiation area) and the associated definition be used in ANS standards	ANS-8.10-2015
restricted area	Non-preferred term. An area to which public access is controlled for the purpose of protection of individuals from exposure to radiation and radioactive materials.	
restricted area	Non-preferred variation (1) An area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building might be set apart as a restricted area.	ANS-2.17-2010
restricted area	Non-preferred variation (2) An area, access to which is limited by the owner/operator or licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Restricted areas do not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area (see also “controlled area”).	ANS-15.11-2016
retaining structure failure	Failure of a dam, levee, breakwater, seawall, or similar confining structure, due to causes other than flood, earthquake or tsunami (since the retaining structure failure consequences must be included in the consideration of these natural hazards).	ANS-2.12-1978
retaining structure failure	Variant form.	ANS-2.19-1989
return period	The inverse of annual frequency of exceedance; see frequency of exceedance.	ANS-2.30-2015
reusable products	Software products such as component libraries, mathematical function libraries, graphics libraries and tools, parallel message-passing libraries, etc., developed by third-party software vendors or by open-source development teams. They may also include reusable software modules for applications, such as processing input, formatting, or displaying output. (Usually, the development, maintenance, and support for reusable products are provided by a central group or by an external organization. Care should be taken to ensure that any licensing restrictions are adhered to when using reusable products.)	ANS-10.7-2013
review level earthquake (RLE)	An earthquake larger than the plant SSE and is chosen in seismic margin assessment (SMA) for initial screening purposes. Typically, the RLE is defined in terms of a ground motion spectrum. Note: A majority of plants in the eastern and midwestern U.S. have conducted SMA reviews for an RLE of 0.3g PGA anchored to a median NUREG/CR-0098 spectrum.	ASME/ANS RA-Sb–2013
rework	The process by which an item is made to conform to original requirements by completion or correction.	ANS-3.2-1993
Richardson number	A dimensionless number that expresses the ratio of potential to kinetic energy.	ASME/ANS RA-S-1.3-2017
rinse fraction	The mobile surface contamination that can be removed from the specimen by immersing it in demineralized water for 30 s without agitation.	ANS-16.1-2019
risk	Frequency and consequences of an event that answer the three fundamental safety questions. (1) What can go wrong? (2) How likely is it? (3) What are the consequences if it occurs? In PRA, risk is defined by a comprehensive set of event sequences, a quantitative assessment of the event sequence frequencies and their consequences, and an evaluation of the uncertainties in the assessments.	ANS-53.1-2011

risk	Non-preferred variation (1) Probability and consequences of an event, as expressed by the “risk triplet” that is the answer to the following three questions: (a) What can go wrong? (b) How likely is it? (c) What are the consequences if it occurs?	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
risk	Non-preferred variation (2) Frequency and consequences of an event, as expressedby the “risk triplet” that is the answer to the following three questions: (a) What can go wrong? (b) How likely is it? And What are the consequences if it occurs? In this Standard,Question (a) is answered by the definition of event sequences,event sequence families, and release categories; Question (b)by estimating the frequency of event sequences on a per plantyear basis where a plant may be comprised of one or more reactors and non-reactor radionuclide sources; Question (c) isquantified using radionuclide consequence metrics such as site boundary dose, population dose, early or latent health effects, or individual or societal risk.	ASME/ANS RA-S-1.4-2021
risk achievement worth (RAW) importance measure	For a specified basic event, risk achievement worth importance reflects the increase in a selected figure of merit when an SSC is assumed to be unable to perform its function due to testing, maintenance, or failure. It is the ratio or interval of the figure of merit, evaluated with the SSC’s basic event probability set to one, to the base case figure of merit.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
risk factors	Parameters related to a radiological risk assessment, e.g., proximity of a member of the public to a facility with subsurface contamination, interconnection between an aquifer and the facility’s subsurface contamination, groundwater transport rates, direction of flow, dilution factors from local surface water bodies and/or groundwater flow, etc.	ANS-2.17-2010
risk-informed approach	An approach to regulatory decision making represents a philosophy whereby risk insights are considered together with other factors to establish requirements that better focus licensee and regulatory attention on design and operational issues commensurate with their importance to health and safety. This approach enhances the traditional approach by (a) allowing explicit consideration of a broader set of potential challenges to safety; (b) providing a logical means for prioritizing these challenges based on risk significance, operating experience, and/or engineering judgment; (c) facilitating consideration of a broader set of resources to defend against these challenges; (d) explicitly identifying and quantifying sources of uncertainty in the analysis; and (e) leading to better decision making by providing a means to test the sensitivity of the results to key assumptions. Where appropriate, a risk-informed regulatory approach can also be used to reduce unnecessary conservatism in deterministic approaches or can be used to identify areas with insufficient conservatism and provide the bases for additional requirements or regulatory actions.	ANS-2.17-2010
risk-informed decision process	A process that uses risk information and insights from PRA with traditional deterministic approaches and judgments to inform decisions.	ANS-53.1-2011 ANS-30.3-2022
risk-informed, performance-based (RIPB)	A range of performances from the UHS, depending on when the accident event occurs and the randomness and uncertainty of the meteorological input data. Results of calculations of performance can be assigned a probability or a recurrence interval that can be factored into an overall probabilistic performance assessment. See [5] and [6].[16]	ANS-2.21-2022
risk metrics	Risk is defined in terms of the frequency of a given level of consequence. The risk metrics in this Standard include the product of the mean	ASME/ANS RA-S-1.4-2021

[16] These references are to NEI-18-04, “Modernization of Technical Requirements for Licensing of Advanced Non-Light Water Reactors: Risk-Informed Performance-Based Technology Inclusive Guidance for Non-Light Water Reactor Licensing Basis Development,” Rev. 1, Nuclear Energy Institute (Aug. 2019); https://www.nrc.gov/docs/ML1924/ML19241A472.pdf (accessed Aug. 25, 2020) and SECY-98-144, “White Paper on Risk-Informed and Performance-Based Regulation”, U.S. Nuclear Regulatory Commission (June 22, 1998); https://www.nrc.gov/reading-rm/doc-collections/commission/secys/1998/secy1998-144/1998-144scy.pdf (accessed Jan. 5, 2020) respectively.

	frequency and mean consequence of an event sequence, the sum of the product of mean frequencies and consequences over a group of event sequences, and the frequency of exceeding a given level of consequence for an event sequence or group of event sequences. In aggregating the risk over a group of event sequences, the risk may be associated with an event sequence family, a release category, a specific combination of plant operating state, source of radioactive material, and hazard group, or the total integrated risk of the plant. Frequencies of event sequences are expressed in terms of events per plant-calendar-year where a plant may include two or more reactors and radionuclides sources from shared facilities. Consequences are expressed in terms of off-site radiological metrics such as site boundary dose, population dose, early and latent health effects, and individual risks.	
risk-relevant consequences	The fire-induced failure of any risk-relevant target, or the fire-induced creation of environmental conditions that may complicate or preclude credited postfire operator actions.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
risk-relevant damage targets	Any equipment item or cable whose operation is credited in the fire PRA plant response model or whose operation may be required to support a credited postfire operator action. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.4-2021 changed “fire PRA plant response model” to “Internal Fire Plant Response Model.”)	
risk-relevant ignition source	Any ignition source considered in the fire PRA fire scenario definitions that could cause a fire that might induce a plant initiating event or adversely affect one or more damage targets. (ASME/ANS RA-S-1.4-2021 changed “fire PRA fire scenario” to “internal fire PRA fire scenerio.”)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
risk-significant accident progression sequence	One of the set of accident sequences contributing to LERF resulting from the analysis of a specific hazard group that, when rank-ordered by decreasing frequency, sum to a specified percentage of the LERF or that individually contribute more than a specified percentage of LERF for that hazard group. The summed percentage of 95% and the individual percentage of 1% of the applicable hazard group are generally used.	ASME/ANS RA-S-1.1-2022
risk-significant accident sequence	One of the set of accident sequences resulting from the analysis of a specific hazard group, defined at the functional or systematic level, that, when rank-ordered by decreasing frequency, sum to a specified percentage of the CDF for that hazard group or that individually contribute more than a specified percentage of CDF. The summed percentage of 95% and the individual percentage of 1% of the applicable hazard group are generally used.	ASME/ANS RA-S-1.1-2022
risk-significant basic event	A basic event that contributes significantly to the computed risks for a specific hazard group. This contribution generally includes any basic event that has an FV importance greater than 0.005 or a RAW importance greater than 2.	ASME/ANS RA-S-1.1-2022
risk-significant basic event, absolute	A basic event that contributes significantly to an absolute risk significance criterion selected for RIDM. It is defined as any basic event that (a) contributes at least 1% to any identified absolute risk target; or (b) would result in exceeding the criterion if the basic event is assumed to fail with a probability of 1.0.	ASME/ANS RA-S-1.4-2021
risk-significant basic event, relative	A basic event that contributes significantly to baseline risk. It is defined as any basic event that has an FV importance greater than 0.005 or a RAW importance greater than 2 where the importance is normalized against the baseline total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant containment challenge	A containment challenge that results in a containment failure mode that is represented in a risk-significant accident progression sequence.	ASME/ANS RA-S-1.1-2022
risk-significant contributor	A basic event; structure, system, or component (SSC); piece of equipment; HFE; scenario; and so on that contributes to a significant sequence or cutset or contributes significantly to the computed risks for a significant sequence or cutset-specific hazard group.	ASME/ANS RA-S-1.1-2022
risk-significant	Implies a significant contributor to an absolute risk significance criterion	ASME/ANS RA-S-1.4-2021

contributor, absolute	selected for RIDM. It is defined as any contributor that comprises at least 1% to any identified absolute risk target. Contributors may be defined in terms of initiating events, event sequences, event sequence families, release categories, radionuclide source, or other defined elements of the PRA model.	
risk-significant contributor, relative	Implies a significant contributor to a given baseline risk metric that is expressed as the total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state. Contributors may be defined in terms of a basic event, piece of equipment, a human failure event (HFE), scenario, initiating event, event sequence, event sequence family, release categories, or other defined modeling item of the PRA model.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
risk-significant cutset	A cutset is one element of an accident sequence resulting from the analysis of a specific hazard group that, when rank-ordered by decreasing frequency, sums to a specified percentage of the CDF (or LERF) for that hazard group or that individually contributes more than a specified percentage of CDF (or LERF). The summed percentage of 95% and the individual percentage of 1% of the applicable hazard group are generally used. Cutset significance may also be measured relative to overall CDF (or LERF) or relative to an individual accident sequence CDF (or LERF) of the applicable hazard group.	ASME/ANS RA-S-1.1-2022
risk-significant cutset, absolute	Implies a cutset that makes a significant contribution to any identified absolute risk target selected for RIDM. It is defined as any contributor that comprises at least 1% to any identified absolute risk target.	ASME/ANS RA-S-1.4-2021
risk-significant cutset, relative	A cutset resulting from the analysis that, when rank-ordered by decreasing frequency, sums to a specified percentage of the total integrated baseline risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state, or that individually contributes more than a specified percentage of risk. For this version of the Standard, the summed percentage is 95%, and the individual percentage is 1% of the total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant event sequence or event sequence family, absolute	An event sequence or event sequence family included in a PRA model, defined at the functional or systematic level, that makes a significant contribution to an absolute risk target selected for RIDM. It is defined as any event sequence or event sequence family that contributes at least 1% to any identified absolute risk target.	ASME/ANS RA-S-1.4-2021
risk-significant event sequence or event sequence family, relative	An event sequence or event sequence family that, when rank-ordered by decreasing frequency, contributes a specified percentage of the baseline risk, or that individually contributes more than a specified percentage of the risk. For this version of the Standard, the aggregate percentage for the set is 95%, and the individual event sequence or event sequence family percentage is 1% of the total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant function, absolute	An event or element of a PRA model that represents the performance of a safety function that contributes significantly to a selected absolute risk criterion. It is defined as any function that either (a) contributes at least 1% to any identified absolute risk criterion target; or (b) would result in exceeding the criterion if the function is assumed to fail with a probability of 1.0.	ASME/ANS RA-S-1.4-2021
risk-significant function, relative	An event or element of a PRA model that represents the performance of a safety function that contributes significantly to risk. For this version of the Standard, the aggregate percentage for the set is 95%, and the individual event sequence or event sequence family percentage is 1% of the total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant equipment	An SSC that contributes significantly to risk or could contribute significantly if it were to degrade in reliability.	ANS-30.3-2022

risk-significant equipment	Non-preferred variation (1) Equipment associated with a significant basic event. (See also significant basic event.)	ASME/ANS RA-Sb–2013
risk-significant plant operating state, absolute	A plant operating state that is associated with one or more risk-significant event sequences families. The risk significance of a plant operating state is the total risk of the associated risk significant event sequences and may be expressed in terms of the total integrated risk, or the risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant plant operating state, relative	A plant operating state that is associated with one or more risk-significant event sequences families. The risk significance of a plant operating state is the total risk of the associated risk-significant event sequences and may be expressed in terms of the total integrated risk, or the risk of a specific combination of source of radioactive material, hazard, and plant operating state.	ASME/ANS RA-S-1.4-2021
risk-significant SSC or human failure event, absolute	An SSC or HFE represented by a group of basic events that contributes significantly to the computed risks against a target. It is defined as any SSC that either 1) contributes at least 1% to any identified absolute risk target; or (b) would result in exceeding the risk criterion if the SSC or HFE were assumed to fail with a 2) probability of 1.0.	ASME/ANS RA-S-1.4-2021
risk-significant SSC or human failure event, relative	An SSC or HFE represented by a basic event or group of basic events that contributes significantly to baseline risk. This contribution generally includes any group of basic events that has an FV importance greater than 0.005 or a RAW importance greater than 2 where the importance is normalized against the total integrated risk or risk of a specific combination of source of radioactive material, hazard, and plant operating state. ()	ASME/ANS RA-S-1.4-2021
rock quality designation (RQD)	An expression in percentage of intact core recovered during drilling operation. Rock quality designation (RQD) as defined by Deere (1963), p. 16. RQD in % = 100 x length of core in pieces 4 in. and longer length of core run RQD (%) Exceeding 90 90-75 75-50 50-25 less than 25 Quality Description Excellent Good Fair Poor Very poor Breakage due to drilling techniques or exposure to air should not be considered as natural breaks.	ANS-2.11-1989 ANS-2.19-1990
rod	Those items of a spent fuel assembly which are long, thin walled tubes closed by end caps. A rod may either contain fuel (e.g., uranium, plutonium and fission products) or non-fuel material.	ANS-57.10-1993
rod consolidation	The process of reducing the spacing between rods. (See also rod reconfiguration)	ANS-57.9-2000 ANS-57.10-2000
rod removal	Pulling or pushing a rod out of a spent fuel assembly. Rods can be removed from a spent fuel assembly singularly, in groups, in rows, or all simultaneously.	ANS-57.10-2006
root-sum-square uncertainty combination	A mathematical uncertainty calculation based on the error stack equal to the sum of the extreme tolerances. This rule greatly overestimates the stackup if the errors are truly statistical; thus, taking assumed tolerances,	ANS-53.1-2011

	squaring each, summing them, and taking the square root produce a statistical tolerance.	
rotation	Angular motion about a fixed axis.	ANS-57.1-1992
route of exposure	A specific scenario or pathway by which an individual or human receptor might be exposed to ionizing radiation or radioactive material. For the ingestion exposure pathway, the routes of exposure might include the ingestion of leafy vegetables, milk, water, fish, etc.	ANS-2.17-2010
routine releases	Releases of pollutants that occur as part of normal facility operation and are not associated with unplanned events.	ANS-2.15-2013
run	The controlled resumption of simulation.	ANS-3.5-2009 ANS-3.5-2018

S

Term	Description	Reference/Source
safeguard	(See engineered safety feature; the preferred term is engineered safety feature).	G
safeguards information	Information not otherwise classified as National Security Information or Restricted Data which specifically identifies an owner organization or applicants detailed (1) security measures for the physical protection of special nuclear material, or (2) security measures for the physical protection and location of certain plant equipment vital to the safety of production or utilization facilities.	ANS-3.3-1988
safe operation, safety	Actions and activities that pose no immediate hazard to the public or facility personnel. This specifically excludes “safety related” as detailed in 10 CFR 50.	ANS-40.37-2009
safe shutdown	A unit shut-down with: (1) the reactivity of the reactor kept to a margin below criticality consistent with technical specifications; (2) the core decay heat being removed at a controlled rate sufficient to prevent core or reactor cool-ant system thermal design limits from being exceeded; (3) radioactive material releases controlled to keep doses within prescribed limits; and (4) items necessary to maintain these conditions, operating within their design limits.	ANS-58.14-1993 ANS-51.1/52.1
safe shutdown	Variant form.	ANS-5.6.1-1990 ANS-58.9-1994 ANS-56.11-1988 ANS-58.2 ANS-58.3-1992 ANS-59.1-1986 ANS-59.4-W83 ANS-58.6-1991 ANS-58.14-2011
safe shutdown earthquake (SSE)	An earthquake that is based upon evaluation of the maximum earthquake potential, considering regional and local geology and seismology and specific characteristics of local subsurface material. It is the earthquake that produces the maximum vibratory ground motion for which safety-related structures, systems, and components (SSCs) are designed to perform their safety-related function.	ANS-51.1/52.1-1983 ANS-57.3-2018
safe shutdown earthquake (SSE)	Non-preferred variation (1) Variant form.	ANS-56.6-1986 ANS-57.1-1992 ANS-57.2-1993 ANS-57.2-1999 57.3-1993 ANS-56.6-1986 ANS-2.9-1989 ANS-2.13-79 ANS-2.12-1978
safe shutdown earthquake (SSE)	Non-preferred variation (2) That earthquake for which certain SSCs are designed to remain functional. In the past, the SSE has been commonly characterized by a standardized spectral shape anchored to a PGA value.	ASME/ANS RA-Sb–2013
safe shutdown earthquake ground motion (SSE)	It is preferred that the term “design bases response spectra (DBRS)” or “design bases time-history” and the associated definitions be used in ANS standards	
safe shutdown earthquake ground motion (SSE)	Non-preferred term (1) safe shutdown earthquake ground motion (SSE). An earthquake free-field motion defined at the ground surface for which certain structures, systems, and components (SSCs) are designed to remain functional. These SSCs are those necessary to ensure the following: • the integrity of the reactor coolant pressure boundary;	ANS-2.2-2016

Term	Description	Reference/Source
	• the capability to shut down the reactor and maintain it in a safe shutdown condition; or • the capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures of nuclear radiation exceeding allowable amounts. Note: Avoid combining definitions for other terms in this manner. For example use the term Safety Related and add the term and definition to the standard.	
safety	In the context of nuclear power plant design practice and standards, the quality of averting or not causing undue radiological effect on the health of the public.	ANS-56.10-1987
safety class	Classification of SSCs based on their nuclear safety function.	ANS-57.3-2018
safety class	Non-preferred variation (1) Safety-class SSCs, including portions of process systems, whose preventive or mitigative function is necessary to limit radioactive hazardous material exposure to the public, as determined from safety analyses.	ANS-3.14-2021
safety class	Non-preferred variation (2) For the purposes of this standard, three SCs are specified (SC-1, SC-2, and SC-3). SC-2 and SC-3 invoke specific design codes and standards that are intended to enhance the reliability and dependability of SSCs and SACs to which they are designed. SC-1 represents SSCs and SACs that are identified in hazard analysis but for which the unmitigated DBE consequences do not rise to the level of SC-2 or SC-3.	ANS-58.16-2014
	Note: Applicability limited to DOE non-reactor facilities	
safe shutdown equipment list (SSEL)	The list of all SSCs that require evaluation in the seismic-margins-calculation task of an SMA. Note that this list can be different from the seismic equipment list (SEL) used in a seismic PRA.	ASME/ANS RA-Sb–2013
safe stable state	A plant condition, following an initiating event, in which RCS conditions are controllable at or near desired values. (ASME/ANS RA-S-1.4-2021 changed “RCS” to “plant.”)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
safety analysis	Non-preferred variation (1) An analysis that simulates the integrated response of the plant to an LBE in order to confirm that the functions of SSCs are accomplished within their design basis and that the nuclear safety criteria and safety analysis acceptance requirements are satisfied.	ANS-30.3-2022
safety analysis	Non-preferred variation (2) An analysis that simulates the integrated response of the plant to a design basis event (DBE) in order to confirm the functions of structures, systems and components are accomplished within their design basis and the nuclear safety criteria and safety analyses acceptance requirements are satisfied for the DBE.	Source unknown
safety analysis	Non-preferred variation (3) Variant form.	ANS-58.4-W90 ANS-58.8-1992
safety analysis	Non-preferred variation (4) An analysis to confirm the adequacy of design once basic parameters including fundamental technology, TLSC, and reasonably likely events based on PRA have been developed.	ANS-53.1-2011
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
safety class (SC)	Classification structures, systems, or components (SSCs) based on their nuclear safety function.	ANS-51.1-1983/ANS-52.1-1983 56.2-1989
safety class (SC)	Non-preferred variation (1) Variant form.	ANS-56.4-1983 ANS-59.2-1985 ANS-59.3 ANS-2.9-1989 ANS-2.17-1989 (G)
safety classification	It is preferred that the term (safety class) and the associated definition be used in ANS standards.	
safety classification	Non-preferred variation (1) Components shall be classified as Safety Class 3 or as Non-Nuclear Safety (NNS) in accordance with definitions	ANS-57.2-1999

Term	Description	Reference/Source
	set forth in section 3.3 of American National Standards Nuclear Safety Criteria for the design of Stationary Pressurized Water Reactor Plants, ANS-51.1-1983[1], and Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, ANS-52.1-1983 [2].	
safety classification	Non-preferred variation (2) Variant form.	ANS-57.1-1992 ANS-57.2-D93 ANS-57.3-1993
safety classification	Non-preferred variation (3) Components shall be classified as Safety 2, Safety Class 3, or as Non-Nuclear Safety (NNS) in accordance set forth in American National Standards Nuclear Safety Criteria for the design of Stationary Pressurized Water Reactor Plants, ANS-51.1-1983[1], and Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, ANS-52.1-1983 [2]. A single system may have components in more than one class.	ANS-57.3-1993
safety criteria	Criteria that are to be met to conform to top level design criteria (TLDC) during a design-basis accident (DBA), based on safety analysis.	ANS-53.1-2011
safety division	The terms division, train, and separation group, when used in this context, are interchangeable. The designation applied to a given system or set of nuclear safety-related components that enable the establishment and maintenance of physical, electrical, and functional independence from other components.	ANS-59.4-79W83
safety features	It is preferred that the term (Engineered Safety Feature) and the associated definition be used in ANS standards.	
safety features	Non-preferred term. Active and passive design features that are provided in the design of a plant specifically to perform a safety function. Active safety features involve mechanical action or motion to perform the safety function that requires application of external motive power such as electric or hydraulic power. Passive safety features perform their safety function without any active SSCs or externally applied motive power. Some safety features involve a combination of passive safety features and inherent reactor characteristics. In modular helium-cooled reactors (MHRs), examples of passive safety features normally include a negative coefficient of reactivity and a capability to remove decay heat via conduction, convection, and radiation heat transfer principles. Examples of active safety features include forced circulation core cooling systems and electrically powered reactor building filtration systems.	ANS-53.1-2011
safety features	Non preferred term. Design features of a reactor that are provided specifically to support one or more safety functions or to support another SSC that provides a safety function.	ASME/ANS RA-S-1.4-2013
safety features, engineered	Non-preferred term. Safety features applied in the design of reactor systems in addition to the selection of materials and design characteristics of the reactor fuel, reactor coolant, and moderator (if any) that support one or more safety functions. Engineered safety features may involve the use of active and/or passive SSCs.	ASME/ANS RA-S-1.4-2013
safety features, inherent	Reactor safety features applied in the design of a reactor that are fundamental to the selection of materials and design characteristics of the reactor fuel, reactor coolant, and moderator (if any) and that support one or more safety functions and thereby support the integrity of one or more radionuclide transport barriers.	ASME/ANS RA-S-1.4-2013 ANS-30.3-2022
safety function	See also the term (nuclear safety function) for use as appropriate	
safety function	Non-preferred variation (1) A specific purpose that must be accomplished for safety for a facility or activity to prevent or to mitigate radiological consequences of normal operation, AOOs, and accident conditions [3].[17]	ANS-30.3-2022
safety function	Non-preferred variation (2) Function that must be performed to control the sources of energy in the plant and radiation hazards.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022

[17] This reference is to “IAEA Safety Glossary,” 2018 Edition, International Atomic Energy Agency, (2019) https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition (accessed June 29, 2022).

Term	Description	Reference/Source
safety function	Non-preferred variation (3) Any function that is necessary to assure: (1) the integrity of the reactor coolant pressure boundary or primary coolant boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the cap-ability to prevent or mitigate the consequences of conditions of design which could result in potential offsite exposures that are a significant fraction of 10 CFR 100, "Reactor Site Criteria", guideline exposures. (Footnote references ANS-51.1/52.1 for functions associated with each safety class) (G)	ANS-2.9-1989 ANS-2.17-1989 ANS-56.6 ANS-58.2 ANS-58.9-1994
safety function	Non-preferred variation (4) Functions provided in the design to prevent and mitigate accidents and assure that top-level regulatory criteria (TLRC) are met under all conditions. Those functions necessary and sufficient to assure that the top-level safety criteria (TLSC) are met in the design-basis event (DBE) portion of the frequency –consequence (F-C) curve and regulatory dose limits for deterministically selected design-basis accidents (DBAs) are met.	ANS-53.1-2011
safety function	Non-preferred variation (5) A function that must be performed to control the sources of energy and radiation hazards in the plant and to maintain the integrity or mitigate the releases from one or more radionuclide transport barriers.	ASME/ANS RA-S-1.4-2021
safety function	Non-preferred variation (6) For the purposes of this standard, the function of an SSC, SAC, or a part that is relied upon, during or following a DBE, to ensure the following are met: • the integrity of the engineered safety system or administrative control; • the capability to place and maintain the facility in a safe condition; or • the capability to prevent or mitigate the consequences of accidents that could result in potential exposures comparable to the guideline exposures in regulatory requirements.	ANS-58.16-2014
safety margin (design)	The difference between the magnitude of challenge to an SSC using conservative assumptions and its capacity based on codes, standards, and regulatory criteria to compensate for uncertainties at any design stage.	ANS-30.3-2022
safety, non-nuclear	It is preferred that the term (non-nuclear safety [NNS]) and the associated definition be used in ANS standards	
safety, non-nuclear	Non-preferred term: safety, non-nuclear (see non-nuclear safety [NNS]).	
safety-related (Q)	It is preferred that the term (nuclear safety-related) and the associated definition be used in ANS standards.	ANS-30.3-2022
safety-related (Q)	Non-preferred variation (1) Classification applied to: (1) an item relied upon to remain functional during or following a design basis event to ensure a safety-related function; or (2) documented information that specifies or establishes parameters required to ensure a safety-related function of an item; or (3) services (to design, purchase, fabricate, handle, ship, store, clean, erect, install, inspect, test, operate, maintain, repair, refuel, and modify) that ensure a safety-related function of an item.	ANS-58.14-2011
safety-related (Q)	Variant form.	ANS-2.9-1989 ANS-2.11-1978 ANS-2.17-1989 ANS-57.1-1992 ANS-57.2-1983 ANS-57.3-1983 ANS-59.2-1989 ANS-59.3 (G)
safety-related (Q)	Non-preferred variation (2) Applies to a function, SSC, or part that is relied upon during or following a DBE to ensure these functions[5)]: (1) the integrity of the RCPB; (2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or	ANS-58.14-2011

Term	Description	Reference/Source
	~~Non-preferred variation (3)~~ the capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the guideline exposures in 10 CFR 50.34(a)(1) [7], 10 CFR 50.67(b)(2) [8], or 10 CFR 100.11 [9], as applicable. To avoid confusion, only the term “safety-related” is used in this standard. The term “safety” is not to be used as a synonym for “safety-related” but is to be used in a broader sense only when necessary. Footnote: (5) Parts (1), (2), and (3) are the three basic safety-related functions.	
safety-related (Q)	Non-preferred variation (4) Classification for plant SSCs relied on to perform safety functions for design-basis accidents (DBAs).	ANS-53.1-2011
safety-related control air system	It is preferred that term (safety-related control air) and the associated definition be used in ANS standards.	
safety-related air-operated device	An air-operated device which is relied upon to ensure or support the operation of safety systems as defined in N18.2-1973, Section 2.2 additional guidance on definitions of safety systems has been formulated and exists in draft form.	ANS-59.3
safety-related control air system	An air supply system which distributes instrument quality control air to Type "A" safety related devices. Safety-related air-operated devices are here further categorized by: (1) Type "A"--Those safety-related air operated devices which require the continued presence of supply air in order to accomplish their safety-related function;(2) Type "B"--Those safety-related air operated devices which do not require the continued presence of supply air in order to accomplish their safety-related function. These devices are fail safe relative to the loss of the air supply. A safety-related air-operated device is further defined to include the operator, i.e., diaphragm, air motor, cylinder, and accessories such as tubing, solenoid pilot, etc.	ANS-59.3
safety-related intake	An intake which is part of the system that delivers water from the ultimate heat sink to the plant.	ANS-2.13-1979
safety-related function	It is preferred that preferred term (nuclear safety function) and the associated definition be used in ANS standards	
safety-related function	A function that is relied upon during or following a design basis event to ensure[1]: (1) the integrity of the reactor coolant pressure boundary; (2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the guideline exposures of 10 CFR 100.11. (See 10 CFR 21, 10 CFR 50.49, and Appendix A of 10 CFR 100.) ([1]) Parts (1) and (2) and (3) are the three basic safety-related functions.	ANS-58.11-1993 ANS-51.1/52.1-1993 58.14-1993
safety-related function	Variant form.	ANS-56.2-1984 ANS-58.8-1992
safety-related operator action	A manual action required by plant emergency procedures that is necessary to cause a safety-related system to perform its safety-related function during the course of any DBE. A safety-related operator action can involve one or more discrete manipulations or steps. In addition, its successful performance can require that the discrete steps be performed in a specific order. An example of a safety-related operator action is the initiation of safety-related cooling water flow. An example of a safety-related operator action that requires more than one discrete manipulations or steps to be accomplished in a specific order is the initiation of safety-related cooling water flow to an isolated heat exchanger for which operation is required to accomplish a safety-related function.	ANS-58.8-1993
safety-related systems	It is preferred that the term “Safety Related” and the associated definition be used in ANS standards	
safety-related systems	Non-preferred term (1) Those systems, structures, and components that perform functions necessary to shut down the reactor and maintain it in a	ANS-15.4-2016

Term	Description	Reference/Source
	safe shutdown condition and to minimize radioactive releases to the environment.	
safety supporting systems	Safety supporting systems are those systems which provide the services necessary to a safety-related fluid system to enable that system to complete its intended safety function. Examples of safety supporting systems for the emergency core cooling system include the component and process cooling system, the electric power supply system, and the emergency core cooling system equipment ventilation system.	ANS-58.9-2004
safety supporting systems	Variant form.	ANS-4.1
safety system	Systems that provide one or more safety functions.	ANS-53.1-2011
safety system	Non-preferred variation (1) Those systems that are designed to prevent or mitigate a design-basis accident.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
safety system	Non-preferred variation (2) (IEEE Std 603) Those systems that are relied upon to remain functional during and following design basis events to ensure: (i) the integrity of the reactor coolant pressure boundary; (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition; or, (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the 10 CFR 100 guidelines. Note: In this standard, safety systems are equivalent to the definition of safety related systems as defined in ANS-51.1-1983 and ANS-52.1-1983.	ANS-7-4.3.2
sample	A single item or specimen from a larger whole or group taken for the purpose of estimating properties or composition of the larger whole or group.	ANS-41.5-2012
sampler	That portion of the monitoring system that provides a representative sample of the fluid stream for the detector to monitor.	ANS-6.8.2-1986
sampling	The process of obtaining representative samples and/or measurements of a subset of a population.	ANS-41.5-2012
sampling	Non-preferred variation (1) A method of choosing a representative number or amount from a larger number or amount.	ASME/ANS RA-S-1.3-2017
sampling rate	The number of samples per second in a digitized time series. For modern strong-motion instruments 200 or 250 samples per second are typical. For a sampling rate of 200 samples per second, the Nyquist frequency would be 100 Hz and an anti-alias filter would have a corner frequency near 80 Hz.	ANS-2.10-2017
sampling station radioactive waste	Liquids originating from operation of centralized reactor and reactor auxiliary system sampling stations.	ANS-55.6-1993 ANS-55.6-1999
saturated zone	The zone in the subsurface where the pores are filled with water (phreatic zone plus capillary zone).	ANS-2.17-2010
scattered gamma rays	The term scattered gamma rays is used to describe all gamma rays which have undergone scattering interactions in transit between the source volume and receptor locations. This category includes air scattering, ground scattering, and scattering through or off any intervening structures or shields.	ANS-6.6.1-2015
scenario	Any set of simulator operations performed in accordance with a lesson plan or guide for the purpose of familiarization, training, or examination of operators.	ANS-3.5-2018
SCRAM	Safety Control Rod Axe Man – a sudden shut down of a reactor, typically by the rapid insertion of control rods. (For information only; not defined in ANS standards to date)	
screening	A process that eliminates items from further consideration based on their negligible contribution to the probability of an accident or its consequences, or from future analysis of a specific issue. (ASME/ANS RA-S-1.4-2021 & ASME/ANS RA-S-1.1-2022 added “or from future analysis of a specific issue.”)	ASME/ANS RA-Sb–2013

Term	Description	Reference/Source
screening criteria	The values and conditions used to determine whether an item is a negligible contributor to the probability of an accident sequence or its consequences.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
screening criteria	Non-preferred variation (1) The values and conditions used to determine whether an item is a negligible contributor to the probability of an event sequence or its consequences, or from further analysis of a specific issue.	ASME/ANS RA-S-1.4-2021
sealed closed isolation valve	. A valve that is in a closed position by administrative controls by any of the following methods: (1) A mechanical device sealing or locking the valve in the closed position; and, (2) A normally closed valve with a seal or lock on any manual override if present and a seal or lock on the power breaker or power source in a manner that prevents power from being supplied to the valve.	ANS-56.2-1984
seasonal population	The seasonal population of an area consists of those people occupying "seasonal housing units" as defined by the U.S. Bureau of the Census. Briefly, these are units intended for occupancy only during a season of the year.	ANS-2.6-1981
Secchi depth	The depth in a water body at which an 8-inch white-and-black metal disk can no longer be seen from the surface. Secchi depth is a measure of water transparency used to calculate the depth of solar radiation penetration.	ANS-2.21-2022
secondary alarm station (SAS)	A continuously manned station, not necessarily on site, equipped with alarm monitoring and communications equipment that provide a backup capability for the central alarm station functions.	ANS-3.3-1988
secondary calibration	A procedure which is followed periodically after a primary calibration on each area monitor channel to ensure that the response of the channel remains accurate within certain prescribed limits.	ANS-6.8.1-1981
secondary combustible	Combustible or flammable materials that are not a part of the fire ignition source that may be ignited if there is fire spread beyond the fire ignition source.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
secondary containment	The structure, or structures, that acts as a barrier, after the primary containment, so that radioactive material leakage from the primary containment or engineered safety features during or following design basis accidents can be collected and processed before release to the external environment. It might include the reactor building, access closures, and penetrations of systems that directly communicate with the secondary containment atmosphere.	ANS-58.14
secondary containment	Variant form.	ANS-56.4-1983 ANS-2.2-1988 ANS-51.1/52.1-93 ANS-58.14-2011 ANS-2.2-2016
secondary containment atmosphere	The gaseous portion of the net free volume contained within the secondary containment pressure boundary and outside the primary containment pressure boundary.	ANS-56.4-1983
secondary criticality control	A method of criticality control that supplements a primary criticality control and provides backup for the unlikely case where the primary control fails.	ANS-8.5-1986
secondary design function	A function of a structure, system or component (SSC) that is not a primary design function but is required because of its position within the plant design. (e.g., a system that was included in the plant design to perform a primary design function such as emergency core cooling might also be required to perform secondary design functions such as reactor coolant pressure boundary integrity and primary containment isolation.)	ANS-58.14-1993
secondary hazard	Used in connection with, and contrast to, a primary hazard. It is an additional hazard effect that is induced by the primary hazard.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
secondary reactor containment	It is preferred that preferred term (secondary containment) and the associated definition be used in ANS standards.	ANS-51.2/52.1-93

Term	Description	Reference/Source
secondary reactor containment	Non-preferred variation (1) The structure surrounding the primary reactor containment that acts as a further barrier to control the release of radioactive material.	ANS-2.2-88 ANS-51.1 ANS-52.1 ANS-56.4-1983 (G)
secondary reactor containment	Variant form.	ANS-56.7
secondary shielding	The secondary shielding is the shielding in the reactor building provided to attenuate the gamma ray radiation and neutron radiation, if present, emanating from the primary coolant system external to the reactor vessel. The secondary shielding typically includes the crane wall in pressurized water reactors (PWRs) the drywell wall in boiling water reactors (BWRs) and the reactor building walls.	ANS-6.3.1-1987
secondary system	Equipment in the condensate, feedwater, and steam cycle of the plant. Secondary system does not include condenser cooling water systems.	ANS-55.6
secondary waste	Waste generated as a byproduct from operation of the MRWP, or separated from the raw waste, which must be handled, processed, and disposed of in accordance with local and federal regulations (e.g., concentrates, wet waste, dry active waste, and toxic chemicals).	ANS-40.37-2009
sector	A closed, four-sided segment of area in a polar coordinate system map, constructed from two adjacent concentric arc segments and two adjacent radial (i.e., directional) lines, resembling an arc-shaped rectangle. For the innermost circle of the map, a segment would be the closed pie-shaped “triangle” created by the center point, two adjacent radial lines, and an arc segment of the first ring.	ANS-2.6-2018
sector map	A polar coordinate system overlaid onto a topographical, geopolitical, or other two-dimensional map.	ANS-2.6-2018
secure development environment	The condition of having appropriate physical, logical, and programmatic controls during the system development phases (i.e., concepts, requirements, design, implementation, and testing) to ensure that unwanted, unneeded, and undocumented functionality (e.g., superfluous code) is not introduced into digital safety systems.	ANS-10.8-2015
	Note: ANS-10.8-2015 has “(Regulatory Guide 1.152)” at end of definition. Reference to a regulatory guide should be provided as a reference or footnote.	
secure operating environment	The condition of having appropriate physical, logical, and administrative controls within a facility to ensure that the reliable operation of digital safety systems is not degraded by undesirable behavior of connected systems and events initiated by inadvertent access to the system.	ANS-10.8-2015
	Note: ANS-10.8-2015 definition has “(Regulatory Guide 1.152)” at end of definition. Reference to a regulatory guide should be provided as a reference or footnote.	
security force	An onsite subentity of the security organization, which includes guards and may include watchmen and armed response individuals, directly responsible for performing operational requirements pursuant to the physical security plan.	ANS-3.3-1988
security organization	Personnel who perform physical security management or operational requirements pursuant to the physical security plan.	ANS-3.3-1988
segmented plume model	A model in which the plume is separated into segments downwind that enable spatial and temporal changes in trajectory and dispersion.	ASME/ANS RA-S-1.3-2017
seiche	Oscillations of enclosed or semi-enclosed water bodies in response to a disturbing force such as pressure changes, wind stress and seismic motions.	ANS-2.19-1989
seiche	Non-preferred variation (1) Variant form.	ANS-2.12-1978 ANS-2.13-1979
seismically-analyzed piping	Piping, which is not required to be Seismic Category I, but has been determined to be able to accommodate seismic loadings. (See also definition of "seismically analyzed B31.1 piping" in ANS-58.2-1988.)	ANS-56.11-1988

Term	Description	Reference/Source
seismic Category I	The classification of an item that is designed to perform at least one function (i.e., safety-related or non-safety-related) during or following a safe shutdown earthquake (SSE)[2] Footnote: (2) See EPRI ALWR Utility Requirements Document and Regulatory Guide 1.29.	ANS-58.14-1993 ANS-58.14-2011
	Note: ANS standards currently use different approaches in different standards. A single approach needs to be agreed up at the SB/CC level.	
seismic Category I	Non-preferred variation (1) The category of nuclear safety related structures, systems, and components that are required to perform their nuclear safety function during or after an SSE as necessary to accommodate any event involving an SSE.	ANS-57.2-1999
seismic Category I	Non-preferred variation (2) The category of structures, systems, and components that are designed to perform at least one function during or after a safe shutdown earthquake (SSE).	ANS-51.10-2020
seismic Category I	Non-preferred variation (3) Variant form.	ANS-2.9-1989 ANS-2.13-1979 ANS-51.1/52.1 ANS-54.2-1985 ANS-56.1-1985 ANS-56.5-1987 ANS-56.6-1986 ANS-56.7 ANS-57.1-1992 ANS-57.2-1993 ANS-58.2 ANS-59.2-1992
seismic category I structure	A structure that is designed to remain functional during and following the safe shutdown earthquake (SSE).	ANS-58.3
	Note: ANS standards currently use different approaches in different standards. A single approach needs to be agreed up at the SB/CC level.	
Seismic Category I structure, system, or component	It is preferred that the term “seismic Category I” and the associated definition be used in ANS standards	
Seismic Category I structure, system, or component	Non-preferred variation (1) Seismic Category I structure, system, or component Structures, systems, and components (SSCs) important to safety that are required to be designed/qualified to withstand the effects of the SSE and remain functional. Guidance for determining the category of an SSC is given in Regulatory Guide 1.29 [7]. The criteria for selecting Seismic Category I SSCs in RG 1.29 are different from those in ANS-2.26-2004 [8]. The regulatory guide or standard that is included in the plant license should be used.	ANS-2.2-2016
	Note: Definitions shall NOT contain requirements or permissions (Shall should and may should not be used in definitions. In this case the definition should be limited to the first sentence. The remaining items should be included in the requirements sections of the standard. Informational statements may be moved to the foreword of the standard.	
seismic category II	The classification of an item that is not Seismic Category I but whose failure mode could prevent a safety-related function during or following a SSE.	ANS-58.14-2011
seismic category II	Non-preferred variation (1) The classification of an item that is not Seismic Category I but is designed to prevent at least one failure mode during or following an SSE[3].	
seismic category II	Non-preferred variation (2) Footnote:) See EPRI ALWR Utility Requirements Document and Regulatory Guide 1.29.	ANS-58.14-1993
	Note: ANS standards currently use different approaches in different standards. A single approach needs to be agreed up at the SB/CC level.	
seismic data retrieval	An instrument having the capability of sensing motion and permanently recording the spectral acceleration at specified frequencies and damping.	ANS-2.10-1990

Term	Description	Reference/Source
seismic design category (SDC)	Non-preferred variation (1). A category assigned to an SSC that is a function of the severity of adverse radiological and toxicological effects of the hazards that could result from the seismic failure of the SSC on workers, the public, and the environment. SSCs are assigned to SDCs that range from 1 through 5. For example, a conventional building whose failure may not result in any radiological or toxicological consequences is assigned to SDC-1; a safety-related SSC in a nuclear material processing facility with a large inventory of radioactive material is assigned to SDC-5. See ANSI/ANS-2.26-2004 (R2017) [1] for additional information.	ANS-2.27-2020 ANS-2.29-2020
seismic design category (SDC)	Non-preferred variation (2) A category assigned to an SSC that is a function of the severity of adverse radiological and toxicological effects of the hazards that may result from the seismic failure of the SSC on workers, the public, and the environment. SSCs may be assigned to SDCs that range from 1 to 5. For example, a conventional building whose failure may not result in any radiological or toxicological consequences is assigned to SDC 1; a safety-related SSC in a nuclear material processing facility with a large inventory of radioactive material may be placed in SDC 5. In this Standard, the term SDC has a different meaning than in the International Building Code. ANS-2.26-2004[1] provides guidance on the assignment of SSCs to SDCs.	ANS-2.27-2008 ANS-2.29-2008
seismic design category (SDC)	Non-preferred variation (3) A category assigned to an SSC that is a function of the severity of adverse radiological and toxicological effects of the hazards that may result from the seismic failure of the SSC on workers, the public, and the environment. SSCs may be assigned to SDCs that range from 1 through 5. For example, a conventional building whose failure may not result in any radiological or toxicological consequences is assigned to SDC-1; a safety-related SSC in a nuclear material processing facility with a large inventory of radioactive material may be placed in SDC-5. In this standard, the term SDC has a different meaning than in the International Building Code. ANS-2.26-2004 [2] provides guidance on the assignment of SSCs to SDCs.	ANS-2.30-2015
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	
seismic equipment list (SEL)	The list of all SSCs that require evaluation in the seismic-fragilities task of a seismic PRA. Note that this list can be different from the SSEL (Safe Shutdown Equipment list) used in an SMA (Seismic Margin Assessment).	ASME/ANS RA-Sb–2013
seismic margin	Seismic margin is expressed in terms of the earthquake motion level that compromises plant safety, specifically leading to severe core damage. The margin concept can also be extended to any particular structure, function, system, equipment item, or component for which “compromising safety” means sufficient loss of safety function to contribute to core damage either independently or in combination with other failures.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
seismic margin	Non-preferred variation (1) Expressed in terms of the earthquake motion level that compromises plant safety, specifically leading to an undesired end state. The margin concept can also be extended to any particular structure, function, system, equipment item, or component for which “compromising safety” means sufficient loss of safety function to contribute to an undesired end state either independently or in combination with other failures.	ASME/ANS RA-S-1.4-2021
seismic margin assessment (SMA)	The process or activity to estimate the seismic margin of the plant and to identify any seismic vulnerabilities in the plant. This is described further in Part 10 and Nonmandatory Appendix 10-A.	ASME/ANS RA-Sb–2013
seismic monitoring system (SMS)	A system of instruments capable of sensing and permanently recording acceleration versus time. A complete SMS consists of acceleration sensor(s), a data acquisition unit, communications hardware, and a central control and processing computer.	ANS-2.10-2017

Term	Description	Reference/Source
seismic monitoring system (SMS)	Non-preferred variation (1) An instrument system capable of sensing and permanently recording acceleration versus time. A complete SMS consisting of acceleration sensor(s), DAU, communications hardware, and central control and processing computer.	ANS-2.2-2016
seismic source	Faults or volumes within the earth where future earthquakes are expected to occur. In a PSHA, all seismic sources with a potential to contribute significantly to the hazard are considered.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.27-2020 ANS-2.29-2020
seismic source	Non-preferred variation (1) A general term referring to both seismogenic sources and capable tectonic sources. A seismogenic source is a portion of the Earth assumed to have a uniform earthquake potential (same expected maximum earthquake and recurrence frequency), distinct from the seismicity of the surrounding regions. A capable tectonic source is a tectonic structure that can generate both vibratory ground motion and tectonic surface deformation such as faulting or folding at or near the Earth's surface. In a probabilistic seismic hazard analysis (PSHA), all seismic sources in the site region with a potential to contribute to the frequency of ground motions (i.e., the hazard) are included. (ASME/ANS RA-S-1.4-2021 & ASME/ANS RA-S-1.1-2022 changed last word from "considered" to "included" which was changed above.)	ASME/ANS RA-Sb–2013
seismic source characteristics	The parameters that characterize a seismic source for PSHA, including source geometry, probability of activity, maximum magnitude, and earthquake recurrence. =	ANS-2.27-2008 ANS-2.27-2020 ANS-2.29-2020 ANS-2.29-2008 ANS-2.30-2015
	seismic source model (SSM). The definition of parameters that characterize a seismic source for PSHA, including source geometry, style of faulting, seismogenic probability, maximum magnitude, and earthquake recurrence.	
seismic spatial interaction	An interaction that could cause an equipment item to fail to perform its intended safety function. It is the physical interaction of a structure, pipe, distribution system, or other equipment item with a nearby item of safety equipment caused by relative motions from an earthquake. The interactions of concern are (a) proximity effects (b) structural failure and falling (c) flexibility of attached lines and cables	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
seismic switch	An instrument capable of providing a signal that a specified preset acceleration has been exceeded. Seismic switches set at low g levels (i.e., 0.01 - 0.02 g) are used to activate time-history accelerographs; in this function they are referred to as seismic triggers.	ANS-2.10-1990
seismic trigger (S/T)	An integral part of the SMS that starts the system after a preset acceleration has been exceeded. The triggering and subsequent annunciation are done using the accelerometers and processors of the SMS.	ANS-2.2-2016 ANS-2.10-2017
seismogenic crust	The brittle portion of the earth's crust capable of generating earthquakes.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.27-2020 ANS-2.29-2020
seismogenic probability	The probability that a fault is capable of generating earthquakes significant to damage and risk.	ANS-2.27-2020 ANS-2.29-2020
seismotectonic	Adjective that describes relationships between earthquakes, faults, and tectonic processes that pertain to the state of stress in the crust and its strain response. Seismotectonic studies incorporate knowledge from multiple geoscience disciplines (e.g., seismology, geology, geodesy) and are useful for characterizing geologic structures generated by earthquakes and the time/space variations in tectonic processes.	ANS-2.27-2020 ANS-2.29-2020
seismotectonic	Non-preferred variation (1) Rock-deforming processes and resulting structures and seismicity that occurs over large sections of the earth's crust and upper mantle.	ANS-2.27-2008 ANS-2.29-2008

Term	Description	Reference/Source
seismotectonic	Non-preferred variation (2) The role of seismicity in tectonics, including regionally significant geologic structures generated by earthquakes and the time/space variations in the processes or structures.	ANS-2.30-2015
seismotectonic province	A region characterized by a relative consistency of geologic structures and associated earthquake activity.	ANS-2.19-1989
semi-infinite medium	A body of which the outer boundary is considered to be effectively at an infinite distance from the inner region.	ANS-16.1-2003
semi-infinite solid	A solid having one planar surface.	ANS-16.1-2019
Senior Seismic Hazard Analysis Committee (SSHAC)	A committee sponsored by the U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), and Electric Power Research Institute (EPRI) to review the state of the art and improve the overall stability of the PSHA process. The SSHAC [7][18] concluded that most of the differences in the results from PSHAs performed by different analysts for the same sites were consequences of differences in the process of elicitation of the information from experts. The SSHAC made recommendations on the process, which is now almost uniformly adopted by analysts worldwide assessing seismic hazard for critical structures.	ANS-2.27-2020 ANS-2.29-2020
Senior Seismic Hazard Analysis Committee (SSHAC)	Non-preferred variation (1) A committee sponsored by the NRC, DOE and EPRI to assess the amount and origins of differences between various PSHA methods of analysis. SSHAC [1] concluded that most of the differences were consequences of differences in the process of elicitation of the information from experts. SSHAC made recommendations on the process, which are now almost uniformly adopted by analysts worldwide.	ANS-2.29-2008
senior operator	An individual licensed under 10 CFR 55 to manipulate the controls of a facility and to direct the licensed activities of licensed operators.	ANS-3.4-1994
senior reactor operator	An individual who is licensed to direct the activities of reactor operators. Such an individual is also a reactor operator.	ANS-15.4-2016
sensitivity	(1) The capability of sensor to respond to change. (2) The ratio of the change in output magnitude to the change of the input which causes it after the steady state has been reached. It is expressed as a ratio with the units of measurement of the two quantities stated (e.g., cpm/μCi/ml). The ratio is constant over the range of a linear device. For a nonlinear device, the applicable input level must be stated. ()	ANS-6.8.2-1986
sensitivity factor	A conversion factor between input and output units of a device, such as volts per unit of gravity (g) for a sensor or counts/volt for a digitizer. Often a single sensitivity factor of counts per unit of motion is used in converting digital signals to ground motion.	ANS-2.10-2017
sensor	A device that converts motion to an analog voltage or a digital signal. Only acceleration sensors are used in this standard. Other sensor types, for example, velocity or displacement, are not included.	ANS-2.2-2016 ANS-2.10-2017
	Note: Definitions should not include scope statement: Delete: “Only acceleration sensors are used in this standard. Other sensor types, for example, velocity or displacement, are not included”.	
sensor accuracy	The accuracy of the sensor used to make a meteorological measurement. Sensor accuracy can be based on manufacturer specifications, test results, or direct comparison with a standard (i.e., calibration).	ANS-3.11-2015
	Note: Definitions should be generic if possible. Delete: “meteorological”	
service conditions	The combination of normal and abnormal operations and the design basis events for which the control air system is relied upon to provide, or maintain its capability to provide, its nuclear safety function.	ANS-59.3-1983

[18] Reference to NUREG-2213, “Updated Implementation Guidelines for SSHAC Hazard Studies,” Rev. 1, U.S. Nuclear Regulatory Commission (2018).

Term	Description	Reference/Source
service environment	The aggregate of conditions (e.g., temperature, pressure, humidity, radioactivity, and chemical) surrounding the components while performing functions as required by the conditions of design.	ANS-56.6-1986
service life	The total accumulated operating time of a system or component including all occurrences that are part of its design basis such as testing and maintenance or transient conditions.	ANS-56.1-D85
severe accident	An accident that involves extensive core damage and fission product release into the reactor vessel and containment, with potential release to the environment.	ASME/ANS RA-Sb–2013 ANS-30.3-2022 ASME/ANS RA-S-1.1-2022
severe accident management guidelines	Guidelines developed to provide steps that can be taken to mitigate accident progression after transition from the emergency operating procedures because of more severe conditions, e.g., core damage.	ASME/ANS RA-S-1.2-2015
severe environmental load	Load that could infrequently be encountered during the operating life of a nuclear power plant.	ANS-2.12-1978
severe natural phenomena	Those conditions postulated as the most severe that can reasonably be derived from the history and properties of the site and surroundings (e.g., probable maximum flood, probable maximum hurricane, tornado, tsunami, seiche, earthquake, minimum water availability).	ANS-56.2-1984
severity factor	Severity factor is the probability that fire ignition would include certain specific conditions that influence its rate of growth, level of energy emanated, and duration (time to self-extinguishment) to levels at which target damage is generated.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022 ASME/ANS RA-S-1.4-2021
shall	It is preferred that the term (Shall, Should and May) be defined in a single definition at the beginning of the definitions section in ANS standards.	
shall, should and may	The word "shall" is used to denote a requirement; the word "should" to denote a recommendation; and the word "may" to denote permission, neither a requirement nor a recommendation. (ANS-2.2-02) (ANS-2.9-89) (ANS-2.10-90) (ANS-2.17-2010) (ANS-2.21-2012) (ANS-2.27-2008) (ANS-2.29-2008) (ANS-3.1-87) (ANS-3.2-93) (ANS-3.4-87) (ANS-3.4-94) (ANS-3.5-85) (ANS-3.5-2009) (ANS-3.7.1-95) (ANS-3.7.2-79) (ANS-3.7.3-79) (ANS-3.8.2-95) (ANS-3.8.4-95) (ANS-5.1-2014) (ANS-5.4-2011) (ANS-5.6.1-D90) (ANS-5.10-98) (ANS-3.11-00) (ANS-6.1.2-2013) (ANS-6.6.1-2015) (ANS-6.7.1 85) (ANS-10.7-2013) (ANS-10.8-2015) (ANS-15.16-2015) (ANS-15.21-2012) (ANS-19.4-2017) (ANS-19.11-2017) (ANS-40.37-2009) (ANS-41.5-2012) (ANS-53.1-2011) (ANS-54.1-89) (ANS-55.4-93) (ANS-55.4-99) (ANS-55.6-93) (ANS-55.6-99) (ANS-56.11-88) (ANS-57.5) (ANS-57.5-96) (ANS-58.4-W90) (ANS-58.3) ANS-58.3-98) (ANS-58.6-94) (ANS-58.9-94) (ANS-58.14-2011) (ANS-59.52-93) (ANS-59.52-98) (Note: For the ANS-8 Standards: ANS-8.1, 8.5, 8.10, 8.15, 8.19, 8.20, 8.22, 8.23, 8.24, 8.26, and 8.27 all have the preferred wording. ANS-8.3, 8.6, 8.7, 8.12, 8.14, 8.17, and 8.21 have the variant form with the “To conform” phrase. It is the intent of NCSCC to have all of the ANS-8 standards move to the preferred wording. This will be done as they are revised.)	
	Note: This should be the 1st definition in the standard and may be a separate subsection.	
	Non-preferred variation (1)	
	shall. Denotes a requirement. (ANS-56.2-1984) (ANS-3.3-1988) (ANS-16.1-2003) (ANS-57.8-1993) (ANS-58.8) (ANS-58.2)	
	Variant form: shall. Used to state a mandatory requirement. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.4-2021) (ASME/ANS RA-S-1.1-2022)	
	Non-preferred variation (2) Included: In order to comply with this standard, the design shall conform to its requirements, but not necessarily with its recommendations. (ANS-57.2-1999) (ANS-57.3-1993)	
	Variant form: (ANS-55.1-92) (ANS-54.2-85) (ANS-57.2-92) (ANS-6.6.1-79) (ANS-6.3.1-87) (ANS-6.8.1-81) (ANS-8.3-91) (ANS-8.5-86) (ANS-8.6-83) (ANS-8.7-75) (ANS-8.10-83) (ANS-56.8-02) (ANS-57.1-92)	

Term	Description	Reference/Source
	(ANS-57.3-93) (ANS-55.1-92) (ANS-55.6) (ANS-56.2) (ANS-57.9-92) (ANS-58.3-92) (ANS-58.11-93) (ANS-58.14-93) (ANS-59.3-83) (ANS-57.7-92) (ANS-57.10-93) (ANS-51.1/52.1-93) (ANS-59.3-83) (ANS-3.8.1-93) (ANS-3.8.2-93) (ANS-3.8.3-93) (ANS-3.8.4-93) (ANS-3.8.5-D92) (ANS-2.11-78) (ANS-2.17-89) (ANS-4.1) (51.1) (ANS-56.3-86) (ANS-56.6-86) (ANS-56.8-02) (ANS-59.1) (ANS-59.3) (ANS-59.4-79W83) (ANS-2.6-81D) (ANS-59.4) (ANS-2.8.92) (ANS-58.12-85) (ANS-59.51-89) (ANS-56.10-87) (ANS-2.19-89) (ANS-2.7-89) (ANS-2.13-79)	
short-lived isotopes	Radionuclides with half-lives of less than eight days.	ANS-55.1-1992
short-lived SSCs	Routine maintenance items, usually active (e.g., moving, rotating) components that are dealt with on a routine basis.	ANS-3.14-2021
sheltering	Response to an emergency at a facility involving the recommendation that part of the population surrounding the facility remain indoors with the windows closed for the time during which the plume of material is passing through the location.	ASME/ANS RA-S-1.3-2017
shielding	Protection from radiation exposure afforded by a structure. Shielding for gamma shine from the passing cloud of material, for gamma shine from material deposited on the ground, or for inhalation of material are possible avenues of protection.	ASME/ANS RA-S-1.3-2017
short-lived isotopes	Radionuclides with half- lives of less than 8 days.	ANS-55.1-2021
short term	In the context of the single failure criterion, that period of time that a safety-related system must operate up to 24 hours following the initiating event. For purposes of design of the emergency core cooling and containment spray systems, the short term might terminate upon transfer of these systems from the short term cooling mode. The concept of short term and long term does not apply to electrical systems or components.	ANS-51.1/52.1-1993
short term	Variant form: (ANS-51.7) (G) (ANS-56.5-1987) (ANS-56.10-1987) (ANS-58.9-1994)	
should	It is preferred that the term (Shall, Should and May) be defined in a single definition at the beginning of the definitions section in ANS standards.	
should	Non-preferred variation (1)	
should	Denotes a recommendation. (ANS-16.1-2003) (ANS-57.8-1993) (ANS-56.2-1984) (ANS-3.3-1988) (ANS-58.8-1992)	
should	Variant form. Used to state a recommendation. (ASME/ANS RA-Sb–2013) (ASME/ANS RA-S-1.4-2021) (ASME/ANS RA-S-1.1-2022)	
shutdown	The procedure of making a nuclear reactor sub-critical (i.e., shutdown) or the state of a nuclear reactor after being made sub-critical (i.e., shutdown).	ANS-51.1/52.1-1993 ANS-59.1
shutdown	Non-preferred variation (1) The collection of POSs during which the reactor is subcritical. This term is interchangeable with the term “outage.” (Also see the related term, “controlled shutdown”).	ANS/ASME-58.22-2015 ASME/ANS RA-S-1.4-2021
shutdown heat removal system	A system that removes residual decay and sensible heat from the reactor coolant system when the reactor is shutdown.	ANS-58.11-1993
shut down the reactor	It is preferred that term (shutdown) and the associated definition be used in ANS standards.	
shut down the reactor	Non-preferred term: shut down the reactor. Insert negative reactivity into the reactor core to make it sub-critical.	ANS-58.14-1993 ANS-58.14-2011
shutdown, safe	It is preferred that the term (safe shutdown) and the associated definition be used in ANS standards.	
sigma phi	The standard deviation of the vertical wind direction.	ANS-3.11-2015
sigma theta	The standard deviation of the horizontal wind direction.	ANS-3.11-2015
signature	A unique characteristic of the physical response of the plant to a particular accident scenario. Signatures can take many different forms, but the most common is a time-dependent plot of a calculated parameter from an integrated severe accident analysis computer code. For example, the calculated, time-dependent pressure of the reactor pressure vessel is a unique “signature” of the accident sequence.	ASME/ANS RA-S-1.2-2015

Term	Description	Reference/Source
significant	A level of anticipated impact on or change of a parameter or result which is or would be sufficient to prompt a change in facility design or operation because the integrity, reliability, function, or sufficiency of a system, component, or structure would not fulfill its intended purpose.	ANS-56.10-1987
significant	Variant form.	ANS-56.4-1983
Significant Accident Progression sequence	It is preferred that the term (significant accident sequence) and the associated definition be used in ANS standards	
Significant Accident Progression sequence	Non-preferred term: Significant Accident Progression sequence. One of the set of accident sequences contributing to large early release frequency resulting from the analysis of a specific hazard group that, when rank-ordered by decreasing frequency, sum to a specified percentage of the large early release frequency, or that individually contribute more than a specified percentage of large early release frequency for that hazard group. For this version of the Standard,[3] the summed percentage is 95% and the individual percentage is 1% of the applicable hazard group. (See Part 2 Requirements LE-C3, LE-C4, LE-E5, LE-C10, LE-C12, LE-D1, LE-D4, LE-D5, LE-D7, and LE-E2.) For hazard groups that are analyzed using methods and assumptions that can be demonstrated to be conservative or bounding, alternative numerical criteria may be more appropriate, and, if used, should be justified. Footnote: (3) Alternative criteria may be appropriate for specific applications. In particular, an alternative definition of “significant” may be appropriate for a given application where the results from PRA models for different hazard groups need to be combined. (For this and subsequent definitions, Part 2 and the alphanumeric index numbers refer to ASME/ANS RA-Sb–2013 which make the definition unique to this standard.)	ASME/ANS RA-Sb–2013
significant accident sequence	One of the set of accident sequences resulting from the analysis of a specific hazard group, defined at the functional or systematic level, that, when rank-ordered by decreasing frequency, sum to a specified percentage of the core damage frequency for that hazard group, or that individually contribute more than a specified percentage of core damage frequency. For this version of the Standard,[3] the summed percentage is 95% and the individual percentage is 1% of the applicable hazard group. (See Part 2 Requirements IE-B3, HR-H1, QU-B2, QU-C1, QU-D1, QU-D5, and QU-F2.) For hazard groups that are analyzed using methods and assumptions that can be demonstrated to be conservative or bounding, alternative numerical criteria may be more appropriate, and, if used, should be justified. Footnote: (3) Alternative criteria may be appropriate for specific applications. In particular, an alternative definition of “significant” may be appropriate for a given application where the results from PRA models for different hazard groups need to be combined. (For this and subsequent definitions, Part 2 and the alphanumeric index numbers refer to ASME/ANS RA-Sb–2013 which make the definition unique to this standard.)	ASME/ANS RA-Sb–2013
significant basic event	. A basic event that contributes significantly to the computed risks for a specific hazard group. For internal events,[3] this includes any basic event that has an FV importance greater than 0.005 or a RAW importance greater than 2. (See Part 2 Requirements DA-C13, DA-D1, DA-D3, DA-D5, DA-D8, HR-D2, and HR-G1.) For hazard groups that are analyzed using methods and assumptions that can be demonstrated to be conservative or bounding, alternative numerical criteria may be more appropriate, and, if used, should be justified. Footnote 3 applies. Note: For this and subsequent definitions, Part 2 and the alphanumeric index numbers refer to ASME/ANS RA-Sb–2013 which make the definition unique to this standard.	ASME/ANS RA-Sb–2013

Term	Description	Reference/Source
significant containment challenge	A containment challenge that results in a containment failure mode that is represented in a significant accident progression sequence.	ASME/ANS RA-Sb–2013
significant contributor	In the context of: (a) an internal events accident sequence/cutset, a significant basic event or an initiating event that contributes to a significant sequence (b) accident sequences/cutsets for hazard groups other than internal events, the following are also included: the hazard source, hazard intensity, and hazard damage scenario; for example, for fire PRA, fire ignition source, physical analysis unit, or fire scenario that contributes to a significant accident sequence would also be included (c) an accident progression sequence, a contributor that is an essential characteristic (e.g., containment failure mode, physical phenomena) of a significant accident progression sequence, and if not modeled would lead to the omission of the sequence.	ASME/ANS RA-Sb–2013
significant cutset	One of the set of cutsets resulting from the analysis of a specific hazard group that, when rank ordered by decreasing frequency, sum to a specified percentage of the core damage frequency (or large early release frequency) for that hazard group, or that individually contribute more than a specified percentage of core damage frequency (or large early release frequency). For this version of the Standard,[3] the summed percentage is 95% and the individual percentage is 1% of the applicable hazard group. Cutset significance may be measured relative to overall CDF (or LERF) or relative to an individual accident sequence CDF (or LERF) of the applicable hazard group. (See Part 2 Requirements QUA2, QU-B2.) For hazard groups that are analyzed using methods and assumptions that can be demonstrated to be conservative or bounding, alternative numerical criteria may be more appropriate, and, if used, should be justified.	ASME/ANS RA-Sb–2013
significant plant operating state (POS)	One of the set of accident classes specified by a given POS and hazard group that, when rank ordered by decreasing frequency, sum to a specified percentage of core damage frequency, or large early release frequency for that hazard group, or that individually contribute more than a specific percentage of core damage frequency or large early release frequency for that hazard group. For this version of the Standard, the summed percentage is 95% and the individual percentage is 1% of the applicable hazard group CDF or LERF. Note that the evaluation of significance in terms of CDF or LERF for each specific hazard group that is to be combined over all LPSD evolutions and all POSs is also implicitly required in the definitions for the following terms from Reference [4] but that are not repeated here; i.e., significant accident progression sequence, significant containment challenge, significant accident progression sequence, and significant cutset.	ANS/ASME-58.22-2015
significant radionuclide release category	One of the set of radionuclide release categories contributing to LRF/LERF or to the overall radionuclide release frequency that, when rank ordered by decreasing frequency, sum to 95% of the LRF/LERF or overall release frequency (excluding design basis leakage RCs); or individually contribute more than 1% of LRF/LERF or 5% of the overall release frequency.	ASME/ANS RA-S-1.2-2015
significant release category sequence	One of the set of accident sequences contributing to a radionuclide release category frequency resulting from the analysis of a specific hazard group that, when rank-ordered by decreasing frequency, sum to a specified percentage of the release category frequency, or that individually contribute more than a specified percentage of the release category frequency for that hazard group. For this version of the standard, the summed percentage is 95% and the individual percentage is 1% of the applicable hazard group. For hazard groups that are analyzed using methods and assumptions that can be demonstrated to be conservative or bounding, alternative numerical criteria may be more appropriate, and, if used, should be justified.	ASME/ANS RA-S-1.2-2015
	Note: May be unique to ASME/ANS RA-S-1.2-2015.	

Term	Description	Reference/Source
simple check valve	A valve which closes upon reverse fluid flow only. (Note: Includes testable check valves.)	ANS-56.2-1984
simple terrain	Any site where terrain effects on meteorological measurements are non-significant.	ANS-2.15-2013
simulated components	Hardware/software components that are integrated with the simulator process via simulator inputs/outputs that perform their functions parallel to, and either independently of or synchronized with, the simulation process.	ANS-3.5-2009
simulator data base	The "simulator data base" may be predicted data, plant design data, or it may include actual reference power plant performance data.	ANS-3.5
single failure	(1) A random failure (e.g., single component failure or operator error) and its consequential effects, in addition to an initiating occurrence, which result in the loss of capability of a component to perform its intended function. Fluid and electrical systems are considered to be designed against an assumed single failure if neither: (1) a single failure of any active component (assuming passive components function properly), nor (2) a single failure of any passive component (assuming active components function properly) results in a loss of the capability of the system to perform its nuclear safety function(s). For functional clarification, refer to ANS-58.9-1981 (R1987) (ANS-51.1/52.1) (ANS-56.6-1986) (ANS-59.2-1992) (ANS-58.16-2014) (ANS-30.3-2022 except for the last sentence) (ANS-51.10-2020 except the last sentence plus includes the below Note) Note: The term refers to a failure that is assumed to occur in addition to an initiating occurrence for the purposes of safety class system design analysis as described in (1) 10 CFR 50, “Licensing of Production and Utilization Facilities,” Appendix A, “General Design Criteria for Nuclear Power Plants” [2]; (2) IEEE 379-2014, “Application of the Single-Failure Criterion to Nuclear Power Generating Station Safety Systems” [3]; (3) ANSI/ANS-58.9-2002 (R2020), “Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems” [4].	
single failure	Non-preferred variation (1) A random failure and its consequential effects, in addition to an initiating occurrence, that result in the loss of capability of a component to perform its intended safety-related function (or functions). Fluid and electrical systems are considered to be designed against an assumed single failure if neither (a) a single failure of any active component (assuming passive components function properly) nor (b) a single failure of any passive component (assuming active components function properly) results in a loss of the capability of the system to perform its safety-related function.	ANS-58.14-2011
single failure	NOTE Variant form.	ANS-54.1-1989 ANS-51.10 ANS-51.1/52.1-1983 ANS-58.11-1993 ANS-51.7 ANS-56.7 ANS-56.10-1987 ANS-56.4-1983 ANS-58.3 ANS-58.9-1994 ANS-59.1 ANS-59.3 G
single failure criterion	A single failure means an occurrence that results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure. Fluid and electric systems are considered to be designed against an assumed single failure if neither (1) a single failure of any active component (assuming passive components function properly) nor (2) a single failure of a passive component (assuming active components	ANS-54.1-2020

Term	Description	Reference/Source
	function properly) results in a loss of the capability of the system to perform its safety functions.	
single failure criterion	Non-preferred term (1) The basis of design founded on the assumption of "...an occurrence which results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure. Fluid and electric systems are considered to be designed against an assumed single failure if neither: (1) a single failure of any active component (assuming passive components function properly) nor; (2) a single failure of a passive electrical component (assuming active components function properly), results in a loss of the capability of the system to perform its safety functions. ("10 CFR 50, "Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants.") Criteria on single failure as applied to safety related PWR plant systems, have been formulated and exist in American National Standard "Single Failure Criteria for PWR Fluid Systems," N658-1976/ANS-51.7. Criteria on a single failure as applied to Class IE electrical systems have been formulated and exist in IEEE Standard, "Application of the Single Failure Criterion To Nuclear Power Generating Station Class IE Systems," IEEE Std. 379-1977.	ANS-58.4-W90
single failure criterion	Variant form.	ANS-59.51
site	The property on which the nuclear power plant structures are to be built or are built.	ANS-2.11-1978
site	Non-preferred variation (1) The property on which the ISFSI is to be built or is built.	ANS-2.19-1989
site	Non-preferred variation (2) A defined area containing one or more facilities.	ANS-8.23-2007 ANS-8.23-2019
site boundary	The extent of site control for occupational exposure and the start of off-site accident exposure.	ANS-53.1-2011
site boundary	Non-preferred variation (1) The site boundary is that boundary, not necessarily having restrictive barriers, surrounding the operations boundary wherein the reactor administrator may directly initiate emergency activities. The area within the site boundary may be frequented by people unacquainted with the reactor operations. That line beyond which the land or property is not owned, leased, or otherwise controlled by the owner/operator or licensee. (ANS-15.11-2016)	ANS-15.16-2015
site-independent certified seismic design response spectra (CSDRS)	Site-independent seismic design response spectra that have been approved by the U.S. Nuclear Regulatory Commission (NRC) as the seismic design response spectra for a certified standard design nuclear power plant.	ANS-2.2-2016
site-specific ground motion response spectra	Site-specific ground motion response spectra characterized by horizontal and vertical response spectra determined as free-field motions on the ground surface or as free-field outcrop motions on the uppermost in situ competent material using performance-based procedures in accordance with Regulatory Guide 1.208.	ANS-2.2-2016
	Note: Definitions shall NOT contain requirements or permissions (Shall should and may should not be used in definitions. The definition words "using performance-based procedures in accordance with Regulatory Guide 1.208" make this a requirement. It belongs in the body of the standard.	
site response (amplification)	The amplification (i.e., increase or decrease) of earthquake ground motion by rock and soil near the earth's surface in the vicinity of the site of interest. Topographic effects, the effect of the water table, and basin edge wave-propagation effects are sometimes included under site response.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.27-2020 ANS-2.29-2020
site seismology	Refers to pertinent geologic and seismic data used in establishing the Safe Shutdown Earthquake (SSE) and Operating Basis Earthquake	ANS-2.10

Term	Description	Reference/Source
	(OBE) for the site. See 10 CFR 100, Appendix A, for definitions for SSE and OBE.	
skill of the craft	Actions that one can assume that trained staff would be able to readily perform without written procedures (e.g., simple tasks such as turning a switch or opening a manual valve as opposed to a series of sequential actions or set of actions that need to be coordinated).	ASME/ANS RA-S-1.1-2022
skill of the craft	Non-preferred variation (1) That level of skill expected of the personnel performing the associated function.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021
slow time	Function of the simulation software that decreases the rate of simulation for some or all computed values with respect to real time.	ANS-3.5-2018
slow time	Non-preferred variation (1) To decrease the rate of simulation for some or all computed values with respect to real time.	ANS-3.5-2009
slurry wastes	Liquid radioactive wastes of high insoluble solids content (i.e., greater than 0.1 percent solids by weight).	ANS-55.1-1992 ANS-55.6-1993 ANS-55.6-1999
slurry wastes	Non-preferred variation (1) Liquid radioactive waste of high insoluble-solids content (greater than 0.1% solids by weight). For example, bead resin is transferred with a high enough water-to-resin ratio and linear velocity to keep the resin suspended creating a slurry stream. (ANS-55.1-2021 but just 1st sentence.)	ANS-40.37-2009
snapshot	The instantaneous storage of existing conditions at any selected point in time. The stored condition then becomes a temporary initialization point and may be called up repeatedly.	ANS-3.5-1985
snapshot	Non-preferred variation (1) The storage of the existing simulated reference unit status at any point in time for later recall as an initial condition.	ANS-3.5-2009 ANS-3.5-2018
Sodar	A wind profiling system that employs sound to probe the atmosphere.	ANS-2.15-2013
software	Computer programs and data. (ANS-7-4.3.2) (not in 93 draft)	
software accuracy	The software attribute that provides a quantitative measure of the magnitude of error.	ANS-7-4.3.2
software consistency	The software attribute that provides uniform design and implementation techniques and notation.	ANS-7-4.3.2
software error tolerance	The software attribute that provides continuity of operation under postulated non-nominal conditions.	ANS-7-4.3.2
software modularity	The software attribute that provides a structure of highly independent computer program units that are discrete and identifiable with respect to compiling, combining with other units, and loading.	ANS-7-4.3.2
software quality assurance (SQA)	Assurance that standards, processes, and procedures used for the development of computer software are appropriate for the project, can produce software products of suitable quality for their intended purposes, and are correctly implemented. A key attribute of SQA is the objectivity of the SQA function with respect to the project.	ANS-10.8-2015
software quality assurance (SQA)	Non-preferred variation (1) All the planned and systematic activities implemented within a quality system that can be demonstrated to provide confidence that a software product or service will fulfill requirements for quality.	ANS-3.11-2015
software tools	(IEEE Std 610.12) A computer program used in the development testing, analysis or maintenance of a program or its documentation. Examples include comparator, cross reference generator, decompiler, driver, editor, flow charter, monitor, test case generator, timing analyzer. Note: In this standard, software tools include compilers.	ANS-7-4.3.2
software validation	A process that evaluates the functional characteristics of the software, and certifies the achievement of acceptable comparisons with objective evidence.	ANS-3.2-1993
software validation	Non-preferred variation (1) The process of evaluating a system or component during or at the end of the development process to determine whether it satisfies specified requirements. Testing may be part of the evaluation process. (2) The process of providing evidence that the	ANS-10.8-2015

Term	Description	Reference/Source
	system, software, or hardware and its associated products satisfy requirements allocated to them at the end of each life cycle activity, solve the right problem (e.g., correctly model physical laws), and satisfy the intended use and user needs. (3) The confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application are fulfilled.	
software verification	The process that confirms that the performance of the software is unchanged from that demonstrated by validation.	ANS-3.2-1993
software verification	Non-preferred variation (1) The process of providing objective evidence that the system, software, or hardware and its associated products conform to requirements (e.g., for correctness, completeness, consistency, and accuracy) for all activities (acquisition, acceptance testing, operation, maintenance, and retirement) and satisfy standards, practices, and conventions during life cycle processes. (2) The confirmation, through the provision of objective evidence, that specified requirements are fulfilled.	ANS-10.8-2015
soil temperature	The temperature that is measured at a given soil depth, typically at 2, 4, 8, and sometimes 20 and 40 in.	ANS-3.11-2015
soil water potential	A measure of the energy content of water in unsaturated materials, the spatial gradient of which causes soil water movement. The energy content is the sum of gravitational, pressure, osmotic, and other forces.	ANS-2.17-2010
solar radiation	The total electromagnetic radiation emitted by the sun.	ANS-3.11-2015
solidify	To immobilize by a method which converts the liquid, slurry or finely divided dry waste to a solid that is monolithic with a definite volume and shape and bounded by a stable surface of distinct outline on all sides (i.e., free-standing).	ANS-55.1-1992 ANS-55.1-2021
solidification agent	Material which, when mixed in prescribed proportions with liquid or slurry waste, can form a free-standing product with no free liquid.	ANS-55.1-1992
solid radioactive waste	Wastes in a physically solid form containing radioactive materials that result from the operation of a nuclear facility. Solid wastes can be radioactive due to neutron activation or surface contamination, or both.	ANS-40.37-2009
solo operation	Operation of the controls, including monitoring of instrumentation during steady station operations, with no other qualified person in the control room or other specified control areas, such as the refueling console.	ANS-3.4-1987
solo operation	Non-preferred variation (1) Operation of the controls, including monitoring of instrumentation, during reactor operation with no other person at the facility.	ANS-15.4-2016
soluble material	That material in solution that will pass through a 0.45-□m filter or that which is established to be soluble via specified chemical tests.	ANS-15-11-2016
soluble neutron absorber	Any neutron poison easily dispersed in liquid, solution, or suspension, used specifically to reduce the reactivity of a system and for which reactivity credit is taken in the nuclear criticality safety evaluation of the system.	ANS-8.14-2004
solution	Liquid containing dissolved fissile material or a suspension of that fissile material in the liquid. This includes aqueous (water based) solutions but excludes those where the hydrogen is replaced by either deuterium or tritium. It also includes organic liquids, provided that their hydrogen content fall within the range specified in the note in section 6 (see page 4).	ANS-8.5-1996
sorbed	Retention of a liquid or gas substance taken into and retained by another substance.	ANS-53.1-2011
source material	(1) Uranium or thorium or any combination of uranium and thorium in any physical or chemical form; or (2) Ores that contain, by weight, 0.05%, or more, of uranium, thorium, or any combination of uranium and thorium. Source material does not include special nuclear material.	ANS-15.11-2016
source of model uncertainty	The uncertainty associated with the variability of an input of interest where the input of interest can be derived or calculated via different modeling approaches, where the selected approach is not clearly more	ASME/ANS RA-S-1.1-2022

Term	Description	Reference/Source
	correct or does not represent a consensus of the technical community, and where the choice of modeling approach is known to have an impact on the PRA model (e.g., introduction of a new basic event, changes to basic event probabilities, change in success criterion, or introduction of a new initiating event).	
source of model uncertainty	Non-preferred variation (1) A source related to an issue in which there is no consensus approach or model and where the choice of approach or model is known to have an effect on the PRA model (e.g., introduction of a new basic event, changes to basic event probabilities, change in success criterion, introduction of a new initiating event). A source of model uncertainty is labeled “key” when it could impact the PRA results that are being used in a decision, and consequently, may influence the decision being made. Therefore, a key source of model uncertainty is identified in the context of an application. This impact would need to be significant enough that it changes the degree to which the risk acceptance criteria are met, and therefore, could potentially influence the decision. For example, for an application for a licensing base change using the acceptance criteria in RG 1.1.74, a source of model uncertainty or related assumption could be considered “key” if it results in uncertainty regarding whether the result lies in Region II or Region I, or if it results in uncertainty regarding whether the result becomes close to the region boundary or not. (ASME/ANS RA-S-1.4-2021 minus the example.)	ASME/ANS RA-Sb–2013
source term	The timing, quantity, physical and chemical form of, and thermal energy associated with, a release of radioactive material from a plant during an accident. The definition of the source term includes sufficient information to calculate the off-site radiological consequences of an accident.	ANS-53.1-2011
source term	Non-preferred variation (1) The amount of radioactive material available for release from confinement if a leak were to occur at the confinement boundary.	ANS-5.10-1998
source term	Non-preferred variation (2) the characteristics of a radionuclide release at a particular location, including the physical and chemical properties of released material, release magnitude, heat content (or energy) of the carrier fluid, location relative to local obstacles that would affect transport away from the release point and the temporal variations in these parameters (e.g., time of release duration, etc.). Note: ASME/ANS RA-S-1.4-2021 reads “Source term. see source term, mechanistic.”	ASME/ANS RA-S-1.2-2015
source term, mechanistic	It is preferred that (Source Term) and the associated definition be used in ANS standards. The characteristics of a radionuclide release at a particular location, including the physical and chemical properties of released material, release magnitude, heat content (or energy) of the carrier fluid, and location relative to local obstacles that would affect transport away from the release point and the temporal variations in these parameters (e.g., time of release duration, etc.) that are calculated using models and supporting scientific data that simulate the physical and chemical processes that describe the radionuclide inventories and the time-dependent radionuclide transport mechanisms that are necessary and sufficient to predict the source term.	ASME/ANS RA-S-1.4-2021
source term, mechanistic	Non-preferred variation (1) Calculated using validated models and supporting scientific data that simulate the physical and chemical processes that describe the radionuclide inventories and time-dependent radionuclide transport mechanisms that are necessary and sufficient to predict the source term.	ANS-53.1-2011
source term, mechanistic	Non-preferred variation (2) A source term that is calculated using models and supporting scientific data that simulate the physical and chemical processes that describe the radionuclide inventories and the time-dependent radionuclide transport mechanisms that are necessary and sufficient to predict the source term.	ASME/ANS RA-S-1.4-2013
spacer grid	Components which maintain the rods in a specific array in spent fuel assemblies and are axially located between the end fittings. The	ANS-57.10-1993

Term	Description	Reference/Source
	function of the spacer grids is to restrain the rod laterally from bowing and vibrating.	
spatial interval.	A portion of a plume (e.g., plume segment) with the same dispersion characteristics.	ASME/ANS RA-S-1.3-2017
spatially explicit data	Attributes that can be geo-referenced to a specific location.	ANS-2.17-2010
special event	An event that is part of the plant licensing basis but is not a DBE. Special events are identified in the plant licensing basis documentation and typically include anticipated transients without scram (ATWS), fire, and station blackout (SBO).	ANS-58.14-2011 ANS-30.3-2022
special event	Non-preferred variation (1) An event that is part of the plant design basis, but is not a design basis event. (Note: Special events are identified in the plant licensing basis documentation (LBD) and typically include anticipated transients without scram, fire, station blackout, shutdown without control rods, and shutdown from outside the main control room).	ANS-58.6-1992 ANS-58.14-1993
special nuclear material	(1) Plutonium, ^{233}U, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the NRC, pursuant to the provisions of Sec. 51 of the Act, determines to be special nuclear material but does not include source material; or (2) Any material artificially enriched by any of the foregoing but does not include source material.	ANS-15.11-2016
special test exception (STE)	A provision in the technical specifications which allows a temporary deviation from particular technical specifications for the performance of a necessary test which could not otherwise be performed.	ANS-58.4
special treatment	Requirements that go beyond industry-established requirements for equipment classified as commercial grade and provide additional confidence that the equipment is capable of meeting its functional requirements for conditions under which it is relied upon in the licensing basis or credited in the PRA. Special treatments specify critical characteristic inspections, tests, their analyses, and acceptance criteria that assure safety functions required.	ANS-30.3-2022
special treatment	Non preferred variation (1) “Treatment” for an SSC, as a general term, refers to activities, processes, and/or controls that are performed or used in the design, installation, maintenance, and operation of SSCs as a means of (1) specifying and procuring SSCs that satisfy performance requirements, (2) verifying over time that performance is maintained, (3) controlling activities that could impact performance, and (4) providing assessment and feedback of results to adjust activities as needed to meet desired outcomes. Treatment includes, but is not limited to, quality assurance, testing, inspection, condition monitoring, assessment, evaluation, and resolution of deviations. The distinction between “treatment” and “special treatment” is the degree of national regulator specification as to what must be implemented for particular SSCs or for particular conditions. Special treatment provisions are also an outcome of the Sec. 4 design process.	ANS-54.1-2020
special treatment	Non preferred variation (2) Requirements imposed on the design, material, manufacture, construction, inspection, testing, operation, and/or maintenance of an SSC that assure that the SSC will perform (e.g., with adequate reliability and capability) its safety functions for a specific set of licensing-basis events (LBEs). Special treatments specify critical characteristic inspections, tests, their analyses, and acceptance criteria that assure safety functions required. Also see SECY 99-256, Definition, Appendix I: (1) go beyond industry-established requirements for equipment classified as commercial grade and (2) provide additional confidence that the equipment is capable of meeting its functional requirements under design-basis conditions. These additional special treatment requirements include additional design considerations, qualification, change control, documentation, reporting, maintenance, testing, surveillance, and quality assurance requirements.	ANS-53.1-2011

Term	Description	Reference/Source
special uses of direct and scattered categories	Because of the limitations of some computer programs (e.g., some point kernel approaches) it may not be possible to compute direct and scattered gamma-ray components as defined as “special treatment”. If the user of this standard requires a special use of the terms direct and scattered, this special use shall be clearly identified, and definitions appropriate to the specific calculation procedure should be provided by the analyst.	ANS-6.6.1-2015
	Note: This is instructional and is not a definition. Move to a requirements section of the standard.	
specific administrative control (SAC)	For the purposes of this standard, an SAC is an administrative control that has a safety function that would be categorized as SC-2 or SC-3 if the function were provided by an SSC.	ANS-58.16-2014
specific gravity	For purposes of this standard, specific gravity is considered numerically equal to density.	ANS-6.4.2-1985
specimen	The solid body that is immersed into the leachant during the leach test.	ANS-16.1-2019
spectral acceleration	Given as a function of period or frequency and damping ratio (typically 5%), spectral acceleration is equal to the peak relative displacement of a linear oscillator of frequency, f, attached to the ground, times the quantity $(2\pi f)^2$. It is expressed in gravitational acceleration (g) or centimeters per second squared (cm/s^2).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
spectral acceleration	Non-preferred variation (1). Pseudo-absolute response spectral acceleration, given as a function of oscillator period or frequency and damping ratio (typically 5%). It is equal to the peak relative displacement of a one-degree-of-freedom linear oscillator of $(2\pi f)^2$. It is expressed in units of gravity (g) or centimeters per second-squared (cm/s^2).	ANS-2.27-2020 ANS-2.29-2020
spectral acceleration	Non-preferred variation (2) Pseudo-absolute response spectral acceleration, given as a function of period or frequency and damping ratio (typically 5%). It is equal to the peak relative displacement of a one degree of freedom linear oscillator of frequency f attached to the ground, times the quantity (2πf)2. It is expressed in units of gravity (g) or m/second2.	ANS-2.29-2008
spectral analysis of surface waves (SASW)	An in situ seismic method for determining shear-wave velocity profiles. It uses the dispersive characteristics of surface waves to determine the variation of the shear-wave velocity (i.e., shear modulus) of layered systems at depth.	ANS-2.27-2008 ANS-2.27-2020
spent fuel assembly	A single fabricated unit of fuel rods and support structures discharged from a light water power reactor, still in the same mechanical configuration in which it was irradiated, and meets the criteria for post-irradiation decay of this standard. It contains recoverable uranium, plutonium and fission products.	ANS-57.7-1992 ANS-57.9-1992 ANS-2.19-1989
spent fuel assembly	Non-preferred variation (1) Variant form.	ANS-57.10-1993
split fraction	A unitless quantity that represents the conditional (on preceding events) probability of choosing one direction rather than the other through a branch point of an event tree.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
spray subsystem	That portion of the containment spray system which is specifically designed to deliver water to the post-accident containment atmosphere.	ANS-56.5-1987
spray thermal effectiveness	The ratio of heat transferred from the containment atmosphere to the spray, to that heat transfer corresponding to thermal equilibrium: $E_t = \frac{h_{sf} - h_{si}}{h_{ca} - h_{si}}$ where: h_{sf} = spray enthalpy after being heated by the containment atmosphere. h_{si} = enthalpy of the spray water at thermal equilibrium with the containment atmosphere.	ANS-56.5

Term	Description	Reference/Source
split fraction	A unitless quantity that represents the conditional (on preceding events) probability of choosing one direction rather than the other through a branch point of an event tree.	ASME/ANS RA-S-1.4-2021
spillage	Spillage to the primary containment sump following a LOCA is of two types: (1) Liquid overflow (not entrained by discharging steam) out the break which occurs when the RCS is refilled above the break elevation; and, (2) Direct spillage from the ECCS line if the break is postulated at the ECCS nozzle.	ANS-56.4-1983
spray thermal effectiveness	The ratio of heat transferred from the containment atmosphere to the spray, to that heat transfer corresponding to thermal equilibrium $e_t = h_{sf} - h_{si}/h_{ca} - h_{si}$ where: h_{sf} = spray enthalpy after being heated by the containment atmosphere. h_{si} = spray water enthalpy nozzles. h_{ca} = enthalpy of the spray water at thermal equilibrium with the containment atmosphere.	ANS-56.5-87
spurious operation	The undesired operation of equipment resulting from a fire that could affect the capability to achieve and maintain safe shutdown (RG 1.189).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
SSC important to safety	The term “important to safety” is meant to encompass those SSCs identified by the utility or the regulator the failure of which during a flood could create a potentially risk-significant outcome.	ANS-2.8-2019
SSCs, safety-related	It is preferred that (safety-related) and the associated definition be used in ANS standards.	
SSCs, safety-related. systems, structures and components (SSCs)	Selected by the designer that have sufficient reliability and capability to fulfill their safety functions and thereby ensure that frequencies and consequences of design-basis events (DBEs) fall within the top-level safety criteria (TLSC) and that the consequences of the deterministically selected design-basis accidents (DBAs) meet regulatory dose limits in the deterministic safety analysis.	ANS-53.1-2011
stability	The lack of sudden incapacitation.	ANS-3.4-1994
stability	Non-preferred variation (1) Refers to a waste form that meets the requirements established for structural stability in order to meet 10 CFR 61 requirements. A stable waste form will generally maintain its physical dimensions and its form under the expected disposal conditions. NRC Waste Form Technical Position provides guidance on acceptable methods to demonstrate waste stability.	ANS-55.1-1992 ANS-55.1-2021
stability	Non-preferred variation (2) A measure of the degree of resistance of a layer of air to vertical motion. It is used to define the amount of turbulent mixing in the atmosphere, which directly influences atmospheric dispersion.	ANS-2.15-2013
stability array method	United States Environmental Protection Agency (EPA) technique for typing atmospheric turbulence into discrete stability classes.	ASME/ANS RA-S-1.3-2017
stability class	A discrete classification of atmospheric stability, or the amount of turbulent mixing in the atmosphere and its effect on effluent dispersion.	ANS-3.11-2015
stacking of uncertainties	Addition of multiple uncertainties in one analysis: Depending on stacking assumption, the final analysis may be either extremely overly conservative, moderately conservative, or (potentially) nonconservative.	ANS-53.1-2011
stagnation	An atmospheric condition that suppresses the dispersion of airborne material.	ANS-2.15-2013
standard conditions	Standard atmospheric conditions referred to by this standard will be these conditions: pressure 14.6959 psia (101.325 kPa), temperature 68°F (527.67° R 20°C, 273.15 K), dry air density 0.07517 lbm/ft^3 (1.2041 kg/m^3).	ANS-56.8-2002
standard conditions	Standard atmospheric conditions referred to by this standard are pressure 14.6959 psia (101.325 kPa); temperature 68°F, 527.67 R (20°C, 293.15 K); and dry air density 0.07517 lbm/ft3 (1.2041 kg/m3).	ANS-56.8-2020

Term	Description	Reference/Source
standard cubic foot (SCF)	An amount of gas occupying one cubic foot at a temperature of 60°F and a pressure of one atmosphere (absolute).	ANS-55.4-1999
standard cubic foot (SCF)	Non-preferred variation (1) A volume of gas occupying one cubic foot at a temperature of 60° F and a pressure of one atmosphere (absolute).	ANS-55.1-1992 ANS-55.4-1993
standard cubic foot (SCF)	Non-preferred variation (2) One cubic foot of gas at standard conditions of 14.6959 psia and 32°F.	ANS-56.1-D85
standard cubic meter	One cubic meter of a gas at standard conditions of 101325 N/M^2 and 273.15°K.	ANS-56.1-D85
standard of care	The minimum accepted level of emergency care to be provided as may be set forth by law, administrative orders, guidelines published by emergency care organizations and societies, local protocols and practice, and what has been accepted as precedence. Each state or locality has its own standard of care.	ANS-3.1.7-1995
standard data set	A standard data (evaluated, processed continuous, or processed averaged) set is one that meets the specifications set forth in this standard.	ANS-19.1-2019
standard design	A design that is sufficiently detailed and complete to support certification or approval in accordance with 10 CFR 52 [9] and that is usable for a multiple number of units or at a multiple number of sites without reopening or repeating the review.	ANS-2.2-2016
standard design certification or design certification	An approved final standard design for a nuclear power facility. This design may be referred to as a certified standard design.	ANS-2.2-2016
	Note: Should standardize on the term “design certification” rather than promote two terms.	
standard deviation	The square root of the variance of a variable. For this application the variance is a measure of the variation of the observations within a measurement set. The standard deviation is often estimated using a set of measurements of the variable. The standard deviation has the same units as the measured quantity and, therefore, is particularly convenient when describing the variability of the measured quantity. This parameter may also be expressed as a relative standard deviation (i.e., as a percentage of the measured quantity).	ANS-41.5-2012
standard project flood (SPF)	The hydrograph representing runoff from the standard project storm (or snow melt, or both), as specified by the U.S. Army Corps of Engineers.	ANS-2.12-1978
standard project hurricane (SPH) or standard project windstorm (SPWS)	A hypothetical hurricane or windstorm that is intended to represent the most severe combination of hurricane or windstorm parameters that is reasonably characteristic of a specified geographical region, excluding extremely rare combinations.	ANS-2.13-1979
standard reference data	Reference data that have been reviewed by a standards development organization and found to meet minimum requirements set forth by the standards development organization for specified purposes.	ANS-6.1.2-2013
standardized cumulative absolute velocity (standardized CAV)	It is preferred that the term “cumulative absolute velocity (CAV).” and the associated definition be used in ANS standards.	
standardized cumulative absolute velocity (standardized CAV)	Non-preferred term. See “cumulative absolute velocity (CAV).”	ANS-2.2-2016
standby	The condition in which the EDG is not operating but is capable of automatic start and subsequent uninterrupted operation.	ANS-59.52-1998
standby air compressor	A backup or emergency air compressor which serves safety related air operated devices.	ANS-59.3
standby component or system	A component or system that can perform the function of a similar operating component or system.	ANS-56.7
standby system	A system that is not normally operating but is intended to be ready to operate upon demand.	ASME/ANS RA-S-1.4-2013 ASME/ANS RA-S-1.4-2021

Term	Description	Reference/Source
standby diesel generator	A diesel generator unit designed in accordance with IEEE-387-1972 [1] and installed to provide a standby power supply in accordance with Criteria for class IE Power Systems for Nuclear Power Generating Stations IEEE-308-1974.	ANS-59.51
standby power supply	The power supply that is selected to furnish electric energy when the preferred power supply is not available. (From IEEE Std. 308/1974).	ANS-4.1
start of pre-operational testing	That time when construction of the first safety related system is complete for performance/ integrated system testing (Note: not component testing).	ANS-3.1-1987
starting threshold	The minimum wind speed above which the measuring instrument is performing within its minimum specification.	ANS-3.11-2015
startup	A POS during which the reactor power level is increased from low power to full power following a plant outage.	ANS/ASME-58.22-2015 ASME/ANS RA-S-1.4-2021
startup mode	A plant mode defined by Technical Specifications (Mode 2) during which the power level is less than 5% with the reactor critical for PWRs or the position (e.g., startup) of the Mode Selector Switch for BWRs.	ANS/ASME-58.22-2015
startup testing	Test activities that are to be performed during and following fuel loading. These activities include precritical tests, initial criticality, low power tests, and power- ascension tests that confirm the design bases and demonstrate, to the extent practical, that the plant will operate in concordance with design and is capable of responding as designed to anticipated transients and postulated accidents.	ANS-3.1-2014
state-of-knowledge correlation	The correlation that arises between sample values when performing uncertainty analysis for cutsets consisting of basic events using a sampling approach (such as the Monte Carlo method); when taken into account, this results, for each sample, in the same value being used for all basic event probabilities to which the same data applies).	ASME/ANS RA-Sb–2013
state of health (SOH)	In-service testing provisions performed during normal plant operation for SMS status monitoring and post event functional testing.	ANS-2.2-2016
state of practice	Those practices that are widely accepted and implemented throughout the nuclear industry, that have been shown to be technically acceptable in documented analyses or engineering assessments, and that have been shown to be acceptable in the context of the intended application.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
state-of-knowledge correlation	The correlation that arises between sample values when performing uncertainty analysis for cutsets consisting of basic events by using a sampling approach (e.g., the Monte Carlo method). When the state of knowledge correlation is included, it results, for each sample, in the same value being used for all basic event probabilities to which the same data apply.	ASME/ANS RA-S-1.1-2022
state-of-knowledge correlation	Non-preferred variation (1) The correlation that arises between sample values when performing uncertainty analysis for cutsets consisting of basic events using a sampling approach (such as the Monte Carlo method); when included, this results, for each sample, in the same value being used for all basic event probabilities to which the same data applies.	ASME/ANS RA-S-1.4-2021
state plane projection	A group of planar coordinate systems based on the division of the United States into more than 130 zones to minimize distortion caused by map projections. Each zone has its own map projection and parameters and uses NAD 27, NAD 83, or WGS 84 horizontal datum. The Lambert conformal conic projection is used for states that extend mostly east–west, while transverse Mercator is used for those that extend mostly north–south. The oblique Mercator projection is used for the panhandle of Alaska.	ANS-2.6-2018
state-point measurement	For the purposes of this standard, a measurement in which data acquisition is completed before there is a significant change in the value of any operating parameter is termed a state-point measurement.	ANS-19.4-2017
	Note: ANS-19.4 and ANS-19.11 should standardize on either “statepoint”, “state point” or “state-point”.	

Term	Description	Reference/Source
statepoint	For the purposes of this standard, a statepoint is a condition in which data acquisition is completed before there is a significant change in the value of any operating parameter.	ANS-19.11-2017
	Note: ANS-19.4 and ANS-19.11 should standardize on either “statepoint”, “state point” or “state-point”.	
Stationarity	Stochastic process for which the joint probability distribution does not change when shifted in time.	ANS-2.21-2022
station blackout	A loss of all electrical power supplies except nuclear safety-related station batteries.	ANS-54.1-1989
station blackout	Non-preferred variation (1) Complete loss of alternating current (AC) electric power to the essential and nonessential switchgear buses in a nuclear power plant.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
station blackout occurrence	It is preferred that (station blackout) and the associated definition be used in ANS standards.	
station blackout occurrence	Complete loss of AC power to the essential and non-essential station switchgear busses for some period of time. The sources of AC power which are not available include the unit generator, offsite power and the onsite emergency AC power sources (i.e., diesel generators) normally capable of feeding the essential station switchgear busses). This occurrence does not include the independent loss of various special purpose diesel generators, such as those associated with diesel driven fire protection equipment or BWR HPCS systems, unless their failure is caused by the station blackout occurrence.	ANS-58.12-1985
station (nuclear)	A facility wherein electric energy is produced from nuclear energy by means of a suitable apparatus. The station may consist of one or more units located on a contiguous site, which may or may not share common auxiliaries.	ANS-51.1-W1998 ANS-52.1-W1998 ANS-59.1-W1996
statistical model	A model in which a modeling parameter or behavior is analyzed as a random variable with specified statistical characteristics.	ASME/ANS RA-S-1.1-2022
statistical model	Non-preferred variation (1) A model in which a modeling parameter or behavior is treated as a random variable with specified statistical characteristics).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021
storage array (array)	A regular arrangement of storage cells.	ANS-8.7-1975 ANS-8.7-2022
storage capacity	The minimum required quantity of lube oil for engine operation.	ANS-59.52-1993
storage cell (cell)	A volume having defined boundaries within which a storage unit is positioned.	ANS-8.7-1975 ANS-8.7-2022
storage coefficient	The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head.	ANS-2.9-1989 ANS-2.17-1989
storage concepts	The following definitions are based on the major characteristics of each concept, namely the predominant heat transfer path, shielding, portability, location with respect to grade, degree of independence of individual storage cells, and the storage structure: (1) cask (silo). Above-ground, portable, or nonportable structures containing one or more individual storage cavities. Each cavity could contain one or more fuel units. Shielding is provided primarily by structural material such as steel cast iron, or concrete. Heat removal is by conduction through the structural shielding material to the atmosphere. (2) drywell (caisson). Stationary, below ground, lined, individual storage cavities containing one or more fuel units. Shielding is provided by the surrounding earth and a shield plug. Heat removal is by conduction through the earth to the atmosphere. (3) Vault (canyon). Above-or below-ground, reinforced concrete structures containing an array of storage cavities. Each cavity could contain one or more fuel units. Shielding is provided by the structure surrounding the stored fuel units. Heat rejection to the atmosphere is either direct or via a secondary cooling system.	ANS-57.9-1992

Term	Description	Reference/Source
storage unit (unit)	A mass of fissile material considered as an entity. The material may be of any shape, and a unit may consist of separate pieces.	ANS-8.7-1975 ANS-8.7-2022
storm surge	A rise above normal water level on the lake, open sea or coast, due to the action of wind and atmospheric pressure.	ANS-2.12 ANS-2.19-1989
straight-line steady-state model	Gaussian model in which the release amount, wind speed, wind direction and turbulence parameters are assumed to not vary with time.	ASME/ANS RA-S-1.3-2017
straight winds	Wind hazards that do not have a powerful rotational wind component. For example, straight winds include thunderstorm and extratropical cyclone winds.	ASME/ANS RA-S-1.2-2022
stratigraphy	The branch of geology that deals with the definition and description of major and minor natural divisions of soil and rock, and the interpretation of their significance in geologic history; specifically, the form arrangement, geographic distribution, chronologic succession, classification, and correlation and mutual relationships.	ANS-2.11-1978 ANS-2.19-1989
stray rod	A rod in any one of the following conditions during the rod consolidation process: (a) partly inserted into a canister; or, (b) in a position not normal for the process.	ANS-57.10-1993
streaming	The penetration of radiation through gaps, voids, or ducts existing in the shield structure.	ANS-6.4-1985
strong ground motion	Usually refers to the earthquake motion that humans can feel, typically exceeding 1% to 2% g. This level of shaking usually occurs at distances relatively close to the earthquake source for moderate or larger earthquakes. Strong ground motion is recorded by accelerographs. Current strong-motion accelerographs can record acceleration up to 4 g. Recorded strong-motion data are used in engineering applications for comparison and evaluation with the design basis of structures. Recordings from these instruments are also typically used in the development of ground motion prediction models for peak acceleration and spectral response values.	ANS-2.10-2017
structural integrity test (SIT)	A pneumatic test that demonstrates the capability of a primary containment to withstand a specified internal design pressure load.	ANS-56.8-2002 ANS-56.8-2020
structural integrity test (SIT)	Variant form.	ANS-56.2-1984
structural seismic model.	Mathematical representation of all Seismic Category I structures and interconnected non-seismic category structures used to predict the dynamic response.	ANS-2.10
structure, system, or component (SSC)	It is preferred that the separate definitions of (structure, system and component) and the associated definition be used in ANS standards. SSC should be defined in the acronym list.	
structure, system, or component (SSC)	Non-preferred variation (1) A general term encompassing all the elements (items) of a facility. A structure is an element, or a collection of elements, to provide support or enclosure, such as a building, free-standing tanks, basins, dikes, or stacks. A system is a collection of components assembled to perform a function, such as piping; cable trays; conduits; or heating, ventilation, and air conditioning (HVAC). A component is an item of mechanical or electrical equipment, such as a pump, valve, or relay, or an element of a larger array, such as a length of pipe, elbow, or reducer.	ANS-2.8-2019 ANS-2.27-2020 ANS-2.29-2020
structure, system, or component (SSC)	Non-preferred variation (2) A structure is an element, or a collection of elements, to provide support or enclosure, such as a building, free-standing tanks, basins, dikes, or stacks. A system is a collection of components assembled to perform a function, such as piping, cable trays, conduits, or Heating Ventilation and Air Conditioning (HVAC). A component is an item of mechanical or electrical equipment, such as a pump, valve, or relay, or an element of a larger array, such as a length of pipe, elbow, or reducer.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.30-2015
structured observation	Observation activity included as part of training program requirements.	ANS-3.1-2014

Term	Description	Reference/Source
structures	Civil constructions (e.g., buildings), portions of civil constructions (e.g., doors, hatches, or walls), supports for items, or structural components such as fuel racks and building sump debris screens. (These might have system-level or component-level plant-unique identification codes).	ANS-58.14-2011
structures	Non-preferred variation (1) Civil constructions (e.g., buildings), portions of civil constructions (e.g., doors, hatches, or walls), or supports for items. (These might have system-level or component-level plant-unique identification codes.)	ANS-58.16-2014
stuck rod	Any rod which cannot be removed from the spent fuel assembly during the normal operation of rod removal.	ANS-57.19-1993
study area	Area for which a population estimate or forecast is being made. It can be a political boundary; a defined space, such as an emergency planning zone; a census geographic unit; or any other boundary.	ANS-2.6-2018
sub-compartment	A fully or partially enclosed sub-division of primary or secondary reactor containment or other building structures. A sub-compartment may consist of one or more node volumes.	ANS-56.10-1987
sub-critical flow	(See critical flow.)	ANS-56.4-1983 ANS-56.10 ANS-56.10-1987
sub-critical limit (limit)	The limiting value assigned to a controlled parameter that results in a sub-critical system under specified conditions. The controlled parameter limit allows for uncertainties in the calculations and experimental data used in its derivation but not for contingencies (e.g., double batching or failure of analytical techniques to yield accurate values).	ANS-8.1-2014
sub-critical limit (limit)	Non-preferred variation (1) Variants.	ANS-8.12-1987 ANS-8.15-1981
submersion nuclides	Those gaseous nuclides and other airborne nuclides whose DAC is based on the external dose rate resulting from submersion in an atmosphere of that nuclide.	ANS-15.11-2016
subject matter expert	An individual who possesses the appropriate education, license, experience, or unique qualifications to perform assessments and make recommendations in a particular subject area.	ANS-3.5-2009 ANS-3.5-2018
subsurface	All rock, soil, and fill material below the ground surface.	ANS-2.17-2010
subsurface water	Water contained in pores and voids within geologic media below the ground surface.	ANS-2.17-2010
subvolume	The fraction of total containment volume associated with each sensor as calculated in Sec. 5.3. Where separate sums are kept for temperature, humidity, and pressure sensors, each sum's total is equal to 1.	ANS-56.8-2020
success criteria	Criteria for establishing the safe and stable plant parameters and minimum levels of performance per component during a specific mission time to ensure that a reactor-specific safety function is satisfied.	ANS-53.1-2011
success criteria	Non-preferred variation (1) Criteria for establishing the minimum number or combinations of systems or components required to operate, or minimum levels of performance per component during a specific period of time, to ensure that the safety functions are satisfied).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
success path	A set of systems and associated components that can be used to bring the plant to a stable hot or cold condition and maintain this condition for at least 72 hr.	ASME/ANS RA-Sb–2013
sudden incapacitation	Abrupt onset of loss of control of physical or mental function (or functions) that results in a loss or impairment of consciousness, control, or performance.	ANS-3.4-2013
sump	A structure in the containment provided to collect water after an accident, for the recirculation mode. The sump may also be a pressure suppression pool (BWR).	ANS-56.5-1987
sump or sump tank	A collection point to which all lubricating oil drains and from which the lubricating oil pumps take suction.	ANS-59.52-1998
sump or sump tank	Non-preferred variation (1) The sump refers to the lube oil collection point in a wet sump type engine. The sump tank refers to the lube oil	ANS-59.52-1993

Term	Description	Reference/Source
	collection point in a dry sump type engine. Either provides a collection point to which all lube oil drains and from where the lube oil pumps take suction.	
supervision	Direction of personnel activities or monitoring of plant functions by an individual responsible and accountable for the activities he/she directs or monitors.	ANS-3.2-1993
supporting systems	Systems and equipment not a part of, but required by the safety-related control air system for the performance of its safety functions shall have Safety Class 3 components.	ANS-59.3
supporting systems	Non-preferred variation (1) A system that provides a support function (e.g., electric power, control power, or cooling) for one or more other systems. (ASME/ANS RA-S-1.4-2021 has the same definition but for “support system.”)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
supplemental personnel	Persons who conduct work or provide services on- or off-site who are not full-time station personnel. These include any of the following: contractors and vendors who perform work on-site; contractors and vendors who perform work off-site, such as engineering modifications or analyses, component fabrication, equipment refurbishment, and equipment testing; personnel from another location within the owner organization or from an industry alliance who perform work on-site, such as shared resources during outages; owner organization personnel who may only work part time at the station, such as switchyard personnel, refueling personnel, and roving valve or turbine teams; owner organization personnel from another location who perform work off-site, such as corporate engineering support.	ANS-3.1-2014
supplemented grade (S)	Classification applied to an item that does not perform a safety-related function, but to which a significant licensing requirement or commitment applies.	ANS-58.14-1993 ANS-30.3-2022
supplemented grade (S)	Variant form.	ANS-59.2-D92
suppression pool	In a water pressure suppression (WPS) primary containment, a pool of water into which steam resulting from a LOCA is directed and condensed to reduce the pressure in the primary containment.	ANS-5.4-1983
surface contamination	Radioactive material on the surface of solid objects.	ANS-5.10-1998
surface Design Dose Equivalent rate	The design dose equivalent rate at a location directly on the surface of the component or shield. For components covered with insulation or other materials, the "surface dose equivalent rate" is at a location directly on the covering surrounding the component. This definition is for design purposes and may differ from measured contact dose equivalent rates.	ANS-5.6.1-D90
surface design dose rate	A design dose rate at a location directly on the surface of the component or shield. For components covered with insulation or other materials, the "surface dose rate" is at a location directly on the covering surrounding the component. This definition is for design purposes and can differ from measured contact dose rates.	ANS-5.6.1-D90
surface vehicle explosion	Accidental explosion of land or water vehicles, including ship, barge, truck and railroad car.	ANS-2.12-1978 ANS-2.19-1989
surface vehicle impact	Accidental impact of a surface vehicle with or near a safety-related plant structure, system, or component (SSC) caused by an out-of-control vehicle due to operator error, vehicle failure, or due to natural hazards such as a flood.	ANS-2.12-1978
surface contamination	Radioactive material on the surface of solid objects.	ANS-5.10-1998
surface vehicle impact	Accidental impact of a surface vehicle with or near an ISFSI.	2.19-1989
surrogate meteorological data	Datasets assembled from on-site and from representative measurement sites having similar physical characteristics such that a complete and continuous record is established.	ANS-2.21-2022
surveillance	The act of monitoring or observing to verify whether an item or activity conforms to specified requirements.	ANS-3.2-1993
surveillance	Variant form.	ANS-4.1

Term	Description	Reference/Source
surveillance	Non preferred variation (1) Program of regular observance and tests to periodically assess the material condition of an SSC.	ANS-3.14-2021
surveillance testing	Periodic testing to verify that structures, systems and components (SSCs) continue to function or are in a state of readiness to perform their functions.	ANS-3.2-1993
survey	An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.	ANS-15.11-2016
survival speed	The maximum wind speed at which the sensor can operate properly.	ANS-3.11-2015
suspension mechanism	The type and level of force/energy input defined and utilized for analysis of a given postulated accident for the process or operation performed.	ANS-5.10-1998
symptomatic data	Refers to data on variables which are well enough correlated with population size so that a change in value of the variable can reasonably be taken to mean a change in size for the population generating the value.	ANS-2.6-1981
synthetic meteorological data	Stochastically derived datasets, i.e., a product of synthetic weather generator software.	ANS-2.21-2022
system	A group of physically interconnected components that together perform a specified design function. (Systems are normally designated by a system-level plant unique identification code). (ANS-30.3-2022 except the parenthetical at the end)	ANS-58.14-93 ANS-3.11-00 ANS-58.14-2011 ANS-58.16-2014
system	Non-preferred variation (1) In the context of this standard, the system consists of (a) all facilities from which a release to the groundwater might occur, (b) all facility policies or procedures that might impact or cause a release, (c) the man-machine interface of a facility that might cause or contribute to a release, (d) all engineered barriers and leak detection systems, (e) the local and regional hydrogeology, and (f) all monitoring well networks and procedures for gathering and analyzing soil and groundwater samples.	ANS-2.17-2010
system accuracy	The extent to which results of a calculation or the readings of an instrument approach the true values of the calculated or measured quantities. System accuracy encompasses all components of the system (i.e., sensor, data processing equipment, computer, calibrations, data displays, etc.). System accuracy is compared with applicable requirements to evaluate the adequacy of the monitoring program.	ANS-3.11-2015
system and equipment wastes	Liquid from radioactive components, equipment, or systems, and from component cooling systems.	ANS-55.6-1993
system calibration	The process of validating the output of an observing system against known reference observations or standards.	ANS-3.11-2015
system failure	System-level failure involving at least one (but probably more) system functional failures.	ANS-53.1-2011
system failure	Non-preferred variation (1) Loss of the ability of a system to perform a modeled function.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
system important to safety	A system whose function is required to meet the general criteria of 4.1; for example, this includes those systems required to shut down the reactor (and maintain shutdown), cool the core, limit damage to the core, cool another safety system, or after an accident cool the containment, control combustible concentrations in the containment, or that contains, controls or reduces radioactivity released in an accident. Only those portions of a system are included that are designed to accomplish one of the above functions or whose failure could prevent accomplishing one of the above functions.	ANS-58.3
	Note: In the future it is suggested that the term important to safety be defined and used in ANS standards rather than this term.	
system, support	An auxiliary or supporting system providing services or power.	ANS-53.1-2011

Term	Description	Reference/Source
system testing	(IEEE Std 610.12). Testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.	ANS-7-4.3.2
systems approach	An analytical and interdisciplinary method used to evaluate the fire hazards and select fire prevention and protection systems in a manner acceptable to management and independent reviewers. Additional definitions or discussions of terms commonly used in the fire protection industry may be found in the National Fire Protection Association (NFPA) "Fire Protection Handbook," Fourteenth edition.	ANS-59.4-1979 (W1983)
systems, structures, and components (SSCs)	It is preferred that the separate definitions of (structure, system and component) and the associated definition be used in ANS standards	
systems, structures, and components (SSCs)	Generic term for those components, structures, and integrated systems that comprise the designed plant.	ANS-53.1-2011
systems, structures, and components (SSCs), non-safety-related (NSR) (NSR SSCs)	SSCs whose reliabilities and capabilities are not required or credited for the frequency and consequences of any licensing basis event (LBE) to fall within the top-level safety criteria (TLSC).	ANS-53.1-2011
systems, structures, and components (SSCs), non-safety-related with special treatment (NSRWST) (NSRWST (SSCs)	SSCs selected by the designer to provide defense-in-depth (DID) for safety functions.	ANS-53.1-2011
SSC, active	An SSC whose function depends on mechanical movement or an external input such as actuation signal, or supply of motive power. Example active SSCs include pumps, gas blowers, control rods, and relief valves.	ASME/ANS RA-S-1.4-2013
SSC, passive	An SSC whose function does not depend on mechanical movement or an external input such as actuation signal, or supply of motive power. Example passive SSCs include the reactor pressure vessel, reactor coolant pressure boundary, operation of rupture discs and mechanical safety valves, dropping of control rods by gravity, when the SSC functions are accomplished without the need for any active SSCs.	ASME/ANS RA-S-1.4-2013
systematic approach to training	An accepted process used to develop and maintain performance-based, accredited training programs that meet identified job requirements for the reference unit. The process includes the elements of analysis, design, development, implementation, evaluation, and feedback.	ANS-3.5-2009

T U V W X Y Z

Term	Description	Reference/Source
take credit	Rely upon SSCs in safety analysis design-basis accidents (DBAs) (limiting conservative analysis), Chapter 15 of the NRC Safety Analysis Report (SAR) (NUREG-0800 [4]). The analysis to demonstrate safety criteria relies on, takes into account, uses, and bases analysis on the "credited" SSC performance. (The SSCs relied on are then subject to special treatment commensurate with their safety significance. Balance-of-plant SSCs are not credited in Chapter 15 for positive responses. Balance-of-plant SSCs are included or "credited" in other analyses of realistic plant performance, such as Chapter 19, design chapters, etc., of NUREG-0800.)	ANS-53.1-2011
tanks	All tanks used to support diesel generator operation; where used without modifiers, it includes day, integral, and supply tanks. (1) day tank. A fuel oil tank or tanks which provide fuel directly to its associated diesel generator or integral tank. (2) integral tank. A fuel oil tank furnished by the diesel generator manufacturer and mounted on the diesel engine. (3) supply tank. A separate fuel oil tank for storage of fuel, which supplies a day tank or integral tank.	ANS-59.51-1997
target	May refer to a high wind, a fire damage target, and/ or an ignition target. A fire damage target is any item whose function can be adversely affected by the modeled fire. Typically, a fire damage target is a cable or equipment item that belongs to the fire PRA cable or equipment list and that is included in event trees and fault trees for fire risk estimation. An ignition target would be any flammable or combustible material to which fire might spread.	ASME/ANS RA-S-1.1-2022
target	Non-preferred variation (1) May refer to a high wind, fire damage target and/or to an ignition target. A fire damage target is any item whose function can be adversely affected by the modeled fire. Typically, a fire damage target is a cable or equipment item that belongs to the Internal Fire PRA cable or equipment list and that is included in event trees and fault trees for fire risk estimation. An ignition target would be any flammable or combustible material to which fire might spread.	ASME/ANS RA-S-1.4-2021
target	Non-preferred variation (2) May refer to a fire damage target and/or to an ignition target. A fire damage target is any item whose function can be adversely affected by the modeled fire. Typically, a fire damage target is a cable or equipment item that belongs to the fire PRA cable or equipment list and that is included in event trees and fault trees for fire risk estimation. An ignition target would be any flammable or combustible material to which fire might spread (NUREG/CR-6850–EPRI TR-1011989 [1-5]).	ASME/ANS RA-Sa–2009
target performance goal	Target mean annual frequency of an SSC exceeding its specified Limit State. Target performance goals of 1×10^{-4}/year, 4×10^{-5}/year, and 1×10^{-5}/year are used in ASCE/SEI 43-05 [2] for SSCs defined at SDC-3 or higher.	ANS-2.27-2008 ANS-2.29-2008 ANS-2.30-2015
target performance goal	The desired level of performance of a facility or individual SSCs when subjected to a seismic hazard. For example, the U.S. Nuclear Regulatory Commission (NRC) requires a demonstration of seismic margin of 1.67 times a design basis with high confidence of low probability of failure	ANS-2.27-2020

	(core damage) at the plant level [6].[19] ASCE/SEI 43-19 [4] defines target performance goal by defining target mean annual frequency of an SSC exceeding its specified limit state.	
target set	A group of damage targets that will be assumed to suffer fire-induced damage based on the same damage criteria and damage threshold in any given fire scenario. The collection of target sets associated with a fire scenario often represents a subset of the damage targets present in the fire compartment but may also encompass all risk-relevant damage targets in a single physical analysis unit or a collection of damage targets in multiple physical analysis units. This definition implies that all members of any single target set will be assumed to fail when the first member of the target set fails (i.e., "... damage based on the same damage criteria and damage threshold"). Progressive or time-dependent states of fire damage may be represented through the definition of multiple target sets for a single fire scenario (e.g., cables in raceways directly above a fire source versus cables in raceways remote from the fire source). The level of detail associated with target set definition will generally parallel the level of detail employed in fire scenario selection and analysis (e.g., screening level analysis versus detailed analysis).	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
task	A well-defined unit of work having an identifiable beginning and end.	ANS-3.1-2014
task analysis	The systematic process to identify conditions, standards, elements, and required skills or knowledge to perform a task.	ANS-3.1-1987
task qualification	Measures used to evaluate and designate qualifications to perform an assigned task. Measures include training, evaluations, and meeting established experience, knowledge, and skill requirements.	ANS-3.1-2014
task qualified	Documented approval from line management to independently perform a task.	ANS-3.1-2014
technical specifications (TS)	As defined in 10 CFR 50.36, "Technical Specifications."	ANS-1.10
technical specifications (TS)	Non-preferred variation (1) technical specifications (tech specs): For the purposes of this standard, this term includes both the reactor-specific Technical Specifications and the core operating limits report (COLR).	ANS-19.11-2017
technical staff	Personnel with specific skills and experience who can assist in the implementation of the requirements defined in this standard. Such personnel may include, but are not limited to, criticality safety, health and safety, and facility process support personnel.	ANS-8.23-07 ANS-8.23-2019
technical support personnel	Unlicensed personnel principally involved in the calibration, maintenance, repair, and radiation protection activities or performance of other craft and technical activities at the facility. Examples are laboratory technicians, instrument technicians, and health physics personnel.	ANS-15.4-2016
technology neutral	Applicable to any type of reactor and independent of any single reactor technology.	ANS-53.1-2011
technology-specific data	Data consisting of observed sample data from experiments that were conducted to support the technology development of the plant being analyzed.	ASME/ANS RA-S-1.4-2021
temporary medical condition	When an operator does not meet the specific minimum requirements in this standard but is expected to meet those requirements without exception! again in the future, the operator's condition disability is considered temporary and does not need to be reported to the NRC. The facility licensee is expected to administratively restrict the operator's activities, as appropriate, during the term of the condition disability. It is up to the licensee's examining physician to evaluate each operator's	ANS-4.3-2013

[19] This is the Code of Federal Regulations, Title 10, "Energy," Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Section 52.47, "Contents of Applications; Technical Information," U.S. Nuclear Regulatory Commission.

	situation and assess whether the operator will be capable of meeting the requirements within 90 days.	
temporary	A system, subsystem, or component whose design, construction, or intent is not of a permanent nature with respect to facility license design.	ANS-40.39-2009
Temporary Emergency Exposure Limit (TEEL)	For the purposes of this standard, TEELs are temporary limits intended for use until AEGLs or ERPGs are adopted for chemicals. See DOE-HDBK-1046-2008, “DOE Handbook—Temporary Emergency Exposure Limits for Chemicals: Methods and Practice” [5]. Because AEGLs and ERPGs exist only for a limited number of chemicals, DOE also commissions the development of TEELs so that DOE facilities may conduct Emergency Planning Hazard Assessments and consequence assessments during response for chemicals lacking AEGLs or ERPGs. TEELs are roughly equivalent to AEGLs and ERPGs.	ANS-58.16-2014
temporary medical condition	A change in the medical status of a licensed operator of duration of no more than 90 days and for which the activities of a licensed operator may be restricted by the Level 2 person. This change does not require a notification to the responsible authority.	ANS-15.4-2016
terminal end	That section of piping originating at a structure or component (e.g., a vessel or component nozzle or structural piping anchor) that acts as an essentially rigid constraint to the piping thermal expansion. Typically, an anchor assumed for the piping code stress analysis would be a terminal end. The branch connection to the main run is one of the terminal ends of a branch run, except for the special case where the branch pipe is classified as part of a main run (see paragraph (b) of definition for branch run).	ANS-58.2
termination time	Time following a severe accident at which the radionuclide release calculation is terminated (truncated) for Level 2 analysis purposes.	ASME/ANS RA-S-1.2-2015
Tertiary	The geologic period from 1,800,000 years before present to 63,000,000 years before present.	ANS-2.27-2008
test connection or test vent	Connection to valves or connecting piping which is provided so that isolation valves can be tested for leakage tightness.	ANS-56.2-1984
test criterion	The predetermined value for evaluating the result of each test. There are two different levels of criteria: review and acceptance. A review criterion is based on differences between calculations and measurements that would suggest a problem with the as-built core, the measurement, or the prediction. Only review criteria are applicable to this standard. An acceptance criterion is based on a Safety Analysis assumption or a Technical Specification limit and is outside of the scope of this standard. See the appendix for a more complete discussion of the test criteria and applicability.	ANS-19.6.1-2019
test criterion	Non-preferred variation (1) The predetermined value for evaluating the result of each test.	ANS-19.11-2017
test interval	The length of time during which a discrete volume of leachant is in contact with the test specimen.	ANS-16.1-2019
test, aquifer	The effect of pumping a well as measured in the pumped well and in one or more observation wells, for the purpose of determining aquifer properties.	ANS-2.9-89 ANS-2.17-1989
test, packer	A method of isolating a section of a borehole by inserting one or more expandable glands (packers) in order to measure hydraulic conductivity or water quality in the section.	ANS-2.17-1989
test, well	The withdrawal of water from or addition of water to a well in measured rates or amounts, in order to measure the response with time of the water level.	ANS-2.9-1989
testing	An element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.	ANS-3.2-1993

thermal internal boundary layer	An internal boundary layer in the atmosphere caused by horizontal movement across a discontinuity in surface temperature.	ASME/ANS RA-S-1.3-2017
thyroid blocking agent	A material introduced into the body that minimizes uptake of radioiodine into the thyroid by saturating the thyroid with stable iodine.	ANS-3.8.1-1993 ANS-3.8.2-1993 ANS-3.8.3-1993 ANS-3.8.6-1994 ANS-3.8.2-1995
thyroid blocking agent	Variant form.	ANS-3.8.5-D92
time available	The time period from the presentation of a cue for human action or equipment response to the time of adverse consequences if no action is taken.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
time-averaged CDF	A risk metric for the expected number of core damage events per calendar year summed over all LPSD evolution types modeled. No one specific evolution is to be considered an “average” LPSD evolution. Rather, an average LPSD evolution of each LPSD evolution type is one whose POS durations and equipment outage durations in each POS are consistent with the data from plant operation averaged over many years from all LPSD evolutions of that same type. LPSD evolution types are described in Part 2 and non-mandatory Appendix 2.A.	ANS/ASME-58.22-2015
time-average model (CANDU)	The CANada Deuterium Uranium (CANDU) reactor time-average model is also known as the equilibrium-core model. The time-average cell-homogenized few-group macroscopic cross sections at each bundle location in the core are calculated as flux-weighted quantities over the fluence range experienced by the fuel during its residence at that specific location. Consequently, the flux, fluence range, and macroscopic cross sections at each location are linked together and depend on the individual refueling rate of the channel in which the fuel bundle resides. The resulting self-consistency problem is solved iteratively to determine all the results of the time-average model.	ANS-19.3-2022
time-critical action (TCA)	A manual action or series of actions, the performance of which within specified time constraints has been credited in the plant’s design analysis (e.g., safety analysis) or specified in licensing-basis documentation. Exceptions and clarifications to this definition are provided below: • Manual actions with defined time limits modeled only in a site’s risk-based NFPA 805 [4] program (as applicable), that have been assigned to the licensing basis via commitment to the NRC, are not TCAs. This latitude is based on the fact that the risk-based assessment associated with these actions already quantifies and accounts for failure to complete the action within the specified time requirement. • Manual actions with defined time limits drawn only from extensive damage mitigation guideline (EDMG) or diverse and flexible coping strategies (FLEX) are not included in this standard due to their low event probability and because the control of the actions is tracked in other programs.	ANS-58.8-2019
time-dependent CDF	The computation of CDF (expected number of core damage events per unit of time) at one particular time and for a single plant configuration in one POS. The plant configuration is characterized by the specific plant system alignments and maintenance conditions at that point in time rather than by time-averaged maintenance alignments. The average of the time dependent CDF over a year is the time-averaged CDF for that year. When averaged over a long period of time, the result is equivalent to the time-averaged CDF, i.e., one of the risk metrics of a baseline PRA.	ANS/ASME-58.22-2015
time-history accelerograph	An instrument capable of measuring and permanently recording acceleration versus time. (No Longer used)	

time interval	The elapsed time between two sequential, time points Specific time intervals include: (1) indication -- ($TI_{INDICATION} = t_{IND} - t_{ST}$). The time interval between the start of the DBE and the first indication of the DBE. For some DBEs, this time interval might be zero. (2) dead (TI_{DEAD}) The time interval allowed in the analyses in which the operator is not required to take action during the course of a DBE. A TI_{DEAD} always precedes T_{MAI} and follows T_{ECA} for the first operator action and follows T_{SFC} for subsequent operator actions in the analyzed sequences. (ANS-58.8-1992) (3) diagnosis -- ($TI_{DIAGNOSIS} = t_{ECA} - t_{IND}$). The time interval between the first indication of the DBE and the earliest time for which credit can be taken for initiation of safety-related operator actions. During this interval, it is assumed that the operator verifies automatic responses, observes plant parameters, and plans subsequent actions. (4) operator response -- ($TI_{OPERATOR} = t_{SAC} - t_{MAI}$). The time interval during which the operator completes a safety-related action. (5) process response -- ($TI_{PROCESS} = t_{SFC} - t_{SAC}$). The time interval between the completion of a safety-related operator action and the receipt of the indication that the corresponding safety-related function is completed through the response of the mitigating equipment and the response of the process. For some DBEs this time interval may be zero. (6) safety -- ($TI_{SAFETY} = (t_{LIM} - t_{SFC})$. The time interval between the completing of the last safety-related function and reaching the design requirement limit.	ANS-58.8 ANS-58.8-1992
time required	The time needed by operators to successfully perform and complete a human action.	ASME/ANS RA-S-1.4-2021
time source	A system to provide precise and accurate time and time intervals to the seismic digital recording system. It is also used to synchronize the recorded acceleration channels acquired by one or more accelerographs.	ANS-2.10-2017
tolerance chart	A chart developed to evaluate the response of an instrument or process to a predetermined tolerance level as determined by an appropriate QC source. The predetermined tolerance level, typically expressed as a percentage, is set with the overall quality performance (bias and precision) parameters for an analytical technique in mind. For practical reasons the response of most instruments is held in control to a tolerance as specified by the MQOs and is related to the instrument calibration.	ANS-41.5-2012
top event	The undesired state of a system in the fault tree model (e.g., the failure of the system to accomplish its function) that is the starting point (at the top) of the fault tree.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-1.1-2022
top-level design criteria (TLDC)	TLSC design implementing criteria; design criteria based on meeting the TLSC, unique to a specific type of plant technology.	ANS-53.1-2011
top-level regulatory criteria (TLRC)	Criteria expressed in the national nuclear regulator's regulations that are used to define the TLSC.	ANS-53.1-2011
top-level safety criteria (TLSC)	Limits on the frequency and consequences of licensing-basis events (LBEs) derived from TLRC.	ANS-53.1-2011
tornado	A violently rotating column of air whose circulation reaches the ground, pendant from the base of a convective cloud, and often observable as a condensation funnel attached to the cloud base, or as a rotating dust cloud rising from the ground.	ANS-2.3-1983
tornado	Variant form.	ANS-2.12-1978

total effective dose equivalent (TEDE)	The sum of the deep dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).	ANS-53.1-2011
total effective dose equivalent (TEDE)	Non-preferred variation (1) Summation of the dose equivalent from external exposure and the committed effective dose from internal exposure.	ANS-8.10-2015
total population	The sum of the permanent resident population plus any transient population (in-commuting workers and any visitors) that may be present in the study area.	ANS-2.6-2018
total propagated uncertainty (TPU)	See “combined standard uncertainty.”	ANS-41.5-2012
total temperature coefficient of reactivity (TTC)	The sum of the DTC and the MTC when the change in the average fuel and average moderator temperatures is the same.	ANS-19.11-2017
trace element	An element found in small quantities (i.e., usually less than 1%) within a material.	ANS-6.4.2-1985
trace radioactivity	Radioactivity due to trace amounts of naturally occurring radioisotopes contained within a material.	ANS-6.4.2-1985
traceability	The documented ability to trace the history, application, or location of an entity. In a calibration sense, traceability relates measuring equipment to national and international standards, primary standards, basic physical constants and properties, or reference materials. In a data collection sense, it relates calculations and data generated throughout the process back to the requirements for quality for the project.	ANS-3.11-2015
traceability	Non-preferred variation (1) Demonstrated linkage by means of an unbroken chain of comparisons of a measurement to nationally or internationally recognized standards or certifying body within specified uncertainty limits.	ANS-41.5-2012
train	Any set of required equipment dependent on a single emergency onsite power source.	ANS-5.11-1988
training	Instructional program designed to develop or improve on-the-job performance.	ANS-3.1-2012
training	Non-preferred variation (1) Instruction that imparts knowledge and skills necessary for safe and efficient on-the-job performance.	ANS-8.20-1991
training needs assessment	An appraisal by a subject matter expert of a simulator deviation, deficiency, or modification, and its relative importance to the operator during performance of required tasks.	ANS-3.5-2009 ANS-3.5-2018
transfer machine	The equipment required to move the fuel units between the fuel handling area and the storage area. It may include a shielded confinement enclosure, transport vehicle, and handling equipment.	ANS-57.9-1992
transient analysis	Evaluation of impacts on a system due to changing conditions over time.	ANS-2.21-2022
transient combustible	Combustible materials that are not fixed in place or an integral part of an operating system or component (RG 1.189 [1-2]). (Note that the term “component” as used in this definition is considered interchangeable with the terms “equipment” or “piece of equipment” as those terms are used in this Standard.).	ASME/ANS RA-Sb–2013
transient population	Tourists, shoppers, workers, and other people who do not reside within the study area and are visiting the area for recreational purposes at transient attractions (e.g., parks, beaches, sport stadiums, concerts, etc.) or for employment at an employer located within the study area. For demographic calculations, it is assumed that the transient population is not counted as part of the permanent population.	ANS-2.6-2018
transition	A change in plant configuration, for example, a change in plant configuration to prepare for refueling.	ASME/ANS RA-S-1.4-2021
translation	Motion in a horizontal plane.	ANS-57.1-1992 ANS-57.3-1993

transport	That component of dispersion that addresses the trajectory of the released material.	ANS-3.8.6-1994 ANS-3.8.6-1995
transport	Non-preferred variation (1) The movement of gaseous and or particulate matter through the atmosphere (ANS-2.15-2013).	
transportation package	A container used to transport spent fuel to or from an ISFSI. It may, in particular, consist of one or more receptacles, spacing structures, radiation shielding, and devices for cooling or for absorbing mechanical shocks. The vehicle, tie-down system, and auxiliary equipment may be integral parts of the container. 10 CFR 71, "Packaging and Transportation of Radioactive Material," provides regulatory requirements for packaging and transporting of spent fuel beyond the confines of the ISFSI site.	ANS-57.9-1992
treatment	Any method, technique or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous material, or to recover energy or material resources from the waste, or to render the waste non-hazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage or reduced in volume.	ANS-55.1-1992
treatment	Any method, technique, conditioning, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous material; or designed to recover energy or material resources from the waste; or designed to render the waste nonhazardous or less hazardous, safer to transport, store, or dispose of, or amenable for recovery or storage, or reduced in volume.	ANS-55.1-2021
trend	The general tendency of the current value (i.e., increasing, constant, or decreasing).	ANS-4.5
triaxial	Able to measure a variable in three mutually orthogonal components (directions), one of which is vertical; applies to description of the function of an instrument or group of instruments.	ANS-2.2-2016
true north	The direction from any point on the earth’s surface toward the geographic North Pole.	ANS-3.11-2015
true value	The actual value of a parameter.	ANS-15.11-2016
truncation limit	The numerical cutoff value of probability or frequency below which results are not retained in the quantitative PRA model or used in subsequent calculations (such limits can apply to accident sequences/ cutsets, system level cutsets, and sequence/cutset database retention). (ASME/ANS RA-S-1.4-2021 same but parenthetical reads “(such limits can apply to initiating event frequencies, event sequences/cutsets, system-level cutsets, and sequence/cutset database retention)”.)	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
tsunami	A series of long period waves generated by the displacement of water by a submarine or coastal earthquake, volcanic eruption, or landslide.	ANS-2.19-1989
tsunami	Variant form.	ANS-2.12-1978
turbine building wastes	Liquids from steam, feed water and condensate system, and from sampling, maintenance and testing operations in the turbine building.	ANS
turbulence	Atmospheric motions in which local velocities and pressures fluctuate irregularly, in a random manner, to form swirling eddies that can cause rapid mixing.	ANS-2.15-2013
type A test	A pneumatic test to measure the containment system overall integrated leakage rate under conditions representing design-basis LOCA containment pressure and systems alignments.	ANS-56.8-2020
type A test	Non-preferred variation (1) A test to measure the containment system overall integrated leakage rate under conditions representing DBA containment pressure and systems alignments.	ANS-56.8-2002
type A test performance criterion	Criterion used for establishing Type A test intervals. The sum of the measured Type A test upper confidence limit (UCL) and the as-left MNPLR from all Type B and Type C pathways isolated during the Type A	ANS-56.8-2002

	test. The sum is required to be less than L_a for a Type A test to pass the performance criterion.	
type B test	A pneumatic test intended to detect or measure leakage across pressure-retaining or leakage-limiting boundaries other than valves, such as:(1) containment penetrations whose design incorporates resilient seals, gaskets, sealant compounds, expansion bellows, or flexible seal assemblies; (2) seals, including door operating mechanism penetrations which are part of the primary containment; (3) doors and hatches with resilient seals or gaskets except for seal-welded doors.	ANS-56.8-2002 ANS-56.8-2020
type C test	A pneumatic test to measure leakage rates from CIVs, which are potential gaseous leakage pathways from containment following a DBA.	ANS-56.8-2020
type C test	Non-preferred variation (1) A pneumatic test to measure leakage rates from containment isolation valves, which are potential gaseous leakage pathways from containment during a design-basis LOCA.	ANS-56.8-2002
ultimate disposal	Placement of radioactive waste in a disposal facility with no intention of removing the waste, e.g., disposal at a shallow land burial facility licensed in accordance with 10 CFR 61.	ANS-40.37-2009
ultimate heat sink	The nuclear safety-related means of heat dissipation from the unit to the environment, including the necessary retaining structures (e.g., a dammed lake or a cooling tower) and any connecting canals or conduits.	ANS-51.1/52.1-1998
ultimate heat sink	Non-preferred variation (1) Variant form.	ANS-54.1-1989 ANS-59.1 ANS-2.12-1978
ultimate heat sink	Non-preferred variation (2) The complex of water sources, including necessary retaining structures (e.g., a pond or river with its dam), and the canals or conduits connecting the sources with, but not including, the cooling water system intake structures for a nuclear power unit. The sink constitutes the source of service water supply necessary to safely operate, shut down, or cool down a plant following a design-basis accident.	ANS-2.21-2012
ultrafine-group	An energy group structure (2000 or more energy groups) that is adopted for a particular application. The ultrafine-group constants are dependent on nuclide composition and can be dependent on temperature when they include narrow-resonance reactions.	ANS-19.3-2022
unavailability	The probability that a system or component is not capable of supporting its function including, but not limited to, the time it is disabled for test or maintenance. Total system unavailability includes unreliability.	ASME/ANS RA-S-1.1-2022
unavailability	Non-preferred variation (1) The probability that a structure, system, or component (SSC) is not capable of supporting its function including, but not limited to, the time it is disabled for test or maintenance. Unavailability is one aspect of an SSC's failure to perform its function and is distinct from unreliability. Total system unavailability includes unreliability.	ASME/ANS RA-S-1.4-2021
unavailability	Non-preferred variation (2) The probability that a system or component is not capable of supporting its function including, but not limited to, the time it is disabled for test or maintenance.	ASME/ANS RA-Sb–2013
unbiased	A measurement of a variable is called unbiased if the expected value of the measurement is equal to the stated value of the property being measured.	ANS-41.5-2012
uncertainty	A representation of the confidence in the state of knowledge about parameter values and models. Note: See "aleatory uncertainty" and "epistemic uncertainty."	
uncertainty	Non-preferred variation (1) See "variability," "epistemic uncertainty," and "aleatory variability."	ANS-2.27-2008 ANS-2.29-2008 ANS-2.30-2015 ANS-2.29-2020

uncertainty	Non-preferred variation (2) A representation of the confidence in the information or state of knowledge about the parameter values and models used in constructing the PRA. (ASME/ANS RA-S-1.4-2021 & ASME/ANS RA-S-1.1-2022 added the words “information or” which were added above.)	ASME/ANS RA-Sb–2013
uncertainty	Non-preferred variation (3) (As used in seismic-fragility analysis): the variability in the median seismic capacity arising from imperfect knowledge about the models and model parameters used to calculate the median capacity.	ASME/ANS RA-Sb–2013
uncertainty	Non-preferred variation (4) A general term. See “epistemic uncertainty” and “aleatory variability.”	ANS-2.27-2020
uncertainty [aleatory]	The uncertainty inherent in a nondeterministic (stochastic, random) phenomenon. Aleatory uncertainty is reflected by modeling the phenomenon in terms of a probabilistic model. In principle, aleatory uncertainty cannot be reduced by the accumulation of more data or additional information. (Aleatory uncertainty is sometimes called “randomness.”)	ANS-30.2-2022
uncertainty [epistemic]	Uncertainty attributable to incomplete knowledge about a phenomenon that affects the ability to model it. Epistemic uncertainty is captured by considering a range of model parameters within a given expert interpretation or multiple expert interpretations, each of which is assigned an associated weight representing statistical confidence in the alternatives. In principle, epistemic uncertainty can be reduced by the accumulation of additional information associated with the phenomenon. The uncertainty in the parameters of the probability distribution of a random phenomenon is epistemic.	ANS-30.2-2022
uncertainty analysis	The process of identifying and characterizing the sources of uncertainty in the analysis and evaluating their impact on results and developing a quantitative measure to the extent practical.	ANS-30.3-2022
uncertainty analysis	Non-preferred-variation (1) The process of identifying and characterizing the sources of uncertainty in the analysis and evaluating their impact on the PRA results and developing a quantitative measure to the extent practical.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
uncertainty distribution	Probability distribution used to describe the uncertainty in the estimation of a parameter that is used to calculate the frequency, consequences, or risk associated with an event sequence.	ANS-53.1-2011
unclassified	Designation applied to an item that has not been classified.	ANS-58.14-1993
uncontrolled access	Access to areas which are not under direct control for purposes of radiation protection.	ANS-5.6.1-D90
uncontrolled access	Variant form.	ANS-6.7.1-1985
uniform grid map	A grid composed of a square with sides of uniform length, with the middle square vertically and horizontally centered on the site under study (e.g., a nuclear power plant site), and having contiguous squares extending outward in all directions to cover all parts of the circle that constitutes the study area.	ANS-2.6-2018
uniform grid squares	The individual squares that comprise a uniform grid map, all of which have the same dimensions and completely overlay the study area.	ANS-2.6-2018
uniform hazard response spectrum (UHRS)	Response spectra derived such that the AFE of any value of the spectral quantity (i.e., spectral acceleration, spectral displacement, etc.) is the same for all one-degree-of-freedom linear oscillator frequencies.	ANS-2.29-2020
uniform hazard response spectrum (UHRS)	Non-preferred variation (1) A response spectrum derived such that the annual probability of exceeding the spectral quantity (i.e., spectra acceleration, spectral displacement, etc.) is the same for all oscillator frequencies.	
uniform hazard response spectrum (UHRS)	Non-preferred variation (2) A response spectrum derived such that the annual probability of exceeding the spectral quantity (i.e., spectra acceleration, spectral displacement, etc.) is the same for all oscillator	ANS-2.27-2008 ANS-2.29-2008

	frequencies. A UHRS is determined in accordance with ANS-2.29-2008) [3].	
uniform hazard response spectrum (UHRS)	Non-preferred variation (3) A plot of a ground response parameter (e.g., spectral acceleration or spectral velocity) that has an equal likelihood of exceedance at different frequencies.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
unit	One nuclear power reactor, all items required for electrical power generation, and all items require to provide reasonable assurance that the nuclear power reactor can be operated without undue risk to the health and safety of the public. Items that are shared between units are part of each unit.	ANS-59.1-94
unit	Non-preferred variation (1) Variant form.	ANS-59.1 ANS-56.4 ANS-58.9-R87 ANS-51.1/52.1-1993
units of measurement	The special unit of measurement of exposure to x-rays or gamma rays is the roentgen (R). The common unit of exposure rate is milliroentgen per hour (mR/hr). For purposes of this standard, the terms milli-roentgen and millirem are used interchangeably.	ANS-6.8.1-81
unlimited air	The storage atmosphere that does not limit the availability of oxygen as a design feature of the ISFSI.	ANS-57.9-92
unmitigated analysis	For the purposes of this standard, analysis of DBEs for event progression and consequences without taking any credit for preventive or mitigative features or controls. “Unmitigated” is meant to consider material quantity, form, location, dispersibility, and interaction with available energy sources but not to consider safety features (e.g., ventilation systems, fire suppression system, etc.) that will prevent or mitigate a release.	ANS-58.16-2014
unreliability	The probability that a system or component will not perform its specified function under given conditions upon demand or for a prescribed time.	ASME/ANS RA-Sb–2013 ASME/ANS RA-S-1.1-2022
unreliability	Non-preferred variation (1) The probability that an SSC will not perform its specified function under given conditions upon demand or for a prescribed time. Unreliability is one aspect of an SSC’s failure to perform its function and is distinct from unavailability.	ASME/ANS RA-S-1.4-2021
unrestricted area	An area, access to which is neither limited nor controlled by the licensee.	ANS-2.17-2010 ANS-15.11-2016
unsaturated zone	A subsurface region where pores are filled partially with water and partially with air; most commonly, the zone between the ground surface and the top of the capillary zone.	ANS-2.17-2010
upender	Handling equipment rotating about a fixed horizontal axis used to move fuel assemblies from a vertical to other than a vertical position and vice versa.	ANS-57.1-92
upper bounding	(See lower bounding).	ANS-56.4-83 ANS-56.10-87
upper confidence limit (UCL)	A calculated value constructed from test data that places a statistical upper bound on the true leakage rate (%/24h). (Note: UCL is calculated at 95% confidence level in this standard. Note: The definition in ANS-56.8-2020 includes a footnote to see formula in Appendix B, upper confidence limit, Eq. (B.16).	ANS-56.8-02 ANS-56.8-2020
upper probability limit for damage	The threshold probability value for design consideration. If the probability of an event is equal to or less than the Upper Probability Limit for Damage, its consequences need not be evaluated.	ANS-58.3
upper subcritical limit	A limit on the calculated k-effective value established to ensure that conditions calculated to be subcritical will actually be subcritical. The USL is established using both the calculational margin and the margin of subcriticality.	ANS-8.24-17

upscale bias	A method of supplementing the exposure rate indication of an area monitor channel, either by means of a radioactive source placed on or near the detector, or by means of an input signal to the detector or electronic readout module.	ANS-6.8.1-81
use-as-is	A disposition permitted for a nonconforming item when it can be established that the item is satisfactory for its intended use.	ANS-3.2-93
user	A person who applies a program to perform a specific task.	ANS-10.5-79
user	Non-preferred variation (1) Authorized user of software.	ANS-10.8-2015
user organization	Organization responsible for authorized use of the software.	ANS-10.8-2015
vadose zone	A subsurface region where the water gauge pressure is negative; most commonly, the zone between the ground surface and the water table.	ANS-2.17-2010
validated computational methods	A calculation method that has been tested, by comparison with experimental data or previously validated calculations, to establish the reliability of results obtained when the method is applied to conditions of interest.	ANS-57.7-92
validated computational methods	Variant form.	ANS-8.7-98
validated computational methods	non-preferred variation (1) A calculational method that has been validated in conformance with ANSI/ANS-8.1-2014 (R2018) [7].	ANS-8.7-2022
validation	The process of determining the degree to which a model is an accurate representation of the real world from the perspective of the intended uses of the model.	ANS-19.3-2011 ANS-19.3-2022
validation	Non-preferred variation (1) The test and evaluation of the integrated computer system to ensure compliance with the functions, performance and interface requirements.	ANS-7-4.3.2-W2000
validation	Non-preferred variation (2) The process of quantifying (e.g., establishing the appropriate bias and bias uncertainty) the suitability of a computer code system for use in nuclear criticality safety analyses by comparison with benchmark results.	ANS-8.24-17
validation	Variants.	ANS-8-14-04 ANS-8-21-95
validation	Non-preferred variation (3) The performance of an activity using a simulator (either dynamic or static), tabletop exercise, in-plant walk-through, or combination thereof, to ensure the action can be performed within available time less acceptable margin using the applicable procedures, including all required human performance protocols.	ANS-58.8-2019
validation	Non-preferred variation (4) A technically based analyte- and sample-specific evaluation process that extends beyond method or written analytical specification (e.g., SOW, contract, project plans) compliance, provides a level of confidence that an analyte is present or absent, and examines the uncertainty of the reported concentration of the analyte relative to the intended use of the data. Data validation is a systematic process, performed externally from the data generator, that applies a defined set of performance-based criteria to a body of data that may result in qualification of the data. Data validation occurs prior to drawing a conclusion from the body of data.	ANS-41.5-2012
validation applicability	A domain, which could be beyond the bounds of the benchmark applicability, within which the margins derived from validation of a calculational method have been applied.	ANS-8.24-17
validator	An individual that performs the validation process and meets the qualifications for validator defined in Sec. 7 of ANS-41.5-2012.	ANS-41.5-2012
valve closure time	Time it takes for a power operated valve to be in the fully closed position after the actuation power has reached the operator assembly. This does not include instrument delay time.	ANS-56.2-84

variability	See “epistemic uncertainty” and “aleatory variability.”	ANS-2.27-2008 ANS-2.29-2008 ANS-2.30-2015 ANS-2.27-2020 ANS-2.29-2020
variable	Quantity or condition that is subject to change or a quantity that can assume any of a given set of values.	ANS-8.3.1-87
variable-trajectory model	An atmospheric dispersion model where plumes follow complex flow fields usually in three or four dimensions.	ANS-2.15-2013
variable types	Type A Those variables to be monitored that provide the information required to permit the control room operator to take the pre-planned manual actions to accomplish and maintain safe plant shutdown for design basis accident events. Note: Type A may include, but is not limited to, variables required to initiate planned manual actions associated with radioactive material releases from: (1) spent fuel, (2) equipment located outside the primary reactor containment and needed during the accident for recirculation of reactor coolant, and (3) waste gas storage vessels. Type B Those variables to be monitored that provide to the control room operator information to assess the process of accomplishing or maintaining critical safety functions, i.e., reactivity control, core cooling, reactor coolant system integrity, primary reactor containment integrity and radioactive effluent control. Type C Those variables to be monitored that provide to the control room operator information to monitor (1) the extent to which parameters, which have the potential for causing a breach of the primary reactor containment, have exceeded the design basis values, or (2) that the in-core fuel clad, the reactor coolant system pressure boundary or the primary reactor containment may have been breached.	ANS-4.5
verifiable count	The term means that the counting process shall be documented well enough so that independent audits of all parts of the process can be performed.	ANS-2.6-81D
verification	The process of determining that a model implementation accurately represents the developer’s conceptual description of the model and the solution to the model.	ANS-19.3-2011 ANS-19.3-2022
verification	Non-preferred variation (1) The process of confirming that the computer code system correctly performs intended numerical calculations.	ANS-8.24-2017
verification	Non-preferred variation (2) The establishment of confirmation of the truth or accuracy of a fact by investigation, comparison with a standard, or reference to the facts.	ANS-8.14-2004 ANS-8.21-1995
verification	Non-preferred variation (3) The act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting whether items, processes, services, or documents conform to specified requirements.	ANS-3.2-1993
verification test	Non-preferred variation (1) A test to confirm integrity of the Type A test leakage rate measurement. This test is performed by inducing a known leakage rate from containment, measuring the resulting combined leakage rate, and comparing this measurement against the expected result.	ANS-56.8-2020
verification test	Non-preferred variation (2) A test intended to confirm the capability of the Type A test method and equipment to measure L_a. This test is performed by inducing a known leakage rate from containment, measuring the resulting combined leakage rate, and comparing this measurement against the expected result.	ANS-56.8-2002
	Note: The 2023 Glossary Review Team agreed that there should be no preferred definition because all are too specific in their application to the source standard.	

verification and validation (V&V)	(IEEE Std 610.12). The process of determining whether the requirements for a system or component are complete and correct, the products of each development phase fulfill the requirements or conditions imposed by the previous phase, and the final system or component complies with specified requirements. Note: In this standard, the phrase V&V, and its usage is considered as equivalent to the term verification, and its usage from ASME NQA-1-1989, Quality Assurance Program Requirements for Nuclear Facilities.	ANS-7-4.3.2-W00
verification and validation (V&V)	Non-preferred variation (1) Activities related to the V&V of a product or activity.	ANS-10.8-2015
verifier	An individual that performs the compliance verification process and meets the qualifications for verifier defined in Sec. 7 of ANS-41.5-2012.	ANS-41.5-2012
verify	To determine that a particular action has been performed in accordance with the rules and requirements of this standard, either by witnessing the action or by reviewing records. (Note: The term 'verify' was deleted in ASME/ANS RA-S-1.1-2022)	ANS-2.29-2008 ASME/ANS RA-Sb–2013 ANS-2.29-2020
very high radiation area	An area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 Gy) in 1 hour at 1 m from a radiation source or from any surface that the radiation penetrates. [Note: At very high doses received at high dose rates, units of absorbed dose (e.g., rads and grays) are appropriate rather than units of dose equivalent (e.g., rems and sieverts).]	ANS-15.11-2016
vertical temperature difference	Also known as delta-T, a simple representation of the mean lapse rate within a layer of the atmosphere, obtained by calculating the difference between observed temperatures at the bottom and top of the layer.	ANS-3.11-2015
vertical wind direction	The wind elevation angle relative to the horizon. Values are reported in degrees elevation and are positive when wind is from below (updraft) and negative when from above (downdraft).	ANS-3.11-2015
vertical wind speed	The ratio of the distance covered by the movement of air to the time taken to cover it perpendicular to the horizon. Values are positive when wind is from below (i.e., updraft) and negative when from above (i.e., downdraft).	ANS-3.11-2015
vessel	A container designed to hold solution. This includes any volume within which criticality control is provided by Raschig rings.	ANS-8.5-96
visually simulated hardware	Hardware that is present on the simulator control panels for realistic appearance and visual orientation but has no interface with the dynamic simulation models.	ANS-3.5-2009 ANS-3.5-2018
vital area	An area that contains vital (e.g., nuclear safety related) equipment. (Note: Definition of Vital equipment should be included when this term is used.)	
vital area	Non-preferred variation (1) An area that contain nuclear safety-related equipment.	ANS-59.52-1998
vital area	Variant form.	ANS-5.6.1-D90
vital area	Non-preferred variation (2) An area that contains vital (e.g., nuclear safety related) equipment, which is any plant equipment, system, or device required to protect core integrity and whose failure could directly or indirectly endanger public health and safety by exposure to radiation.	ANS-59.51-1989 ANS-59.52-1993
vital area	Non-preferred variation (3) Any area that contains vital equipment. The Central Alarm Station, although not containing vital equipment, shall be considered a vital area.	ANS-3.3-1988
vital equipment	Any plant equipment, system or device, required to protect reactor core or spent fuel integrity the failure or destruction of which could directly or indirectly endanger public health and safety by exposure to radiation. (Note: Security equipment is not vital equipment.)	ANS-3.3-1988

volume source	The initial configuration of a plume or puff of material within a dispersion model that represents a three-dimensional volume.	ANS-2.15-2013
volumetric source zone	A volume of the earth's crust within which future seismicity is assumed to have distributions of source properties and locations of energy release that do not vary in time and space.	ANS-2.27-2008 ANS-2.29-2008
vortex	A vortex is any closed circulation flow.	ANS-2.3-83 ANS-2.3-2011
walkdown	The physical inspection of relevant areas of the NPP site (and its surroundings, as necessary) to obtain or confirm information such that the PRA model represents the as-built and as-operated plant.	ASME/ANS RA-S-1.4-2021 ASME/ANS RA-S-1.1-2022
walkdown	Non-preferred variation (1) Inspection of local areas in a nuclear power plant where systems and components are physically located to ensure accuracy of procedures and drawings, equipment location, operating status, and environmental effects or system interaction effects on the equipment, which could occur during accident conditions.	ASME/ANS RA-Sb–2013
walkthrough	Step-by-step consideration of a procedure along with, if possible, visits to relevant locations and demonstration of actions.	ASME/ANS RA-S-1.1-2022
warning time	Elapsed time from the order to evacuate until the start of the release. For external flood analysis, the warning time is a lead time for a flood arrival. The weather forecast and the predicted flood wave traveling time or the rate of rise of the flood waters should be determined to establish the available lead time for a plant responding to an external flood.	ASME/ANS RA-S-1.4-2021
wash-off	Liquid containing the mobile surface contamination removed from the specimen by immersing it in demineralized water for 30 s.	ANS-16.1-2003
watchman	An individual, not necessarily uniformed or armed with a firearm, who may per-form other duties in the course of providing protection a plant.	ANS-3.3-1988
water pressure suppression (WPS) primary containment	A WPS primary containment consists of a drywell, suppression pool, and wetwell. In the event of a reactor coolant pressure boundary break in the drywell, reactor coolant energy is transferred from the drywell to the suppression pool by the vent system connecting the drywell and wetwell. The reactor coolant energy and decay heat are removed from the sup-pression pool by Residual Heat Removal (RHR) heat exchanges.	ANS-56.4-1983
water table	The water surface in an unconfined aquifer corresponding to where the water gauge pressure is zero, also called the phreatic surface.	ANS-2.17-2010
waves	Surface motion in an ocean or large body of water caused by winds, barometric pressure anomalies (e.g., squall lines, etc.) and seismic disturbances. For floating nuclear plants, waves can induce plant motion which must be considered in plant design. Waves increase the effective water depth to be considered in the design of a plant sited on or near a large body of water. The dynamic effects of waves are considered in the definitions of floods in American National Standard "Standards for Determining Design Basis Flooding at Power Reactor Sites," N170-1976.	ANS-2.8-1992 ANS-2.12-1978
weak ground motion	Usually refers to the earthquake motion that humans do not feel. This level of shaking usually occurs at greater distances (>100 km or so) from the earthquake source (M > about 6) or at close distances from relatively small earthquakes (M < about 3). Recording low-amplitude motion requires instruments with high sensitivity, referred to as seismometers. In contrast to accelerometers, seismometers usually record the velocity of the ground motion. They can record very low levels of ground motion but in general, and due to their limited dynamic range, are incapable of recording high levels of shaking. Weak-motion seismometers are used to locate earthquakes, to help determine earthquake magnitude and source parameters, and to study Earth structure. Recordings from these instruments are also being used in the development of ground motion prediction models.	ANS-2.10-2017
weighting factor (W_T)	The factor for an organ or tissue (T) that describes the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue	ANS-15.11-2016

	to the total risk of stochastic effects when the whole body is irradiated uniformly. Values for the weighting factors can be found in 10 CFR 20, Sec. 20.1003 (“Definitions”).	
wet-bulb temperature	The temperature of a wet-bulb thermometer when the heat leaving the wet bulb from evaporative cooling is equal to the heat transferred to the wet bulb by convective heat transfer from the surrounding air.	ANS-2.21-2012
wet-bulb temperature	Non-preferred variation (1) The temperature an air parcel would have if cooled adiabatically to saturation at constant pressure by evaporation of water into it, with all latent heat being supplied by the parcel.	ANS-3.11-2015
wet waste	Waste media containing appreciable amounts (greater than 1 vol %) of free liquid, for example, spent bead or powdered resin, filter sludge, and cartridge filters.	ANS-40.37-2009
wetwell	In a water pressure suppression (WPS) primary containment, the structure which forms the boundary of the suppression pool and the vapor space contiguous to it.	ANS-56.4-1983
wind direction	The direction from which the wind is blowing. Wind direction data should be reported in degrees azimuth measured clockwise from true north and range from 0º to 360º (e.g., north is 0º or 360º, east is 90º, etc.). See also “sigma theta.”	ANS-3.11-00
wind-driven rain	Wind-driven rain is rain that has a horizontal velocity component from wind. Wind-driven rain is an effect that may require consideration when HWs damage a building, exposing interior equipment to water damage from rain water, drips, and splash.	ASME/ANS RA-S-1.1-2022
wind effects	The physical loading effects that can result from HW hazards, including wind pressure and atmospheric pressure change, wind-generated missiles, structural interactions, wind-driven rain, and correlated hazard effects.	ASME/ANS RA-S-1.1-2022
wind-generated missile	Wind generated missiles are objects that either become airborne, or tumble along the ground, or both, as the result of the wind pressure forces and the aerodynamic characteristics of the objects.	ANS-2.3-2011
World Geodetic System (WGS 84)	The reference coordinate system used by the Global Positioning System. It is an extremely precise Earth measurement across continents and oceans, using satellite radio wave transmissions to establish locational coordinates for any point on the surface of the Earth with an error of less than 2 centimeters to the Earth’s center mass.	ANS-2.6-2018
worth	It is preferred that the term “reactivity worth” and the associated definition be used in ANS standards	
worth	Non-preferred variation (1) See “reactivity worth.”	ANS-19.11-2017
yield, specific	The ratio of the volume of water which the rock or soil, after being saturated, will yield by gravity to the volume of the rock or soil.	ANS-2.9-89 ANS-2.17-89
zero-order error	An error caused by a constant offset, such as a base voltage.	ANS-2.10-2017
zero period acceleration	The acceleration level in a response spectrum at frequencies where the response curve is asymptotic to a line perpendicular to the acceleration axis. This usually corresponds to accelerations at frequencies greater than 33 cycles per second for the horizontal direction, and 50 cycles per second for the vertical direction and is identical to the maximum acceleration in time history (accelerogram). (Not used)	
zone	A classification of plant areas that have similar dose rate limitations based on accessibility requirements and design precautions. A zone starts at the access door or gate. Unless separately zoned, labyrinth entrances to an area are considered part of that area and are assigned the same zone designation.	ANS-5.6.1-D90
zone design dose rate	Maximum expected surface design dose rate in the areas of the zone that can be physically reached by an individual without the use of portable ladders, scaffolding, or other special equipment.	ANS-5.6.1-D90

APPENDIX

LIST OF STANDARDS PUBLISHED SINCE 2019 INCLUDED IN THIS UPDATE

Standards	Consensus Committees*
ANSI/ANS-2.8-2019, Probabilistic Evaluation of External Flood Hazards for Nuclear Facilities (new standard, supersedes ANS-2.8-1992)	ESCC
ANSI/ANS-2.21-2022, Criteria for Assessing Atmospheric Effects on the Ultimate Heat Sink (revision of ANSI/ANS-2.21-2012; R2016)	ESCC
ANSI/ANS-2.27-2020, Criteria for Investigations of Nuclear Facility Sites for Seismic Hazard Assessments (revision of ANSI/ANS-2.27-2008; R2016)	ESCC
ANSI/ANS-2.29-2020, Probabilistic Seismic Hazard Analysis (revision of ANSI/ANS-2.29-2008; R2016)	ESCC
ANSI/ANS-3.5-2018, Nuclear Power Plant Simulators for Use in Operator Training and Examination (new standard, supersedes ANSI/ANS-3.5-2009)	LLWRCC
ANSI/ANS-3.14-2021, Process for Infrastructure Aging Management and Life Extension of Non-Reactor Nuclear Facilities (new standard)	NRNFCC
ANSI/ANS-6.1.1-2020, Neutron and Photon Fluence-to-Dose Conversion Coefficients (new standard)	SRACC
ANSI/ANS-8.3-2022, Criticality Accident Alarm System (revision of ANSI/ANS-8.3-1997; 2017).	NCSCC
ANSI/ANS-8.7-2022, Nuclear Criticality Safety in the Storage of Fissile Materials (revision of ANSI/ANS-8.7-1998; R2017)	NCSCC
ANSI/ANS-8.23-2019, Nuclear Criticality Accident Emergency Planning and Response (revision of ANSI/ANS-8.23-2007; R2012)	NCSCC
ANSI/ANS-16.1-2019, Measurement of the Leachability of Solidified Low-Level Radioactive Wastes by a Short-Term Test Procedure (revision of ANSI/ANS-16.1-2003; R2017)	ESCC
ANSI/ANS-18.1-2020, Radioactive Source Term for Normal Operation of Light Water Reactors (revision of ANSI/ANS-18.1-2016) – No definitions other than “shall, should, and may.”	LLWRCC
ANSI/ANS-19.1-2019, “Nuclear Data Sets for Reactor Design Calculations” (revision of ANSI/ANS-19.1-2002; R2011)	SRACC
ANSI/ANS-19.3-2011, Steady-State Neutronics Methods for Power Reactor Analysis (revision of ANS-19.11-2005) Note: This standard was inadvertently missed in the 2019 updated.	SRACC
ANSI/ANS-19.3-2022, Steady-State Neutronics Methods for Power Reactor Analysis (revision of ANS-19.11-2011; R2017)	SRACC
ANSI/ANS-19.3.4-2022, The Determination of Thermal Energy Deposition Rates in Nuclear Reactors (revision of ANSI/ANS-19.3-4-2002; R2017)	SRACC
ANSI/ANS-19.6.1-2019, Reload Startup Physics Tests for Pressurized Water Reactors (revision of ANSI/ANS-19.6.1-2011; R2016)	SRACC
ANSI/ANS-30.3-2022, Light Water Reactor Risk-Informed, Performance-Based Design (new standard)	LLWRCC
ANSI/ANS-51.10-2020, Auxiliary Feedwater System for Pressurized Water Reactors (revision of ANSI/ANS-51.10-1991; R2018)	LLWRCC
ANSI/ANS-54.1-2020, Nuclear Safety Criteria and Design Process for Sodium Fast Reactor Nuclear Power Plants (supersedes ANS-54.1-1989)	RARCC
ANSI/ANS-55.1-2021, Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants (revision of ANSI/ANS-55.1-1992; R2018)	FWDCC

ANSI/ANS-56.8-2020, Containment System Leakage Test Requirements (revision of ANSI/ANS 56.8-2002; R2016)	LLWRCC
ANSI/ANS-57.8-2020, Fuel Assembly Identification (revision of ANSI/ANS-57.8-1995; R2017)	FWDCC
ANSI/ANS-58.8-2019, Time Response Criteria for Manual Actions at Nuclear Power Plants (revision of ANSI/ANS-58.8-1994; R2017)	LLWRCC
ANSI/ASME/ANS RA-S-1.1-2022 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications [revision of ANSI/ASME/ANS RA-S-2008; R2019)	JCNRM
ANSI/ASME/ANS RA-S-1.4-2021, Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants (new standard)	JCNRM

ANS Consensus Committees*

ESCC: Environmental and Siting Consensus Committee	FWDCC: Fuel, Waste, and Decommissioning Consensus Committee
JCNRM: ANS/ASME Joint Committee on Nuclear Risk Management	LLWRCC: Large Light Water Reactor Consensus Committee
NCSCC: Nuclear Criticality Safety Consensus Committee	NRNFCC: Nonreactor Nuclear Facilities Consensus Committee
RARCC: Research and Advanced Reactors Consensus Committee	SRACC: Safety and Radiological Analyses Consensus Committee