S

S A programming language used widely in the UNIX environment for data analysis and visualization. (C) 610.13-1993w

SA *See:* source address; spin axis.

sabin (audio and electroacoustics) A unit of absorption having the dimensions of area. *Notes:* 1. The metric sabin has dimensions of square meters. 2. When used without a modifier, the sabin is the equivalent of one square foot of a perfectly absorptive surface. (SP) [32]

SAC *See:* slanted array compressor.

SACK *See:* selective acknowledgment.

sacrificial protection Reduction or prevention of corrosion of a metal in an environment acting as an electrolyte by coupling it to another metal that is electrochemically more active in that particular electrolyte. *See also:* stray-current corrosion. (IA) [59]

safe Having acceptable risk of the occurrence of a hazard. (VT/RT) 1483-2000

safe braking model An analytical representation of a train's performance while decelerating to a complete stop, allowing for a combination of worst-case influencing factors and failure scenarios. A communications-based train control equipped train will stop in a distance equal to or less than that guaranteed by the safe braking model. (VT/RT) 1474.1-1999

safeguard (1) (electrolytic cell line working zone) A precautionary measure or stipulation, or a technical contrivance to prevent accidents. (IA/PC) 463-1993w

(2) Security measures for the physical protection of nuclear material and vital equipment at a nuclear power generating station. (PE/NP) 692-1997

safe let-go level The current level passing through a hand grip contact for which 99.5% of the subject population would retain sufficient muscular control to voluntarily release the subject grip and break contact. *Note:* The safe let-go level is a function of the frequency and voltage and varies considerably for various contact areas and pressures. Individual responses vary greatly from the mean level, and different levels are obtained for men, women, and children. (T&D/PE) 539-1990

safe shutdown earthquake (1) (seismic qualification of Class 1E equipment for nuclear power generating stations) An earthquake that is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake that produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional. These structures, systems, and components are those necessary to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and 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, Ch 1, Section 100. (PE/NP) 344-1987r

(2) (valve actuators) That earthquake which produces the maximum vibratory ground motion for which certain structural systems are designed to remain functional. These structures, systems, and components are those 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;
c) The capability to prevent or mitigate the consequences of an accident which could result in potential offsite exposures comparable to the exposure guideline of CFR 10, Energy—Nuclear Regulatory Commission, Part 100 (Dec 5, 1973.)

(SWG/PE/NP/PSR) C37.81-1989r, 382-1985, C37.98-1977s

(3) (nuclear power generating station) That earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional. (PE/NP) 649-1980s

(4) That earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional. These structures, systems, and components are those necessary to ensure (1) the integrity of the reactor coolant pressure boundary, and (2) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guideline exposures of Code of Federal Regulations, Title 10, Part 100 (December 5, 1973). (SWG/PE) C37.100-1992

safety assurance A characteristic of the implementation of a system that assures a level of safe operation. (VT/RT) 1483-2000

safety assurance concept A design concept applied to processor-based systems that assures the fail-safe implementation of identified functions, including safe operation in the presence of hardware failures and/or software errors. Examples are: Checked Redundancy; Diversity and Self-Checking; Numerical Assurance; and N-Version Programming. (VT/RT) 1483-2000

safety class features (Class 1E equipment and circuits) Structures design to protect Class 1E equipment against the effects of design basis events. *Note:* For the purposes of this standard, separate safety class structures can be separate rooms in the same building. The rooms may share a common wall. (PE/NP) 384-1981s

safety class structures Structures designed to protect Class 1E equipment against the effects of the design basis events. (PE/NP) 384-1992r, 308-1991

safety, conductor *See:* conductor safety.

safety control feature (deadman's feature) That feature of a control system that acts to reduce or cut off the current to the traction motors or to apply the brakes, or both, if the operator relinquishes personal control of the vehicle. *See also:* multiple-unit control. (EEC/PE) [119]

safety control handle (deadman's handle) A safety attachment to the handle of a controller, or to a brake valve, causing the current to the traction motors to be reduced or cut off, or the brakes to be applied, or both, if the pressure of the operator's hand on the handle is released. *Note:* This function may be applied alternatively to a foot-operated pedal or in combination with attachments to the controller or the brake valve handles, or both. *See also:* multiple-unit control. (EEC/PE) [119]

safety critical A term applied to a system or function, the correct performance of which is critical to safety of personnel and/or equipment; also a term applied to a system or function, the incorrect performance of which may result in an unacceptable hazard. *Note:* A safety-critical designation may require the incorporation of additional special safety design features. *See also:* fail-safe. (VT/RT) 1473-1999, 1483-2000, 1475-1999

(2) (A) A term applied to a system or function, the correct performance of which is critical to safety of personnel and/or equipment. **(B)** A term applied to a system or function, the incorrect performance of which may result in a hazard. *Note:* Vital functions are a subset of safety-critical functions. (VT/RT) 1474.1-1999

safety-critical software Software that falls into one or more of the following categories:

a) Software whose inadvertent response to stimuli, failure to respond when required, response out-of-sequence, or re-

sponse in combination with other responses can result in an accident.

b) Software that is intended to mitigate the result of an accident.

c) Software that is intended to recover from the result of an accident.

(C/SE) 1228-1994

safety function One of the processes or conditions (for example, emergency negative reactivity insertion, post-accident heat removal, emergency core cooling, post-accident radioactivity removal, and containment isolation) essential to maintain plant parameters within acceptable limits established for a design basis event. *Note:* A safety function is achieved by the completion of all required protective actions by the reactor trip system or the engineered safety features concurrent with the completion of all required protective actions by the auxiliary supporting features, or both.

(PE/NP) 603-1998, 338-1987r, 379-1994

safety ground (1) The connection between a grounding system and metallic parts that are not usually energized but that may become live due to a fault or an accident; often referred to as equipment or frame ground. (PE/EDPG) 665-1995

(2) *See also:* equipment grounding conductor.

(IA/PSE) 1100-1999

safety group A given minimal set of interconnected components, modules, and equipment that can accomplish a safety function. (PE/NP) 603-1998, 308-1991

safety life line A safety device normally constructed from synthetic fiber rope and designed to be connected between a fixed object and the body belt of a worker working in an elevated position when his/her regular safety strap cannot be utilized. *Synonyms:* safety line; life line; scare rope.

(T&D/PE) 524-1992r

safety line *See:* safety life line.

safety outlet *See:* grounding outlet.

safety-related (nuclear power generating station) Any Class IE power or protection system device included in the scope of IEEE 279-1971 or IEEE 308-1974. (PE/NP) 577-1976r

safety ring *See:* write-protect ring.

safety sign A visual alerting device in the form of a sign, label, decal, placard, or other marking that advises the observer of the nature and degree of the potential hazard(s), which can cause injury or death. It can also provide safety precautions or evasive actions to take, or provide other directions to eliminate or reduce the hazard. (NIR/SCC28) C95.2-1999

safety strap *See:* positioning strap.

safety system (1) (nuclear power plants) Those systems (the reactor trip system, an engineered safety feature, or both, including all their auxiliary supporting features and other auxiliary features) that provide a safety function. A safety system is comprised of more than one safety group of which any one safety group can provide the safety function.

(PE/NP) 338-1987r, 600-1983lw, 497-1981w

(2) (nuclear power generating station) (design of control room complex) The collection of systems required to minimize the probability and magnitude of release of radioactive material to the environment by maintaining plant conditions within the allowable limits established for each design basis event. *Note:* The safety system is the aggregate of one or more protective action systems. It includes, but is not necessarily limited to, the engineered safety features, the reactor trip system, and the auxiliary supporting features.

(PE/NP) 567-1980w

(3) A system that is relied upon to remain functional during and following design basis events 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 accidents that could result in potential off-site exposures comparable to the 10 CFR Part 100 guidelines. *Note:* The electrical portion of the safety systems, that perform safety functions, is classified as Class 1E.

(PE/NP) 603-1998

safety validation A structured and managed set of activities that demonstrate that the system, as specified and implemented, performs the intended functions, and that those functions result in overall safe operation. Validation answers the question, "Did we build the right system?" (VT/RT) 1483-2000

safety verification A structured and managed set of activities that identify the vital functions required to be performed by the system, and demonstrate that the system, including its subsystems, inter faces and components, implements the vital functions fail-safely to a level that meets the allocated system safety goals. Verification answers the question, "Did we build the system right?" (VT/RT) 1483-2000

safe working space (electrolytic cell line working zone) The space required to safeguard personnel from hazarous electrical conditions during the conduct of their work in operating and maintaining cells and their attachments. This shall include space allowance for tools and equipment that may be involved. (IA/PC) 463-1977s

safe working voltage to ground (electric recording instrument) The highest safe voltage in terms of maximum peak value that should exist between any circuit of the instrument and its case. *See also:* test. (EEC/ERI) [111]

safe work practices (electrolytic cell line working zone) Those operating and maintenance procedures that are effective in preventing accidents. (IA/PC) 463-1993w

SAFI *See:* semiautomatic flight inspection.

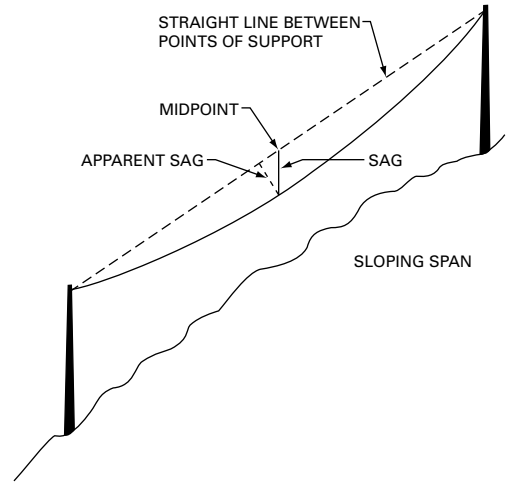
sag (1) The distance measured vertically from a conductor to the straight line joining its two points of support. Unless otherwise stated in the rule, the sag referred to is the sag at the midpoint of the span. *See also:* sag of a conductor at any point in a span; apparent sag at any point in the span; maximum total sag; final unloaded sag; final sag; initial unloaded sag; total sag; apparent sag.

(NESC/T&D/PE) C2-1997, 524-1992r

(2) A decrease in rms voltage or current at the power frequency for durations of 0.5 cycle to 1 min. Typical values are 0.1 to 0.9 pu. *Note:* To give a numerical value to a sag, the recommended usage is "a sag to 20%," which means that the line voltage is reduced down to 20% of the normal value, not reduced by 20%. Using the preposition "of" (as in "a sag of 20%," or "a 20% sag") is deprecated. (SCC22) 1346-1998

(3) An rms reduction in the ac voltage, at the power frequency, for durations from a half cycle to a few seconds. *See also:* notch; undervoltage. (IA/PSE) 1100-1999

sag and appararent sag (apparent sag at any point) The departure of the wire at the particular point in the span from the straight line between the two points of support of the span, at 60°F, with no wind loading. (See the corresponding figure.)



sag and apparent sag

(NESC) C2-1997

sag board *See:* target sag.

sagger *See:* wheel tractor.

Sagnac effect (laser gyro) (interferometric fiber optic gyro) A relativistic rotation-induced optical path length difference between electromagnetic waves that counter-propagate around a closed path. (AES/GYAC) 528-1994

sag of a conductor at any point in a span The distance measured vertically from the particular point in the conductor to a straight line between its two points of support. (T&D/NESC) C2-1997

sag section (conductor stringing equipment) The section of line between snub structures. More than one sag section may be required in order to sag properly the actual length of conductor that has been strung. *Synonyms:* stringing section; pull; setting; pull setting. (T&D/PE) 524-1992r

sag span (conductor stringing equipment) A span selected within a sag section and used as a control to determine the proper sag of the conductor, thus establishing the proper conductor level and tension. A minimum of two, but normally three, sag spans are required within a sag section in order to sag properly. In mountainous terrain or where span lengths vary radically, more than three sag spans could be required within a sag section. *Synonym:* control span. (T&D/PE) 524-1992r

sag target (conductor stringing equipment) A device used as a reference point to sag conductors. It is placed on one structure of the sag span. The sagger, on the other structure of the sag span, can use it as his reference to determine the proper conductor sag. *Synonym:* target. (T&D/PE) 524-1980s

SAID *See:* security association identifier.

sal ammoniac cell A cell in which the electrolyte consists primarily of a solution of ammonium chloride. *See also:* electrochemistry. (EEC/PE) [119]

salient pole (rotating machinery) A field pole that projects from the yoke or hub towards the primary winding core. *See also:* rotor. (PE) [9]

salient-pole machine An alternating-current machine in which the field poles project from the yoke toward the armature and/or the armature winding self-inductance undergoes a significant single cyclic variation for a rotor displacement through one pole pitch. *See also:* asynchronous machine. (PE) [9]

salient pole synchronous induction motor (rotating machinery) A salient pole synchronous motor having a coil winding for starting purposes embedded in the pole shoes. The terminal leads of this coil winding are connected to collector rings. (PE) [9]

salinity indicator system A system, based on measurement of varying electric resistance of the solution, to indicate the amount of salt in boiler feed water, the output of an evaporator plant, or other fresh water. *Note:* Indication is usually in grains per gallon. (EEC/PE) [119]

SAM *See:* sequential access method.

SAM76 A list processing language widely used in artificial intelligence due to its unique suitability for interactive and user-directed applications. (C) 610.13-1993w

sample One or more units of product drawn from a lot, the units of sample being selected at random without regard to their quality. (PE/T&D) C135.61-1997

sample-and-hold device A device that senses and stores the instantaneous value of an analog signal. (C) 610.10-1994w

sampled data Data in which the information content can be, or is, ascertained only at discrete intervals of time. *Note:* Sampled data can be analog or digital. *See also:* feedback control system. (IA/EEC) [61], [74]

sampled-data control system A system that operates with sampled data. *See also:* feedback control system. (IA/ICTL/IAC) [60]

sampled-data system One in which at least one sampled signal is present. *See also:* control system. (CS/IM) [120]

sample description −1, −2, −3, −4 Four 64-character records containing a sample description. These records will provide information on the source of the sample being analyzed. If not used they should be set to spaces. (NPS/NID) 1214-1992r

sampled format (pulse measurement) A waveform which is a series of sample magnitudes taken sequentially or nonsequentially as a function of time. It is assumed that nonsequential samples may be rearranged in time sequence to yield the following samples formats. *See also:* aperiodically sampled equivalent time format; periodically sampled equivalent time format; periodically sampled real time format; aperiodically sampled real time format. (IM/WM&A) 181-1977w

sampled signal The sequence of values of a signal taken at discrete instants. *See also:* control system. (PE/EDPG) [3]

sample edge A time corresponding to a falling edge of the bus clock signal. (C/MM) 1196-1987w

sample equipment (1) (nuclear power generating station) Production equipment tested to obtain data that are valid over a range of ratings and for specific services. (PE/NP) 323-1974s, 650-1979s

(2) (safety systems equipment in nuclear power generating stations) Equipment, representative of a design, used to obtain data that are valid over a range of ratings and for specific service conditions. (PE/NP) 627-1980r

sample instance diagram A form of presenting example instances in which instances are shown as separate graphic objects. The graphic presentation of instances can be useful when only a few instances are presented. *Contrast:* sample instance table. (C/SE) 1320.2-1998

sample instance table A form of presenting example instances in which instances are shown as a tabular presentation. The tabular presentation of instances can be useful when several instances of one class are to be presented. *Contrast:* sample instance diagram. (C/SE) 1320.2-1998

SAMPLE/PRELOAD A defined instruction for the test logic defined by IEEE Std 1149.1-1990. (TT/C) 1149.1-1990

sample size Based on the lot size. Minimum sample sizes are given in the following table.

Lot size	Sample size
1–29	3
30–150	5
151–1200	13
1201–10 000	20
10 001–35 000	32

(PE/T&D) C135.61-1997

sample software Software selected from a current or completed project from which data can be obtained for use in preliminary testing of data collection and metric computation procedures. (C/SE) 1061-1992s

sample time The time of the physical collection of the sample material, as

DD/MM/YR␣HH:NN:SS␣

where the '␣' (underscore character) is an ASCII space; DD is the day; MM is the month; YR is the year; HH is the hours; NN is the minutes; and SS is the seconds. (NPS/NID) 1214-1992r

sample valve actuator A representative unit manufactured in accordance with the manufacturer's quality control system and specifications for production units. (PE/NP) 382-1980s

sample valve operator (nuclear power generating station) A production valve operator type tested to obtain data that are valid over a range of sizes and for the specific services. *Note:* All salient factors must be shown to be common to the sample valve operator and to the intended service valve operator. Commonality of factors such as materials of construction, lubrication, mechanical stresses and clearances, manufacturing processes, and dielectric properties may be established by specification, test, or analyses. (PE/NP) 382-1980s

sampling (1) (pulse terminology) A process in which strobing pulses yield signals that are proportional to the magnitude (typically, as a function of time) of a second pulse or other event. (IM/WM&A) 194-1977w

(2) (image processing) The technique of dividing an image into disjoint regions, selecting a single point in each region to represent the region, and measuring the brightness or color of each of these points. (C) 610.4-1990w

(3) The process of obtaining the values of a function for regularly or irregularly spaced distinct values of an independent variable. (C) 610.10-1994w

sampling circuit (sampler) A circuit whose output is a series of discrete values representative of the values of the input at a series of points in time. (PE/EEC) [119]

sampling control *See:* sampling control system.

sampling control system Control using intermittently observed values of signals such as the feedback signal or the actuating signal. *Note:* The sampling is often done periodically. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

sampling gate A device that extracts information from the input wave only when activated by a selector pulse or sampling pulse. (AES) 686-1997

sampling, instantaneous *See:* instantaneous sampling.

sampling interval (automatic control) The time between samples in a sampling control system. *See also:* feedback control system. (IM) [120]

sampling period (automatic control) The time interval between samples in a periodic sampling control system. *See also:* feedback control system. (IM) [120]

sampling rate (1) For the purposes of "de-bouncing" and noise rejection, the receiving station (BCC or DCC) of a special function signal shall sample the signal at a specified rate for a specified length of time in order to determine the "filtered" logic sense of the signal. The clock rate used is referred to as the sampling rate. (EMB/MIB) 1073.3.1-1994

(2) The frequency with which the event recorder regularly monitors an input channel to determine its value. (VT) 1482.1-1999

sampling smoke detector (fire protection devices) A device which consists of tubing distributed from the detector unit to the area(s) to be protected. An air pump draws air from the protected area back to the detector through the air sampling ports and piping. At the detector, the air is analyzed for smoke particles. (NFPA) [16]

sampling tests Tests carried out on a few samples taken at random out of one consignment. *See also:* direct-current commutating machine; asynchronous machine. (PE) [9]

sanding Dropping or blowing of sand or similar material on the top of the rail head to increase the coefficient of friction to obtain better adhesion. (VT) 1475-1999

SAP *See:* service access point.

SAR *See:* synthetic-aperture radar.

SAS *See:* Statistical Analysis System.

sash A visual user interface control that separates areas of a window to allow the user to display alternative information. (C) 1295-1993w

satellite (communication satellite) A body which revolves around another body and which has a motion primarily and permanently determined by the force of attraction of this body. *Note:* A body so defined which revolves round the sun is called a planet or planetoid. By extension, a natural satellite of a planet may itself have a satellite. (COM) [19]

satellite computer A processor connected locally or remotely to a larger central processor, and performing certain processing tasks. *See also:* remote computer system. (C) 610.10-1994w

satellite navigation (navigation aid terms) Navigation using artificial earth satellites as an aid. Position is computed by determination of either angles, range and range rate, or range and angle measurements of the vehicle relative to the satellite plus satellite ephemeris data received by the vehicle. Satellite ephemeris data can be determined by tracking stations and transmitted to and stored in the satellite's memory for subsequent transmission to vehicle's receivers. (AES/GCS) 172-1983w

satellite phasing (communication satellite) Maintaining the center of mass of a satellite by propulsion within a prescribed small tolerance in a desired relation with respect to other satellites or a point on the earth or some other point of reference, such as the subsolar point. (COM) [19]

saturable-core magnetometer A magnetometer that depends for its operation on the changes in permeability of a ferromagnetic core as a function of the field to be measured. *See also:* magnetometer. (EEC/PE) [119]

saturable-core reactor *See:* saturable reactor.

saturable reactor (saturable core reactor) (electrical heating applications to melting furnaces and forehearths in the glass industry) A device that provides output voltage modulation by variation of its circuit reactance. This reactance is controlled by changing the saturation of its magnetic core through variation of a superimposed unidirectional flux. (IA) 668-1987w

(2) (A) (power and distribution transformers) A magnetic-core reactor whose reactance is controlled by changing the saturation of the core through variation of a super-imposed unidirection flux. **(B) (power and distribution transformers)** A magnetic-core reactor operating in the region of saturation without independent control means. *Note:* Thus a reactor whose impedance varies cyclically with the alternating current (or voltage). (PE/TR) C57.12.80-1978

saturated relay recovery time Recovery time of a thermal relay measured after temperature saturation has been reached. (EEC/REE) [87]

saturated relay reoperate time Reoperate time of a thermal relay measured when the relay is de-energized after temperature saturation (equilibrium) has been reached. (EEC/REE) [87]

saturated signal *See:* saturating signal.

saturated sleeving A flexible tubular product made from braided cotton, rayon, nylon, glass, or other fibers, and coated or impregnated with varnish, lacquer, a combination of varnish and lacquer, or other electrical insulating materials. The impregnant or coating need not form a continuous film. (EEC/PE) [119]

saturating reactor A magnetic-core reactor operating in the region of saturation without independent control means. *See also:* magnetic amplifier. (EEC/PE) [119]

saturating signal (electronic navigation) A signal of an amplitude greater than can be accommodated by the dynamic range of a circuit. *See also:* navigation. (AES/RS) 686-1982s, [42]

saturation (1) (signal-transmission system) A natural phenomenon or condition in which any further change of input no longer results in appreciable change of output. (IA/IA/APP/IAC) [69], [60]

(2) (automatic control) A condition caused by the presence of a signal or interference large enough to produce the maximum limit of response, resulting in loss of incremental response. *See also:* feedback control system; signal. (IE/PE/EDPG) [43], [3]

(3) (A) (visual) The attribute of a visual sensation which permits a judgment to be made of the proportion of pure chromatic color in the total sensation. *Note:* This attribute is the psychosensorial correlate (or nearly so) of the colorimetric quantity "purity." **(B) (color television)** In a tristimulus reproducer, the degree to which the color lies on the triangle as defined by the three reproducing primaries. *Note:* Full saturation is achieved when one or two of the reproduced primary colors have zero intensity. (BT/AV) 201-1979

(4) (A) (perceived light-source color) The attribute used to describe its departure from a light-source color of the same brightness perceived to have no hue. *See also:* color. **(B) (illuminating engineering)** (of a perceived color) The attribute according to which it appears to exhibit more or less

chromatic color judged in proportion to its brightness. In a given set of viewing conditions, and at luminance levels that result in photopic vision, a stimulus of a given chromaticity exhibits approximately constant saturation for all luminances. (EEC/IE) [126]

(5) (diode-type camera tube) The point on the signal transfer characteristic where an increase in the input irradiance signal does not change the resulting output current signal significantly. (ED) 503-1978w

(6) (of a maser, laser, maser material, or laser material) (laser-maser) A condition in which the attenuation or gain of a material or a device remains at a fixed level or decreases as the input signal is increased. (LEO) 586-1980w

(7) (A) In a switching device or amplifier, the fully conducting state at which the device is passing the maximum possible current. *Note:* Most commonly used in reference to circuits containing bipolar or field-effect transistors. **(B)** In color graphics and printing, the amount of color in a specified hue. *Note:* The saturation affects the vividness of the image. (C) 610.10-1994

(8) The amount of a particular gas that can be dissolved in a fluid at a given pressure and temperature. The saturation of all gases of interest is linearly proportional to absolute pressure. However, the effect of temperature varies with the specific gas. Some gases exhibit a decrease in saturation with increasing temperature while others tend to increase. The variation with temperature is generally small and can be neglected when evaluating samples in the lab. (PE/IC) 1406-1998

saturation characteristics (nuclear power generating station) A description of the steady state or dynamic conditions or limitations under which a further change in input produces an output response which no longer conforms to the specified steady-state or dynamic input-output relationship. (PE/NP) 381-1977w

saturation current (1) (thermionics) The value of the current in the saturation state. *See also:* electron emission. (ED) [45]

(2) (semiconductor diode) That portion of the steady-state reverse current that flows as a result of the transport across the junction of minority carriers thermally generated within the regions adjacent to the junction. *See also:* semiconductor device. (ED) 216-1960w

(3) (diode-type camera tube) The value of the output current signal saturation. Units: amperes. (ED) 503-1978w

saturation curve (machine or other apparatus) A characteristic curve that expresses the degree of magnetic saturation as a function of some property of the magnetic excitation. *Note:* For a direct-current or synchronous machine the curve usually expresses the relation between armature voltage and field current for no load or some specified load current, and for specified speed. (PE) [9]

saturation factor (K_s) (1) (rotating machinery) The ratio of the unsaturated value of a quantity to its saturated value. The reciprocal of this definition is also used. (PE) [9]

(2) The ratio of the saturation voltage of a current transformer to the excitation voltage. Saturation factor is an index of how close to saturation a current transformer is in a given application. (PE/PSR) C37.110-1996

saturation flux density (1) (pipelines and vessels) The maximum possible magnetic flux density in a material. (IA/PC) 844-1991

(2) *See also:* saturation induction. (MAG) 393-1977s

saturation induction (magnetic core testing) The maximum intrinsic value of induction possible in a material. *Notes:* 1. This term is often used for the maximum value of induction at a stated high value of field strength where further increase in intrinsic magnetization with increasing field strength is negligible. 2. S.I. unit: Tesla: cgs unit: Gauss (1 Tesla), 10^4 Gauss. 3. Peak induction (Bm) is the magnetic induction corresponding to the peak applied magnetizing force specified in a test. (MAG) 393-1977s

saturation level (storage tubes) The output level beyond which no further increase in output is produced by further writing (then called write saturation) or reading (then called read saturation). *Note:* The word saturation is frequently used alone to denote saturation level. *See also:* storage tube. (ED) 158-1962w, [45]

saturation region of an IGFET *See:* saturation region of an insulated-gate field-effect transistor.

saturation region of an insulated-gate field-effect transistor (metal-nitride-oxide field-effect transistor) A portion of the I_{DS} versus V_{DS} characteristic where I_{DS} is nearly constant regardless of the value of V_{DS}. This is true when $|V_{DS}| \geq |V_{GS} - V_T|$. *Synonym:* saturation region of an IGFET. (ED) 581-1978w

saturation state (thermionics) The state of working of an electron tube or valve in which the current is limited by the emission from the cathode. *See also:* electron emission. (ED) [45]

saturation voltage (V_x) The symmetrical voltage across the secondary winding of the current transformer for which the peak induction just exceeds the saturation flux density. It is found graphically by locating the intersection of the straight portions of the excitation curve on log-log axes. This is not the same as the knee-point voltage which is the point on the curve where the tangent to the curve makes an angle of 45° to the abscissa. (PE/PSR) C37.110-1996

save area An area of main storage in which the contents of registers are saved. (C) 610.10-1994w

saved program state The set of information, necessary to begin or resume the execution of a client program, describing the machine state (including CPU registers) that will be established upon resumption or initiation of client program execution. (C/BA) 1275-1994

saved set-group-ID (1) An attribute of a process that allows some flexibility in the assignment of the effective group ID attribute, when the saved set-user-ID option is implemented. (C/PA/C/PA) 9945-1-1996, 9945-2-1993

(2) When the Saved IDs option is implemented, an attribute of a process that allows some flexibility in the assignment of the effective group ID attribute, as described for `Set_Group_ID`. (C) 1003.5-1999

saved set-user-ID (1) An attribute of a process that allows some flexibility in the assignment of the effective user ID attribute, when the saved set-user-ID option is implemented. (C/PA) 9945-1-1996, 9945-2-1993

(2) When the Saved IDs option is implemented, an attribute of a process that allows some flexibility in the assignment of the effective user ID attribute, as described for `Set_User_ID`. (C) 1003.5-1999

SAW *See:* surface acoustic wave.

SAW filter A filter characterized by the use of surface acoustic waves that are usually generated by an interdigital transducer and that propagate along a substrate surface to a receiving transducer. (UFFC) 1037-1992w

SAW oscillator An oscillator that uses a SAW device (resonator or delay line) as the main frequency-controlling element. (UFFC) 1037-1992w

SAW resonator filter A type of surface acoustic wave filter that offers a high $Q(f_0/\Delta f)$ and incorporates efficient reflective arrays to form a Fabry-Perot resonant cavity. (UFFC) 1037-1992w

sawtooth *See:* sawtooth waveform.

sawtooth sweep A sweep generated by the ramp portion of a sawtooth waveform. *See also:* oscillograph. (IM/HFIM) [40]

sawtooth wave (television) A periodic wave whose instantaneous value varies substantially linearly with time between two values, the interval required for one direction of progress being longer than that for the other. *Note:* In television practice, the waveform during the retrace interval is not necessarily linear, since only the trace interval is used for active scanning. (BT/AV) 201-1979w

sawtooth waveform A waveform containing a ramp and a return to initial value, the two portions usually of unequal duration. *See also:* oscillograph. (IM/HFIM) [40]

S-band A radar-frequency band between 2 GHz and 4 GHz, usually in one of the International Telecommunication Union (ITU) allocated bands 2.3–2.5 GHz or 2.7–3.7 GHz. (AES) 686-1997

S-BASIC A dialect of the BASIC programming language. (C) 610.13-1993w

SBS *See:* system breakdown structure.

SBM *See:* Serial Bus management.

SBus A) The correct spelling of the noun describing the bus defined by this standard. B) The name for the Chip and Module Interconnect Bus described by this standard. (C/BA) 1496-1993w

SBus Card A physical printed circuit assembly that conforms to the single-width or double-width mechanical specifications; meets the connector, power, and signal assignment requirements of this standard; and contains one or more SBus Devices. (C/BA) 1496-1993w

SBus Controller The SBus Device that performs all the centralized services for the SBus, including bias circuitry, arbitration, and address translation for SBus Masters, and selection of and time-outs for SBus Slaves. (C/BA) 1496-1993w

SBus Cycle One complete operation on the SBus, consisting of a set of phases beginning with an optional Arbitration Phase and progressing through the optional Translation Phase, the optional Extended Transfer Information Phase, and the Transfer Phase. (C/BA) 1496-1993w

SBus Device A set of circuitry complying with the electrical and protocol requirements of the SBus and properly implementing all the signals of the SBus. An SBus Device may reside on the computer motherboard or it may be on an SBus Card. See SBus Controller, SBus Master, SBus Slave. (C/BA) 1496-1993w

SBus Master The SBus Device that requests data transfers to be performed by an SBus Slave. (C/BA) 1496-1993w

SBus Master port In an SBus Device that combines both an SBus Master and an SBus Slave, the circuitry that is associated with the SBus Master. (C/BA) 1496-1993w

SBus Slave The SBus Device providing the function of performing the data transfers requested by an SBus Master. The address space for the data transfers may contain data, control registers, or sense registers. (C/BA) 1496-1993w

SBus Slave port In an SBus Device that combines both an SBus Master and an SBus Slave, the circuitry that is associated with the SBus Slave. (C/BA) 1496-1993w

SBus Slot The location on a computer motherboard in which an SBus Card may be installed. The SBus Slot has the connector, the electrical characteristics, and the physical volumes and dimensions that are required by this standard. (C/BA) 1496-1993w

SBus Specification SBus Specification B.0, an earlier specification of SBus, now superseded by the IEEE Std 1496-1993. (C/BA) 1496-1993w

SBus standard IEEE Std 1496-1993, IEEE Standard for a Chip and Module Interconnect Bus: SBus. (C/BA) 1496-1993w

SBus System A computer system containing a motherboard with at least an SBus Controller and some combination of zero or more SBus Slots which may be populated with SBus Cards. The SBus System may additionally have SBus Devices integrated on the motherboard. The SBus System includes the electronic, powering, cooling, and mechanical support functions required by the installed SBus Devices and SBus Slots. (C/BA) 1496-1993w

SC *See:* station-type cubicle switchgear.

SCADA *See:* supervisory control data acquisition system.

scada channel (supervisory control, data acquisition, and automatic control) The communication path between master and remote stations. (SWG/PE/SUB) C37.100-1992, C37.1-1994

scaffolding Computer programs and data files built to support software development and testing, but not intended to be included in the final product. For example, dummy routines or files, test case generators, software monitors, stubs. *See also:* programming support environment. (C) 610.12-1990

scalability The ability to provide functionality up and down a graduated series of application platforms that differ in speed and capacity. (C/PA) 14252-1996

Scalable Coherent Interface (1) The name that refers to IEEE Std 1596-1992. Though functionally behaving as a bus, the SCI's physical implementation is a collection of point-to-point unidirectional links (i.e., a ring). (C/MM) 1212-1991s

(2) The Scalable Coherent Interface standard, IEEE Std 1596-1992. (C/MM) 1596.3-1996

scalable font A font that can be scaled to produce characters in varying sizes. *See also:* derived font; outline font. (C) 610.10-1994w

scalar (1) (computers) A data item used to represent a single number or entity. *Contrast:* vector. (C) 610.5-1990w, 1084-1986w

(2) Quantity that is completely specified by a single number. (Std100) 270-1966w

(3) A value that is atomic, i.e., having no parts. *Contrast:* collection-valued. (C/SE) 1320.2-1998

(4) An integer constant. (C/DA) 1481-1999

scalar approximation The reduction of the vector representation of an electromagnetic field to a scalar description by assuming that the field is identically polarized at every point in space. *Note:* It usually means that cross-polarization effects are ignored. (AP/PROP) 211-1997

scalar field The totality of scalars in a given region represented by a scalar function $S(x, y, z)$ of the space coordinates x, y, z. (Std100) 270-1966w

scalar function A functional relationship that results in a scalar. (Std100) 270-1966w

Scalar Parameter An instance of the class `IEEE1451_ScalarParameter` or of a subclass thereof. (IM/ST) 1451.1-1999

scalar product (dot product) (of two vectors) The scalar obtained by multiplying the product of the magnitudes of the two vectors by the cosine of the angle between them. The scalar product of the two vectors A and B may be indicated by means of a dot $A \cdot B$. If the two vectors are given in terms of their rectangular components, then

$$A \cdot B = A_x B_x + A_y B_y + A_z B_z$$

Example: Work is the scalar product of force and displacement. (Std100) 270-1966w

scalar property *See:* scalar-valued property.

scalar radiative transfer A radiative transfer theory in which the vector nature of the fields is ignored. *Synonym:* scalar radiative transport. (AP/PROP) 211-1997

scalar radiative transport *See:* scalar radiative transfer.

Scalar Series Parameter An instance of the class `IEEE1451_ScalarSeriesParameter` or of a subclass thereof. (IM/ST) 1451.1-1999

scalar solutions Solutions of Maxwell's equations where cross-polarization effects are disregarded, i.e., coupling between transverse electric (TE) and transverse magnetic (TM) fields is ignored. (AP/PROP) 211-1997

scalar unit An arithmetic unit that operates on one data element at a time. (C) 610.10-1994w

scalar-valued class A class in which each instance is a single value. *Contrast:* collection-valued class. (C/SE) 1320.2-1998

scalar-valued property A property that maps to a scalar-valued class. *Contrast:* collection-valued property. (C/SE) 1320.2-1998

scalar wave equation *See:* homogeneous Helmholtz equation.

scale (1) A musical scale is a series of notes (symbols, sensations, or stimuli) arranged from low to high by a specified scheme of intervals, suitable for musical purposes. (SP/ACO) [32]

(2) (computers) To change a quantity by a factor in order to bring its range within prescribed limits. (C) [20], [85]

(3) (instrument scale) *See also:* full scale. (C) 1084-1986w

(4) (mathematics of computing) To multiply the representation of a number by a factor in order to bring its range within prescribed limits. (C) 1084-1986w

(5) (A) (data management) To adjust the representation of a quantity so that its value is brought within a specified range. **(B) (data management)** The difference between the original and resulting adjustment as in definition (A). **(C) (data management)** A system of mathematical notation such as fixed-point or floating point. (C) 610.5-1990

(6) (computer graphics) To change the size of a display element by multiplying its coordinates by a constant value. *Note:* An object can be scaled by the same amount in each of its dimensions (global scaling) or by a different amount in each of its dimensions. (C) 610.6-1991w

(7) A visual user interface control that represents a quantity and its relationship to the range of possible values for that quantity. The user can change the value of the quantity. (C) 1295-1993w

scale class (mechanical demand registers) Denotes, with respect to single-pointer-form, dual-range single-pointer form, or cumulative-form demand registers, the relationship between the full-scale value of the register and the kilovolt ampere (kVA) rating of the meter with which the register is used. (ELM) C12.4-1984

scale factor (1) (high voltage testing) (measuring system) (of a measuring system) The factor by which the output indication is multiplied to determine the measured value of the input quantity or function. (PE/PSIM) 4-1995

(2) In an analog computer, the multiplication factor necessary to transform problem variables into computer variables. *Note:* A problem variable is a variable appearing in the mathematical model of the problem. A computer variable is a dependent variable as represented on the computer. (C) 610.10-1994w, 165-1977w

(3) (mathematics of computing) A number used as a factor in a scaling operation. *See also:* scale. (C) 1084-1986w

(4) (A) (accelerometer) (gyros) The ratio of a change in output to a change in the input intended to be measured. Scale factor is generally evaluated as the slope of the straight line that can be fitted by the method of least squares to input-output data obtained by varying the input cyclically within the input range. **(B) (laser gyro)** The ratio of change in angular displacement about the input axis to a change in output (arc-seconds per pulse). The laser gyro scale factor is directly proportional to the total path length and operating wavelength, and inversely proportional to the effective enclosed ring area. (AES/GYAC) 528-1994

scale factor asymmetry (accelerometer) (gyros) The difference between the scale factor measured with positive input and that measured with negative input, specified as a fraction of the scale factor measured over the input range. Scale factor asymmetry implies that the slope of the input-output function is discontinuous at zero input. It must be distinguished from other nonlinearities. (AES/GYAC) 528-1994

scale-factor potentiometer *See:* parameter potentiometer.

scale length (electric instruments) The length of the path described by the indicating means or the tip of the pointer in moving from one end of the scale to the other. *Notes:* 1. In the case of knife-edge pointers and others extending beyond the scale division marks, the pointer shall be considered as ending at the outer end of the shortest scale division marks. In multiscale instruments the longest scale shall be used to determine the scale length. 2. In the case of antiparallax instruments of the step-scale type with graduations on a raised step in the plane of and adjacent to the pointer tip, the scale length shall be determined by the end of the scale divisions adjacent to the pointer tip. *See also:* instrument. (EEC/AII) [102]

scale model A physical model that resembles a given system, with only a change in scale; for example, a replica of an airplane one tenth the size of the actual airplane. (C) 610.3-1989w

scale-of-two counter A flip-flop circuit in which successive similar pulses, applied at a common point, cause the circuit to alternate between its two conditions of permanent stability. *See also:* trigger circuit. (EEC/PE) [119]

scaler (radiation counters) An instrument incorporating one or more scaling circuits and used for registering the number of counts received. *See also:* anticoincidence. (ED) [45]

scaler, pulse *See:* pulse scaler.

scale span (instrument) The algebraic difference between the values of the actuating electrical quantity corresponding to the two ends of the scale. *See also:* instrument. (EEC/PE) [119]

scaling (A) The formation at high temperatures of thick corrosion product layer(s) on a metal surface. **(B)** The deposition of water-insoluble constituents on a metal surface (as on the interior of water boilers). (IA) [59]

scaling circuit (radiation counters) A device that produces an output pulse whenever a prescribed number of input pulses has been received. *See also:* anticoincidence. (ED) [45]

scalloping (navigation aid terms) The irregularities in the field pattern of the ground facility due to unwanted reflections from obstructions or terrain features, exhibited in flight as cyclical variations in bearing error. *Synonym:* course scalloping. (AES/GCS) 172-1983w

scan (1) (general) To examine sequentially part by part. (C) [20], [85]

(2) (oscillography) The process of deflecting the electron beam. *See also:* uniform luminance area; graticule area; phosphor screen; oscillograph. (IM/HFIM) [40]

(3) (supervisory control, data acquisition, and automatic control) (interrogation) The process by which a data acquisition system interrogates remote stations or points for data. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(4) (data management) To examine a set of items sequentially. (C) 610.5-1990w

(5) The process by which a data acquisition system interrogates remote terminals or points for data. (SUB) 999-1992w

(6) A sampling process of observing attribute values at a specified point in time. (LM/C) 802.1F-1993r

(7) To examine stored information sequentially, part by part. (C) 610.10-1994w

scan angle The angle between the direction of the maximum of the major lobe or a directional null and a reference direction. *Notes:* 1. The term beam angle applies to the case of a pencil beam antenna. 2. The reference boresight is usually chosen as the reference direction. *Synonym:* beam angle. (AP/ANT) 145-1993

scan conversion The process of redefining an image from one that is composed of lines, points, and areas to one that is expressed in an array of pixels. (C) 610.6-1991w

scan converter A device on which a display can be written in refresh line-drawing mode and read out in raster scan mode. (C) 610.10-1994w

scan cycle (supervisory control, data acquisition, and automatic control) The time in seconds required to obtain a collection of data (for example, all data from one remote, all data from all remotes, and all data of a particular type from all remotes). (SWG/PE/PE) C37.100-1992, C37.1-1994

scan design A design technique that introduces shift-register paths into digital electronic circuits and thereby improves their testability. (TT/C) 1149.1-1990

scan function check Accomplished when control function check has been performed with all remotes. A check of master and remote station equipment by exercising a predefined component or capability. (SUB/PE) C37.1-1994

scan head A head within a scanner that sweeps across the item being scanned and transmits the contents of that item to be processed by the scanner. (C) 610.10-1994w

scan input signal A primary signal which may be used to serially precondition the scan register latches of the DUT. (C/TT) 1450-1999

scanner (1) (facsimile) That part of the facsimile transmitter which systematically translates the densities of the subject copy into signal waveform. *See also:* scanning. (COM) 168-1956w

(2) (A) A multiplexing arrangement that sequentially connects one channel to a number of channels. **(B)** An arrangement that progressively examines a surface for information. *See also:* feedback control system. (IA/ICTL/APP/IAC) [69], [60]

(3) (test, measurement, and diagnostic equipment) A device that sequentially samples a number of data points. *See also:* optical scanner; flying spot scanner; visual scanner. (MIL) [2]

(4) (computer graphics) A graphical input device that examines a spatial pattern and generates analog or digital signals, which can be used as input to a computer system. (C) 610.6-1991w

(5) (A) A graphic input device that automatically digitizes images for input to a computer. *See also:* bar code scanner; scan head; magnetic ink scanner; optical scanner. **(B)** Any device that is capable of scanning. (C) 610.10-1994

scanning (1) (navigation aids) A programmed motion given to the major lobe of an antenna for the purpose of searching a larger angular region than can be covered with a single direction of the beam, or for measuring angular location of a target; also, the analogous process using range gates or frequency domain filters. *See also:* supervisory control. (AES/GCS) 172-1983w, 686-1997

(2) (television) The process of analyzing or synthesizing successively, according to a predetermined method, the light values of picture elements constituting a picture area. (BT) 202-1954w

(3) (facsimile) The process of analyzing successively the densities of the subject copy according to the elements of a predetermined pattern. *Note:* The normal scanning is from left to right and top to bottom of the subject copy as when reading a page of print. Reverse direction is from right to left and top to bottom of the subject copy. (COM) 168-1956w

(4) (telephone switching systems) The periodic examination of circuit states under common control. (COM) 312-1977w

(5) (of an antenna beam) A repetitive motion given to the major lobe of an antenna. (AP/ANT) 145-1993

(6) The process of examining information in a systematic manner. (C) 610.10-1994w

scanning, high-velocity *See:* high-velocity scanning.

scanning line (television) A single continuous narrow strip that is determined by the process of scanning. *Note:* In most television systems, the scanning lines that occur during the retrace intervals are blanked. The total number of scanning lines is numerically equal to the ratio of line frequency to frame frequency. (BT/AV) 201-1979w

scanning linearity (television) A measure of the uniformity of scanning speed during the unblanked trace interval. (BT/AV) 201-1979w

scanning line frequency *See:* stroke speed.

scanning line length (facsimile) The total length of scanning line is equal to the spot speed divided by the scanning line frequency. *Note:* This is generally greater than the length of the available line. *See also:* scanning. (COM) 168-1956w

scanning loss (radar system employing a scanning antenna) The reduction in sensitivity, usually expressed in decibels, due to scanning across a target, compared with that obtained when the beam is directed constantly at the target. *See also:* antenna. (AP/ANT) 145-1983s

(2) (A) In a radar using a continuously scanning beam, the reduction in sensitivity due to motion of the beam between transmission and reception of the signal (sometimes called transit-time loss). **(B)** In an electronic scanning radar, the reduction in signal power due to scanning of the beam from broadside (the direction normal to the array face). *See also:* beamshape loss. (AES) 686-1997

scanning, low-velocity *See:* low-velocity scanning.

scanning speed (television) The time rate of linear displacement of the scanning spot. (BT/AV) 201-1979w

scanning spot (1) (television) The area with which the scanned area is being explored at any instant in the scanning process. *See also:* television. (PE/EEC) [119]

(2) (facsimile) The area on the subject copy viewed instantaneously by the pickup system of the scanner. *See also:* scanning. (COM) 168-1956w

scanning spot, *X* dimension (facsimile) The effective scanning-spot dimension measured in the direction of the scanning line on the subject copy. *Note:* The numerical value of this will depend upon the type of system used. *See also:* scanning. (COM) 168-1956w

scanning spot, *Y* dimension (facsimile) The effective scanning-spot dimension measured perpendicularly to the scanning line on the subject copy. *Note:* The numerical value of this will depend upon the type of system used. *See also:* scanning. (COM) 168-1956w

scanning supervisory system (station control and data acquisition) A system in which the master controls all information exchange. The normal state is usually one of repetitive communication with the remote stations. (SWG/PE/SUB) C37.100-1992, C37.1-1994

scanning velocity (spectrum analyzer) Frequency span divided by sweep time. (IM) 748-1979w

scan output signal A primary signal which may be used to serially observe the contents of the scan register latches of the DUT. (C/TT) 1450-1999

scan path The shift-register path through a circuit designed using the scan design technique. (TT/C) 1149.1-1990

scan pitch (facsimile) The number of scanning lines per unit length measured perpendicular to the direction of scanning. (COM) 167-1966w

scan rate (data transmission) The quantity of remote functions or stations that a master station can poll in a given time period. (PE) 599-1985w

scan sector The angular interval over which the major lobe of an antenna is scanned. (AP/ANT) 145-1993

scan test methodology A test methodology that utilizes shift register latches to precondition and observe modeled faults within the DUT. Scan tests typically consist of a serial preconditioning (load via scan inputs), parallel vectors to clock/transition the DUT, and then a serial observation (unload via the scan outputs). (C/TT) 1450-1999

scan time (1) (sequential events recording systems) The time required to examine the state of all inputs. (PE/EDPG) [1]

(2) (acousto-optic deflector) The time for the light beam to be scanned over the angular swing of the deflector. (UFFC) [17]

scan vectors A representation of test information containing lists of states that are to be shifted into or out of the scan pins on the device. *Note:* Scan vectors imply the use of scan test methodology in the design of the device under test. (C/TT) 1450-1999

scare rope *See:* safety life line.

scatterband (navigation aids) (interrogation systems) The total bandwidth occupied by the various received signals from interrogators operating with carriers on the same nominal radio frequency; the scatter results from the individual deviations from the nominal frequency. (AES/GCS) 172-1983w

scattered radiation An electromagnetic field resulting from currents induced in a secondary, conducting or dielectric object by electromagnetic waves incident on that object from one or more primary sources. (NIR) C95.1-1999

scattered wave An electromagnetic wave that results when an incident wave encounters the following:

— One or more discrete scattering objects
— A rough boundary between two media
— Continuous irregularities in the complex constitutive parameters of a medium

(AP/PROP) 211-1997

scatter/gather Data structures in memory that are sequentially ordered in virtual space may be sparcely ordered in physical space. In order to access this data structure with a physical device (such as a DMA controller), the device may need to redirect its address pointer to different physical pages of memory while transferring that data. (C/BA) 1014.1-1994w

scattering (1) (laser maser) The angular dispersal of power from a beam of radiation (or the perturbation of the field distribution of a resonance mode) either with or without a change in frequency, caused for example by inhomogeneities or nonlinearities of the medium or by irregularities in the surfaces encountered by the beam. (LEO) 586-1980w

(2) (fiber optics) The change in direction of light rays or photons after striking a small particle or particles. It may also be regarded as the diffusion of a light beam caused by the inhomogeneity of the transmitting medium. *See also:* leaky mode; unbound mode; Rayleigh scattering; waveguide scattering; refractive index; mode; nonlinear scattering; material scattering. (Std100) 812-1984w

(3) (data transmission) The production of waves of changed direction, frequency, or polarization when radio waves encounter matter. *Note:* The term is frequently used in a narrower sense, implying a disordered change in the incident energy. (PE) 599-1985w

(4) A process in which the energy of a traveling wave is dispersed in direction by means other than reflection and refraction. (AP/PROP) 211-1997

scattering coefficient Element of the scattering matrix. *See also:* scattering matrix. (IM/HFIM) [40]

(2) (A) The scattering cross-section per unit illuminated area of a surface expressed in square meters per square meter:

$$\sigma^0_{pq} = \frac{d\sigma_{pq}}{dA}$$

where p and q are polarization indices. **(B)** The scattering cross-section per unit volume of a medium containing discrete scatterers or random variations of refractive index. It is expressed in meters squared per cubic meter and is often designated σ_v. *Note:* The scattering coefficient may be monostatic (backscatter), when the transmitter and receiver are collocated, or bistatic, when they are not. *See also:* scattering cross section. (AP/PROP) 211-1997

scattering cross section (1) (radio-wave propagation) The projected area required to intercept and isotropically radiate the same power as a scatterer (target) scatters toward the receiver. The scattering cross-section is calculated from the relationship:

$$\sigma_{pq} = \lim_{R\to\infty}\left[4\pi R^2 \frac{\langle|\vec{E}^s_p|^2\rangle}{\langle|\vec{E}^i_q|^2\rangle}\right]$$

where

R = the distance between the scatterer and the receiver
$\vec{E}^s_p$ = the p-polarized component of the scattered electric field at the receiver
$\vec{E}^i_q$ = a q-polarized incident electric field at the scatterer.

The incident field is assumed to be planar over the extent of the target. (AP/PROP) 211-1997

(2) For a scattering object and an incident plane wave of a given frequency, polarization, and direction, an area that, when multiplied by the power flux density of the incident wave, would yield sufficient power that could produce, by isotropic radiation, the same radiation intensity as that in a given direction from the scattering object. *Note:* The scattering cross section is equal to 4π times the ratio of the radiation intensity of the scattered wave in a specified direction to the power flux density of the incident plane wave. *See also:* monostatic cross section; radar cross section; bistatic cross section. (AP/ANT) 145-1993

scattering loss (1) (laser maser) That portion of the loss in received power which is due to scattering. (LEO) 586-1980w

(2) That part of the transmission loss that is due to scattering within the medium or due to roughness of the reflecting surface. (SP/ACO) [32]

scattering matrix (1) (waveguide components) A square array of complex numbers consisting of the transmission and reflection coefficients of a waveguide component. As most commonly used, each of these coefficients relates the complex electric field strength (or voltage) of a reflected or transmitted wave to that of an incident wave. The subscripts of a typical coefficient S_{ij} refer to the output and input ports related by the coefficient. These coefficients, which may vary with frequency, apply at a specified set of input and output reference planes. (MTT/AP/ANT) 148-1959w, [35]

(2) An n × n (square) matrix used to relate incident waves and reflected waves for an n-port network. If the incident wave quantities for the ports are denoted by the vector A and the reflected wave quantities by the vector B then the scattering matrix S is defined such that $B = SA$. where:

$$a_i = \frac{1}{\sqrt{R_e Z_i}}(V_i + Z_i I_i)$$

$$b_i = \frac{1}{\sqrt{R_e Z_i}}(V_i - Z_i I_i)$$

Z_i is the port normalization impedance with $R_e Z_i > 0$. One formula for the scattering matrix is $S = [Z + R]^{-1}[Z - R]$ where Z is the open circuit impedance matrix that describes the network and R is a diagonal matrix representing the source or load resistances at each port. It should be noted that the scattering matrix is defined with respect to a specific set of port terminations. Physical interpretations can be given to the scattering coefficients for example, $|S_{ij}|^2$ is the fraction of available power that is delivered to the port termination at port i due to a source at port j. (CAS) [13]

(3) An $n \times n$ (square) matrix used to relate incident waves and reflected waves for an n-port network. (EMC) 1128-1998

(4) A 2 × 2 complex matrix which characterizes the polarized field scattered by a given object. (AP/PROP) 211-1997

scattering pattern *See:* scattering phase function.

scattering phase function The angular spectrum of a scatterer when illuminated by a plane wave. *Synonym:* scattering pattern. (AP/PROP) 211-1997

scatter read A read operation in which data from an input record is placed into non-adjacent storage areas. *Contrast:* gather write. (C) 610.10-1994w

scatter storage *See:* hashing.

SC device A static configuration device, whose logical address is set manually and cannot be changed by DC protocols. (C/MM) 1155-1992

scenario A set of initial conditions and a sequence of events used to develop, test, or apply a system, model, or simulation. (C) 610.3-1989w

(2) (A) A description of an exercise (initial conditions). A scenario is part of the session database that configures the units and platforms and places them in specific locations with specific missions. **(B)** An initial set of conditions and time line of significant events imposed on trainees or systems to achieve exercise objectives. (DIS/C) 1278.3-1996

(3) (A) A step-by-step description of a series of events that may occur concurrently or sequentially. **(B)** An account or

synopsis of a projected course of events or actions. (C/SE) 1362-1998

scheduled frequency (electric power system) The frequency that a power system or an interconnected system attempts to maintain. (PE/PSE) 94-1970w

scheduled frequency offset (electric power system) Scheduled system frequency minus rated frequency. This offset is usually initiated to correct the system time error. (PE/PSE) 94-1991w

scheduled interruption (1) (electric power system) An interruption caused by a scheduled outage. *See also:* outage. (PE/PSE) [54], 346-1973w

(2) A loss of electric power that results when a component is deliberately taken out of service at a selected time, usually for the purposes of construction, preventative maintenance, or repair. *Notes:* 1. This derives from transmission and distribution applications and does not apply to generation interruptions. 2. The key test to determine if an interruption should be classified as a forced or scheduled interruption is as follows. If it is possible to defer the interruption when such deferment is desirable, the interruption is a scheduled interruption; otherwise, the interruption is a forced interruption. Deferring an interruption may be desirable, for example, to prevent overload of facilities or interruption of service to customers. (PE/T&D) 1366-1998

scheduled maintenance (generation) Capability which has been scheduled to be out of service for maintenance. (PE/PSE) 346-1973w

scheduled net interchange (control area) (electric power system) The net power flow that a control area strives to maintain on its area tie lines in the absence of control biases. (PE/PSE) 94-1991w

scheduled outage (1) (electric power system) A loss of electric power that results when a component is deliberately taken out of service at a selected time, usually for purposes of construction, preventive maintenance, or repair. *Notes:* 1. This derives from transmission and distribution applications and does not necessarily apply to generation outages. 2. The key test to determine if an outage should be classified as forced or scheduled is as follows. If it is possible to defer the outage when such deferment is desirable, the outage is a scheduled outage; otherwise, the outage is a forced outage. Deferring an outage may be desirable, for example, to prevent overload of facilities or an interruption of service to consumers. (PE/PSE) 346-1973w

(2) (electrical transmission facilities) An intentional manual outage that could have been deferred without increasing risk to human life, risk to property, or damage to equipment. *Note:* A manual outage is classified as scheduled if it is possible to defer the outage occurrence when such deferment is desirable. Otherwise, the outage occurrence is a forced outage. Deferring an outage occurrence may be desirable, for example,to prevent overload of facilities or an interruption of service to consumers. (PE/PSE) 859-1987w

(3) An outage that results when a component is deliberately taken out of service at a selected time, usually for purposes of construction, maintenance, or repair. (IA/PSE) 493-1997, 399-1997

scheduled outage duration (1) (electric power system) The period from the initiation of the outage until construction, preventive maintenance, or repair work is completed. (PE/PSE) 346-1973w

(2) The period from the initiation of a scheduled outage until construction, preventive maintenance, or repair work is completed and the affected component is made available to perform its intended function. (IA/PSE) 493-1997, 399-1997

scheduled outage rate (1) (electrical transmission facilities) The number of scheduled outages per unit of service time = number of scheduled outages/service time. In some studies, scheduled outage rate may be defined as the number of outage occurrences per unit of exposure time (including both service time and outage time). (PE/PSE) 859-1987w

(2) The mean number of scheduled outages of a component per unit exposure time. (IA/PSE) 493-1997, 399-1997

scheduled system frequency The frequency that a power system or an interconnected system attempts to maintain. (PE/PSE) 94-1991w

schedule, electric rate *See:* electric rate schedule.

scheduler A computer program, usually part of an operating system, that schedules, initiates, and terminates jobs. (C) 610.12-1990

schedule setter or set-point device (speed governing systems) A device for establishing or setting the desired value of a controlled variable. *See also:* speed-governing system. (PE/PSE) 94-1970w

scheduling The application of a policy to select a runnable thread to become a running thread, or to alter one or more of the thread lists. (C/PA) 9945-1-1996

scheduling allocation domain The set of processors on which an individual thread can be scheduled at any given time. (C/PA) 9945-1-1996

scheduling contention scope A property of a thread that defines the set of threads against which that thread competes for resources. For example, in a scheduling decision, threads sharing scheduling contention scope compete for processor resources. In this standard, a thread has a scheduling contention scope of either PTHREAD_SCOPE_SYSTEM or PTHREAD_SCOPE_PROCESS. (C/PA) 9945-1-1996

scheduling policy A set of rules that is used to determine the order of execution of threads to achieve some goal. In the context of this standard, a scheduling policy affects thread ordering

1) When a thread is a running thread and it becomes a blocked thread
2) When a thread is a running thread and it becomes a preempted thread
3) When a thread is a blocked thread and it becomes a runnable thread
4) When a running thread calls a function that can change the priority or scheduling policy of a thread
5) In other scheduling-policy-defined circumstances

Conforming implementations shall define the manner in which each of the scheduling policies may modify the priorities or otherwise affect the ordering of threads at each of the occurrences listed above. Additionally, conforming implementations shall define at what other circumstances and in what manner each scheduling policy may modify the priorities or affect the ordering of threads. (C/PA) 9945-1-1996

schema (1) A description of the logical structure of a database. *See also:* data model. (C) 610.5-1990w

(2) The set of rules and constraints concerning DIT structure, object class definitions, attribute types, and syntaxes that characterize the DIB. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

(3) The structure or framework used to define a data record. This includes each field's name, type, shape, dimension, and mapping. (SCC20) 1226-1998

schema definition language *See:* data definition language.

schema language *See:* data definition language.

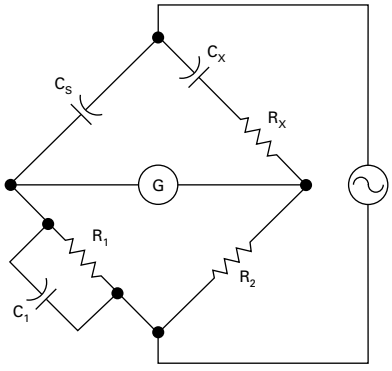
schematic diagram (elementary diagram) A diagram that shows, by means of graphic symbols, the electrical connections and functions of a specific circuit arrangement. The schematic diagram facilitates tracing the circuit and its functions without regard to the actual physical size, shape, or location of the component device or parts. (GSD) 315-1975r

SCHEME A dialect of LISP. (C) 610.13-1993w

Scherbius machine (rotating machinery) A polyphase alternating-current commutator machine capable of generator or motor action, intended for connection in the secondary circuit of a wound-rotor induction motor supplied from a fixed-frequency polyphase power system, and used for speed and/or power-factor control. The magnetic circuit components are

laminated and may be of the salient-pole type or of the cylindrical-rotor uniformly slotted type, either type having a series-connected armature reaction compensating winding as part of the field system. The control field winding may be separately or shunt-excited with or without an additional series-excited field winding. *See also:* asynchronous machine. (PE) [9]

Schering bridge A four-arm alternating-current bridge in which the unknown capacitor and a standard loss-free capacitor form two adjacent arms, while the arm adjacent to the standard capacitor consists of a resistor and a capacitor in parallel, and the fourth arm is a nonreactive resistor. (See the corresponding figure.) *Note:* Normally used for the measurement of capacitance and dissipation factor. Usually, one terminal of the source is connected to the junction of the unknown capacitor with the standard capacitor. With this connection, if the impedances of the capacitance arms are large compared to those of the resistance arms, most of the applied voltage appears across the former, the maximum test voltage being limited by the rating of the standard capacitor. If the detector and the source of electromotive force are interchanged the resulting circuit is called a conjugate Schering bridge. The balance is independent of frequency. *See also:* bridge.



$C_X R_2 = C_S R_1$
$C_X R_X = C_1 R_1$

Schering bridge

(EEC/PE) [119]

Schlieren method The technique by which light refracted by the density variations resulting from acoustic waves is used to produce a visible image of a sound field. (SP/ACO) [32]

Schmitt trigger A solid state element that produces an output when the input exceeds a specified turn-on level, and whose output continues until the input falls below a specified turn-off level. (SWG/PE) C37.100-1981s

Schottky-barrier contact (charged-particle detectors) A metal-semiconductor contact structure in which rectification occurs that is heavily influenced by the difference in the work functions of the materials. The contacts frequently consist of an interfacial metal/semiconductor compound such as a silicide. (NPS) 325-1986s, 300-1988r, 325-1996

Schottky-barrier detector A semiconductor radiation detector in which the blocking contact is of the Schottky barrier type. (NPS) 325-1996, 300-1988r

Schottky effect *See:* Schottky emission.

Schottky emission (electron tube) The increased thermionic emission resulting from an electric field at the surface of the cathode. *See also:* electron emission. (ED) 161-1971w

Schottky noise (electron tube) The variation of the output current resulting from the random emission from the cathode. (ED) [45], [84]

Schuler tuning (inertial navigation system) (navigation aids) The application of parameter values such that accelerations do not deflect the platform system from any vertical to which it has been set; a Schuler-tuned system, if fixed to the mean surface of a nonrotating earth, exhibits a natural period of 84.4 min. (AES/GCS) 172-1983w

SCI *See:* SCI standard.

SCI standard Refers to IEEE Std 1596-1992, which provides computer-bus-like services using a collection of point-to-point unidirectional links. (C/MM) 1596.5-1993, 1596.4-1996, 1596-1992

scientific notation A notation system in which a number is expressed as a coefficient multiplied by a power of ten. (C) 1084-1986w

scintillation (1) (scintillators) The optical photons emitted as a result of the incidence of a particle or photon of ionizing radiation on a scintillator. *Note:* Optical photons unless otherwise specified are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* ionizing radiation; radiation. (NPS) 398-1972r

(2) (laser maser) The rapid changes in irradiance levels in a cross section of a laser beam. (LEO) 586-1980w

(3) The phenomenon of fluctuation of the amplitude of a wave caused by irregular changes in the transmission path or paths with time. *Note:* The term scintillation is sometimes used to describe fluctuations of phase and angle of arrival. *See also:* fading. (AP/PROP) 211-1997

(4) Random variations in the received signal from a complex target that can occur due to changes in aspect angle or other causes. *Note:* Because this term has been applied variously to target fluctuation and scintillation error, use of one of these more specific terms is recommended to avoid ambiguity. (AES) 686-1997

scintillation counter The combination of scintillation-counter heads and associated circuitry for detection and measurement of ionizing radiation. (NPS) 398-1972r

scintillation-counter cesium resolution The scintillation-counter energy resolution for the gamma ray or conversion electron from cesium-137. *See also:* scintillation counter. (NPS) 398-1972r

scintillation-counter energy resolution A measure of the smallest difference in energy between two particles or photons of ionizing radiation that can be discerned by the scintillation counter. Quantitatively, it is the fractional standard deviation (σ/E_1) of the energy distribution curve. *Note:* The fractional full width at half maximum of the energy distribution curve (FWHM/E_1) is frequently used as a measure of the scintillation-counter energy resolution where E_1 is the mode of the distribution curve. *See also:* scintillation counter. (NPS) 398-1972r

scintillation-counter energy-resolution constant The product of the square of the scintillation-counter energy resolution, expressed as the fractional full width at half maximum (FWHM/E_1), and the specified energy. *See also:* scintillation counter. (NPS) 175-1960w

scintillation counter head The combination of scintillators and phototubes or photocells that produces electric pulses or other electric signals in response to ionizing radiation. *See also:* scintillation counter; phototube. (NPS) 175-1960w

scintillation-counter time discrimination A measure of the smallest interval of time between two individually discernible events. Quantitatively, it is the standard deviation of the time-interval curve. *Note:* The full width at half maximum of the time-interval curve is frequently used as a measure of the time discrimination. *See also:* scintillation counter. 160-1957w

scintillation decay time The time required for the rate of emission of optical photons of a scintillation to decrease from 90% to 10% of its maximum value. *Note:* Optical photons, for the purpose of this Standard, are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scintillation duration The time interval from the emission of the first optical photon of a scintillation until 90% of the optical photons of the scintillation have been emitted. *Note:* Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scintillation error Error in radar-derived target position or Doppler frequency caused by interaction of the scintillation spectrum with frequencies used in sequential measurement techniques. *Note:* Not to be confused with glint. (AES) 686-1997

scintillation index The ratio of the second moment to the first moment squared of the intensity. (AP/PROP) 211-1997

scintillation rise-time The time required for the rate of emission of optical photons of a scintillation to increase from 10% to 90% of its maximum value. *Note:* Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scintillator The body of scintillator material together with its container. *See also:* scintillation counter. (NPS) 398-1972r

scintillator conversion efficiency The ratio of the optical photon energy emitted by a scintillator to the incident energy of a particle or photon of ionizing radiation. *Note:* The efficiency is generally a function of the type and energy of ionizing radiation. Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 175-1960w

scintillator material A material that emits optical photons in response to ionizing radiation. *Notes:* 1. There are five major classes of scintillator materials, namely:

a) inorganic crystals such as NaI(Tl) single crystals, ZnS(Ag) screens;
b) organic crystals (such as, anthracene, trans-stilbene);
c) solution scintillators: (1) liquid, (2) plastic, (3) glass;
d) gaseous scintillators;
e) Cerenkov scintillators.

2. Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scintillator-material total conversion efficiency The ratio of the optical photon energy produced to the energy of a particle or photon of ionizing radiation that is totally absorbed in the scintillator material. *Note:* The efficiency is generally a function of the type and energy of the ionizing radiation. Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scintillator photon distribution (in number) The statistical distribution of the number of optical photons produced in the scintillator by total absorption of monoenergetic particles. *Note:* Optical photons are photons with energies corresponding to wavelengths between 2000 and 15 000 angstroms. *See also:* scintillation counter. (NPS) 398-1972r

scissoring A computer graphics technique in which portions of display elements that lie outside of the physical bounds of a window or view volume are removed. *See also:* wrap-around; clipping. (C) 610.6-1991w

SCN *See:* specification change notice.

scope (1) (navigation aids) The face of a cathode-ray tube or a display of similar appearance. A colloquial abbreviation of oscilloscope. (AES/GCS) 172-1983w

(2) (scheme programming language) The region of a program's source text that is associated with a linguistic construct. Normally used with "variable" to describe the region over which a variable is bound: "the scope of a variable." (C/MM) 1178-1990r

(3) The face of a cathode-ray tube or a display of similar appearance. *Note:* The term *scope* is a colloquial abbreviation of the word *oscilloscope*. (AES) 686-1997

(4) *See also:* transit. (T&D/PE) 524-1992r

scored card A special card that contains one or more scored lines to facilitate precise folding or separation of certain parts of the card. *See also:* processable scored card. (C) 610.10-1994w

scoring system (motion-picture production) (electroacoustics) A recording system used for recording music to be reproduced in timed relationship with a motion picture. (SP) [32]

scotopic spectral luminous efficiency function (light-emitting diodes) (photometric standard observer for scotopic vision) (V') The ratio of the radiant flux at wavelength m, to that at wavelength λ, when the two fluxes produce the same scotopic luminous sensations under specified photometric conditions, lm, being chosen so that the maximum value of this ratio is unity. Unless otherwise indicated, the values used for the spectral luminous efficiency function relate to scotopic vision by the photometric standard observer having the characteristics laid down by the International Commission on Illumination. (ED) [127]

scotopic vision (illuminating engineering) Vision mediated essentially or exclusively by the rods. It is generally associated with adaptation to a luminance below about 0.034 cd/m^2, (2.2 $\times$ 10^{-5} cd/in^2), (0.01 fL). (EEC/IE) [126]

Scott-connected transformer, interlacing impedance voltage The single-phase voltage applied from the midtap of the main transformer winding to both ends, connected together, that is sufficient to circulate in the supply lines a current equal to the three-phase line current. The current in each half of the winding is 50% of this value. *See also:* efficiency. (IA) [61]

Scott-connected transformer per-unit resistance The measured watts expressed in per-unit on the base of the rated kilovolt-ampere of the teaser winding. (IA) [61]

Scott or T-connected transformer (power and distribution transformers) An assembly used to transfer energy from a three-phase circuit to a two-phase circuit, or vice versa; or from a three-phase circuit to another three-phase circuit. The assembly consists of a main transformer with a tap at its midpoint connected directly between of the phase wires of a three-phase circuit, and of a teaser transformer connected between the mid-tap of the main transformer and a third phase wire of the three-phase circuit. The other windings of the transformers may be connected to provide either a two-phase or a three-phase output. Alternatively, this may be accomplished with an assembly utilizing a three-legged core with main and teaser coil assemblies located on the two outer legs, and with a center leg which has no coil assembly and provides a common magnetic circuit for the two outer legs. *See also:* teaser transformer; interlacing impedance voltage of a Scott-connected transformer; main transformer. (PE/TR) C57.12.80-1978r

SCR *See:* semiconductor controlled rectifier; silicon controlled rectifier; reverse-blocking triode thyristor.

scram (power operations) The rapid shutdown of a nuclear reactor. Usually, a scram is accomplished by rapid insertion of safety or control rods, or both. Emergencies or deviations from normal operation may require scramming the reactor by manual or automatic means. (PE/PSE) 858-1987s

scraper hoist A power-driven hoist operating a scraper to move material (generally ore or coal) to a loading point. (EEC/PE) [119]

scratch (A) To physically erase data from its medium. **(B)** To logically delete the identification of data from its medium. (C) 610.5-1990

scratch file A file used as a work area to hold data temporarily. (C) 610.5-1990w

scratchpad area (SPA) A portion of computer memory shared by a set of computer programs or processes for some special purpose. For example, memory used by two programs for interprocess communication. *Synonym:* scratchpad RAM. (C) 610.5-1990w, 610.10-1994w

scratchpad memory *See:* temporary storage.

scratchpad RAM *See:* scratchpad area.

screen (1) (rotating machinery) A port cover with multiple openings used to limit the entry of foreign objects. (IA/APP) [90]

(2) (cathode-ray tubes) The surface of the tube upon which the visible pattern is produced. *See also:* electrode. (ED) 161-1971w

(3) A rectangular region of columns and lines on a terminal display. A screen may be a portion of a physical display device or may occupy the entire physical area of the display device. (C/PA) 9945-2-1993

(4) The portion of a display that is visible on the display device. A screen may show part of a page, an entire page, or several pages. *See also:* display device. (PE/NP) 1289-1998

(5) *See also:* display screen. (C) 610.10-1994w

screened conductor cable A cable in which the insulated conductor or conductors is/are enclosed in a conducting envelope or envelopes. (PE/IC/TR) C57.15-1968s

screen editor *See:* full-screen editor.

screen factor (electron-tube grid) The ratio of the actual area of the grid structure to the total area of the surface containing the grid. *See also:* electron tube. (ED) [45], [84]

screen font A font designed for use on a display device. *Note:* Usually matches closely the font used when printing. *Synonym:* graphical user interface font. (C) 610.10-1994w

screen grid A grid placed between a control grid and an anode, and usually maintained at a fixed positive potential, for the purpose of reducing the electrostatic influence of the anode in the space between the screen grid and the cathode. *See also:* grid; electrode. (ED) 161-1971w

screen-grid modulation Modulation produced by application of a modulating voltage between the screen grid and the cathode of any multigrid tube in which the carrier is present. (BT) 182A-1964w

screen image *See:* display image.

screening (telephone switching systems) The ability to accept or reject calls by using trunk or line class or trunk or line number information. (C) [85]

screening measurements Measurements made to detect radioactive material under routine conditions, but not used to quantify the amount of a given radionuclide. (NI) N42.23-1995

screening test A test, or combination of tests, intended to remove unsatisfactory items or those likely to exhibit early failures. *See also:* reliability. (R) [29]

screen protected *See:* guarded.

screen size The diameter of a cathode ray tube outside of its housing or, for a non-round tube, the length of the maximum diagonal of the display space after the tube has been mounted inside its housing. (C) 610.6-1991w

screen, viewing *See:* viewing area.

SC resource manager A resource manager that supports static configuration and does not support dynamic configuration of VXIbus devices. (C/MM) 1155-1992

screw machine (elevators) An electric driving machine, the motor of which raises and lowers a vertical screw through a nut with or without suitable gearing, and in which the upper end of the screw is connected directly to the car frame or platform. The machine may be of direct or indirect drive type. (EEC/PE) [119]

SCRIBE A text-formatting language in which formatting commands are embedded in the text, then processed into a formatted document. (C) 610.13-1993w

SCRIPT A text-formatting language in which formatting commands are embedded in the text, then processed into a formatted document. *Note:* SCRIPT is a forerunner to DCF. (C) 610.13-1993w

script An area of nonvolatile memory reserved for user interface commands to be evaluated at particular times during the Open Firmware start-up sequence. (C/BA) 1275-1994

scroll To move the representation of data vertically or horizontally relative to the terminal screen. There are two types of scrolling:

1) The cursor moves with the data
2) The cursor remains stationary while the data moves

(C/PA) 9945-2-1993

scroll bar A visual user interface control, associated with a scrollable area, that indicates to a user that more information is available and can be scrolled into view. (C) 1295-1993w

scrolled window A window that presents information that exceeds the space available for display. The user uses the scroll bar to bring the contents currently outside the display area into view. (C) 1295-1993w

scrolling (1) (word processing) The process of moving text across a display screen to create the effect of a viewing window moving on a large page of a document. An operator may scroll left, right, up, or down in a document. *See also:* reverse scrolling. (C) 610.2-1987

(2) (computer graphics) The process of moving an entire display image in such a manner that new data appears within the viewport as old data disappears, to give a visual impression of vertical movement of the image. *Note:* The term scrolling is sometimes used to mean vertical or horizontal movement. *Contrast:* panning. (C) 610.6-1991w

(3) A method of viewing and moving the data displayed in which the data rolls continuously behind a fixed display frame. (PE/NP) 1289-1998

scrubber The node that marks packets as they go past in a ringlet, and discards any previously marked packet. This prevents damaged or misaddressed packets from circulating indefinitely. The scrubber also performs other housekeeping tasks for the ringlet. There is always exactly one scrubber on a ringlet. Normal nodes may all have scrubber capability built in, but exactly one is enabled as scrubber per ringlet. Often the scrubber will take responsibility for initializing a ringlet, but this could be done by another (unique) node. (C/MM) 1596-1992

SC system A VXIbus system with no DC devices. (C/MM) 1155-1992

sculling error (inertial sensors) (strapdown inertial system) A system error resulting from the combined input of linear vibration along one axis and an angular oscillation, at the same frequency, around a perpendicular axis. In the computer processing, an apparent rectified acceleration is produced along an axis perpendicular to these two axes. (AES/GYAC) 528-1994

scuzzy Colloquial pronunciation for "SCSI." *See also:* small computer systems interface. (C) 610.10-1994w

SDC *See:* self-damping conductor.

SDD *See:* software design description.

SDL *See:* Specification and Description Language; software development library.

SDN *See:* software defined network.

SDP *See:* software development plan.

SDR *See:* system design review.

SDS *See:* sparse data scan; sequential data set.

SDU *See:* service data unit.

SDV (segment delay value (ARCHIVE)) *See:* Segment Delay Value.

SE *See:* segment extender.

seal (window) (in a waveguide) A gastight or watertight membrane or cover designed to present no obstruction to radio-frequency energy. *See also:* waveguide. (AP/ANT) [35]

sealable equipment Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. The equipment may or may not be operable without opening the enclosure. (NESC/NEC) [86]

seal, double electric conductor (nuclear power generating station) An assembly of two single electric conductor seals in series and arranged in such a way that there is a double pressure barrier seal between the inside and the outside of the

containment structure along the axis of the conductors. (IM) [76]

sealed (1) (power and distribution transformers) So constructed that the enclosure will remain hermetically sealed within specified limits of temperature and pressure. (PE/TR) C57.12.80-1978r

(2) (rotating machinery) Provided with special seals to minimize either the leakage of the internal coolant out of the enclosure or the leakage of medium surrounding the enclosure into the machine. *See also:* asynchronous machine. (IA/APP) [90]

sealed-beam headlamp (illuminating engineering) An integral optical assembly designed for headlighting purposes, identified by the name "Sealed Beam" branded on the lens. (EEC/IE) [126]

sealed bushing An oil-filled bushing in which the oil is contained within the bushing and not allowed to mix with the oil of the apparatus on which it is used. (PE/TR) C57.19.03-1996

sealed cell (1) (lead storage batteries) (nuclear power generating station) A cell in which the only passage for the escape of gases from the interior of the cell is provided by a vent of effective spray-trap design adapted to trap and return to the cell particles of liquid entrained in the escaping gases. (PE/EDPG) 484-1987s

(2) A sealed cell (or battery) is one that has no provision for the addition of water or electrolyte or for external measurement of electrolyte specific gravity. (NESC/NEC) [86]

sealed dry-type transformer, self-cooled (power and distribution transformers) (class GA) A dry-type self-cooled transformer with a hermetically sealed tank. *Note:* The insulating gas may be air, nitrogen, or other gases (such as fluorocarbons) with high dielectric strength. (PE/TR) C57.94-1982r, C57.12.80-1978r

sealed end (cable) (shipping seal) The end fitted with a cap for protection against the loss of compound or the entrance of moisture. (EEC/AWM) [91]

sealed refrigeration compressor (hermetic type) A mechanical compressor consisting of a compressor and a motor, both of which are enclosed in the same sealed housing, with no external shaft or shaft seals, the motor operating in the refrigerant atmosphere. *See also:* appliance. (NESC) [86]

sealed relay contacts A contact assembly that is sealed in a compartment separate from the rest of the relay. (EEC/REE) [87]

sealed-tank system (1) (power and distribution transformers) A method of oil preservation in which the interior of the tank is sealed from the atmosphere and in which the gas plus the oil volume remains constant over the temperature range. (PE/TR) C57.12.80-1978r

(2) A method of oil preservation in which the interior of the tank is sealed from the atmosphere and in which the gas volume plus the oil volume remains constant. (PE/TR) C57.15-1999

sealed transformer (power and distribution transformers) A dry-type transformer with a hermetically sealed tank. (PE/TR) C57.12.80-1978r

sealed tube An electron tube that is hermetically sealed. *Note:* This term is used chiefly for pool-cathode tubes. (ED) [45]

sealing current *See:* sealing voltage.

sealing gap The distance between the armature and the center of the core of a magnetic circuit-closing device when the contacts first touch each other. *See also:* electric controller. (IA/ICTL) 74-1958w

sealing voltage (contactors) The voltage (or current) necessary to complete the movement of the armature of a magnetic circuit-closing device from the position at which the contacts first touch each other. *Synonym:* sealing current. *See also:* control switch; contactor. (QUL) 268-1982s

seal-in relay An auxiliary relay that remains picked up through one of its own contacts which bypasses the initiating circuit until deenergized by some other device. (SWG/PE) C37.100-1992

seal, pressure barrier *See:* pressure barrier seal.

seal, single electric conductor *See:* single electric conductor seal.

search (1) (information processing) To examine a set of items for those that have a desired property. *See also:* dichotomizing search; binary search. (C/C) [20], [85]

(2) (test, measurement, and diagnostic equipment) The scanning of information contained on a storage medium by comparing the information of each field with a predetermined standard until an identity is obtained. (IM/WM&A) 194-1977w

(3) (A) (data management) The examination of a set of items to find all those having a desired property or properties. For example, to find all items in a file that meet some search criterion. **(B) (data management)** To examine a set of items as in definition (A). **(C) (data management)** To retrieve the results of an examination as in definition (A). **(D) (data management)** To retrieve the first item witin a set of items as in definition (A). *Note:* The use of the term "search" in place of the term "seek" is deprecated in IEEE Std 610.5-1990. (C) 610.5-1990

search argument In a search, the value compared with the search key of each item in the set being searched. *See also:* condition. (C) 610.5-1990w

search criterion In a search, the relationship that a search key must have to the search argument in order for the search to be successful. For example, "NAME equals 'SMITH;'" "SALARY greater than 10000." (C) 610.5-1990w

search cycle That portion of a search that is repeated for each item in the set being searched. (C) 610.5-1990w

search key In a search, the key within each item in the set being searched that is compared to the search argument. *Synonym:* seek key. (C) 610.5-1990w

search length (A) For a node in a search tree, the number of nodes that must be examined in order to find that node. **(B)** For a search tree, the average search length as in definition (A) for all nodes in the tree. (C) 610.5-1990

searchlight (illuminating engineering) A projector designed to produce an approximately parallel beam of light. *Note:* The optical system of a searchlight has an aperture of greater than 20 cm (8 in). (EEC/IE) [126]

searchlighting The process of projecting a radar beam continuously at a particular object or in a particular direction as contrasted to scanning. (AES) 686-1997

search memory *See:* associative memory.

search radar (1) (navigation aids) A radar used primarily for the detection of targets in a particular volume of interest. (AES/GCS) 172-1983w

(2) A radar used primarily for the initial detection of targets in a particular volume of interest. (AES) 686-1997

search time (A) The time required to locate a particular item of data in a storage medium. **(B)** The time interval required for the read/write head of a rotating storage device to locate a particular record on a track corresponding to a given address or key. *See also:* rotational delay; seek time. (C) 610.10-1994

search tree (A) A tree into which items in a set are placed in order for the set to be searched. The tree is traversed according to some searching algorithm, making key comparisons until the search argument is found or the algorithm is halted. For example, a B-tree. **(B)** A multiways tree of order m in which each nonterminal node may contain $(m - 1)$ key values and each terminal node, called a leaf, contains associated data for one of the key values contained in its parent node. Each subtree is used to contain all the items with key values falling in the intervals formed by the key values contained in its root node. *See also:* B-tree; binary search tree; digital search tree. (C) 610.5-1990

sea return (navigation aids) The radar response from the sea surface. (AES/GCS) 686-1997, 172-1983w

season A calendar-specified period used for activation of rate schedules. (AMR/SCC31) 1377-1997

seasonal derated hours (power system measurement) (electric generating unit reliability, availability, and productivity) The available hours during which a seasonal derating was in effect. (PE/PSE) 762-1987w

seasonal derating (electric generating unit reliability, availability, and productivity) The difference between maximum capacity and dependable capacity. (PE/PSE) 762-1987w

seasonal diversity Load diversity between two or more electric systems that occurs when their peak loads are in different seasons of the year. (PE/PSE) 858-1993w, 346-1973w

seasonal unavailable generation (electric generating unit reliability, availability, and productivity) The difference between the energy that would have been generated if operating continuously at maximum capacity and the energy that would have been generated if operating continuously at dependable capacity, calculated only during the time the unit was in the available state.

$$SUG = \text{equivalent seasonal derated hours} \cdot \text{maximum capacity} = ESDH \cdot MC$$

(PE/PSE) 762-1987w

season cracking Cracking resulting from the combined effect of corrosion and internal stress. A term usually applied to stress-corrosion cracking of brass. (IA) [59]

SEC *See:* secondary-electron conduction; secondary-electron conduction camera tube.

second (metric practice) The duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the cesium-133 atom. (adopted by 13 General Conference on Weights and Measures 1967). *Note:* This definition supersedes the ephemeris second as the unit of time. (QUL) 268-1982s

secondary (A) Operates after the primary device; for example, secondary arcing contacts. **(B)** Second in preference. **(C)** Referring to auxiliary or control circuits as contrasted with the main circuit; for example, secondary disconnecting devices, secondary and control wiring. **(D)** Referring to the energy output side of transformers or the conditions (voltages) usually encountered at this location; for example, secondary fuse, secondary unit substation. (SWG/PE) C37.100-1992

secondary access method A collection of techniques designed to allow efficient access to all the target data or data records associated with a set of stated secondary key values in a query. (C) 610.5-1990w

secondary address An address for use within a device. It is provided by a secondary address cycle that loads the NTA register of the device following a primary address cycle or a data cycle. (NID) 960-1993

secondary address cycle A data cycle in which a master uses the address/data (AD) lines to load a secondary address into the NTA register of a device. (NID) 960-1993

secondary alarm station (SAS) A continuously manned location that is capable of providing backup security system monitoring and communications functions. (PE/NP) 692-1997

secondary and control wiring Wire used with switchgear assemblies for control circuits and for connections between instrument transformers' secondaries, instruments, meters, relays, or other equipment. *Synonym:* small wiring. (SWG/PE) C37.100-1992

secondary arcing contacts (of a switching device) The contacts on which the arc of the arc-shunting-resistor current is drawn and interrupted. (SWG/PE) C37.100-1992

secondary arrester A surge protective device that is intended to be connected to the low-voltage ac supply mains (1000 V rms and less, frequency between 48 and 62 Hz) at locations between and including the secondary terminals of the distribution transformer and the main service entrance panel. (PE) C62.34-1996

secondary boot program A client program whose purpose is to load and execute another client program. (C/BA) 1275-1994

secondary bus A collection of signals that provides the system with an alternate mechanism for exchanging data between boards as a means to recover from faults in the primary bus. (C/BA) 896.9-1994w, 896.3-1993w

secondary calibration (nuclear power generating station) (monitoring radioactivity in effluents) The determination of the response of a system with an applicable source whose effect on the system was established at the time of a primary calibration. (NI/EEC) N42.18-1980r, [81]

secondary current rating The secondary current existing when the transformer is delivering rated kilovolt-amperes at rated secondary voltage. *See also:* transformer. (PE/TR) [57]

secondary disconnecting devices (of a switchgear assembly) Self-coupling separable contacts provided to connect and disconnect the auxiliary and control circuits between the removable element and the housing. (SWG/PE) C37.100-1992

secondary distribution feeder A feeder operating at secondary voltage supplying a distribution circuit. (EEC/AWM) [91]

secondary distribution mains The conductors connected to the secondaries of distribution transformers from which consumers' services are supplied. *See also:* center of distribution. (EEC/AWM) [91]

secondary distribution network A network consisting of secondary distribution mains. *See also:* center of distribution. (EEC/AWM) [91]

secondary distribution system A low-voltage alternating-current system that connects the secondaries of distribution transformers to the consumers' services. *See also:* alternating-current distribution; center of distribution. (EEC/AWM) [91]

secondary distribution trunk line A line acting as a main source of supply to a secondary distribution system. *See also:* center of distribution. (EEC/AWM) [91]

secondary electric shock An electric shock not sufficiently severe to cause direct physiological harm. Nevertheless, such a shock could result in injury from involuntary muscular response. (T&D/PE) 539-1990

secondary electron (thermionics) An electron detached from a surface during secondary emission by an incident electron. *See also:* electron emission. (ED) [45], [84]

secondary-electron conduction (SEC) The transport of charge under the influence of an externally applied field in low-density structured materials by free secondary electrons traveling in the interparticle spaces (as opposed to solid-state conduction). *See also:* camera tube. (ED) [45]

secondary-electron conduction camera tube (SEC) A camera tube in which an electron image is generated by a photocathode and focused on a target composed of a backplate and a secondary-electron-conduction layer that provides charge amplification and storage. *See also:* camera tube. (ED) [45]

secondary emission Electron emission from solids or liquids due directly to bombardment of their surfaces by electrons or ions. *See also:* electron emission. (ED) 161-1971w

secondary-emission characteristic (thermionics) (surface) The relation, generally shown by a graph, between the secondary-emission rate of a surface and the voltage between the source of the primary emission and the surface. *See also:* electron emission. (ED) [45], [84]

secondary-emission crossover voltage (charge-storage tubes) The voltage of a secondary-emitting surface, with respect to cathode voltage, at which the secondary-emission ratio is unity. The crossovers are numbered in progression with increasing voltage. *Note:* The qualifying phrase secondary-emission is frequently dropped in general usage. *See also:* charge-storage tube. (ED) 158-1962w

secondary-emission ratio (electrons) The average number of electrons emitted from a surface per incident primary electron. *Note:* The result of a sufficiently large number of events should be averaged to ensure that statistical fluctuations are negligible. (ED) 161-1971w

secondary failure *See:* failure.

secondary fault An insulation breakdown occurring as a result of a primary fault. *See also:* center of distribution. (EEC/AWM) [91]

secondary fuse A fuse used on the secondary-side circuits of transformers. *Note:* In high-voltage fuse parlance such a fuse is restricted for use on a low-voltage secondary distribution system that connects the secondaries of distribution transformers to consumers' services. (SWG/PE) C37.100-1992

secondary grid emission Electron emission from a grid resulting directly from bombardment of its surface by electrons or other charged particles. *See also:* electron emission. (ED/ED) 161-1971w, [45]

secondary index (A) A list associated with an inverted file in which entries in the list point to records in the file that contain identical values for the key field on which the file is inverted. **(B)** In a hierarchical database, an index used to establish access to a physical or logical segment by a path different from the one provided by the primary key within the root segment. *Note:* A secondary index allows access on the basis of any field within the segment or any of its dependent segments with secondary indices. *See also:* source segment; secondary processing sequence. (C) 610.5-1990

secondary key (A) In sorting and searching, a key that is given lower priority than the primary key within a group of related keys. That is, after sorting, all items having the same primary key will be in order by the secondary key or keys. *Synonym:* minor key. *Contrast:* primary key. **(B)** Within a record, a key that is used to index that record but which does not necessarily uniquely identify that record. (C) 610.5-1990

secondary neutral grid A network of neutral conductors, usually grounded, formed by connecting together within a given area all the neutral conductors of individual transformer secondaries of the supply system. *See also:* center of distribution. (EEC/AWM) [91]

secondary oil containment A system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure. (SUB/PE) 980-1994

secondary outage An outage occurrence that is the result of another outage occurrence. *Notes:* 1. Secondary outages of components or units may be caused by repair of other components or units requiring physical clearance, failure of a circuit breaker to clear a fault, or a protective relay system operating incorrectly and overreaching into the normal tripping zone of another unit. 2. Some secondary outages are solely the result of system configuration; for example, two components connected in series will always go out of service together. These secondary outages may be given special treatment when compiling outage data. 3. At present, primary outages have been referred to in the industry as independent outage occurrences, and secondary outages as dependent or related outage occurrences. *See also:* related multiple outage event. (PE/PSE) 859-1987w

secondary power The excess above firm power to be furnished when, as, and if available. *See also:* generating station. (EEC/AWM) [91]

secondary processing sequence In a hierarchical database, the hierarchical order of segment types in a physical or logical database resulting from a secondary index. (C) 610.5-1990w

secondary radar (1) (A) (navigation aids) A radar technique or mode of operation in which the return signals are obtained from a beacon, transponder, or repeater carried by the target, as contrasted with primary radar in which the return signals are obtained by reflection from the target. **(B) (navigation aids)** A radar, or that portion of a radar, that operates on this principle. *See also:* primary radar. (AES/GCS) 172-1983 **(2)** A cooperative target identification system such as the military identification, friend or foe (IFF) Mark XII or the civil air traffic control radar beacon system (ATCRBS) in which an interrogator transmits a coded signal that asks for a reply. The transponder on the vehicle or platform queried answers with a coded reply. *Notes:* 1. The term secondary radar is more widely used in Europe than in the U.S. 2. The interrogator antenna is often mounted on the radar antenna and the reply from the transponder is often included on the radar display with the echo detection. *See also:* primary radar. (AES) 686-1997

secondary radiator That portion of an antenna having the largest radiating aperture, consisting of a reflecting surface or a lens, as distinguished from its feed. (AP/ANT) 145-1993

secondary representation A second form, an alternative to the primary representation, in which the client may supply an attribute value to the service. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

secondary ring The alternate paths of the dual ring that are not normally connected to MAC1. It uses links BRx and ATx. Application data may be transmitted on this ring, but not when the primary ring is being used for transmitting application data. (LM/C) 802.5c-1991r

secondary section of the core The section of the ferroresonant transformer on which the output and resonating windings are wound. In steady-state operation, this section of the core is normally driven into magnetic saturation. (PEL) 449-1998

secondary-selective type (low voltage-selective type) A unit substation that has two stepdown transformers each connected to an incoming high-voltage circuit. The outgoing side of each transformer is connected to a separate bus through a suitable switching and protective device. The two sections of bus are connected by a normally open switching and protective device. Each bus has one or more outgoing radial (stub-end) feeders. (PE/TR) C57.12.80-1978r

secondary service area (radio broadcast station) The area within which satisfactory reception can be obtained only under favorable conditions. *See also:* radio transmitter. (PE/EEC) [119]

secondary shock A shock of a magnitude such that it will not produce direct physiological harm, but may cause involuntary muscle reactions. The results of secondary shock are annoyance, alarm, and aversion. (T&D/PE) 524a-1993r, 1048-1990

secondary short-circuit current rating of a high-reactance transformer (power and distribution transformers) One that designates the current in the secondary winding when the primary winding is connected to a circuit of rated primary voltage and frequency and when the secondary terminals are short-circuited. (PE/TR) C57.12.80-1978r

secondary, single-phase induction motor The rotor or stator member that does not have windings that are connected to the supply line. *See also:* induction motor; asynchronous machine. (IA/APP) [90]

secondary socket identifier (SSID) A socket number identifying a particular endpoint on the secondary device. (C/MM) 1284.4-2000

secondary space allocation The amount of space that is reserved for a particular file after the primary space allocation has been exhausted. *Note:* Some systems allow multiple secondary space allocation operations. When a secondary space allocation is granted to a particular file, that file is said to "increase its extents." *Contrast:* primary space allocation. (C) 610.5-1990w

secondary standard (luminous standards) (illuminating engineering) A stable light source calibrated directly or indirectly by comparison with a primary standard. This order of standard also is designated as a reference standard. *Note:* National secondary (reference) standards are maintained at national physical laboratories; laboratory secondary (reference)

standards are maintained at other photometric laboratories. (IE/EEC) [126]

secondary station (1) A station that has been temporarily selected to receive a transmission from the primary station. *See also:* primary station. (C) 610.7-1995

(2) As defined by the infrared link access protocol (IrLAP), any station on the data link that does not assume the role of the primary station. It will initiate transmission only as a result of receiving explicit permission to do so from the primary station. (EMB/MIB) 1073.3.2-2000

secondary storage A type of storage which is used to store information for extended periods, while still allowing for online access. *See also:* mass storage; auxiliary storage. (C) 610.10-1994w

secondary unit substation (power and distribution transformers) A substation in which the low-voltage section is rated 1000 V (volts) and below. *See also:* unit substation. (PE/TR) C57.12.80-1978r

secondary voltage (capacitance potential devices) The root-mean-square voltage obtained from the main secondary winding, and when provided, from the auxiliary secondary winding. *See also:* rated secondary voltage; outdoor coupling capacitor. 31-1944w

secondary voltage rating (power and distribution transformers) The load circuit voltage for which the secondary winding is designed. (PE/TR) C57.12.80-1978r

secondary winding (1) (A) (power and distribution transformers) The winding on the energy output side. **(B) (instrument transformers) (power and distribution transformers)** The winding that is intended to be connected to the measuring or control devices. (PE/TR) C57.12.80-1978

(2) (rotating machinery) Any winding that is not a primary winding. *See also:* asynchronous machine; voltage regulator. (IA/APP) [90]

(3) (voltage regulators) The series winding. *See also:* voltage regulator. (PE/TR) C57.15-1968s

(4) The winding intended for connection to the measuring, protection, or control devices. (PE/TR) C57.13-1993

second-channel attenuation *See:* selectance.

second-channel interference Interference in which the extraneous power originates from a signal of assigned (authorized) type in a channel two channels removed from the desired channel. *See also:* interference; radio receiver. 188-1952w

second contingency incremental transfer capability (power operations) The amount of power, incremental above normal base power transfers, that can be transferred over the transmission network in a reliable manner, based on the following conditions:

a) With all transmission facilities in service, all facility loadings are within normal ratings and all voltages are within normal limits.

b) The bulk power system is capable of absorbing the dynamic power swings and remaining stable following a disturbance resulting in the sequential and overlapping outage of two facilities, either being a generating unit, transmission circuit, or transformer with system adjustments made between the two outages as required.

c) After the dynamic power swings following a disturbance resulting in the loss of the second facility, either a generating unit, transmission circuit, or transformer, but before further operator-directed system adjustments are made, all transmission facility loadings are within emergency ratings and all voltages are within emergency limits.

Note: The term second contingency is used to specifically exclude simultaneous outages. Use of the term double contingency has been avoided, since it is often used to include both simultaneous and sequential outages. (PE/PSE) 858-1987s

second generation A period during the evolution of electronic computers in which transistors were used to replace the first generation vacuum tubes. *Note:* Introduced in 1959, thought to have been the state of the art until the introduction of integrated circuits. *See also:* fourth generation; first generation; fifth generation. (C) 610.10-1994w

second generation language *See:* assembly language.

second-level address *See:* n-level address; indirect address.

second normal form One of the forms used to characterize relations; a relation is said to be in second normal form if it is in first normal form and if every nonprime attribute is fully functionally dependent on each candidate key of the relation.

FIRST NORMAL FORM

ORDER1 = {ORDER-NO} + DATE + CUSTOMER-NO
+ CUSTOMER-NAME + CUSTOMER-ADDRESS
+ TOTAL-ORDER-AMOUNT
ITEM1 = {ORDER-NO + SEQUENCE-NO} + ITEM-NO
+ ITEM-DESCRIPTION + QUANTITY-ORDERED
+ UNIT-PRICE + EXTENDED-PRICE

SECOND NORMAL FORM

ORDER2 = {ORDER-NO} + DATE + CUSTOMER-NO
+ CUSTOMER-NAME + CUSTOMER-ADDRESS
+ TOTAL-ORDER-AMOUNT
ORDER-ITEM2 = {ORDER-NO + ITEM-NO}
+ QUANTITY-ORDERED
+ EXTENDED-PRICE
ITEM2 = {ITEM-NO} + ITEM-DESCRIPTION
+ UNIT-PRICE

In first normal form, nonprime attributes ITEM- DESCRIPTION and UNIT-PRICE are not functionally dependent on candidate key SEQUENCE- NO. Keys shown in brackets.

(C) 610.5-1990w

second-order distortion *See:* intermodulation distortion.

second-order lag (automatic control) In a linear system or element, lag which results from changes of energy storage at two separate points in the system, or from effects such as acceleration. *Note:* It is representable by a second-order differential equation, or by a quadratic factor such as $s^2 + 2z\omega_n s + \omega_n^2$ in the denominator of a transfer function. *Synonym:* quadratic lag. *See also:* lag. (PE/EDPG) [3]

second-order nonlinearity coefficient (accelerometer) The proportionality constant that relates a variation of the output to the square of the input, applied parallel to the input reference axis. (AES/GYAC) 528-1994

second source In the event that several vendors offer pin-for-pin compatible components, second-source suppliers are vendors of the component other than the prime source. *See also:* prime source. (TT/C) 1149.1-1990

seconds since the Epoch A value to be interpreted as the number of seconds between a specified time and the Epoch. A Coordinated Universal Time name [specified in terms of seconds (*tm_sec*), minutes (*tm_min*), hours (*tm_hour*), days since January 1 of the year (*tm_yday*), and calendar year minus 1900 (*tm_year*)] is related to a time represented as seconds since the Epoch, according to the expression below. If the year $<$ 1970 or the value is negative, the relationship is undefined. If the year $\geq$ 1970 and the value is nonnegative, the value is related to a Coordinated Universal Time name according to the expression:

tm_sec + *tm_min**60 + *tm_hour**3600 + tm_yday*86400
+ (*tm_year-70*)*31536000 + ((*tm_year-69*)/4)*86400

(C/PA) 9945-1-1996, 9945-2-1993

second-time-around echo An echo received after a time delay exceeding one pulse-repetition interval but less than two pulse-repetition intervals. *Note:* Third-time-around, etc., echoes are defined in a corresponding manner. The generic term "multiple-time-around" is sometimes used. (AES) 686-1997

second Townsend discharge (gas) A semi-self-maintained discharge in which the additional ionization is due to the secondary electrons emitted by the cathode under the action of the bombardment by the positive ions present in the gas. *See also:* discharge. (ED) [45]

second voltage range *See:* voltage range.

secretary/librarian (software) The software librarian on a chief programmer team. *See also:* software librarian; chief programmer team. (C/SE) 729-1983s

secret key The traditional cryptographic key known only to the communicating parties and used for both encipherment and decipherment. (C/LM) 802.10-1998

section (1) (rectifier unit) A part of a rectifier unit with its auxiliaries that may be operated independently. *See also:* rectification. (IA) [62]
(2) (thyristor converter) Those parts of a thyristor converter unit containing the power thyristors (and when also used, the power diodes) together with their auxiliaries (including individual transformers or cell windings of double converters and circulating current reactors, if any), in which the main direct current when viewed from the converter unit dc terminals always flows in the same direction. A thyristor converter section is supposed to be operated independently. *Note:* A converter equipment may have either only one section or one forward and one reverse section. (IA/IPC) 444-1973w
(3) A length of coaxial cable which forms the transmission medium for a network. *See also:* segment. (C) 610.7-1995
(4) (A) To divide a program into parts such that some portions reside in internal storage and others in auxiliary storage. *See also:* page. **(B)** One of the parts as in (A). **(C)** To divide a program or data into parts of varying lengths, known as sections, such that each section is placed in a main memory area of corresponding size, not necessarily contiguously or in logical order. (C) 610.10-1994

sectional center (1) (telephone switching systems) A toll office to which may be connected a number of primary centers, toll centers, or toll points. Sectional centers are classified as Class 2 offices. *See also:* office class. (C) [85]
(2) Class 2 office in the North American hierarchical routing plan; a control center connecting primary centers of the telephone system together. *See also:* regional center; toll center; end office; primary center. (C) 610.7-1995

sectionalized linear antenna A linear antenna in which reactances are inserted at one or more points along the length of the antenna. *Synonym:* loaded linear antenna. (AP/ANT) 145-1993

sectionalizer *See:* automatic line sectionalizer.

section locking Locking effective while a train occupies a given section of a route and adapted to prevent manipulation of levers that would endanger the train while it is within that section. *See also:* interlocking. (EEC/PE) [119]

section, sag *See:* sag section.

sector *See:* block.

sectoral horn antenna A horn antenna with two opposite sides of the horn parallel and the two remaining sides diverging. (AP/ANT) 145-1983s

sector cable A multiple-conductor cable in which the cross section of each conductor is substantially a sector of a circle, an ellipse, or a figure intermediate between them. *Note:* Sector cables are used in order to obtain decreased overall diameter and thus permit the use of larger conductors in a cable of given diameter. (EEC/AWM) [91]

sector display (1) (continuously rotating radar-antenna system) A range-amplitude display used with a radar set, the antenna system of which is continuously rotating. The screen, which is of the long-persistence type, is excited only while the beam of the antenna is within a narrow sector centered on the object. *See also:* radar. (AES) [42]
(2) A limited display in which only a sector of the total service area of the radar system is shown. *Note:* Usually the sector to be displayed is selectable. (AES) 686-1997

sector impedance relay A form of distance relay that by application and design has its operating characteristic limited to a sector of its operating circle on the *R-X* diagram. (SWG/PE) C37.100-1992

sector scanning (1) A modification of circular scanning in which the direction of the antenna beam generates a portion of a cone or a plane. (AP/ANT) 145-1993
(2) The repeated scanning of a limited volumetric sector by a radar. *See also:* sector display. (AES) 686-1997

sector select line The line, determined by the row addresses (output of the X decoder), that is used to access the appropriate sector select transistor. (ED) 1005-1998

sector select transistor The transistor, controlled by the sector select line, that isolates the sector source from other sectors. (ED) 1005-1998

secure data exchange Layer Manager The SDE portion of the Layer 2 Manager. (C/LM) 802.10-1998

secure modem *See:* port protection system.

secure path *See:* trusted path.

security (1) (software) The protection of computer hardware and software from accidental or malicious access, use, modification, destruction, or disclosure. Security also pertains to personnel, data, communications, and the physical protection of computer installations. *See also:* software; modification; data; protection; hardware. (C/SE) 729-1983s
(2) The protection of computer resources (e.g., hardware, software, and data) from accidental or malicious access, use, modification, destruction, or disclosure. Tools for the maintenance of security are focused on availability, authentication, accountability, confidentiality, and integrity. (C/PA) 14252-1996
(3) (of a relay or relay system) That facet of reliability that relates to the degree of certainty that a relay or relay system will not operate incorrectly. (SWG/PE) C37.100-1992

security association A cooperative relationship between entities formed by the sharing of cryptographic keying information and security management objects. This shared information need not be identical, but it must be compatible. (C/LM) 802.10-1998

security association identifier (SAID) A value placed in the clear header of the SDE PDU that is used to identify the security association. (C/LM) 802.10-1998

security attribute A security-related quality of an object. Security attributes may be represented as hierarchical levels, bits in a bit map, or numbers. Compartments, caveats, and release markings are examples of security attributes. (C/LM) 802.10g-1995, 802.10-1998

security code A group of data bits calculated by a transmitting terminal from the information within its message by use of a prearranged algorithm, appended to the transmitted message, and tested by the receiving terminal to determine the validity of the received message. (SUB/PE) 999-1992w

security dispatch control An automatic generation control subsystem that allocates unit generation levels within a control area based upon system security considerations. (PE/PSE) 94-1991w

security kernel (software) A small, self-contained collection of key security-related statements that works as a privileged part of an operating system, specifying and enforcing criteria that must be met for programs and data to be accessed. (C) 610.12-1990

security label A marking bound to a resource (which may be a data unit) that names or designates the security attributes of that resource. (C/LM) 802.10g-1995

security level (1) The sensitivity of information represented, for example, by a combination of hierarchical classifications and nonhierarchical categories. (C/BA) 896.3-1993w
(2) A hierarchical level whose purpose is to indicate degree of sensitivity to a designated security threat. It indicates a specific level of protection as specified by the security policy being enforced. (C/LM) 802.10g-1995, 802.10-1998

security management In networking, a management function defined for controlling, authenticating, and authorizing access to network resources. (C) 610.7-1995

security management information base (SMIB) A management information base (MIB) that stores security-relevant objects. (C/LM) 802.10a-1999, 802.10-1998

security policy The objectives and mandates for protecting information, services, and other resources in a system, and the philosophy of protection for meeting those objectives. (C/BA) 896.3-1993w

security service (1) A service, provided by a layer of communicating open systems, that ensures adequate security of the systems or of data transfers. Note that these security services need not be directly requested at the (N)- and (N+)-layer boundary as is required for an OSI (N)-service. (LM/C) 802.10-1992

(2) The capability of the system to ensure the security of system resources or data transfers. Access controls, authentication, data confidentiality, data integrity, and nonrepudiation are traditional data communications security services. (C/BA) 896.3-1993w

security system The aggregate assemblage of hardware and associated software that includes all components, equipment, barriers, etc., necessary for the physical protection of nuclear power generating stations against the design basis threat of radiological sabotage. (PE/NP) 692-1997

security tag An information unit containing a representation of certain security-related information (e.g., a restrictive attribute bit map). (C/LM) 802.10g-1995, 802.10-1998

security threat A potential violation of security. (LM/C) 802.10-1992, 802.10g-1995

SED Static Electric Discharge; an alternate name for ESD. (SPD/PE) C62.47-1992r

sedimentation potential (electrobiology) The electrokinetic potential gradient resulting from unity velocity of a colloidal or suspended material forced to move by gravitational or centrifugal forces through a liquid electrolyte. *See also:* electrobiology. (EMB) [47]

sediment separator (rotating machinery) Any device, used to collect foreign material in the lubricating oil. *See also:* oil cup. (IA/APP) [90]

Seebeck coefficient (for homogeneous conductors) (of a couple) The limit of the quotient of: the Seebeck electromotive force by the temperature difference between the junctions as the temperature difference approaches zero: by convention, the Seebeck coefficient of a couple is positive if the first-named conductor has a positive potential with respect to the second conductor at the cold junction. *Note:* The Seebeck coefficient of a couple is the algebraic difference of either the relative or absolute Seebeck coefficients of the two conductors. *See also:* thermoelectric device. (ED) [46]

Seebeck coefficient, absolute *See:* absolute Seebeck coefficient.

Seebeck coefficient, relative *See:* relative Seebeck coefficient.

Seebeck effect The generation of an electromotive force by a temperature difference between the junctions in a circuit composed of two homogeneous electric conductors of dissimilar composition: or, in a nonhomogeneous conductor, the electromotive force produced by a temperature gradient in a nonhomogeneous region. *See also:* thermoelectric device; thermoelectric effect. (ED) [46]

Seebeck electromotive force The electromotive force resulting from the Seebeck effect. *See also:* thermoelectric device. (ED) [46]

Seed In 10BROAD36, the 23 bits residing in the scrambler shift register prior to the transmission of a packet. (C/LM) 802.3-1998

seeding *See:* fault seeding.

SEE-IN *See:* Significant Event Evaluation and Information Network.

seek (1) To position the head or access mechanism of a direct-access device to a specified location. *Synonym:* position. (C) 610.10-1994w

(2) An activity that positions a pointer at a specific location within a data file. (C/MM) 855-1990

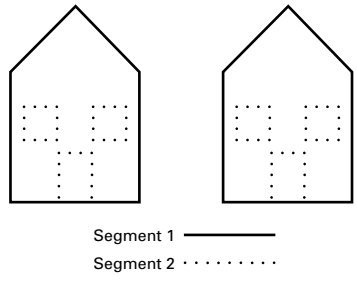
(3) (data management) *See also:* search; search cycle. (C) 610.5-1990w

seek key *See:* search key.

seek time The time it takes to position the head or access mechanism of a rotating storage device to a specified location. *Synonym:* positioning time. *See also:* access time; search time. (C) 610.10-1994w

segment (1) (A) (data management) (software) One of the subsystems or combinations of subsystems that make up an overall system; for example, the accounts payable segment of a financial system. **(B) (data management) (software)** In storage allocation, a self-contained portion of a computer program that can be executed without maintaining the entire program in main storage. *See also:* page. **(C) (data management) (software)** A collection of data that is stored or transferred as a unit. **(D) (software) (data management)** In path analysis, a sequence of computer program statements between two consecutive branch points. **(E) (data management) (software)** To divide a system, computer program, or data file into segments as in (A), (B), or (C). **(F) (data management) (software)** A fixed-length unit of data that contains one or more data items. **(G) (software) (data management)** In some databases, the smallest unit of data that can be retrieved or stored. *Synonym:* database segment. *See also:* twin segment; parent segment; dependent segment; logical segment; child segment; physical segment; root segment. (C) 610.5-1990, 610.12-1990

(2) (computer graphics) A logically related collection of display elements with their associated attributes such that the collection can be manipulated as a unit. (See corresponding figure.) *Synonym:* display group; entity; display segment. *See also:* segment attribute.



segment

(C) 610.6-1991w

(3) The medium connection, including connectors, between medium dependent interfaces in a LAN. (C/LM) 802.9a-1995w

(4) The portion of a ringlet between the producer and consumer along which a packet is sent. The segment traversed by a send packet is the send segment, and the segment traversed by an echo is the echo segment. (C/MM) 1596-1992

(5) A specific transmission medium that supports the FASTBUS protocol and to which FASTBUS devices may attach. A segment is capable of supporting autonomous operation and communicating with other segments via segment interconnects. (NID) 960-1993

(6) The protocol data unit (PDU) of 52 octets transferred between peer DQDB Layer entities as the information payload of a slot. It contains a segment header of 4 octets and a segment payload of 48 octets. There are two types of segments: Pre-Arbitrated (PA) segments and Queued Arbitrated (QA) segments. (LM/C) 8802-6-1994

(7) One or more sections of coaxial cable that form the transmission medium for a network. (C) 610.7-1995

(8) A portion of a session that is contiguous in simulation time and in wall clock (sidereal) time. (DIS/C) 1278.3-1996

(9) On a magnetic drum or disk, one of a series of addressable segments within a track or a band on which information is stored. *See also:* cluster; storage element. (C) 610.10-1994w

(10) Zero or more contiguous elements of a string. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

(11) The medium connection, including connectors, between Medium Dependent Interfaces (MDIs) in a CSMA/CD local area network. (C/LM) 802.3-1998

(12) A portion of an interconnect structure treated as a unit for the purposes of extracting or estimating its electrical properties. *See also:* parasitics. (C/DA) 1481-1999

segmental conductor A stranded conductor consisting of three or more stranded conducting elements, each element having approximately the shape of the sector of a circle, assembled to give a substantially circular cross section. The sectors are usually lightly insulated from each other and, in service, are connected in parallel. *Note:* This type of conductor is known as type-M conductor in Canada. *See also:* conductor. (EEC/AWM) [91]

segmental-rim rotor (rotating machinery) A rotor in which the rim is composed of interleaved segmental plates bolted together. *See also:* rotor. (IA/APP) [90]

segmentation (1) The function in the DQDB Layer that fragments a variable length Initial MAC Protocol Data Unit (IMPDU) into fixed-length segmentation units for transfer in Derived MAC Protocol Data Units (DMPDUs) (cf., reassembly). (LM/C) 8802-6-1994

(2) (image processing and pattern recognition) *See also:* image segmentation. (C) 610.4-1990w

segmentation unit The fixed-length data units of 44 octets formed by the fragmentation of an Initial MAC Protocol Data Unit (IMPDU). (LM/C) 8802-6-1994

segment attribute A characteristic that applies to a segment. For example, detectability, highlighting, priority, transformation, visibility. (C) 610.6-1991w

segment, cable *See:* cable segment.

segment, crate *See:* crate segment.

Segment Delay Value (SDV) A number associated with a given segment that represents the delay on that segment including repeaters and end stations, if present, used to assess path delays for 10 Mb/s CSMA/CD networks. (C/LM) 802.3-1998, 802.9a-1995w

segment, extended *See:* extended segment.

segment extender (SE) (FASTBUS acquisition and control) A device for connecting two segments to form an extended segment or part of an extended segment. (NID) 960-1993

segment header The protocol control information in a segment. (LM/C) 8802-6-1994

segmenting A technique used in memory mapping whereby the address space is broken into several various-size blocks; physical addresses are obtained by biasing each of the individual segments. (C) 610.10-1994w

segment interconnect (SI) A device that implements an intersegment connection such that the FBP on the two segments is synchronized. When an operation is passing through an SI, the SI acts as a slave on the near-side and as a master on the far-side. (NID) 960-1993

segment interconnect, active *See:* active segment interconnect.

segment interconnect, reserved *See:* reserved segment interconnect.

segment number A four-character number identifying the subsection of the ADC used for the data. Leading spaces are interpreted as leading zeros. This will be used in a system where the ADC is shared by several data inputs and is multiplexed among the inputs. Each input could be a separate detector, and there is not necessarily any correlation between any two detector inputs. The subsystem identification, ADC number, and segment number should provide sufficient data to be able to trace this data to the apparatus that collected it. This will enable other data, such as calibration spectra or background spectra, which are stored separately, to be identified with this spectrum. In large distributed systems, the ADC and segment numbers are not enough to uniquely identify the data. (NPS/NID) 1214-1992r

segment payload The unit of data carried by a segment. (LM/C) 8802-6-1994

segment shoe (rotating machinery) (bearing shoe) A pad that is part of the bearing surface of a pad-type bearing. *See also:* bearing. (IA/APP) [90]

Segment Variability Value (SVV) A number associated with a given segment that represents the delay variability on that segment (including a repeater) for 10 Mb/s CSMA/CD networks. (C/LM) 802.3-1998, 802.9a-1995w

segregated-phase bus One in which all phase conductors are in a common metal enclosure, but are segregated by metal barriers between phases. (SWG/PE/EDPG) C37.100-1992, 665-1987s

segregated phase comparison Similar to phase comparison, except data on each phase and ground is sent separately to the remote terminal for comparison with the local phase data at that terminal. (PE/PSR) C37.113-1999

seismic category I (nuclear power generating station) The classification assigned to those structures, systems, and components of a nuclear power plant, including foundations and supports, which must be designed to withstand the effects of the Safe Shutdown Earthquake (SSE) and remain functional. (PE/NP) 567-1980w

seismic outline drawing A 280 × 432 mm (11 × 17 in) or 216 × 280 mm (8 1/2 × 11 in) drawing that shows key information concerning the seismic qualification of the equipment. It shows information such as the resonant frequencies of the equipment, important loads, an outline drawing of the equipment, the center of gravity of the equipment, and other key information about the equipment. (PE/SUB) 693-1997

seizure signal (telephone switching systems) A signal transmitted from the sending end of a trunk to the far end to indicate that its sending end has been selected. (C) [85]

select (1) To identify, within a set of items, all items that meet a particular criterion. *See also:* extract; selection. (C) 610.5-1990w

(2) Context determines which of the following applies:

— To establish a particular device node as the active package.
— To establish a particular device as either the console input device or console output device.
— To establish a particular instance as the current instance.

(C/BA) 1275-1994

(3) To identify and fix (for the duration of the current message) a port to which data of a Data Transfer class message are to be directed. (TT/C) 1149.5-1995

selectable element A display element that can be selected by a pick device. (C) 610.6-1991w

selectance (amplitude-modulation broadcast receivers) The ratio of the ordinates of a selectivity graph, described in Section 4.05.03 of IEEE Std 186-1948w, between the resonant frequency and another frequency differing from the resonant frequency by a specified multiple of the width of one channel. (The width of one broadcast channel is 10 kilocycles.) It is expressed in decibels or voltage ratios. The ratio at a frequency n channels above the resonant frequency is denoted by S_{+n} and at a frequency n channels below the resonant frequency is denoted by S_{-n}. The geometric mean of these ratios is denoted by S_n. Expressed in decibels, the value of S_n is the average value of S_{+n} and S_{-n}. The terms adjacent-channel attenuation" (ACA) and "second-channel attenuation" (2ACA) are used to refer to S_1 and S_2, respectively. (CE) 186-1948w

selected emphasis A visual cue that indicates the current selection. (C) 1295-1993w

selected slave (1) A slave that is selected during the connection phase by the master when it recognizes its address on the bus lines. (C/BA/C/BA/C/BA) 10857-1994, 896.4-1993w, 896.3-1993w

(2) *See also:* slave. (C/MM) 1096-1988w

selected test data register A test data register is selected when it is required to operate by an instruction supplied to the test logic. (TT/C) 1149.1-1990

selecting (telephone switching systems) Choosing a particular group of one or more servers in the establishment of a call connection. (C) [85]

selection (A) (data management) A relational operator that extracts specified tuples from a relation and results in a relation containing only those tuples. Also called **select**.

Student No.	Name	Grade	Homeroom
15	Mary	4	26A
21	Harry	4	27

See also: product; projection; coincident-current selection; difference; union; join; amplitude selection; intersection. **(B) (data management)** The process of identifying, within a set of items, all items that meet a particular criterion. (C) 610.5-1990

Selection of Relation *Students* in Fig to entity/attribute matrix where GRADE is ≤ 5

selection box A boxed area on the user interface that presents a list of items to select from and a text field where selected items are displayed.The user can also directly type in an item into the text field. (C) 1295-1993w

selection check (electronic computation) A check (usually an automatic check) to verify that the correct register, or other device, is selected in the interpretation of an instruction. (C) 162-1963w, [85], [20]

selection phase The set of steps performed by software administration utility to process selections and options. (C/PA) 1387.2-1995

selection ratio The least ratio or a magnetomotive force used to select a cell to the maximum magnetomotive force used that is not intended to select a cell. *See also:* coincident-current selection. (Std100) 163-1959w

selection sort A sort in which the items in a set are examined to find an item that fits a specified criterion; for example, the smallest item; this item is appended to the sorted set and removed from further consideration; and the process is repeated until all items are in the sorted set. *Synonym:* straight selection sort. *See also:* repeated selection sort; tree selection sort; heapsort. (C) 610.5-1990w

selective acknowledgment An acknowledgment mechanism used with a sliding window protocol that allows the receiver to acknowledge packets that are received out of order. *Synonym:* extended acknowledgment. (C) 610.7-1995

selective calling The ability of a transmitting station to specify which of several stations on the same line is in condition to receive a message. (C) 610.7-1995

selective choice construct *See:* branch.

selective collective automatic operation (elevators) Automatic operation by means of one button in the car for each landing level served and by UP and DOWN buttons at the landings, wherein all stops registered by the momentary actuation of the car buttons are made as defined under nonselective collective automatic operation, but wherein the stops registered by the momentary actuation of the landing buttons are made in the order in which the landings are reached in each direction of travel after the buttons have been actuated. With this type of operation, all UP landing calls are answered when the car is traveling in the up direction and all DOWN landing calls are answered when the car is traveling in the down direction, except in the case of the uppermost or lowermost calls, which are answered as soon as they are reached irrespective of the direction of travel of the car. *See also:* control. (PE/EEC) [119]

selective coordination *See:* selectivity.

selective dump (1) (computers) A dump of a selected area of storage. (C) [20], [85]

(2) (software) A dump of designated storage location areas only. *See also:* postmortem dump; snapshot dump; dynamic dump; change dump; static dump; memory dump. (C) 610.12-1990

selective erase The removal of one or more display elements or parts of an element without affecting the rest of the display image. *See also:* erase. (C) 610.6-1991w

selective erasing (storage tubes) Erasing of selected storage elements without disturbing the information stored on other storage elements. *See also:* storage tube. (ED) 158-1962w

selective fading *See:* frequency selective fading.

selective listing in combination index (SLIC) An automatic index in which the entries are combinations of terms taken from a set of preselected keywords. (C) 610.2-1987

selective opening (tripping) The application of switching devices in series such that (of the devices carrying fault current) only the device nearest the fault will open and the devices closer to the source will remain closed and carry the remaining load. (SWG/PE) C37.100-1992

selective overcurrent trip *See:* overcurrent release; selective release.

selective overcurrent tripping *See:* overcurrent release; selective opening.

selective pole switching The practice of tripping and reclosing one or more poles of a multipole circuit breaker without changing the state of the remaining pole(s), with tripping being initiated by protective relays that respond selectively to the faulted phases. *Note:* Circuit breakers applied for selective pole switching must inherently be capable of individual pole opening. (SWG/PE) C37.100-1992

selective release (trip) A delayed release with selective settings that will automatically reset if the actuating quantity falls and remains below the release setting for a specified time. (SWG/PE) C37.100-1992

selective retransmission A transmission scheme where the transmitter may send multiple PDUs without waiting for an acknowledgment. If the receiver indicates that an error occurred in a given PDU, the sender will retransmit only the errored PDU. *Note:* In this scheme, the receiver will accept PDUs that are out-of-sequence. *Contrast:* Go-Back-N. (C) 610.7-1995

selective ringing (telephone switching systems) Ringing in which only the ringer at the desired main station on a party line responds. (C) [85]

selective signaling equipment (mobile communication) Arrangements for signaling, selective from a base station, of any one of a plurality of mobile stations associated with the base station for communication purposes. *See also:* mobile communication system. (VT) [37]

selective trace A variable trace that involves only selected variables. *See also:* symbolic trace; subroutine trace; retrospective trace; execution trace; variable trace. (C) 610.12-1990

selectivity (1) The characteristic of a filter that determines the extent to which the filter is capable of altering the frequency spectrum of a signal. A highly selective filter has an abrupt transition between a pass-band region and a stop-band region. (CAS/MTT) 146-1980w

(2) A general term describing the interrelated performance of relays and breakers, and other protective devices; complete selectivity being obtained when a minimum amount of equipment is removed from service for isolation of a fault or other abnormality. (SWG/PE/IA/PSP) C37.100-1992, 1015-1997

selector, amplitude *See:* pulse-height selector.

selector channel An input-output channel that can transfer data to or from only one peripheral device at a time. *See also:* multiplexer. (C) 610.10-1994w

selector field A five-bit field in the Base Link Code Word encoding that is used to encode up to 32 types of messages that define basic abilities. For example, selector field 00001 indicates that the base technology is IEEE 802.3. (C/LM) 802.3-1998

selector pen *See:* light pen.

selector pulse (navigation aids) A pulse which is used to identify, for selection, one event in a series of events. (AES/GCS) 172-1983w

selector, pulse-height *See:* pulse-height selector.

selectors Those who execute the selection process described in this recommended practice. They may also act in other roles (for example, users). (C/SE) 1209-1992w

selector switch (1) A switch arranged to permit connecting a conductor to any one of a number of other conductors. (SWG/PE) C37.30-1971s, C37.100-1992

(2) A manually operated multiposition switch for selecting alternative control circuits. (IA/ICTL/IAC) [60]

self-adapting Pertaining to the ability of a system to change its performance characteristics in response to its environment. (C) [20], [85]

self-adapting computer A computer that can change its performance characteristics in response to its environment. (C) 610.10-1994w

self-aligning bearing (rotating machinery) A sleeve bearing designed so that it can move in the end shield to align itself with the journal of the shaft. *See also:* bearing. (IA/APP) [90]

self-ballasted lamp (illuminating engineering) Any arc discharge lamp of which the current-limiting device is an integral part. (EEC/IE) [126]

self-capacitance (conductor) (total capacitance) (grounded capacitance) In a multiple-conductor system, the capacitance between this conductor and the other $(n - 1)$ conductors connected together. *Note:* The self-capacitance of a conductor equals the sum of its $(n - 1)$ direct capacitances to the other $(n - 1)$ conductors. (Std100) 270-1966w

self-checking (by a relay) Self-testing by microprocessor-based relays that checks operation of the processor software. (PE/PSR) C37.113-1999

self-checking circuit A circuit which is capable of withstanding a specified number of non-fatal failures while continuing to operate. (C) 610.10-1994w

self-checking code (electronic computation) A code that uses expressions such that one (or more) error(s) in a code expression produces a forbidden combination. *See also:* error-detecting code; parity. (C) 162-1963w

self-closing door or gate (elevators) A manually opened hoistway door and/or a car door or gate that closes when released. *See also:* hoistway. (PE/EEC) [119]

self-commutated converter (self-commutated converters) (forced-commutated converter) A converter in which commutation is accomplished by components within the converter. *Note:* In converters using switching devices that can interrupt or turn off current, such as transistors or gate turn-off thyristors, rejection of the current produces a voltage across the device to commutate the current to another device. In converters using circuit-commutated thyristors, the commutating voltages required to transfer current from one device to another are usually supplied by capacitors. (IA/SPC) 936-1987w

self-commutated inverters An inverter in which the commutation elements are included within the power inverter. (IA) [62]

self-complementing code A binary code in which the complement of each decimal digit represented equals the complement of its binary representation. *See also:* excess-three code. (C) 1084-1986w

self-contained Pertaining to a database management system having a programming language that contains all of the necessary facilities for the control and processing of a database. (C) 610.5-1990w

self-contained electromechanical watthour meter A self-contained electromechanical watthour meter is one in which the terminals are arranged for connection to the circuit being measured without using external instrument transformers. (ELM) C12.10-1987

self-contained instrument An instrument that has all the necessary equipment built into the case or made a corporate part thereof. *See also:* instrument. (EEC/AII) [102]

self-contained navigation aid (navigation aids) An aid that consists only of facilities carried by the vehicle. (AES/GCS) 172-1983w

self-contained pressure cable A pressure cable in which the container for the pressure medium is an impervious flexible metal sheath, reinforced if necessary, that is factory assembled with the cable core,. *See also:* oil-filled cable; pressure cable. (EEC/AWM) [91]

self-coupling separable contacts (switchgear assembly disconnecting device) Contacts, mounted on the stationary and removable elements of a switchgear assembly, that align and engage or disengage automatically when the two elements are brought into engagement or disengagement. (SWG/PE) [56]

self-damping (conductor self-damping measurements) Of a conductor subjected to a load T is defined by the power dissipated per unit length of a conductor vibrating in a natural mode, with a loop length l and an antinode displacement amplitude y and a frequency f. The power per unit conductor length P is expressed as a function in the nth mode.

$$P = f_n(T, l, f, y)$$

(T&D/PE) 563-1978r

self-damping conductor (SDC) ACSR that is designed to control aeolian vibration by integral damping. Trapezoidal aluminum wires and annular gaps are utilized. (T&D/PE) 524-1992r

self-descriptiveness The degree to which a system or component contains enough information to explain its objectives and properties. *See also:* maintainability; usability; testability. (C) 610.12-1990

self diagnostics Programs automatically executed, at predetermined intervals, in the master station or RTU, to check the health of the system. (SUB/PE) C37.1-1994

self-discharge The process by which the available capacity of a battery is reduced by internal chemical reactions (local action). (PV) 1013-1990, 1144-1996

self-discharge rate The amount of capacity reduction occurring per unit of time in a battery as the result of self-discharge. (PV) 1013-1990, 1144-1996

self-documented Pertaining to source code that contains comments explaining its objectives, operation, and other information useful in understanding and maintaining the code. (C) 610.12-1990

self-excitation A condition in which an induction generator, operating in an isolated power system, derives its excitation from shunt capacitors or the natural capacitance of the power lines. Applies only to induction machines. (DESG) 1094-1991w

self-excited A qualifying term applied to a machine to denote that the excitation is supplied by the machine itself. *See also:* direct-current commutating machine. (IA/APP) [90]

self-field (Hall generator) The magnetic field caused by the flow of control current through the loop formed by the control current leads and the relevant conductive path through the Hall plate. (MAG) 296-1969w

self-filling bushing An oil-filled bushing in which the oil is allowed to circulate freely between the inside of the bushing and the apparatus on which it is used. (PE/TR) C57.19.03-1996

self-heating The result of exothermic reactions, occurring in some materials under certain conditions, whereby heat is liberated at a rate sufficient to raise the temperature of the material. (DEI) 1221-1993w

Self Identifying Publisher Port An instance of the class `IEEE1451_SelfIdentifyingPublisherPort` or of a subclass thereof. (IM/ST) 1451.1-1999

self-ID packet (1) A special packet sent by a cable PHY during the self-ID phase following a reset. One to four self-ID packets are sent by a given node depending on the maximum number of ports it has. (C/MM) 1394-1995

(2) A physical layer (PHY) packet transmitted by a cable PHY during the self-ID phase or in response to a PHY ping packet. (C/MM) 1394a-2000

self-ignition Ignition resulting from self-heating. (DEI) 1221-1993w

self-impedance (of an array element) The input impedance of a radiating element of an array antenna with all other elements in the array open-circuited. (AP/ANT) 145-1993

self-inductance The property of an electric circuit whereby an electromotive force is induced in that circuit by a change of current in the circuit. *Notes:* 1. The coefficient of self-inductance L of a winding is given by the following expression:

$$L = \frac{\delta\lambda}{\delta i}$$

where λ is the total flux-linkage of the winding and i is the current in the winding. 2. The voltage e induced in the winding is given by the following equation:

$$e = -\left[L\frac{\mathrm{d}i}{\mathrm{d}t} + i\frac{\mathrm{d}L}{\mathrm{d}t}\right]$$

If L is constant

$$e = -L\frac{\mathrm{d}i}{\mathrm{d}t}$$

3. The definition of self-inductance L is restricted to relatively slow changes in i, that is, to low frequencies, but by analogy with the definitions, equivalent inductances may often be evolved in high-frequency applications such as resonators, waveguide equivalent circuits, etc. Such inductances, when used, must be specified. The definition of self-inductance L is also restricted to cases in which the branches are small in physical size compared with a wavelength, whatever the frequency. Thus, in the case of a uniform 2-wire transmission line, it may be necessary even at low frequencies to consider the parameters as distributed rather than to have one inductance for the entire line. (BT) 270-1966w, [33]

self-information *See:* information content.

self-locking gear train A power transmission gear train designed such that the power train will hold its position and not back-drive whenever the primary driving force is removed. A valve actuator with a self-locking gear train will hold the valve in its last position when the VAM is de-energized. (PE/NP) 1290-1996

self-lubricating bearing (rotating machinery) A bearing lined with a material containing its own lubricant such that little or no additional lubricating fluid need be added subsequently to ensure satisfactory lubrication of the bearing. *See also:* bearing. (IA/APP) [90]

self-maintained discharge (gas) A discharge characterized by the fact that it maintains itself after the external ionizing agent is removed. *See also:* discharge. (ED) [45], [84]

self-operated controller (automatic control) A control device in which all the energy to operate the final controlling element is derived from the controlled system through the primary detecting element. (PE/EDPG) [3]

self-organizing Pertaining to the ability of a system to arrange its internal structure. (C) [20], [85]

self-organizing computer A computer that can change its internal structure. (C) 610.10-1994w

self-phasing array antenna system A receiving antenna system that introduces a phase distribution among the array elements so as to maximize the received signal, regardless of the direction of incidence. *Contrast:* retrodirective antenna. (AP/ANT) 145-1993

self-propelled electric car An electric car requiring no external source of electric power for its operation. *Note:* Diesel-electric, gas-electric, and storage-battery-electric cars are examples of self-propelled cars. The prefix self-propelled is also applied to buses. *See also:* electric motor car. (EEC/PE) [119]

self-propelled electric locomotive An electric locomotive requiring no external source of electric power for its operation. *Note:* Storage-battery, diesel-electric, gas-electric and turbine-electric locomotives are examples of self-propelled electric locomotives. *See also:* electric locomotive. (EEC/PE) [119]

self-pulse modulation Modulation effected by means of an internally generated pulse. *See also:* blocking oscillator; oscillatory circuit. (AP/ANT) 145-1983s

self-quenched counter tube A radiation counter tube in which reignition of the discharge is inhibited by internal processes. (EEC/PE) [119]

self-rectifying x-ray tube An x-ray tube operating on alternating anode potential. (ED) [45]

self-refresh A RAM-refresh protocol, where RAM-local hardware schedules the timing and specifies addresses for RAM refresh cycles. (C/MM) 1596.4-1996

self-relative address An address that must be added to the address of the instruction in which it appears to obtain the address of the storage location to be accessed. *See also:* offset; indexed address; base address; relative address. (C) 610.12-1990

self-repairing circuit A circuit capable of automatically correcting for the effects of a failure so that the presence of the failure is not perceptible. (C) 610.10-1994w

self-reset manual release (control) A manual release that is operative only while it is held manually in the release position. *See also:* electric controller. (IA/ICTL/IAC) [60]

self-reset relay (automatically reset relay) (automatic reset relay) A relay that is so constructed that it returns to its reset position following an operation after the input quantity is removed. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

self-restoring fire detector (fire protection devices) A restorable fire detector whose sensing element is designed to be returned to normal automatically. (EEC/LB) [97]

self-restoring insulation (1) Insulation that completely recovers its insulating properties after a disruptive discharge caused by the application of a test voltage; insulation of this kind is generally, but not necessarily, external insulation. (SWG/C/PE/TR) 1313.1-1996, C57.12.80-1978r, C37.100-1992

(2) Insulation that completely recovers its insulating properties after a disruptive discharge. (PE/PSIM) 4-1995

(3) Insulation that completely recovers its insulating properties after a disruptive discharge caused by the application of an overvoltage; insulation of this kind is generally, but not necessarily, external insulation. (SPD/PE) C62.22-1997

self-rest relay (automatically reset relay) A relay that is so constructed that it returns to its reset position following an operation after the input quantity is removed. (SWG/PE) C37.100-1981s

self-retracting lanyard A device which contains a drum-wound line which may be slowly extracted from or retracted onto the drum under slight tension during normal movement of the user. The line has means for attachment to the fall arrest attachment on the body support. After onset of a fall, the device automatically locks the drum and arrests the fall.The device may have integral means for energy absorption. (T&D/PE) 1307-1996

self-revealing component failures Component failures whose effects on system operation are immediately and clearly apparent to a properly trained person. (VT/RT) 1483-2000

self-saturation (magnetic amplifier) The saturation obtained by rectifying the output current of a saturable reactor. (EEC/PE) [119]

self-screening range Range at which a specified target carrying its own specified active jamming [electronic countermeasures (ECM)] can be detected by a specified radar with specified probabilities of detection and false-alarm. *Note:* Also called "burn-through range." (AES) 686-1997

self-supported aerial cable A cable that includes a messenger cable that has an outer jacket that covers the messenger and the shield. The messenger is available for support, gripping, pulling, and tensioning. *See also:* aerial cable. (PE/PSC) 789-1988w

self-supporting aerial cable A cable consisting of one or more insulated conductors factory assembled with a messenger that supports the assemblage, and that may or may not form a part of the electric circuit. *See also:* conductor. (EEC/AWM) [91]

self-surge impedance *See:* surge impedance.

self-test (test, measurement, and diagnostic equipment) A test or series of tests, performed by a device upon itself, which shows whether or not it is operating within designed limits. This includes test programs on computers and automatic test equipment which check out their performance status and readiness. (IM/WM&A) 194-1977w

self-test capability (test, measurement, and diagnostic equipment) The ability of a device to check its own circuitry and operation. The degree of self-test is dependent on the ability to fault detect and isolate. (IM/WM&A) 194-1977w

self-testing circuit A circuit in which for every signal line an error is detected for both stuck-at-zero and stuck-at-one failures. (C) 610.10-1994w

self-triggered gap A bypass gap that is designed to sparkover on the voltage that appears across the gap terminals. The sparkover of the gap is normally initiated by a trigger circuit set at a specified voltage level. A self-triggered bypass gap may be used for the primary protection of the capacitor. The self-triggered gap may sparkover during external as well as internal faults. (T&D/PE) 824-1994

self-ventilated machine A machine that has its ventilating air circulated by means integral with the machine. (IA/MT) 45-1998

SELV Safety extra low voltage. (C/BA) 896.2-1991w

semianechoic absorber-lined chamber (SALC) A room or enclosure (either shielded or unshielded) with all its surfaces, except the floor, lined with radio-frequency (RF) absorber material. The floor is covered with a good conductor. (EMC) 1128-1998

semantic error An error resulting from a misunderstanding of the relationship of symbols or groups of symbols to their meanings in a given language. *Contrast:* syntactic error. (C) 610.12-1990

semantics (1) (software) The relationships of symbols or groups of symbols to their meanings in a given language. (C) [20], 610.12-1990, [85]

(2) The connotative meaning of words within an ATLAS statement. (SCC20) 771-1998

(3) The meaning of the syntactic components of a language. (C/SE) 1320.2-1998

(4) The meaning, including concept(s), associated with a given entity. (SCC32) 1489-1999

semaphore (1) (software) A shared variable used to synchronize concurrent processes by indicating whether an action has been completed or an event has occurred. *See also:* indicator; flag. (C) 610.12-1990

(2) A shareable resource that has a nonnegative integral value. When the value is zero, there is a (possibly empty) set of threads awaiting the availability of the semaphore. (PA/C) 9945-1-1996

(3) A system variable used to synchronize concurrent processes by indicating whether an action has been completed or an event has occurred. (C/MM) 855-1990

(4) A shareable resource that has a nonnegative integer value. When the value is zero, there is a (possibly empty) set of tasks is awaiting the availability of the semaphore. (C) 1003.5-1999

semaphore decrement operation An operation that decrements the value of a semaphore, blocking until this is possible. If, prior to the operation, the value of the semaphore is zero, the semaphore decrement operation shall cause the calling task to be blocked and added to the set of tasks (possibly in different processes) awaiting the semaphore. Otherwise, the semaphore value is decremented. (C) 1003.5-1999

semaphore increment operation An operation that increments the value of a semaphore or unblocks a waiting task. If, prior to the operation, any tasks are awaiting the semaphore, then some task from that set shall be removed from the set and be unblocked. Otherwise, the semaphore value shall be incremented. (C) 1003.5-1999

semaphore lock operation An operation that is applied to a semaphore. If, prior to the operation, the value of the semaphore is zero, the semaphore lock operation shall cause the calling thread to be blocked and added to the set of threads awaiting the semaphore. Otherwise, the value is decremented. (C/PA) 9945-1-1996

semaphore unlock operation An operation that is applied to a semaphore. If, prior to the operation, there are any threads in the set of threads awaiting the semaphore, then some thread from that set shall be removed from the set and become unblocked. Otherwise, the semaphore value is incremented. (C/PA) 9945-1-1996

semiactive guidance A bistatic-radar homing system in which a receiver in the guided vehicle derives guidance information from electromagnetic signals scattered from a target which is illuminated by a transmitter at a third location. *See also:* illuminator. (AES) 686-1997

semiactive homing guidance (navigation aids) Guidance in which a craft is directed toward a destination by means of information received from the destination in response to transmissions from a source other than the craft. (AES/GCS) 172-1983w

semianalytic inertial navigation equipment The same as geometric inertial navigation equipment except that the horizontal measuring axes are not maintained in alignment with a geographic direction. *Note:* The azimuthal orientations are automatically computed. *See also:* navigation. (AES/RS) 686-1982s, [42]

semiautomatic Combining manual and automatic features so that a manual operation is required to supply to the automatic feature the actuating influence that causes the automatic feature to function. (EEC/PE) [119]

semiautomatic controller An electric controller in which the influence directing the performance of some of its basic functions is automatic. *See also:* electric controller. (IA/IAC) [60]

semiautomatic flight inspection (SAFI) (navigation aid terms) A specialized and largely automatic system for evaluating the quality of information in signals from ground-based navigational aids; data from navigational aids along and adjacent to any selected air route are simultaneously received by a specially equipped SAFI aircraft as it proceeds under automatic control along the route, evaluated at once for gross errors, and recorded for subsequent processing and detailed analysis at a computer-equipped central ground facility. *Note:* Flight inspection means the evaluation of performance of navigational aids by means of in-flight measurements. (AES/GCS) 172-1983w

semiautomatic gate (elevators) A gate that is opened manually and that closes automatically as the car leaves the landing. *See also:* hoistway. (PE/EEC) [119]

semiautomatic holdup-alarm system An alarm system in which the signal transmission is initiated by the indirect and secret action of the person attacked or of an observer of the attack. *See also:* protective signaling. (EEC/PE) [119]

semiautomatic load throw-over equipment Equipment that automatically transfers a load to another (emergency) source of power when the original (preferred) source to which it has been connected fails, but that requires manual restoration of the load to the original source. (SWG/PE) C37.100-1992

semiautomatic plating Mechanical plating in which the cathodes are conveyed automatically through only one plating tank. *See also:* electroplating. (EEC/PE) [119]

semiautomatic signal A signal that automatically assumes a stop position in accordance with traffic conditions, and that can be cleared only by cooperation between automatic and manual controls. (EEC/PE) [119]

semiautomatic station (station control and data acquisition) A station that requires both automatic and manual modes to maintain the required character of service. (SWG/PE/SUB) C37.100-1992, C37.1-1994

semiautomatic telephone systems A telephone system in which operators receive orders orally from the calling parties and establish connections by means of automatic apparatus. (EEC/PE) [119]

semiautomatic test equipment (test, measurement, and diagnostic equipment) Any automatic testing device which requires human participation in the decision-making, control, or evaluative functions. (IM/WM&A) 194-1977w

semiconducting jacket A jacket of such resistance that its outer surface can be maintained at substantially ground potential by contact at frequent intervals with a grounded metallic conductor, or when buried directly in the earth. (PE/EEC/AWM) [4], [91]

semiconducting material (1) A conducting medium in which the conduction is by electrons, and holes, and whose temperature coefficient of resistivity is negative over some temperature range below the melting point. *See also:* semiconductor device; semiconductor. (Std100) 270-1966w

(2) A solid material that conducts limited electric current by means of a small number of free electrons and additional electrons that can be freed from their local bonds by the addition of other elements or "doping." For example, silicon is a semiconducting material. *Contrast:* conducting material; insulating material. *See also:* hole. (C) 610.10-1994w

semiconducting paint (rotating machinery) A paint in which the pigment or portion of pigment is a conductor of electricity and the composition is such that when converted into a solid film, the electrical conductivity of the film is in the range between metallic substances and electrical insulators. (IA/APP) [90]

semiconducting tape (power distribution, underground cables) A tape of such resistance that when applied between two elements of a cable the adjacent surfaces of the two elements will maintain substantially the same potential. Such tapes are commonly used for conductor shielding and in conjunction with metallic shielding over the insulation. (PE/TR) C57.15-1968s

semiconductive ignition cable High-tension ignition cable, the core of which is made of semiconductive material. *Note:* Semiconductive is understood here as referring to conductivity and no other physical properties. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

semiconductive slot coating The partially conductive paint or tape layer in intimate contact with the groundwall insulation in the slot portion of the stator core. This coating ensures that there is little voltage between the surface of the coil or bar and the grounded stator core. (DEI) 1043-1996

semiconductor (1) An electronic conductor, with resistivity in the range between metals and insulators, in which the electric-charge-carrier concentration increases with increasing temperature over some temperature range. *Note:* Certain semiconductors possess two types of carriers, namely, negative electrons and positive holes. (ED) 216-1960w

(2) A device that is made of semiconducting material. For example: a diode, an integrated circuit, or a transistor. (C) 610.10-1994w

(3) Material in which the conductivity is due to charge carriers of both signs (electrons and holes), is normally in the range between metals and insulators, and in which the charge-carrier density can be changed by external means. (NPS) 325-1996

semiconductor, compensated *See:* compensated semiconductor.

semiconductor controlled rectifier (SCR) An alternative name used for the reverse-blocking triode-thyristor. *Note:* The name of the actual semiconductor material (selenium, silicon, etc.) may be substituted in place of the word semiconductor in the name of the components. *See also:* thyristor. (ED) 216-1960w

semiconductor converters, classification The following designations are intended to describe the functional characteristics of converters, but not necessarily the circuits or components used. *Note:* Forms A through D refer only to the converters. Rotational direction of motors may be changed by field or armature reversal. (form A converter) A single converter unit in which the direct current can flow in one direction only and which is not capable of inverting energy from the load to the ac supply. Operates in quadrant I only (semiconverter). (form B converter) A double converter unit in which the direct current can flow in either direction but which is not capable of inverting energy from the load to the ac supply. Operates in quadrants I and III only. (form C converter) A single converter unit in which the direct current can flow in one direction only and which is capable of inverting energy from the load to the ac supply. Operates in quadrants I and IV. (form D converter) A double converter unit in which the direct current can flow in either direction and which is capable of inverting energy from the load to the ac supply. Operates in quadrants I, II, III, and IV. (IA/IPC) 444-1973w

semiconductor device An electron device in which the characteristic distinguishing electronic conduction takes place within a semiconductor. *See also:* semiconductor. (Std100) 270-1966w

semiconductor device circuit breaker (thyristor) A circuit breaker of special characteristics used to isolate or protect semiconductor devices from overcurrent. (IA/IPC) 428-1981w

semiconductor device fuse (thyristor) A fuse of special characteristics connected in series with one or more semiconductor devices to isolate or protect the semiconductor. (IA/IPC) 428-1981w

semiconductor device lead inductance (nonlinear, active, and nonreciprocal waveguide components) The inductance of a semiconductor device associated with the strap, mesh, or wire connections used to contact the semiconductor chip. In general, a larger cross-sectional contacting area results in decreased lead inductance. (MTT) 457-1982w

semiconductor device, multiple unit A semiconductor device having two or more sets of electrodes associated with independent carrier streams. *Note:* It is implied that the device has two or more output functions that are independently derived from separate inputs, for example, a duo-triode transistor. *See also:* semiconductor. (PE/EDPG) [93]

semiconductor device, single unit A semiconductor device having one set of electrodes associated with a single carrier stream. *Note:* It is implied that the device has a single output function related to a single input. *See also:* semiconductor. (PE/EDPG) [93]

semiconductor diode A two-terminal device formed of a semiconductor junction having a nonlinear characteristic that will conduct electric current more in one direction than in the other. (CAS/MTT) 146-1980w

semiconductor-diode parametric amplifier A parametric amplifier using one or more varactors. *See also:* parametric device. (ED) [46]

semiconductor, extrinsic *See:* extrinsic semiconductor.

semiconductor frequency changer A complete equipment employing semiconductor devices for changing from one alternating-current frequency to another. *See also:* semiconductor rectifier stack. (IA) [62]

semiconductor, intrinsic *See:* intrinsic semiconductor.

semiconductor junction (light-emitting diodes) A region of transition between semiconductor regions of different electrical properties. (ED) [127]

semiconductor laser *See:* injection laser diode.

semiconductor, *n*-type (A) An extrinsic semiconductor in which the conduction electron concentration exceeds the mobile hole concentration. *Note:* It is implied that the net ionized impurity concentration is donor type. *See also:* semiconductor. **(B)** An *n*-type semiconductor in which the excess conduction electron concentration is very large. *See also:* semiconductor. (ED) 216-1960

semiconductor, *n*+-type An *n*-type semiconductor in which the excess conduction electron concentration is very large. *See also:* semiconductor. (ED) 216-1960w

semiconductor, *p*+-type A *p*-type semiconductor in which the excess mobile hole concentration is very large. *See also:* semiconductor. (ED) 216-1960w

semiconductor power converter A complete equipment employing semiconductor devices for the transformation of electric power. *See also:* semiconductor rectifier stack. (IA) [62]

semiconductor, *p*-type An extrinsic semiconductor in which the mobile hole concentration exceeds the conduction electron concentration. *Note:* It is implied that the net ionized impurity concentration is acceptor type. *See also:* semiconductor. (ED) 216-1960w

semiconductor radiation detector (1) (germanium gamma-ray detectors) A semiconductor device that utilizes the production and motion of excess free charge carriers in the semiconductor for the detection and measurement of particles or photons of incident radiation. (NPS/NID) 300-1988r, 759-1984r

(2) A semiconductor device in which the production and motion of excess free carriers is used for the detection and measurement of incident particles or photons. (NPS) 325-1996

semiconductor rectifier A device consisting of a conductor and semiconductor forming a junction. The junction exhibits a difference in resistance to current flow in the two directions through the junction. This results in effective current flow in one direction only. The semiconductor rectifier stack is a single columnar structure of one or more semiconductor rectifier cells. (IA/MT) 45-1998

semiconductor rectifier cell A semiconductor device consisting of one cathode, one anode, and one rectifier junction. *See also:* semiconductor rectifier stack; semiconductor. (IA) 59-1962w, [12]

semiconductor rectifier cell combination The arrangement of semiconductor rectifier cells in one rectifier circuit, rectifier diode, or rectifier stack. The semiconductor rectifier cell combination is described by a sequence of four symbols written in the order 1-2-3-4 with the following significances:

1) Number of rectifier circuit elements.
2) Number of semiconductor rectifier cells in series in each rectifier circuit element.
3) Number of semiconductor rectifier cells in parallel in each rectifier circuit element.
4) Symbol designating circuit. If a semiconductor rectifier stack consists of sections of semiconductor rectifier cells insulated from each other, the total semiconductor rectifier cell combination becomes the sum of the semiconductor rectifier cell combinations of the individual insulated sections. If the insulated sections have the same semiconductor rectifier cell combination, the total semiconductor rectifier cell combination may be indicated by the semiconductor rectifier cell combination of one section preceded by a figure showing the number of insulated sections. Example: 4(4-1-1-B) indicates four single-phase full-wave bridges insulated from each other assembled as one semiconductor rectifier stack.

Notes: 1. The total number of semiconductor rectifier cells in each semiconductor rectifier cell combination is the product of the numbers in the combination. 2. This arrangement can also be applied by analogy to give a semiconductor rectifier diode combination.

Symbol	Circuit	Example
H	half wave	1-1-1-H
C	center tap	2-1-1-C
B	bridge	4-1-1-B
		6-1-1-B
Y	wye	3-1-1-Y
S	star	6-1-1-S
D	voltage doubler	2-1-1-D

See also: semiconductor rectifier cell. (IA) 59-1962w, [12]

semiconductor rectifier diode (thyristor) A semiconductor diode having an asymmetrical voltage-current characteristic, used for the purpose of rectification, and including its associated housing, mounting, and cooling attachment if integral with it. (IA/IPC) 428-1981w

semiconductor rectifier stack An integral assembly, with terminal connections, of one or more semiconductor rectifier diodes, and includes its associated mounting and cooling attachments if integral with it. *Note:* It is a subassembly of, but not a complete semiconductor rectifier. (IA) 59-1962w, [12], [62]

semiconductor storage A type of storage whose elements are formed as solid state electronic components on an integrated circuit. *Contrast:* magnetic storage; core memory. (C) 610.10-1994w

semiconverter, bridge *See:* bridge semiconverter.

semi-direct lighting (illuminating engineering) Lighting involving luminaires that distribute 60−90% of the emitted light downward and the balance upward. (EEC/IE) [126]

semienclosed (A) Having the ventilating openings in the case protected with wire screen, expanded metal, or perforated covers. **(B)** Having a solid enclosure except for a slot for an operating handle or small openings for ventilation, or both. (EEC/PE) [119]

semienclosed brake A brake that is provided with an enclosure that covers the brake shoes and the brake wheel but not the brake actuator. *See also:* control. (IA/ICTL/IAC/APP) [60], [75]

semi-flush-mounted device A device in which the body of the device projects in front of the mounting surface a specified distance between the distance specified for flush-mounted and surface-mounted devices. (SWG/PE) C37.100-1992

semiguarded enclosure An enclosure in which all of the openings, usually in the top half, are protected as in the case of a "guarded enclosure," but the others are left open. (IA/MT) 45-1998

semiguarded machine (rotating machinery) One in which part of the ventilating openings, usually in the top half, are guarded as in the case of a guarded machine but the others are left open. (IA/APP) [90]

semi-high-speed low-voltage dc power circuit breaker (1) A low-voltage dc power circuit breaker that, during interruption, limits the magnitude of the fault current so that its crest is passed not later than a specified time after the beginning of the fault current transient, where the system fault current, determined without the circuit breaker in the circuit, falls between specified limits of current at a specified time. *Note:* The specified time in present practice is 0.03 second. (SWG/PE) C37.100-1981s

(2) (low-voltage dc power circuit breakers used in enclosures) A circuit breaker which, when applied in a circuit with the parameter values specified in American National Standard C37.16-1979, Tables 11 and 11A, tests "b" (1.7 A μs initial rate of rise of current), forces a current crest during interruption within 0.030 s after the current reaches the pickup setting of the instantaneous trip device. *Note:* For total performance at other than test circuit parameters values, consult the manufacturer. (SWG/PE) C37.14-1979s

semi-indirect lighting (illuminating engineering) Lighting involving luminaires which distribute 60% to 90% of the emitted light upward and the balance downward. (EEC/IE) [126]

semimagnetic controller An electric controller having only part of its basic functions performed by devices that are operated by electromagnets. (IA/MT) 45-1998

semi-manual hyphenation In text formatting, hyphenation in which most line-ending and word break decisions are made automatically, the user being asked to assist only when a determination cannot be made automatically. *See also:* manual hyphenation; hot zone hyphenation; automatic hyphenation. (C) 610.2-1987

semi-Markov model (modeling and simulation) A Markov chain model in which the length of time spent in each state is randomly distributed. (C) 610.3-1989w

semi-Markov process (modeling and simulation) A Markov process in which the duration of each event is randomly distributed. (C) 610.3-1989w

semioutdoor reactor A reactor suitable for outdoor use provided that certain precautions in installation (specified by the manufacturer) are observed. For example, protection against rain. C57.16-1958w

semiprotected enclosure (electric installations on shipboard) An enclosure in which all of the openings, usually in the top half, are protected as in the case of a "protected enclosure," but the others are left open. (IA/MT) 45-1983s

semi-random-access A mode of data access that, in the search for the desired item, combines a form of direct access with a limited sequential search. (C) 610.10-1994w

semiremote control A system or method of radio-transmitter control whereby the control functions are performed near the transmitter by means of devices connected to but not an integral part of the transmitter. *See also:* radio transmitter. (AP/ANT) 145-1983s

semi-reverberant facility A room with a solid floor and an undetermined amount of sound-absorbing materials on the walls and ceiling. (PE/TR) C57.12.90-1999

semiselective ringing (telephone switching systems) Ringing wherein the ringers at two or more of the main stations on a party line respond simultaneously, differentiation being by the number of rings. (C) [85]

semistop joint (power cable joints) A joint which is designed to restrict movement of the dielectric fluid between cables being joined. (PE/IC) 404-1986s

semistrain insulator (semitension assembly) Two insulator strings at right angles, each making an angle of about 45 degrees with the line conductor. *Note:* These assemblies are used at intermediate points where it may be desirable to partially anchor the conductor to prevent too great movement in case of a broken wire. *See also:* tower. (EEC/AWM) [91]

semit *See:* semitone.

semitone (half-step) (semit) The interval between two sounds having a basic frequency ratio approximately the twelfth root of two. *Note:* In equally tempered semitones, the interval between any two frequencies is 12 times the logarithm to the base 2 (or 39.86 times the logarithm to the base 10) of the frequency ratio. (SP) [32]

semitransparent photocathode (camera tubes or phototubes) A photocathode in which radiant flux incident on one side produces photoelectric emission from the opposite side. *See also:* phototube; electrode. (ED) 161-1971w

senary (A) Pertaining to a selection in which there are six possible outcomes. **(B)** Pertaining to the numeration system with a radix of 6. (C) 1084-1986

send (1) The first of two packets within a request or response subaction (the second packet is an echo). The send packet contains a 16-byte header (containing command and status) and may optionally contain a data component (up to 256 bytes). (C/MM) 1596-1992
(2) The electrical output of a handsfree telephone due to an acoustic input. (COM/TA) 1329-1999

send attenuation during double talk (A_{SDT}) Attenuation in the send path, seen at the send electrical test point, inserted during double talk. The receive talker initiates the double talk. (COM/TA) 1329-1999

send channel *See:* transmit channel.

send electrical test point (SETP) The point in a battery feed circuit, reference codec, or wireless reference base station at which signals coming from the handsfree telephone (HFT) in the send direction are accessed. (COM/TA) 1329-1999

sender (A) The agent that supplies the data for a solicited message. *See also:* solicited messages. **(B) (telephone switching systems)** Equipment that generates and transmits signals in response to information received from another part of the system. (C/MM) 1296-1987, [85]

send front-end syllabic clipping during double talk (T_{SFDT}) The length of time that speech undergoes syllabic clipping, as seen at the send electrical test point, just after the onset of double talk. The send talker initiates the double talk. (COM/TA) 1329-1999

sending-end crossfire The crossfire in a telegraph channel from one or more adjacent telegraph channels transmitting from the end at which the crossfire is measured. *See also:* telegraphy. (EEC/PE) [119]

sending-end impedance (line) The ratio of an applied potential difference to the resultant current at the point where the potential difference is applied. The sending-end impedance of a line is synonymous with the driving-point impedance of the line. *Note:* For an infinite uniform line the sending-end impedance and the characteristic impedance are the same: and for an infinite periodic line the sending-end impedance and the iterative impedance are the same. *See also:* waveguide; self-impedance. (EEC/PE) [119]

send loudness rating directionality (SLRD) Send loudness rating versus angles around the handsfree telephone (HFT), normalized to the loudness rating at the 50 cm test point (50TP). (COM/TA) 1329-1999

send noise level Electrical noise at send electrical test point (SETP), measured in units of decibels relative to 1 mW (dBm), psophometrically weighted (dBmp). (COM/TA) 1329-1999

send-only equipment Data communication channel equipment capable of transmitting signals, but not arranged to receive signals. (COM) [49]

sensation level *See:* level above threshold.

sense (navigation aids) The pointing direction of a vector representing some navigation parameter. (AES/GCS) 172-1983w

sense amplifier voltage window (1) The minimum difference in threshold voltage required by a sense amplifier to differentiate between the low- and high-conductance MNOS thresholds for the two logic states. (ED) 641-1987w
(2) Sense amplifier sensitivity between differential state or reference voltage and sensed state. (ED) 1005-1998

sense and command features The electrical and mechanical components and interconnections involved in generating those signals associated directly or indirectly with the safety functions. The scope of the sense and command features extends from the measured process variables to the execute features' input terminals. (PE/NP) 603-1998

sense finder That portion of a direction-finder that permits determination of direction without 180-degree ambiguity. *See also:* radio receiver. (EEC/PE) [119]

sense of polarization For an elliptical or circularly polarized field vector, the sense of rotation of the extremity of the field vector when its origin is fixed. *Note:* When the plane of polarization is viewed from a specified side, if the extremity of the field vector rotates clockwise [counterclockwise] the sense is right-handed [left-handed]. For a plane wave, the plane of polarization shall be viewed looking in the direction of propagation. (AP/ANT) 145-1993

sense signal The response taken or measured from a test subject. (SCC20) 1226-1998

sense switch A switch found on the front panel or console of a computer. *Note:* The computer can be programmed to check a switch and to take some action depending on whether the switch is on or off. (C) 610.10-1994w

SENSE/INT/SYNC-IN A special function signal from the bedside ommunications controller (BCC) to the device communications controller (DCC) in a BCC-to-DCC interconnection cable used for three purposes. The signal allows the DCC to sense whether it has been physically connected to a BCC port, allows a BCC to send sync pulses to the DCC, and allows the BCC to send interrupt deactivate pulses to the DCC. (EMB/MIB) 1073.3.1-1994, 1073.4.1-2000

SENSE/INT/SYNC-OUT A special function signal from the device communications controller (DCC) to the bedside communications controller (BCC) in a BCC-to-DCC interconnection cable used for three purposes. The signal allows the BCC port to sense whether a DCC has been physically connected, allows a DCC to send sync pulses to the BCC, and allows the DCC to send interrupt activate and interrupt deactivate pulses to the BCC. (EMB/MIB) 1073.3.1-1994, 1073.4.1-2000

sensibility, deflection *See:* deflection sensibility.

sensing (navigation aids) The process of finding the sense, as, for example, in direction finding, the resolution of the 180° ambiguity in bearing indication; and, as in phase or amplitude-comparison systems such as ILS (instrument landing system) and VOR (very high-frequency omnidirectional range), the establishment of a relation between course displacement signal and the proper response in the control of the vehicle. (AES/GCS) 172-1983w

sensing circuit A circuit whose function is to detect the occurrence of some event at its input terminals. (C) 610.10-1994w

sensing coil (interferometric fiber optic gyro) A coil of optical fiber in which counter-propagating light waves differ in phase as a consequence of the Sagnac effect when the coil is rotated about an axis normal to the plane of the coil. (AES/GYAC) 528-1994

sensing element *See:* primary detector; sensor.

sensing station *See:* read station.

sensitive A condition of an object that allows it to accept input events. (C) 1295-1993w

sensitive relay A relay that operates on comparatively low input power, commonly defined as 100 mW or less. *See also:* relay. (EEC/REE) [87]

sensitive volume That portion of the radiation counter gas volume having sufficient potential gradient to operate in the Geiger-Mueller region. (NI/NPS) 309-1999

sensitivity (1) (A) (general comment) Definitions of sensitivity fall into two contrasting categories. In some fields, sensitivity is the ratio of response to cause. Hence increasing sensitivity is denoted by a progressively larger number. In other fields, sensitivity is the ratio of cause to response. Hence increasing sensitivity is denoted by a progressively smaller number. *See also:* sensitivity coefficient. **(B) (electric pipe heating systems)** The ratio of the magnitude of a device response to the magnitude of the quantity measured. In electric pipe heating systems, sensitivity is usually associated with temperature controls and alarms and addresses their response function. **(C) (nuclear power generating station)** The ratio of a change in output magnitude to the change in input which causes it, after the steady-state has been reached. (PE/EDPG/NP) 622A-1984, 381-1977

(2) (electric heat tracing systems) The ratio of the magnitude of a device response to the magnitude of the quantity measured. In electric heat tracing systems, sensitivity is usually associated with temperature controls and alarms and addresses their response function. (PE/EDPG) 622B-1988r

(3) (monitoring radioactivity in effluents) The minimum amount of contaminant that can repeatedly be detected by an instrument. (NI/PE/NP) N42.18-1980r, 381-1977w

(4) (measuring devices) The ratio of the magnitude of its response to the magnitude of the quantity measured. *Notes:* 1. It may be expressed directly in divisions per volt, millimeters per volt, milliradians per microampere, etc., or indirectly by stating a property from which sensitivity can be computed (for example, ohm per volt for a stated deflection. 2. In the case of mirror galvanometers it is customary to express sensitivity on the basis of a scale distance of 1 m. (MIL) [2]

(5) (radio receiver or similar device) Taken as the minimum input signal required to produce a specified output signal having a specified signal-to-noise ratio. *Note:* This signal input may be expressed as power or as voltage, with input network impedance stipulated. (PE) 599-1985w

(6) (transmission lines, waveguides, and nuclear techniques) The least signal input capable of causing an output signal having desired characteristics. *See also:* ionizing radiation. (IM/HFIM) [40]

(7) (camera tubes or phototubes) The quotient of output current by incident luminous flux at constant electrode voltages. *Notes:* 1. The term output current as here used does not include the dark current. 2. Since luminous sensitivity is not an absolute characteristic but depends on the special distribution of the incident flux, the term is commonly used to designate the sensitivity to light from a tungsten-filament lamp operating at a color temperature of 2870 kelvins. *See also:* phototube; cathode luminous sensitivity. (EEC/PE) [119]

(8) (A) (electrothermic unit) (dissipated power) The ratio of the dc output voltage of the electrothermic unit to the microwave power dissipated within the electrothermic unit at a prescribed frequency, power level, and temperature. **(B) (electrothermic unit)** (incident power) The ratio of the dc output voltage of the electrothermic unit to the microwave power incident upon the electrothermic unit at a prescribed frequency, power level, and temperature. **(C) (electrothermic-coupler unit)** The ratio of the dc output voltage of the electrothermic unit on the side arm of the directional coupler to the power incident upon a nonreflecting load connected to the output port of the main arm of the directional coupler at a prescribed frequency, power level, and temperature. If the electrothermic unit is attached to the main arm of the directional coupler, the sensitivity is the ratio of the dc output voltage of the electrothermic unit attached to the main arm of the directional coupler to the microwave power incident upon a nonreflecting load connected to the output port of the side arm of the directional coupler at a prescribed frequency, power level, and temperature. (IM) 544-1975

(9) (non-real time spectrum analyzer) (volts, decibels above or below one milliwatt) Measure of a spectrum analyzer's ability to display minimum level signals. IF (intermediate frequency) bandwidth, display mode, and any other influencing factors must be given. *Notes:* 1. equivalent input noise. The average level of a spectrum analyzer's internally generated noise referenced to the input. 2. input signal level. The input signal level that produces an output equal to twice the value of the average noise alone. This may be power or voltage relationship, but must be so stated. (IM) [14]

(10) (automatic control) Of a control system or element, or combination, the ratio of a change in output magnitude to the change of input which causes it, after the steady state has been reached. *Note:* ASA C85 deprecates use of "sensitivity" to describe smallness of a dead-band. *See also:* gain. (PE/EDPG) [3]

(11) (fiber optics) Imprecise synonym for responsivity. In optical system receivers, the minimum power required to achieve a specified quality of performance in terms of output signal-to-noise ratio or other measure. (Std100) 812-1984w

(12) (radiation protection) The ratio of a change in response to the corresponding change in the field being measured. (NI) N323-1978r

(13) (spectrum analyzer) Measure of a spectrum analyzer's ability to display minimum level signals, (V, dBm). Intermediate frequency (IF) bandwidth, display mode, and any other influencing factors must be given. *See also:* input signal level sensitivity; equivalent input noise sensitivity. (IM) 748-1979w

(14) (accelerometer) (gyros) The ratio of a change in output to a change in an undesirable or secondary input. For example: a scale factor temperature sensitivity of a gyro or accelerometer is the ratio of change in scale factor to a change in temperature. (AES/GYAC) 528-1994

sensitivity analysis (1) (nuclear power generating station) An analysis that determines the variation of a given function caused by changes in one or more parameters about a selected reference value. (PE/NP) 380-1975w

(2) (reliability analysis of nuclear power generating station safety systems) An analysis that assesses the variation in the value of a given function caused by changes in one or more arguments of the function. (PE/NP) 352-1987r

sensitivity, cathode luminous *See:* cathode luminous sensitivity.

sensitivity, cathode radiant *See:* cathode radiant sensitivity.

sensitivity coefficient (1) (automatic control) The partial derivative of a system signal with respect to a system parameter. *See also:* control system. (CS/PE/EDPG) [3]

(2) A coefficient used to relate the change of a system function F due to the variation of one of its parameters x. In some applications (for example control theory) absolute changes are important and the sensitivity coefficient is defined as the $\partial F/\partial x$. In other applications (for example, filter theory) relative changes are important and then sensitivity is defined as $\partial(\text{Ln } F)/\partial(\text{Ln}x) = (\partial F/\partial x)/(F/x)$. (CAS) [13]

sensitivity, deflection *See:* deflection sensitivity.

sensitivity, dynamic *See:* dynamic sensitivity.

sensitivity, illumination *See:* illumination sensitivity.

sensitivity, incremental *See:* incremental sensitivity.

sensitivity label Representation of the security level of an object describing the sensitivity (e.g., classification) of information in the object. (C/BA) 896.3-1993w

sensitivity level (in electroacoustics) (in decibels) (of a transducer) 20 times the logarithm to the base 10 of the ratio of the amplitude sensitivity *SA* to the reference sensitivity S_0, where the amplitude is a quantity proportional to the square root of power. The kind of sensitivity and the reference sensitivity must be indicated. *Note:* For a microphone, the free-field voltage/pressure sensitivity is the kind often used and a common reference sensitivity is S_0, one volt per newton per square meter. The square of the sensitivity is proportional to a power ratio. The free-field voltage sensitivity-squared level, in decibels, is therefore $SA = 10 \log (S_A^2/S_0^2) = 20 \log (S_A/S_0)$. Often, sensitivity-squared level in decibels can be shortened, without ambiguity, to sensitivity level in decibels, or simply sensitivity in decibels. *Synonyms:* sensitivity; response. (SP) [32]

sensitivity, luminous *See:* luminous sensitivity.

sensitivity, quieting *See:* quieting sensitivity.

sensitivity, radiant *See:* radiant sensitivity.

sensitivity response The net number of counts registered by the detector system per unit of time, divided by the activity of the radionuclide. (NI) N42.12-1994

sensitivity, threshold *See:* threshold sensitivity.

sensitivity time control (STC) Programmed variation of the gain (sensitivity) of a radar receiver as a function of time within each pulse-repetition interval or observation time in order to prevent overloading of the receiver by strong echoes from targets or clutter at close ranges. *Note:* Also called swept gain, especially in British usage. (AES) 686-1997

sensitizing (electrostatography) The act of establishing an electrostatic surface charge of uniform density on an insulating medium. *See also:* electrostatography. (ED) 224-1965w, [46]

sensitometry The measurement of the light response characteristics of photographic film under specified conditions of exposure and development. (SP) [32]

sensor (1) (electrical heating applications to melting furnaces and forehearths in the glass industry) A device that responds to a physical stimulus (such as heat and light) and transmits a resulting signal. (IA) 668-1987w

(2) (A) (nuclear power generating station) That portion of a channel which first responds to changes in, and performs the primary measurement of, a plant variable or condition. **(B) (nuclear power generating station)** A device directly responsive to the value of the measured quantity. (PE/NP) 381-1977

(3) (electric heat tracing systems) The first system element that responds quantitatively to the measure and performs the initial measurement operation. Sensors, as used in electric heat tracing systems, respond to the temperature of the system and may be directly connected to controllers, alarms, or both. Sensors can be mechanical (bulb, bimetallic) or electrical (thermocouple, RTD, thermistor). (PE/EDPG) 622A-1984r, 622B-1988r

(4) (temperature measurement) That portion of a temperature-measuring system that responds to the temperature being measured. (PE/PSIM) 119-1974w

(5) (test, measurement, and diagnostic equipment) A transducer which converts a parameter at a test point to a form suitable for measurement by the test equipment. (MIL) [2]

(6) The portion of a channel that responds to changes in a plant variable or condition and converts the measured process variable into an electric, optic, or pneumatic signal. (PE/NP) 603-1998

(7) A transducer that converts a physical, biological, or chemical parameter into an electrical signal. (IM/ST) 1451.2-1997

(8) (as applied to a circuit-breaker with an electronic trip unit) A current sensing element such as a current transformer within a circuit-breaker frame. The sensor will have a current rating less than or equal to the frame size and will provide the sensing function for a specific group of current ratings within the frame size. (IA/PSP) 1015-1997

(9) A component providing a useful output in response to a physical, chemical, or biological phenomenon. This component may already have some signal conditioning associated with it. Examples: platinum resistance temperature detector, humidity sensor with voltage output, light sensor with frequency output, pH probe, and piezoresistive bridge. (IM/ST) 1451.1-1999

sensor, active *See:* active sensor.

sensor-based system An organization of components, including a computer, whose primary source of input is data from sensors and whose output can be used to control the related physical process being sensed. (C) 610.10-1994w

sensor, passive *See:* passive sensor.

sensory saturation (nuclear power generating station) The impairment of effective operator response to an event due to excessive amount of display information that must be evaluated prior to taking action. (PE/NP) 566-1977w

sentinel *See:* flag.

separable insulated connector (1) (separable insulated connectors) A fully insulated and shielded system for terminating and electrically connecting an insulated power cable to electrical apparatus, other power cables, or both, so designed that the electrical connection can be readily established or broken by engaging or separating the connector at the operating interface. (T&D/PE) 386-1995

(2) (power and distribution transformers) A system for terminating and electrically connecting an insulated power cable to electrical apparatus, other power cables, or both, so designed that the electrical connection can be readily established or broken by engaging or separating mating parts of the connector at the operating interface. (PE/TR) C57.12.80-1978r

separate chaining Hashing in which collision resolution is handled by building a linked list, called a collision chain, for each position in the hash table to hold the items whose hash values correspond to that position in the hash table. *Synonyms:* direct chaining; external chaining. *Contrast:* open-address hashing. (C) 610.5-1990w

separate excitation (1) (emergency and standby power) A source of generator field excitation power derived from a source independent of the generator output power. (IA/PSE) 446-1995

(2) (power system device function numbers) A device that connects a circuit, such as the shunt field of a synchronous converter, to a source of separate excitation during the starting sequence; or one that energizes the excitation and ignition circuits of a power rectifier. (SUB/PE) C37.2-1979s

separately excited (rotating machinery) A qualifying term applied to a machine to denote that the excitation is obtained from a source other than the machine itself. (PE) [9]

separately ventilated machine A machine that has its ventilating air supplied by an independent fan or blower external to the machine. (IA/MT) 45-1998

separate parts of a network The parts that are not connected. *See also:* network analysis. (Std100) 270-1966w

separate terminal enclosure (rotating machinery) A form of termination in which the ends of the machine winding are connected to the incoming supply leads inside a chamber that need not be fully enclosed and may be formed by the foundations beneath the machine. (PE) [9]

separating character *See:* information separator.

separation (1) (frequency modulation) The process of deriving individual channel signals (for example, for stereophonic systems) from a composite transmitted signal. *Note:* Separation describes the ability of a receiver to produce left and right stereophonic channel signals at its output terminals and is a measured parameter for stereo receivers only. Left-channel signal separation is defined as the ratio in decibels of the output voltage of the left output of the receiver to that of the right output when an "L"-only signal is received. Right-channel separation is similarly defined. (BT) 185-1975w

(2) (nuclear power generating station) (separation and identification) Physical independence of redundant circuits, components, and equipment. (Physical independence may be achieved by space, barriers, shields, etc.) (PE/EDPG) 690-1984r

(3) The distance between two objects, measured surface to surface, and usually filled with a solid or liquid material. (NESC) C2-1997

separation criteria Curves that relate the frequency displacement to the minimum distance between a receiver and an undesired transmitter to insure that the signal-to-interference ratio does not fall below a specified value. *See also:* electromagnetic compatibility. (EMC) [53]

separation distance Space that has no interposing structures, equipment, or materials that could aid in the propagation of fire or that could otherwise disable Class 1E systems or equipment. (PE/NP) 384-1992r

separation plane A reference plane, used to separate two objects. This plane shall not be encroached upon by the object on either side except in clearly specified interface areas. (C/BA) 1301.4-1996

separation sort *See:* distribution sort.

separator (1) (storage cell) A spacer employed to prevent metallic contact between plates of opposite polarity within the cell. (Perforated sheets are usually called retainers.) *See also:* battery. (PE/EEC) [119]

(2) A visual user interface control consisting of a line boundary that provides a visual distinction between two adjacent areas. The line may be drawn using various graphics styles. (C) 1295-1993w

(3) *See also:* delimiter. (C) 610.5-1990w, 610.12-1990

separator, insulation slot *See:* insulation slot separator.

septenary (A) Pertaining to a selection in which there are seven possible outcomes. **(B)** Pertaining to the numeration system with a radix of 7. (C) 1084-1986

septendecimal (A) Pertaining to a selection in which there are 17 possible outcomes. **(B)** Pertaining to the numeration system with a radix of 17. (C) 1084-1986

septet (1) A group of seven adjacent digits operated upon as a unit. *Synonym:* seven-bit byte. (C) 610.5-1990w, 1084-1986w

(2) A byte composed of seven bits. *Synonym:* seven-bit byte. (C) 610.10-1994w

sequence (1) (A) To place items in a linear arrangement in accordance with the order of the natural numbers. *Note:* Methods or procedures may be specified for other natural linear orders by mapping onto the natural numbers. For example, the sequence may be alphabetic or chronological. *See also:* sort; collating sequence. **(B)** The order in which items are arranged. *See also:* random number sequence; collating sequence; recursively defined sequence. **(C)** A set of items that have been sequenced. *See also:* collating sequence; order. (C) 610.5-1990

(2) (STEbus) An indivisible bus transaction comprising one or more transfers. *See also:* pseudo-random number sequence; calling sequence. (MM/C) 1000-1987r

(3) A set of bits, packets, or messages ordered in time and that are, or that are intended to be, transmitted consecutively without interruption. (TT/C) 1149.5-1995

sequence by merging *See:* sort by merging.

sequence check A check that verifies that a set of items are in a certain sequence. (C) 610.5-1990w

sequence control register *See:* instruction address register.

sequence field *See:* key.

sequence filter *See:* sequence network.

sequence network An electrical circuit that produces an output proportional to one or more of the sequence components of a polyphase system of voltages or currents, e.g., positive sequence network, negative sequence network, or zero-sequence network. (SWG/PE) C37.100-1992

sequence number (1) A number identifying the relative location of blocks or groups of blocks on a tape. (IA) [61]

(2) Each I frame is sequentially numbered with a number listed in the control field, from 0 to 7. The sequence numbers cycle through the entire range. (EMB/MIB) 1073.3.1-1994

sequence-number readout Display of the sequence number punched on the tape. *See also:* block count readout. (IA) [61]

sequence-of-events (SOE) Digital input points that are time tagged to include relative or absolute time of occurrence. (SUB/PE) C37.1-1994

sequence of events function *See:* supervisory control functions.

sequence-of-events point interface Master station or RTU (or both) element(s) that accept(s) a digital input signal to perform the function of time tagging the occurrence of an event. *See also:* sequence-of-events. (SUB/PE) C37.1-1994

sequence-of-events SCADA function The capability of a supervisory system to recognize each predefined event, associate a time of occurrence with each event, and present the event data in order of occurrence of the events. (SUB/PE) C37.1-1994

sequence of operation (packaging machinery) A written detailed description of the order in which electrical devices and other parts of the industrial equipment should function. (IA/PKG) 333-1980w

sequence point A certain point in the execution sequence of a program where all side effects of previous evaluations are complete and no side effects of subsequent evaluations have occurred. (C/DA) 1481-1999

sequencer (1) A mechanical device or computer program that sequences the items in a set. *See also:* sorter. (C) 610.5-1990w

(2) An object that controls the execution flow of programs. (SCC20) 1226-1998

sequence switch A remotely controlled power-operated switching device used as a secondary master controller. *See also:* multiple-unit control. (EEC/PE) [119]

sequence table (electric controller) A table indicating the sequence of operation of contactors, switches, or other control apparatus for each step of the periodic duty. *See also:* multiple-unit control. (VT/LT) 16-1955w

sequence variable A flow-control component involving a public location in System Memory or a CSR, holding the sequence number of the current message. The first message corresponds to sequence number one, etc. This sequence number is operated modulo the variable size (i.e., when the maximum value is reached, it rolls over to zero). (C/MM) 1212.1-1993

sequencing key *See:* sort key.

sequential (1) (formatted system) (telecommunications) If the signal elements are transmitted successively in time over a channel, the transmission is said to be sequential. If the signal elements are transmitted at the same time over a multiwire circuit, the transmission is said to be coincident. *See also:* bit. (COM) [49]

(2) (software) Pertaining to the occurrence of two or more events or activities in such a manner that one must finish before the next begins. *Synonym:* serial. *See also:* consecutive. (C) 610.12-1990

(3) Pertaining to a circuit whose output values, at a given instant, depend upon its input values and internal state at that instant, and whose internal state depends upon the immediately preceding input values and the preceding internal state. *Contrast:* combinational. (C) 610.10-1994w

sequential access (1) (test, measurement, and diagnostic equipment) A system in which the information becomes available in a one after the other sequence only, whether all of it is desired or not. (MIL) [2]

(2) (data management) Pertaining to the process of storing and retrieving data using the sequential access mode. *Synonyms:* serial access; physical sequential access. *Contrast:* random access; direct access. *See also:* indexed access; indexed sequential access. (C) 610.5-1990w

(3) *See also:* nano; access. (C) 610.10-1994w

sequential access method (SAM) A technique for accessing data using sequential access mode. That is, to process a given data record, all data records previous to it must be accessed. *See also:* basic sequential access method. (C) 610.5-1990w

sequential access mode An access mode in which data records are stored and retrieved in such a way that each successive access defines the next record to be retrieved. *Contrast:* indexed sequential access mode; direct access mode. (C) 610.5-1990w

sequential access storage A type of storage that provides only sequential access to data. For example, magnetic tape storage. *Synonym:* serial access storage. (C) 610.10-1994w

sequential circuit A logic circuit whose output values, at a given instant, depend upon its input values and internal state at that instant, and whose internal state depends upon the immediately preceding input values and the preceding internal state. *Contrast:* combinational circuit. *See also:* trigger circuit; toggle. (C) 610.10-1994w

sequential cohesion A type of cohesion in which the output of one task performed by a software module serves as input to another task performed by the module. *Contrast:* temporal cohesion; logical cohesion; coincidental cohesion; procedural cohesion; communicational cohesion; functional cohesion. (C) 610.12-1990

sequential commutation (circuit properties) (self-commutated converters) Commutation occurs from one to the next of three or more principal switching branches arranged as a multipulse group that conduct in cyclic sequential order for usually (but not always) equal time intervals. The commutation may be direct or indirect. (IA/SPC) 936-1987w

sequential computer A computer in which events occur in time sequence, with little or no simultaneity or overlap of events. *Contrast:* simultaneous computer; parallel computer. (C) 610.10-1994w

sequential construct *See:* serial construct.

sequential control (computers) A mode of computer operation in which instructions are executed consecutively unless specified otherwise by a jump. (MIL/C) [2], [20], [85]

sequential data set (SDS) *See:* sequential file.

sequential detection A method of automatic detection in two or more steps. Normally the first step uses a high probability of false alarm and the last uses a low probability of false alarm. *Note:* In radars with controllable scanning, the first detection can be used to order the scan to return to, stop at, or stay longer at the suspected target position. (AES) 686-1997

sequential events recording system A system that monitors bistable equipment operations and process status and records changes of state in the order of detected occurrences. This monitoring may be accomplished using a device dedicated solely to this function, or using a multifunction system such as a data acquisition computer system. (PE/EDPG) [5], [1]

sequential file A file that must be accessed using sequential access; for example, a data file on a magnetic tape. *Synonyms:* serial file; sequential data set. *Contrast:* partitioned data set; direct data set; indexed file. (C) 610.5-1990w

sequential lobing *See:* lobe switching.

sequential logic function A logic function in which there exists at least one combination of input states for which there is more than one possible resulting combination of states at the outputs. *Note:* The outputs are functions of variables in addition to the present states of the inputs, such as time, previous internal states of the element, etc. (GSD) 91-1984r

sequential memory (sequential events recording systems) The memory that stores events in the same order in which they were received by the system. The memory capacity can be expressed as the number of events or levels. *See also:* level; event. (PE/EDPG) [5], [1]

sequential operation Pertaining to the performance of operations one after the other. (C) [20], [85]

sequential precedential database *See:* hierarchical database.

sequential processes (software) Processes that execute in such a manner that one must finish before the next begins. *See also:* concurrent processes; process. (C/SE) 729-1983s

sequential processing *See:* serial processing.

sequential programming (test, measurement, and diagnostic equipment) The programming of a device by which only one arithmetical or logical operation can be executed at one time. (MIL) [2]

sequential relay A relay that controls two or more sets of contacts in a predetermined sequence. *See also:* relay. (EEC/REE) [87]

sequential scanning (television) A rectilinear scanning process in which the distance from center to center of successively scanned lines is equal to the nominal line width. *See also:* television. (PE/EEC) [119]

sequential search A search in which the items in a set are examined in order, starting from the first item in the set, until the search is successful or the end of the set is encountered. *Synonym:* linear search. (C) 610.5-1990w

sequential-stress aging A form of accelerated aging in which two or more individual stresses are applied or intensified in sequence. (DEI/RE) 775-1993w

sequential transfer A transfer operation with multiple data transfers during the reply phase. *See also:* transfer operation; reply phase. (C/MM) 1296-1987s

sequential tripping A situation where one or more relay terminals of a line cannot detect an internal line fault, typically because of infeed, until one or more terminals has already opened and removed the infeed. (PE/PSR) C37.113-1999

serial (1) (A) Pertaining to the time sequencing of two or more processes. **(B)** Pertaining to the time sequencing of two or more similar or identical processes, using the same facilities for the successive processes. **(C)** Pertaining to the time-sequential processing of the individual parts of a whole, such as the bits of a character, the characters of a word, etc., using the same facilities for successive parts. *See also:* serial-parallel. (C) 162-1963

(2) (software) Pertaining to the sequential transfer, occurrence, or processing of the individual parts of a whole, such as the bits of a character, using the same facilities for successive parts. *Contrast:* parallel. *See also:* sequential. (C) 610.12-1990

(3) One bit following another over a single pathway. *Contrast:* parallel. *See also:* bit serial. (C) 610.10-1994w

serial access (1) (computers) Pertaining to the process of obtaining data from, or placing data into, storage when there is a sequential relation governing the access time to successive storage locations. (C) [20], [85]

(2) (data management) *See also:* sequential access. (C) 610.5-1990w

serial access storage *See:* sequential access storage.

serial adder An adder in which addition is performed by adding, digit place after digit place, the corresponding digits of the operands. *Contrast:* parallel adder. (C) 610.10-1994w

serial addition Addition that is performed by adding the corresponding digits of the operands, one digit place at a time. *Contrast:* parallel addition. (C) 1084-1986w

serial by bit *See:* serial transmission.

serial bus (1) Intended as a low-cost peripheral connect or an alternate diagnostic and control path. One instantiation of a serial bus is the "Serial Bus" as specified in IEEE P1394. (C/BA) 896.2-1991w

(2) A peripheral interconnect and an alternate diagnostic and control path. (C/BA) 896.10-1997

Serial Bus (1) The name that refers to the IEEE project, P1394, which specifies a serial bus intended as a low-cost peripheral connect or an alternate diagnostic and control path. (C/MM) 1212-1991s

(2) A bit-serial interconnect defined by IEEE P1394. (C/MM) 1212.1-1993

(3) Refers to the IEEE P1394 project, which defines an inexpensive serial network that can be used as an alternate control or diagnostic path, as an I/O connection, or in place of a parallel bus in some systems. (C/MM) 1596.5-1993, 1596-1992

Serial Bus management The set of protocols, services, and operating procedures that monitors and controls the various Serial Bus layers: physical, link, and transaction. See figure 34 for the relation of Serial Bus management to the Serial Bus protocol stack. (C/MM) 1394-1995

serial clock driver A functional module that provides a periodic timing signal that synchronizes the operation of IEEE P1132 serial bus. Two backplane signal lines are reserved for use by a serial bus. However, the protocols of the serial bus are completely independent of this standard, and the inclusion of a serial bus is not a required feature of IEEE Std 1014-1987. (C/BA) 1014-1987

serial communication (1) (supervisory control, data acquisition, and automatic control) A method of transmitting information between devices by sending all bits serially over a single communication channel. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) Method of transferring information between devices by transmitting a sequence of individual bits in a prearranged order of significance. (SUB/PE) 999-1992w

serial computer (A) A computer that has a single arithmetic and logic unit. **(B)** A computer, some specified characteristic of which is serial; for example, a computer that manipulates all bits of a word serially. *Contrast:* parallel computer. (C) 610.10-1994

serial construct A program construct consisting of a sequence of steps not involving a decision or loop. *Synonym:* sequential construct. (C) 610.12-1990

serial digital computer A digital computer in which the digits are handled serially. Mixed serial and parallel machines are frequently called serial or parallel according to the way arithmetic processes are performed. An example of a serial digital computer is one that handles decimal digits serially although it might handle the bits that comprise a digit either serially or in parallel. *See also:* parallel digital computer. (Std100) 270-1966w

serial file *See:* sequential file.

serial interface An interface that transmits data bit by bit rather than in whole bytes. (C) 610.10-1994w

serialization Serialization is the process of transmitting coded characters one bit at a time. *See also:* deserialization. (C/BA) 1355-1995

serializer A device that converts a set of simultaneous signals into a corresponding time sequence of signals. *Synonyms:* parallel-serial converter; dynamicizer. (C) 610.10-1994w

serially correlated variable *See:* lag variable.

serial medium A medium that contains a POSIX.1 extended tar or extended `cpio` archive. (C/PA) 1387.2-1995

serial mouse A mouse that is connected to a computer system through a serial port. *Contrast:* bus mouse. (C) 610.10-1994w

serial operation (data transmission) (telecommunications) The flow of information in time sequence, using only one digit, word, line, or channel at a time. (PE) 599-1985w

serial-parallel Pertaining to processing that includes both serial and parallel processing, such as one that handles decimal digits serially but handles the bits that comprise a digit in parallel. (C) 162-1963w

serial port A port that transfers data one bit at a time. *Contrast:* parallel port. (C) 610.10-1994w

serial printer A printer that receives its input data in the form of a serial stream of data. *Contrast:* parallel printer. *See also:* character-at-a-time printer. (C) 610.10-1994w

serial processing Pertaining to the sequential execution of processes in a single device, such as a processing unit or channel. *Synonym:* sequential processing. *Contrast:* parallel processing. (C) 610.10-1994w

serial protocol Any communication protocol in which data is transferred serially to or from a fixed location. (C/MM) 1155-1992

serial transmission (1) (data transmission) (telecommunications) Used to identify a system wherein the bits of a character occur serially in time. Implies only a single transmission channel. *Synonym:* serial by bit. (PE) 599-1985w

(2) In data communications, the conveying of a character of information one bit at a time on a single path. *Contrast:* parallel transmission. (C) 610.7-1995

series In a propulsion system, the motor connection in which all motors are connected in a series circuit for the purpose of applying to them some fraction (usually one half) of the maximum available per-motor voltage. (VT) 1475-1999

series capacitor A device that has the primary purpose of introducing capacitive reactance in series with an electric circuit. (T&D/PE) 824-1994

series capacitor bank (series capacitor) An assembly of capacitors and associated auxiliaries, such as structures, support insulators, switches, and protective devices, with control equipment required for a complete operating installation. (T&D/PE) 824-1994

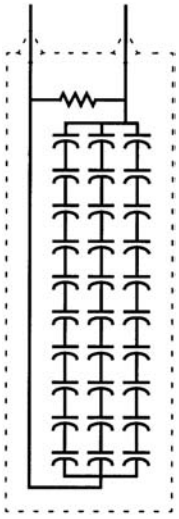
series circuit A circuit supplying energy to a number of devices connected in series, that is, the same current passes through each device in completing its path to the source of supply. *See also:* center of distribution. (T&D/PE) [10]

series circuit lighting transformer (power and distribution transformers) Dry-type individual lamp insulating transformer, autotransformer, and group series loop transformers

for operation of incandescent or memory lamps on series lighting circuits such as for street and airport lighting. (PE/TR) C57.12.80-1978r

series coil sectionalizer A sectionalizer in which main circuit current impulses above a specified value, flowing through a solenoid or operating coil, provide the energy required to operate the counting mechanism. (SWG/PE) C37.100-1992

series-connected capacitor unit A capacitor unit with the elements connected in series with each other between the line terminals, with more than one such series strings within a capacitor unit (see the below figure).power systems relaying.



Series-connected capacitor unit with three strings of 10 elements (showing two shorted elements in one string

series-connected capacitor unit

(PE) C37.99-2000

series-connected starting-motor starting (rotating machinery) The process of starting a motor by connecting its primary winding to the supply in series with the primary windings of a starting motor, this latter being short-circuited for the running condition. (PE) [9]

series connection The arrangement of cells in a battery made by connecting the positive terminal of each successive cell to the negative terminal of the next adjacent cell so that their voltages are additive. *See also:* battery. (EEC/PE) [119]

series distribution system A distribution system for supplying energy to units of equipment connected in series. *See also:* direct-current distribution; alternating-current distribution. (T&D/PE) [10]

series elements (A) (networks) Two-terminal elements are connected in series when they form a path between two nodes of a network such that only elements of this path, and no other elements, terminate at intermediate nodes along the path. **(B) (networks)** Two-terminal elements are connected in series when any mesh including one must include the others. *See also:* network analysis. (Std100) 270-1966

series-fed vertical antenna A vertical antenna that is insulated from ground and whose feed line connects between ground and the lower end of the antenna. (AP/ANT) 145-1993

series filter A type of filter that reduces harmonics by putting a high series impedance between the harmonic source and the system to be protected. (IA/SPC) 519-1992

series gap (1) (surge arresters) An intentional gap(s) between spaced electrodes: it is in series with the valve or expulsion element of the arrester, substantially isolating the element from line or ground, or both, under normal line-voltage conditions. (PE/SPD) C62.1-1981s

(2) An intentional gap(s) between spaced electrodes in series with the valve elements across which all or part of the impressed arrester terminal voltage appears. (SPD/PE) C62.22-1997, C62.11-1999

(3) An intentional gap(s) between spaced electrodes. The gap is in series with the valve or expulsion element of the protective device, substantially isolating the element from line or ground, or both, under normal line-voltage conditions. (SPD/PE) C62.62-2000

series heater (electrical heat tracing for industrial applications) Heating elements that are designed to have a specific resistance at a given temperature for a given length. (BT/AV) 152-1953s

series heating cable Heating elements that are electrically connected in series with a single current path and have a specific resistance at a given temperature for a given length. (IA/PC) 515.1-1995, 515-1997

series loading Loading in which reactances are inserted in series with the conductors of a transmission circuit. *See also:* loading. (EEC/PE) [119]

series-mode interference *See:* differential-mode interference.

series modulation Modulation in which the plate circuits of a modulating tube and a modulated amplifier tube are in series with the same plate voltage supply. (EEC/PE) [119]

series noise (of a device) The fraction of electrical noise that can be attributed to a hypothetical white noise generator connected in series with the input of the device. (NPS) 325-1996

series operation (power supplies) The output of two or more power supplies connected together to obtain a total output voltage equal to the sum of their individual voltages. Load current is equal and common through each supply. The extent of series connection is limited by the maximum specified potential rating between any output terminal and ground. For series connection of current regulators, master/slave (compliance extension) or automatic crossover is used. *See also:* isolation voltage. (AES) [41]

series overcurrent tripping *See:* overcurrent release; direct release.

series-parallel connection The arrangement of cells in a battery made by connecting two or more series-connected groups, each having the same number of cells so that the positive terminals of each group are connected together and the negative terminals are connected together in a corresponding manner. *See also:* battery. (EEC/PE) [119]

series-parallel control A method of controlling motors wherein the motors, or groups of them, may be connected successively in series and in parallel. *See also:* multiple-unit control. (EEC/PE) [119]

series-parallel network Any network, containing only two-terminal elements, that can be constructed by successively connecting branches in series and/or in parallel. *Note:* An elementary example is the parallel combination of two branches, one containing resistance and inductance in series, the other containing capacitance. This network is sometimes called a simple parallel circuit. *See also:* network analysis. (Std100) 270-1966w

series-parallel primary current transformer One that has two insulated primary windings that are intended for connection in series or parallel to provide different rated currents. (PE/TR) C57.13-1993, [57]

series-parallel starting (rotating machinery) The process of starting a motor by connecting it to the supply with the primary winding phase circuits initially in series, and changing them over to a parallel connection for running operation. *See also:* asynchronous machine. (PE) [9]

Series Parameter A Scalar Series Parameter or a Vector Series Parameter. (IM/ST) 1451.1-1999

series rating The interrupting rating of a tested combination of a line-side (main) overcurrent protective device and a load-side (branch) circuit-breaker in which the interrupting rating of the combination is greater than the interrupting rating of the branch circuit-breaker. The interrupting rating of the se-

ries combination does not exceed the interrupting rating of the main overcurrent protective device. (IA/PSP) 1015-1997

series rectifier circuit A rectifier circuit in which two or more simple rectifier circuits are connected in such a way that their direct voltages add and their commutations coincide. *See also:* rectifier circuit element; rectification. (IA) [12]

series regulator (power supplies) A device placed in series with a source of power that is capable of controlling the voltage or current output by automatically varying its series resistance. (AES) [41]

series relay *See:* relay; current relay.

series resistor (electric instruments) A resistor that forms an essential part of the voltage circuit of an instrument and generally is used to adapt the instrument to operate on some designated voltage or voltages. The series resistor may be internal or external to the instrument. *Note:* Inductors, capacitors, or combinations thereof are also used for this purpose. *See also:* auxiliary device to an instrument. (EEC/AII) [102]

series snubber (ac adjustable-speed drives) Circuit elements, usually including an inductor, connected in series with a switching device to limit the rate of rise or fall of current through the device when switching on or off, respectively. *See also:* snubber. (IA/ID/SPC) 995-1987w, 936-1987w

series street-lighting transformer (power and distribution transformers) A series transformer that receives energy from a current-regulating series circuit and that transforms the energy to another winding at the same or different current from that in the primary. *See also:* specialty transformer. (PE/TR) C57.12.80-1978r, [57]

series system The arrangement in a multielectrode electrolytic cell whereby in each cell an anode connected to the positive bus bar is placed at one end and a cathode connected to the negative bus bar is placed at the other end, with the intervening unconnected electrodes acting as bipolar electrodes. *See also:* electrorefining. (EEC/PE) [119]

series tee junction *See:* E-plane tee junction.

series thyristor converter A thyristor converter in which two or more simple converters are connected in such a way that their direct voltages add and their commutations coincide. (IA/IPC) 444-1973w

series transformer (1) (power and distribution transformers) A transformer with a "series" winding and an "exciting" winding, in which the "series" winding is placed in a series relationship in a circuit to change voltage or phase, or both, in that circuit as a result of input received from the "exciting" winding. *Note:* Applications of series transformers include:

1) Use in a transformer such as a load-tap-changing or regulating transformer to change the voltage or current duty of the load-tap-changing mechanism.
2) Inclusion in a circuit for power factor correction to indirectly insert series capacitance in a circuit by connecting capacitors to the exciting winding.

(PE/TR) C57.12.80-1978r

(2) A transformer in which the primary winding is connected in series with a power-supply circuit, and that transfers energy to another circuit at the same or different current from that in the primary circuit. *See also:* transformer. (PE/TR) [57]

series transformer rating (power and distribution transformers) The lumen rating of the series lamp, or the wattage rating of the multiple lamps, that the transformer is designed to operate. (PE/TR) C57.12.80-1978r

series-trip recloser A recloser in which main-circuit current above a specified value, flowing through a solenoid or operating coil, provides the energy necessary to open the main contacts. (SWG/PE) C37.100-1992

series two-terminal pair networks Two-terminal pair networks are connected in series at the input or at the output terminals when their respective input or output terminals are in series. *See also:* network analysis. (BT) 153-1950w

series undercurrent tripping *See:* direct release; undercurrent release.

series unit (power and distribution transformers) The core and coil unit which has one winding connected in series in the line circuit. (PE/TR) C57.12.80-1978r

series weighting Response weighting by separating a finger into individual elements with capacitive coupling between them; the elements may be separated from the bus bar. (UFFC) 1037-1992w

series winding (1) (A) (autotransformer) (power and distribution transformers) That portion of the autotransformer winding which is not common to both the primary and the secondary circuits, but is connected in series between the input and output circuits. **(B) (power and distribution transformers)** The winding of the series unit which is connected in series in the line circuit. *Note:* If the main unit of a two-core transformer is an autotransformer, both units will have a series winding. In such cases, one is referred to as the series winding of the autotransformer and the other, the series winding of the series unit. (PE/TR) C57.12.80-1978

(2) That portion of the autotransformer winding that is not common to both the primary and secondary circuits, but is connected in series between the input and output circuits. (PE/TR) C57.15-1999

series-wound (rotating machinery) A qualifying term applied to a machine to denote that the excitation is supplied by a winding or windings connected in series with or carrying a current proportional to that in the armature winding. *See also:* asynchronous machine. (PE) [9]

series-wound motor (1) The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served. (NESC/NEC) [86]

(2) A dc motor in which the field circuit and armature circuit are connected in series. Speed is inversely proportional to the square root of load torque. Motor operates at a much higher speed at light load than at full load. (IA/MT) 45-1998

servant A device that is controlled by a commander. There are message-based and register-based servants. (C/MM) 1155-1992

server (1) (telecommunications switching systems) A system component that performs operations required for the processing of a call. *See also:* traffic usage count. (COM/TA) 973-1990w

(2) (MULTIBUS II) An agent that performs a service for clients. *See also:* client. (C/MM) 1296-1987s

(3) In a network, a device or computer system that is dedicated to providing specific facilities to other devices attached to the network. *Contrast:* client. *See also:* mail server; disk server; file server; terminal server; network server; database server; print server. (C) 610.7-1995

(4) The facility in the terminal or work station that provides input (keyboard, mouse) and output (screen graphics) services to the application. *Synonym:* X server. (C) 1295-1993w

(5) The software component on one device that provides services for use by clients on the same or another device. (C/MM) 1284.4-2000

(6) *See also:* batch server.

Server Object Any Object that executes one or more of its operations in response to a request from a Client object. (IM/ST) 1451.1-1999

Server Object Tag An attribute of a Client Port that identifies the Object Tag of the Server Object with which the Port communicates in client-server communications. (IM/ST) 1451.1-1999

Service An instance of a subclass of `IEEE1451_Service`. (IM/ST) 1451.1-1999

service (1) (electric systems) The conductors and equipment for delivering electric energy from the secondary distribution or street main, or other distribution feeder, or from the transformer, to the wiring system of the premises served. *Note:* For overhead circuits, it includes the conductors from the last line pole to the service switch or fuse. The portion of an

overhead service between the pole and building is designated as service drop. (NESC) [86]

(2) (controller) The specific application in which the controller is to be used, for example: general purpose; definite purpose (for example, crane and hoist, elevator, machine tool, etc). *See also:* electric controller. (IA/ICTL/IAC) [60]

(3) A distinct part of the functionality that is provided by an entity on one side of an interface to an entity on the other side of the interface. (C/PA) 14252-1996

(4) The delivery, installation, maintenance, training, and other labor-intensive activities providing life-cycle support associated with the products and processes of the system. (C/SE) 1220-1994s

(5) System behavior as perceived by the system user. (C/BA) 896.9-1994w

(6) Software that implements the interface. (C/PA) 1351-1994w, 1224-1993w, 1224.1-1993w, 1327-1993w, 1328-1993w

(7) Capabilities provided by a tool or user to get a job done. (ATLAS) 1232-1995

(8) A software interface, frequently implemented as a software function, providing a means for communicating information between two applications. (SCC20) 1232.1-1997

(9) Operation or run-time call whose behavior and interface are standardized. *See also:* method. (SCC20) 1226-1998

(10) The operation of the vehicles under normal conditions with or without revenue passengers. (VT) 1475-1999

(11) An action or response initiated by a process (i.e., a server) at the request of some other process (i.e., a client). (SCC20) 1232.2-1998

(12) (local area networks) The capabilities and action provided by one layer for another. (C) 8802-12-1998

(13) The capabilities and features provided by an N-layer to an N-user. (C/LM/CC) 8802-2-1998

service access point (SAP) (1) The point at which services are provided by one layer (or sublayer) to the layer (or sublayer) immediately above it (ISO 7498). (LM/C) 610.7-1995, 8802-6-1994

(2) An address that identifies a user of the services of a protocol entity. (C/EMB/MIB) 610.7-1995, 1073.3.2-2000

service area (1) (navigation) (navigation aids) The area within which a navigational aid provides either generally satisfactory service or a specific quality of service. (AES/GCS) 172-1983w

(2) The territory in which a utility system is required or has the right to supply or make available electric service to the ultimate customer. (PE/PSE) 858-1993w

service band A band of frequencies allocated to a given class of radio service. *See also:* radio transmission. (AP/BT/ANT) 145-1983s, 182-1961w

service bits (telecommunications) Those bits that are neither check nor information bits. *See also:* bit. (COM) [49]

service brake (maximum) A nonemergency brake application that obtains the (maximum) brake rate that is consistent with the design of the brake system, retrievable under the control of master control. (VT) 1475-1999

service braking *See:* service brake.

service cable Service conductors made up in the form of a cable. (NESC/NEC) [86]

service capacity (cell or battery) The electric output (expressed in ampere-hours, watthours, or similar units) on a service test before its working voltage falls to a specified cutoff voltage. *See also:* battery. (EEC/PE) [119]

service circuit (telephone switching systems) A circuit used for signaling purposes connected to and disconnected from a communication path during the progress of a call. (COM) 312-1977w

service circuits Common or shared equipment units or software facilities (e.g., registers) associated with lines or trunks to provide specialized functions. Examples of service circuits include the following:

1) Customer digit receivers
2) Interoffice receivers
3) Interoffice transmitters
4) Ringing circuits
5) Universal announcement circuits
6) Tone circuits
7) Conference circuits
8) Memory registers

(COM/TA) 973-1990w

service class (use in primitives) A parameter used to convey the class of service required or desired. (C/LM/CC) 8802-2-1998

service code (telephone switching systems) Any of the destination codes for use by customers to obtain directory assistance or repair service, or to reach the business office of the telecommunications company. (COM) 312-1977w

service condition (thermal classification of electric equipment and electrical insulation) A combination of factors of influence, which are to be expected in a specific application of electric equipment. (EI) 1-1986r

service conditions (nuclear power generating station) (valve actuators) (safety systems equipment in nuclear power generating stations) Environmental, loading, power and signal conditions expected as a result of normal operating requirements, expected extremes (abnormal) in operating requirements, and postulated conditions appropriate for the design-basis events of the station. (PE/NP/EDPG) 382-1985, 323-1974as, 650-1979s, 317-1983r, 649-1980s, 690-1984r, 627-1980r

service conductors The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied. (NESC/NEC) [86]

service controls Parameters conveyed as part of a directory operation that constrain various aspects of its performance. (C/PA) 1328.2-1993w, 1327.2-1993w, 1224.2-1993w, 1326.2-1993w

service corrosion (dry cell) The consumption of the negative electrode as a result of useful current delivered by the cell. *See also:* electrolytic cell. (EEC/PE) [119]

service current, continuous *See:* continuous service current.

service data unit (SDU) (1) Information that is delivered as a unit between peer service access points (SAPs). *See also:* service access point. (LM/C/EMB/MIB) 8802-6-1994, 1073.3.2-2000

(2) The 48-byte data payload of an asynchronous transfer mode (ATM) Cell. (C/BA) 1393-1999

(3) The data associated with a service primitive. (SCC32) 1455-1999

(4) Information delivered as a unit between adjacent entities that may also contain a PDU of the upper layer. (C/LM) 8802-5-1998

service date (power system measurement) The date a unit first enters the active state. On this date the reporting of performance data shall begin. *Note:* The service date is not to be confused with the installation date (the date the unit was first electrically connected to the system) or with the commercial operation date (usually related to the satisfactory completion of acceptance tests as specified in the purchase contract). (PE/PSE) 762-1980s

service delay In data communications, the time that elapses from the release of a message by an originator to its receipt by the addressee. (C) 610.7-1995

service discovery The function of providing transport clients with the ability to dynamically query service availability within a peer transport entity. (C/MM) 1284.4-2000

service drop (1) The overhead conductors between the electric supply or communication line and the building or structure being served. (NESC) C2-1997

(2) The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure. (NEC) [86]

service-entrance cable A single conductor or multiconductor assembly provided with or without an overall covering, primarily used for services and of the following types:

a) Type SE, having a flame-retardant, moisture-resistant covering, but not required to have inherent protection against mechanical abuse.
b) Type USE, recognized for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering or inherent protection against mechanical abuse. Single-conductor cables having an insulation specifically approved for the purpose do not require an outer covering. Cabled single-conductor Type USE constructions recognized for underground use may have a bare copper conductor cabled with the assembly. Type USE single, parallel, or cabled conductor assemblies recognized for underground use may have a bare copper concentric conductor applied. These constructions do not require an outer overall covering.
c) If Type SE or USE cable consists of two or more conductors, one shall be permitted to be uninsulated.

(NESC/NEC) [86]

service entrance conductors (1) (electric systems) (overhead system) The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop. (NESC) [86]
(2) (underground system) The service conductors between the terminals of the service equipment and the point of connection to the service lateral. *Note:* Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building. (NESC/T&D/PE) [10], [86]

service environment (diesel-generator unit) The aggregate of conditions surrounding the diesel-generator unit in its enclosure, while serving the design load during normal, accident, and post-accident operation.
(PE/NP) 387-1995, 387-1984s

service equipment The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply. (NESC/NEC) [86]

service evaluation (telephone switching systems) Determination of the quality of service received by the customer.
(COM) 312-1977w

service factor (general-purpose alternating-current motor) A multiplier that, when applied to the rated power, indicates a permissible power loading that may be carried under the conditions specified for the service factor. *See also:* asynchronous machine. (PE/NP) [9], 741-1997

service ground A ground connection to a service equipment or a service conductor or both. *See also:* ground.
(T&D/PE) [10]

service hours (power system measurement) (electric generating unit reliability, availability, and productivity) The number of hours a unit was in the in-service state.
(PE/EDPG) [3]

service interface The interface as realized, for the benefit of the client, by the service as a whole.
(C/PA) 1328-1993w, 1224.1-1993w, 1327-1993w, 1224-1993w

service laboratory A laboratory, either internal to an agency (or company) or commercially contracted, which performs radioassay measurements for the purpose of providing analytical results, exclusive of the purpose of monitoring or testing. The term "service laboratory" is synonymous with "processing laboratory." (NI) N42.23-1995

service lateral The underground service conductors between the street main, including any risers at a pole or other structure or from transformers, and the first point of connection to the service-entrance conductors in a terminal box or meter or other enclosure with adequate space, inside or outside the building wall. Where there is no terminal box, meter, or other enclosure with adequate space, the point of connection shall be considered to be the point of entrance of the service conductors into the building. (NESC/NEC) [86]

service life (1) (primary cell or battery) The period of useful service before its working voltage falls to a specified cutoff voltage. (EEC/PE) [119]
(2) (storage cell or battery) The period of useful service under specified conditions, usually expressed as the period elapsed before the ampere-hour capacity has fallen to a specified percentage of the rated capacity. *See also:* battery; charge. (EEC/PE) [119]
(3) The actual period from initial operation to retirement of a system, structure, or component. (PE/NP) 1205-1993

service life capacity Minimum battery capacity needed to meet design requirements, including temperature correction but excluding margin. (PE/EDPG) 1106-1987s

service life of cable (cable systems) The time during which satisfactory cable performance can be expected for a specific set of service conditions.
(PE/SUB/EDPG) 422-1986w, 525-1992r

service order process time A command to a switching system to install, remove, or rearrange trunking, routing, or a customer's service. The time required for input of a service order and its implementation in the switch under specified traffic conditions may be defined separately for manual or computer-generated input. (COM/TA) 973-1990w

service period (illuminating engineering) The number of hours per day for which the daylighting provides a specified illuminance level. It often is stated as a monthly average.
(EEC/IE) [126]

service pipe The pipe or conduit that contains underground service conductors and extends from the junction with outside supply wires into the customer's premises. *See also:* service; distributor duct. (T&D/PE) [10]

service-point The point of connection between the facilities of the serving utility and the premises' wiring. *Note:* For clearances of conductors of over 600 V, see the National Electrical Safety Code. (NESC/NEC) [86]

service pole *See:* structure.

service primitive (1) A specific service provided by a particular protocol layer entity. (C/MM) 1394-1995
(2) An abstract, implementation-independent interaction between a service user and the service provider. *Synonym:* primitive. (LM/C) 8802-6-1994
(3) A function in the external interface of a kernel element (KE) that may be invoked to access services provided by the KE. (SCC32) 1455-1999

service provider An implementation of the ACSE and Presentation Layer protocols, to which the APS API provides access.
(C/PA) 1351-1994w

service raceway The raceway that encloses the service-entrance conductors. (NESC/NEC) [86]

service rating (rectifier transformer) The maximum constant load that, after a transformer has carried its continuous rated load until there is no further measurable increase in temperature rise, may be applied for a specified time without injury. *See also:* rectifier transformer. (Std100) C57.18-1964w

service recovery Actions or strategies that restore the service capabilities of a switching system from detected troubles, both internal and external to the switching system, in order to protect service with minimal impact on customers, consistent with reliability and service objectives.
(COM/TA) 973-1990w

service request A solicitation of services from a client to a server. A service request may entail the exchange of any number of messages between the client and the server. In this amendment, the term *request* denotes a service request. When naming specific types of requests, the term *request* is qualified

by the type of request, as in Queue Job Request and Delete Job Request. (C/PA) 1003.2d-1994

service request handler (SRH) A Master responsible for monitoring the service request line, SR, on a segment or a group of segments. When SR=1 the SRH requests bus mastership and after obtaining mastership determines which module(s) is asserting SR, either by polling or by a broadcast operation. The SRH may subsequently service the pending request(s) itself, or may issue interrupt messages to other devices on behalf of the module(s) asserting SR. SR is usually asserted only by modules which lack Mastership capability. (NID) 960-1993

service requirement (thermal classification of electric equipment and electrical insulation) The specified performance to be expected in a specific application under a specified service condition. (EI) 1-1986r

service routine (computers) A routine in general support of the operation of a computer, for example, an input-output, diagnostic, tracing, or monitoring routine. *See also:* utility routine. (MIL/C) [2], [85], [20]

services (1) (logical link control) The capabilities and features provided by an *N*-layer to an *N*-user. (PE/TR) 799-1987w
(2) A set of capabilities provided by one protocol layer entity for use by a higher layer or by management entities. (C/MM) 1394-1995

service specification The formal description of the services provided by an entity of the OSI model to the next higher layer. *See also:* physical layer; sublayer; network layer; presentation layer; data link layer; transport layer; entity layer; session layer; client layer; application layer; logical link control sublayer; medium access control sublayer. (C) 610.7-1995

service, standby *See:* standby service.

service, station *See:* station service.

service test (1) (primary battery) A test designed to measure the capacity of a cell or battery under specified conditions comparable with some particular service for which such cells are used. (EEC/PE) [119]
(2) (meter) A test made during the period that the meter is in service. *Note:* A service test may be made on the consumer's premises without removing the meter from its support, or by removing the meter for test, either on the premises or in a laboratory or meter shop. *See also:* field tests. (ELM) C12.1-1982s
(3) A test, in the "as found" condition, of the battery's capability to satisfy the battery duty cycle. (PE/EDPG) 1106-1995, 450-1995
(4) (battery) A special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the dc system. (SB) 1188-1996

service time The accumulated time one or more components or units are in the in-service state during the reporting period. (PE/PSE) 859-1987w

service voltage (1) (system voltage ratings) (elecrtic power systems in commercial buildings) The voltage at the point where the electric system of the supplier and the electric system of the user are connected. *See also:* high voltage; maximum system voltage; medium voltage; low voltage; nominal system voltage; system voltage; utilization voltage; service voltage. (IA/APP/PSE) [80], 241-1990r
(2) The root-mean-square phase-to-phase or phase-to-neutral voltage at the point where the electrical system of the supplier and the user are connected. (SPD/PE) C62.62-2000

servicing Planned servicing of the circuit breaker including lubricating and replacing minor parts. (SWG/PE) C37.10-1995

servicing time (electric drive) The portion of down time that is necessary for servicing due to breakdowns or for preventive servicing measures. *See also:* electric drive. (VT/LT) 16-1955w

serving (cable) A wrapping applied over the core of a cable before the cable is leaded, or over the lead if the cable is armored. *Note:* Materials commonly used for serving are jute or cotton. The serving is for mechanical protection and not for insulating purposes. (T&D/PE) [10]

servo *See:* servomechanism.

servo amplifier In an analog computer, an amplifier used as part of a servomechanism that supplies power to the electrical input terminals of a mechanical actuator. (C) 610.10-1994w, 165-1977w

servo function generator A function generator consisting of a position servo driving a function potentiometer. *See also:* electronic analog computer. (C) 165-1977w

servomechanism (A) A feedback control system in which at least one of the systems signals represents mechanical motion. **(B)** Any feedback control system. **(C)** An automatic feedback control system in which the controlled variable is mechanical position or any of its time derivatives. *See also:* feedback control system. (C) [85]
(2) (A) An automatic device that uses feedback to govern the physical position of an element; for example, a tracking servo. *See also:* rate servomechanism; servo potentiometer; repeater servomechanism; positional servomechanism. **(B)** A feedback control system in which at least one of the system signals represents mechanical motion. (C) 610.10-1994

servomechanism, positional *See:* positional servomechanism.

servomechanism, rate *See:* rate servomechanism.

servomechanism, repeater *See:* repeater servomechanism.

servomechanism type number In control systems in which the loop transfer function is

$$\frac{K(1 + a_1 s + a_2 s^2 + \ldots + a_i s^i)}{s^n(1 + b_1 s + b_2 s^2 + \ldots + b_k s^k)}$$

where K, a_1, b_1, b_2, etc., are constant coefficients, the value of the integer n. *Note:* The value of n determines the low-frequency characteristic of the transfer function. The log-gain−log-frequency curve (Bode diagram) has a zero-frequency slope of zero for $n = 0$, slope -1 for $n = 1$, etc. *See also:* feedback control system. (NESC) [86]

servomotor An actuating device used to position turbine wicket gates, runner blades, deflectors, or other turbine control devices. (PE/EDPG) 1020-1988r

servomotor limit (hydraulic turbines) A device that acts on the governor system to prevent the turbine-control servomotor from opening beyond the position for which the device is set. (PE/EDPG) 125-1988r

servomotor position (hydraulic turbines) The instantaneous position of the turbine control servomotor expressed as a percent of the servomotor stroke. This is commonly referred to as gate position, needle position, blade position, or deflector position, although the relationship between servomotor stroke and the position of the controlled device may not always be linear. (PE/EDPG) 125-1977s

servomotor stroke (speed governing systems) Travel of the turbine control servomotor from zero to maximum without overtravel at the maximum position or "squeeze" at the minimum position. *Notes:* 1. For a gate servomotor this shall be established as the change in gate position from no discharge to maximum discharge. 2. For a blade servomotor this shall be established as the change in blade position from "flat" to "steep." 3. For a deflector servomotor this shall be established as the change in deflector position from "no deflection" position to "full flow deflected" position with maximum discharge under maximum specified head including overpressure due to water hammer. (PE/EDPG) [5], 125-1977s

servomotor time (hydraulic turbines) The equivalent elapsed time for one servomotor stroke (either opening or closing) corresponding to maximum servomotor velocity. Servomotor time can be qualified as:

a) gate;
b) blade;
c) deflector;
d) needle.

(PE/EDPG) 125-1977s

servomotor velocity limit (hydraulic turbines) A device that functions to limit the servomotor velocity in either the opening, closing, or both directions exclusive of the operation of the slow closure device. (PE/EDPG) 125-1977s

servomotor velocity limiter A device that functions to limit the servomotor velocity in either the opening, closing, or both directions exclusive of the operation of the slow closure device (above). (PE/EDPG) 125-1988r

servo multiplier An analog multiplier in which one variable is used to position one or more ganged potentiometers across which the other variable voltages are applied. (C) 610.10-1994w, 165-1977w

servo potentiometer A potentiometer driven by a positional servomechanism. *See also:* electronic analog computer. (C) 165-1977w, 166-1977w, 610.10-1994w

session (1) The period of time during which a user of a terminal can communicate with an interactive system, usually equal to elapsed time between logon and logoff. (C) 610.10-1994w

(2) An execution of a software administration command from initiation to completion on all applicable roles. (C/PA) 1387.2-1995

(3) A collection of process groups established for job control purposes. Each process group is a member of a session. A process is considered to be a member of the session of which its process group is a member. A newly created process joins the session of its creator. A process can alter its session membership. Implementations that support the *setpgid*() function can have multiple process groups in the same session. (PA/C) 9945-1-1996, 9945-2-1993

(4) A portion of an exercise that is contiguous in wall clock (sidereal) time and is initialized per a session database. (DIS/C) 1278.3-1996

(5) A sequence of directory operations requested by a particular user of a particular DUA using the same session OM object. (PA/C) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

(6) A printer state that allows the logical grouping of one or more jobs into a sequential, referenceable collection. (C/MM) 1284.1-1997

(7) A portion of an exercise that is contiguous in wall clock (sidereal) time and is initialized by a session database that includes network, entity, and environment initialization and control data. (C/DIS) 1278.4-1997

(8) A series of transactions exchanged between the roadside and the vehicle while the vehicle is within a beacon's communications zone. (SCC32) 1455-1999

(9) A collection of process groups established for job control purposes. Each process group is a member of a session. A process is considered to be a member of the session of which its process group is a member. A newly created process joins the session of its creator. A process can alter its session membership by the procedure `Create_Session` in the package `POSIX_Process_Identification`. Implementations that support `Set_Process_Group_ID` can have multiple process groups in the same session. (C) 1003.5-1999

session database A database that includes network, entity, and environment initialization and control data. It contains the data necessary to start a session. (DIS/C) 1278.3-1996

session layer (1) (Layer 5) The layer of the ISO Reference Model that provides the mechanisms for organizing and structuring the interaction between two entities. (C/DIS) 1278.2-1995

(2) The fifth layer of the seven-layer OSI model, responsible for coordination of the communications in an orderly manner. *See also:* entity layer; client layer; application layer; logical link control sublayer; physical layer; presentation layer; transport layer; network layer; data link layer; sublayer; medium access control sublayer. (C) 610.7-1995

session leader A process that has created a session. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

session lifetime The period between when a session is created and the end of the lifetime of all the process groups that remain as members of the session. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

set (1) (A) (test, measurement, and diagnostic equipment) A collection. **(B) (test, measurement, and diagnostic equipment)** To place a storage device into a specified state, usually other than that denoting zero or blank. **(C) (test, measurement, and diagnostic equipment)** To place a binary cell into the one state. *See also:* reset; preset. (MIL/C) [2], 162-1963

(2) (electric and electronics parts and equipment) A unit or units and necessary assemblies, subassemblies, and basic parts connected or associated together to perform an operational function. Typical examples: search radar set, radio transmitting set, sound measuring set; these include such parts, assemblies, and units as cables, microphone, and measuring instruments. (GSD) 200-1975w

(3) (A) (data management) In a CODASYL model or network model, a named collection of records. *Synonym:* CODASYL set. **(B) (data management)** In database design, of entities, or of concepts, that have a given property or properties in common. (C) 610.5-1990

(4) To force the contents of one or more storage elements to a logic 1. (TT/C) 1149.5-1995

(5) The language-independent syntax for a family of datatypes constructed from a base datatype. A value of a set datatype contains an unordered collection of values of the base datatype, each occurring at most once. (C/PA) 1351-1994w

(6) To place a binary cell in the true or one state. *See also:* reset. (C) 610.10-1994w

(7) A datatype constructed from a base datatype; a value of a set datatype contains an unordered collection of values of the base datatype, each occurring only once. The is-member operation returns a Boolean value that depends on whether the specified value is a member of the set. Applying an operation to all members of a set may be supported through either of two programming paradigms. In the first, the sequencing control is provided by the application; in the second, it is provided by the implementation. (C/PA) 1224.1-1993w

(8) (A) (of m phases) A group of m interrelated alternating currents, each in a separate phase conductor, that have the same primitive period but normally differ in phase. They may or may not differ in amplitude and waveform. The equations for a set of m phase currents, when each is sinusoidal, and has the primitive period, are

$$i_a = (2)^{1/2} I_a \cos(\omega t + \beta_{a1})$$
$$i_b = (2)^{1/2} I_b \cos(\omega t + \beta_{b1})$$
$$i_c = (2)^{1/2} I_c \cos(\omega t + \beta_{c1})$$
$$\ldots$$
$$i_m = (2)^{1/2} I_m \cos(\omega t + \beta_{m1})$$

where the symbols have the same meaning as for the general case given later. The general equations for a set of m-phase alternating currents are

$$i_a = (2)^{1/2}[I_a \cos(\omega t + \beta_{a1}) + I_{a2} \cos(2\,\omega t + \beta_{a2}) + \ldots + I_{aq} \cos(q\omega t + \beta_{aq}) + \ldots]$$
$$i_b = (2)^{1/2}[I_b \cos(\omega t + \beta_{b1}) + I_{b2} \cos(2\,\omega t + \beta_{b2}) + \ldots + I_{bq} \cos(q\omega t + \beta_{bq}) + \ldots]$$
$$i_b = (2)^{1/2}[I_b \cos(\omega t + \beta_{b1}) + I_{b2} \cos(2\,\omega t + \beta_{b2}) + \ldots + I_{bq} \cos(q\omega t + \beta_{bq}) + \ldots]$$
$$i_m = (2)^{1/2}[I_m \cos(\omega t + \beta_{m1}) + I_{m2} \cos(2\,\omega t + \beta_{m2}) + \ldots + I_{aq} \cos(q\omega t + \beta_{mq}) + \ldots]$$

here $i_a, i_b, \ldots, i_m$ are the instantaneous values of the currents, and $I_{a1}, I_{a2}, \ldots, I_{aq}$ are the root-mean-square amplitudes of the harmonic components of the individual currents. The first subscript designates the individual current and the second subscript denotes the number of the harmonic component. If there is no second subscript, the quantity is assumed to be

sinusoidal. β_{a1} β_{a2}, . . ., β_q are the phase angles of the components of the same subscript determined with relation to a common reference. *Note:* If the circuit has a neutral conductor, the current in the neutral conductor is generally not considered as a separate current of the set, but as the negative of the sum of all the other currents (with respect to the same reference direction). *See also:* network analysis; voltage sets. **(B)** A group of *m* interrelated alternating voltages that have the same primitive period but normally differ in phase. They may or may not differ in amplitude and wave form. The equations for a set of *m*-phase voltages, when each is sinusoidal and has the primitive period, are

$$e_a = (2)^{1/2}E_a\cos(\omega t + \alpha_{a1})$$
$$e_b = (2)^{1/2}E_b\cos(\omega t + \alpha_{b1})$$
$$e_c = (2)^{1/2}E_c\cos(\omega t + \alpha_{c1})$$
. . .
$$e_m = (2)^{1/2}E_m\cos(\omega t + \alpha_{m1})$$

where the symbols have the same meaning as for the general case given below. The general equations for a set of *m*-phase alternating voltages are

$$e_a = (2)^{1/2}[E_{a1}\cos(\omega t + \alpha_{a1}) + E_{a2}\cos(2\omega t + \alpha_{a2}) + . . . + E_{ar}\cos(r\omega t + \alpha_{ar}) + . . .]$$
$$e_b = (2)^{1/2}[E_{b1}\cos(\omega t + \alpha_{b1}) + E_{b2}\cos(2\omega t + \alpha_{b2}) + . . . + E_{br}\cos(r\omega t + \alpha_{br}) + . . .]$$
$$e_m = (2)^{1/2}[E_{m1}\cos(\omega t + \alpha_{m1}) + E_{m2}\cos(2\omega t + \alpha_{m2}) + . . . + E_{mr}\cos(r\omega t + \alpha_{mr}) + . . .]$$

where e_a, e_b, . . ., e_m are the instantaneous values of the voltages, and E_{a1}, E_{a2}, . . ., E_{ar} the root-mean-square amplitudes of the harmonic components of the individual voltages. The first subscript designates the individual voltage and the second subscript denotes the number of the harmonic component. If there is no second subscript, the quantity is assumed to be sinusoidal. a_{a1}, a_{a2}, . . ., a_{ar} are the phase angles of the components with the same subscript determined with relation to a common reference. *Note:* This definition may be applied to a two-phase four-wire or five-wire circuit if *m* is considered to be 4 instead of 2. A two-phase three-wire circuit should be treated as a special case. (Std100) 270-1966

(9) (used as a verb) To position the various adjusting devices so as to secure the desired operating characteristic. *Note:* Typical adjustment devices are taps, dials, levers, and scales suitably marked, rheostats that may be adjusted during tests, and switches with numbered positions that refer to recorded operating characteristics. (SWG/PE) C37.100-1992

(10) A kind of collection class with no duplicate members and where order is irrelevant. *Contrast:* bag; list. (C/SE) 1320.2-1998

set difference *See:* difference.

set light (illuminating engineering) The separate illumination of the background or set, other than that provided for principal subjects or areas. (EEC/IE) [126]

set normal response mode (SNRM) A high-level data link control (HDLC) message sent by a bed-side communications controller (BCC) to a device communications controller (DCC) when a successful connection to the network has occurred. (EMB/MIB) 1073.3.2-2000, 1073.3.1-1994

set of commutating groups (rectifier) Two or more commutating groups that have simultaneous commutations. *See also:* rectifier circuit element; rectification. (IA) [62], [12]

set of fours *See:* block.

set of fives *See:* block.

set of sixes *See:* block.

set point (1) (electric pipe heating systems) A fixed or constant (for relatively long time periods) command. With respect to electric pipe heating systems, set points are usually associated with temerature controllers or alarms and are the position of of the dials, taps, levels, scales, etc., so as to secure the desired operating characteristics. (PE/EDPG) 622A-1984r

(2) (electric heat tracing systems) A fixed or constant (for relatively long time periods) command. With respect to electric heat tracing systems, set points are usually associated with temperature controllers or alarms and are the position of the dials, taps, levels, scales, etc., so as to secure the desired operating characteristics. (PE/EDPG) 622B-1988r

(3) (nuclear power generating station) A predetermined point within the range of an instrument where protective or control action is initiated. 336-1980s

set pulse A drive pulse that tends to set a magnetic cell. (Std100) 163-1959w

setting (1) (of circuit breaker) The value of current and/or time at which an adjustable circuit breaker is set to trip. (NESC/NEC) [86]

(2) (used as a noun) The desired characteristic, obtained as a result of having set a device, stated in terms of calibration markings or of actual performance bench marks such as pickup current and operating time at a giving value of input. *Note:* When the setting is made by adjusting the device to operate as desired in terms of a measured input quantity, the procedure may be the same as in calibration. However, since it is for the purpose of finding one particular position of an adjusting device, which in the general case may have several marked positions that are not being calibrated, the term *setting* is to be preferred over the term *calibration*. (SWG/PE) C37.100-1992

setting error The departure of the actual performance from the desired performance resulting from errors in adjustment or from limitations in testing or measuring techniques. (SWG/PE) C37.100-1992

setting limitation The departure of the actual performance from the desired performance resulting from limitations of adjusting devices. (SWG/PE) C37.100-1992

settling time (1) (hybrid computer linkage components) The time required from the instant after the "load" has been completed until the digital-to-analog converter (KDAC) or digital-to-analog multiplier (DAM) output voltage is available within a given accuracy (under the condition of a jam transfer for a double-buffered DAC). (C) 166-1977w

(2) (automatic control) The time required, following the initiation of a specified stimulus to a linear system, for the output to enter and remain within a specified narrow band centered on its steady-state value. *Note:* The stimulus may be a step, impulse, ramp, parabola, or sinusoid. For a step or impulse, the band is often specified as $\pm 2\%$. For nonlinear behavior, both magnitude and pattern of the stimulus should be specified. (PE/EDPG) [3]

(3) (STEbus) The time taken for a signal line to settle unambiguously to a logical state when making a transition from one state to another. (MM/C) 1000-1987r

(4) Measured from the mesial point (50%) of the output, the time at which the step response enters and subsequently remains within a specified error band around the final value. The final value is defined to occur 1 s after the beginning of the step. (IM/WM&A) 1057-1994w

(5) Time required by channel or terminal equipment to reach an acceptable operating condition. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(6) (A) Following the initiation of a specified input signal to a system, the time required for the output signal to enter and remain within a specified narrow range centered on its steady-state value. *Note:* The input may be step, impulse, ramp, parabola, or sinusoidal signal. **(B)** In a hybrid computer, the time required after a load has been completed until the digital-to-analog converter or digital-to-analog multiplier output voltage is available within a given accuracy. *Synonym:* switching time. (C) 610.10-1994

(7) The duration from a step change in control signal input until the static var compensator (SVC) output settles to within $\pm 5\%$ of the required output. (PE/SUB) 1031-2000

setup (television) The ratio between reference black level and reference white level, both measured from blanking level. It

is usually expressed in percent. *See also:* television. (BT/AV) [34]

setup/hold timing check A timing check that establishes an interval with respect to a reference signal transition during which some other signal may not change value. This timing check is frequently applied to flip-flops and latches to establish a stable interval for the data input with respect to the active edge of the clock or the active-to-inactive transition of the gate. Two limit values are necessary to define the stable interval. The setup time is the time before the reference signal transition when the stable interval begins and shall be negative if the stable interval begins after the reference signal transition. The hold time is the time after the reference signal transition when the stable interval ends, and shall be negative if the stable interval ends before the reference signal transition. If the data signal changes during the stable interval, the reliability of the resulting state of the flip-flop or latch is unknown. (C/DA) 1481-1999

setup time (1) The period of time during which a system or component is being prepared for a specific operation. *See also:* busy time; down time; idle time. (C/IM/ST) 610.12-1990, 1451.2-1997

(2) *See also:* nochange timing check; setup/hold timing check. (C/DA) 1481-1999

setup timing check A timing check that establishes only the beginning of the stable interval for a setup/hold timing check. If no hold timing check is provided for the same arc, transitions, and state, the stable interval is assumed to end at the reference signal transition and a negative value for the setup time is not meaningful. *See also:* setup/hold timing check. (C/DA) 1481-1999

seven-bit byte *See:* septet.

seven bolt *See:* conductor grip; grip, conductor.

severe lightning current Lightning currents greater than 65 kA, but not greater than 100 kA. (SPD/PE) C62.11-1999

severely errored second A second during which the error ratio is worse than a specified limit, or an OOF event occurs. (COM/TA) 1007-1991r

severity *See:* criticality.

sexadecimal (A) Pertaining to a characteristic or property involving a selection, choice, or condition in which there are sixteen possibilities. **(B)** Pertaining to the numeration system with a radix of sixteen. *Note:* More commonly called hexadecimal. *See also:* hexadecimal; positional notation. (C) [20]

sexagenary (A) Pertaining to a selection in which there are 60 possible outcomes. **(B)** Pertaining to the numeration system with a radix of 60. *Synonym:* sexagesimal. (C) 1084-1986

sexagesimal *See:* sexagenary.

sextant (navigation aids) A double-reflecting instrument for measuring angles—primarily altitudes—of the celestial bodies. (AES/GCS) 172-1983w

sextet (1) A group of six adjacent digits operated upon as a unit. *Synonym:* six-bit byte. (C) 610.5-1990w, 1084-1986w

(2) A byte composed of six bits. *Synonym:* six-bit byte. (C) 610.10-1994w

(3) (local area networks) A contiguous string of six bits. (C) 8802-12-1998

SF_6 *See:* sulfur hexafluoride.

sferics *See:* atmospherics.

SGML *See:* Standard Generalized Markup Language.

shade (illuminating engineering) A screen made of opaque or diffusing material which is designed to prevent a light source from being directly visible at normal angles of view. (EEC/IE) [126]

shaded-pole motor (rotating machinery) A single-phase induction motor with a main winding and one or more short-circuited windings (or shading coils) disposed about the air gap. The effect of the winding combination is to produce a rotating magnetic field which in turn induces the desired motor action. (PE) [9]

shading (1) (A) The rendering of surfaces in the graphical display image of a three-dimensional object by taking into account surface characteristics and the position and orientation of the surfaces with respect to light sources. **(B) (storage tubes)** The type of spurious signal, generated within a tube, that appears as a gradual variation or a small number of gradual variations in the amplitude of the output signal. These variations are spatially fixed with reference to the target area. Note the distinction between this and disturbance. *See also:* storage tube; television. (C/ED) 610.6-1991, 158-1962

(2) (audio and electroacoustics) A method of controlling the directional response pattern of a transducer through control of the distribution of phase and amplitude of the transducer action over the active face. *See also:* television. (SP) [32]

(3) (camera tubes) A brightness gradient in the reproduced picture, not present in the original scene, but caused by the tube. (ED) 161-1971w

shading coil (1) (rotating machinery) The short-circuited winding used in a shaded-pole motor, for the purpose of producing a rotating component of magnetic flux. (PE) [9]

(2) (direct-current motors and generators) A short-circuited winding used on a main (excitation) pole to delay the shift in flux caused by transient armature current. Transient commutation is aided by the use of this coil. *See also:* rotor; stator. (PE) [9]

shading wedge (rotating machinery) A strip of magnetic material placed between adjacent pole tips of a shaded-pole motor to reduce the effective separation between the pole tips. The shading wedge usually has a slot running most of its length to provide some separation effect. *See also:* stator; rotor. (PE) [9]

shadow class A class presented in a view that is specified in some other view. (C/SE) 1320.2-1998

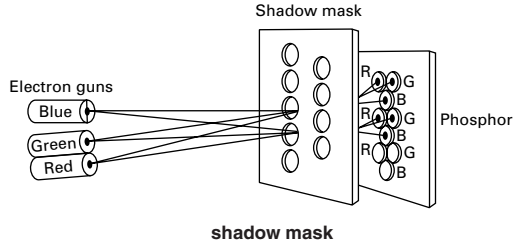
shadow factor (radio-wave propagation) The ratio of the electric field strength which would result from propagation over a convex curved surface to that which would result from propagation over a plane, other factors being the same. (AP) 211-1977s

shadowing (shielding) The interference of any part of an anode, cathode, rack, or tank with uniform current distribution upon a cathode. (EEC/PE) [119]

shadow loss (mobile communication) The attenuation to a signal caused by obstructions in the radio propagation path. *See also:* mobile communication system. (VT) [37]

shadow mask (1) (color picture tubes) A color-selecting-electrode system in the form of an electrically conductive sheet containing a plurality of holes that uses masking to effect color selection. *See also:* television. (ED) 161-1971w

(2) (computer graphics) A metal plate with small holes, positioned behind the display surface of a display device, such that when the electron guns for red, green, and blue colors are focused through each hole, the beam strikes only the phosphor of its associated color. (See the corresponding figure.)



shadow mask

(C) 610.6-1991w

shadow region The region in space that, because of an intervening obstacle, cannot be reached by an incident geometric-optic ray. (AP/PROP) 211-1997

shaft (rotating machinery) That part of a rotor that carries other rotating members and that is supported by bearings in which it can rotate. *See also:* rotor. (PE) [9]

shaft current (rotating machinery) Electric current that flows from one end of the shaft of a machine through bearings, bearing supports, and machine framework to the other end of the shaft, driven by a voltage between the shaft ends that results from flux linking the shaft caused by irregularities in the magnetic circuit. *See also:* rotor. (PE) [9]

shaft extension (rotating machinery) The portion of a shaft that projects beyond the bearing housing and away from the core. *See also:* armature. (PE) [9]

shaft recorder A sensor that is attached to the wheels of an input device such as a mouse; used for delivering electrical pulses as the wheel rotates. (C) 610.10-1994w

shaft revolution indicator A system consisting of a transmitter driven by a propeller shaft and one or more remote indicators to show the speed of the shaft in revolutions per minute, the direction of rotation and (usually) the total number of revolutions made by the shaft. *See also:* electric propulsion system. (EEC/PE) [119]

shaft voltage test (rotating machinery) A test taken on an energized machine to detect the induced voltage that is capable of producing shaft currents. *See also:* rotor. (PE) [9]

shaker-type conveyor A conveyor designed to transport material along a line of troughs by means of a reciprocating or shaking motion. *See also:* conveyor. (EEC/PE) [119]

shallow and deep dose equivalent The dose equivalents (H_s and H_d) at the depths in tissue of 0.007 cm and 1.0 cm, respectively. (NI) N42.20-1995

sham control In an experiment, a group of organisms that is not exposed to the treatment, but is maintained, handled, observed, etc., in an identical manner as the treatment group, and whose overall characteristics are as similar as possible to the treatment organisms. (T&D/PE) 539-1990

shank (cable plowing) A portion of the plow blade to which a removable wear point is fastened. *See also:* wear point. (T&D/PE) 590-1977w

shaped-beam antenna An antenna that is designed to have a prescribed pattern shape differing significantly from that obtained from a uniform-phase aperture of the same size. (AP/ANT) 145-1993

shaped pulse The pulse shape produced by passing the output signal from the preamplifier (approximately a step function) through the pulse-shaping network in the main amplifier (shaping amplifier). (NPS) 325-1996

shaped wire compact conductor (TW) ACSR or AAC that is designed to increase the aluminum area for a given diameter of conductor by the use of trapezoidal shaped aluminum wires. (T&D/PE) 524-1992r

shape factor (1) (spectrum analyzer) A measure of the asymptotic shape of the resolution bandwidth response curve of a spectrum analyzer. Shape factor is defined as the ratio between bandwidths at two widely spaced points on the response curve, such as the 3 dB and 60 dB down points. (IM) 748-1979w

(2) (induction and dielectric heating equipment) *See also:* coil shape factor.

shaping (pulse terminology) (operations on a pulse) A process in which the shape of a pulse is modified to one which is ideal or more suitable for the intended application wherein time magnitude parameters may be changed. Typically, some property(ies) of the original pulse is preserved.

a) (regeneration) A shaping process in which a pulse with desired reference characteristics is developed from a pulse which lacks certain desired characteristics.
b) (stretching) A shaping process in which pulse duration is increased.
c) (clipping) A shaping process in which the magnitude of a pulse is constrained at one or more predetermined magnitudes.
d) (limiting) A clipping process in which the pulse shape is preserved for all magnitudes between predetermined clipping magnitudes.
e) (slicing) A clipping process in which the pulse shape is preserved for all magnitudes less (greater) than a predetermined clipping magnitude.
f) (differentiation) A shaping process in which a pulse is converted to a wave whose shape is or approximates the time derivative of the pulse.
g) (integration) A shaping process in which a pulse is converted to a wave whose shape is or approximates the time integral of the pulse.

(IM) 194-1977w

shaping amplifier *See:* main amplifier.

shaping constant An arbitrary indicator of shaped pulse width. The use of this designation is discouraged. *See also:* shaping index. (NPS) 300-1988r

shaping index (1) The width of a unipolar pulse at 50% of its peak height. (NPS) 300-1988r

(2) In a main amplifier, the width of the shaped unipolar pulse measured at 50% of its peak height, designated as t0.5. (NPS) 325-1996

shaping pulse The intentional processing of a pulse waveform to cause deviation from a reference waveform. *See also:* pulse. (IM/HFIM) [40]

shaping time *See:* amplifier shaping time.

shaping time constant (semiconductor radiation detectors) The time constants of the bandwidth defining CR (capacitance-resistance) differentiators and RC (resistance-capacitance) integrators used in pulse amplifiers. (NID) 301-1976s

Shareable List A DMA queue composed of a linked list of items. Each item contains a pointer to the next item and the message being passed to the consumer. Swap transactions are used to support shared access by multiple producers. (C/MM) 1212.1-1993

shared lock A lock that allows several processes concurrent access to data. *Note:* at most, only one of the processes is allowed to modify the data and the other processes may only read the data. *Contrast:* exclusive lock. (C) 610.5-1990w

shared-logic word processing Word processing performed on a system composed of multiple work stations that share the logic and storage sections of a single central processor. *Contrast:* shared-resource word processing; dedicated word processing; clustered word processing; stand-alone word processing. (C) 610.2-1987

shared memory (1) The address space in the system accessible to all modules. (C/BA) 1014.1-1994w, 896.3-1993w

(2) The address space in the system accessible to all caching modules. (C/BA) 10857-1994, 896.4-1993w

shared memory object (1) An object that represents memory that can be mapped concurrently into the address space of more than one process. (PA/C) 9945-1-1996

(2) An object that represents memory that can be mapped concurrently into the address space of more than one process. These named regions of storage may be independent of the file system and can be mapped into the address space of one or more processes to allow them to share the associated memory. (C) 1003.5-1999

shared port An output or bidirectional port where some other output port of the cell derives its logic function. The output load at a shared port affects not only the delay to that port itself, but also the delay to any ports sharing it. (C/DA) 1481-1999

shared-resource word processing Word processing performed on a system composed on multiple work stations, each with its own processor but sharing certain resources such as printers and disk drives. *Contrast:* shared-logic word processing; dedicated word processing; clustered word processing; stand-alone word processing. (C) 610.2-1987

shared service A CSMA/CD network in which the collision domain consists of more than two DTEs so that the total network bandwidth is shared among them. (C/LM) 802.3-1998

shared systems Structures, systems, and components that can perform functions for more than one unit in multiunit stations. *Note:* This definition includes the following:

1) systems that are simultaneously shared by both units;
2) time sequential sharing or systems that would be shared by two units at different times, according to the sequence of events; and
3) systems that would only be used by one unit, at any given time, but that could be disconnected from that unit and placed in the other unit on demand.

(PE/NP) 379-1994

shared unmodified (SU) An attribute assigned to a cache line if there is an up-to-date copy of the line in the module's cache and the module is to assume that a copy also exists in another module's cache. (C/BA) 896.4-1993w

Shared Virtual Local Area Network (VLAN) Learning (SVL) Configuration and operation of the Learning Process and the Filtering Database such that, for a given set of VLANs, if an individual MAC Address is learned in one VLAN, that learned information is used in forwarding decisions taken for that address relative to all other VLANs in the given set. *Note:* In a Bridge that supports only SVL operation, the "given set of VLANs" is the set of all VLANs. (C/LM) 802.1Q-1998

Shared Virtual Local Area Network (VLAN) Learning (SVL) Bridge A type of Bridge that supports only Shared VLAN Learning. (C/LM) 802.1Q-1998

Shared Virtual Local Area Network (VLAN) Learning (SVL)/Independent Virtual Local Area Network (VLAN) Learning (IVL) Bridge An SVL/IVL Bridge is a type of Bridge that simultaneously supports both Shared VLAN Learning and Independent VLAN Learning. (C/LM) 802.1Q-1998

sharing *See:* time sharing.

sharing transformer and current balancing transformer (current balancing reactor) (electrical heating applications to melting furnaces and forehearths in the glass industry) Two-winding, iron core devices used in paralleled current paths, connected so that any difference in current between the paths causes an induced voltage that opposes the current difference. (IA) 668-1987w

sharp Pertaining to elements in an image that are well defined and readily discernable. *Contrast:* blurred. (C) 610.4-1990w

sharpening Any image enhancement technique in which the effect of blurring in the original image is reduced. *Synonym:* deblurring. *See also:* unsharp masking. (C) 610.4-1990w

shearing machine An electrically driven machine for making vertical cuts in coal. (EEC/PE) [119]

shear pin (1) (rotating machinery) A dowel designed to shear at a predetermined load and thereby prevent damage to other parts. *See also:* rotor; shear section shaft. (PE) [9]
(2) (small hydraulic power plants) Replaceable protective device that fails by shearing when an obstruction prevents a wicket gate from closing. (PE/EDPG) 1020-1988r

shear section shaft (rotating machinery) A section of shaft machined to a controlled diameter, or area, designed to shear at a predetermined load and thereby prevent damage to connected machinery. *See also:* shear pin; rotor. (PE) [9]

shear wave (rotational wave) A wave in an elastic medium that causes an element of the medium to change its shape without a change of volume. *Notes:* 1. Mathematically, a shear wave is one whose velocity field has zero divergence. 2. A shear plane wave in an isotropic medium is a transverse wave. 3. When shear waves combine to produce standing waves, linear displacements may result. (SP/ACO) [32]

sheath (1) (cable systems in power generating stations) (jacket) The overall protective covering for the insulated cable. (PE/EDPG) 422-1977
(2) A continuous covering for a cable. (BT/IA/AV/PC) 152-1953s, 515.1-1995
(3) A uniform and continuous covering, metallic or nonmetallic, enclosing the insulated conductor(s), used to protect the cable against influences from the surroundings (corrosion, moisture, etc.). (IA) 515-1997

sheath/shield sectionalizers A sectionalizer that is used to minimize induced current in the cable metallic shield/shield by electrically interrupting the semiconducting shield and conducting metallic sheath or shield of two cable lengths that are joined together. These sectionalizers are primarily used on cable systems operating at 60 kV and above. (PE/IC) 404-1993

sheath temperature (1) The temperature of the outermost sheath that may be exposed to the surrounding atmosphere. (BT/IA/AV/PC) 152-1953s, 515.1-1995
(2) The temperature of the outermost continuous covering of a heating cable or surface heating device that may be exposed to the surrounding atmosphere. (IA) 515-1997

sheave (A) (grounding of power lines) The grooved wheel of a traveler or rigging block. Travelers are frequently referred to as sheaves. **(B) (grounding of power lines)** A shaft-mounted wheel used to transmit power by means of a belt, chain, band, etc. *See also:* pulley. (T&D/PE) 1048-1990
(2) (A) (conductor stringing equipment) The grooved wheel of a traveler or rigging block. Travelers are frequently referred to as sheaves. *Synonym:* pulley; wheel; roller. **(B)** A shaft-mounted wheel used to transmit power by means of a belt, chain, band, etc. (PE/T&D) 524a-1993, 524-1992

sheet A cut piece of print media, such as a sheet of paper. (C/MM) 1284.1-1997

Sheffer stroke *See:* NAND.

shelf corrosion (dry cell) The consumption of the negative electrode as a result of local action. *See also:* electrolytic cell. (EEC/PE) [119]

shelf depreciation The depreciation in service capacity of a primary cell as measured by a shelf test. *See also:* battery. (EEC/PE) [119]

shelf test A storage test designed to measure retention of service ability under specified conditions of temperature and cutoff voltage. *See also:* battery. (EEC/PE) [119]

Shell, The The Shell Command Language Interpreter, a specific instance of a shell. (C/PA) 9945-2-1993

shell (1) (insulators) A single insulating member, having a skirt or skirts without cement or other connecting devices intended to form a part of an insulator or an insulator assembly. *See also:* insulator. (EEC/IEPL) [89]
(2) (electrolysis) The external container in which the electrolysis of fused electrolyte is conducted. *See also:* fused electrolyte. (EEC/PE) [119]
(3) (electrotyping) A layer of metal (usually copper or nickel) deposited upon, and separated from, a mold. (PE/EEC) [119]
(4) (software) A computer program or routine that provides an interface between the user and a computer system or program. (C) 610.12-1990
(5) (A) A software interface between the user and the operating system in which the shell interprets commands and communicates them to the operating system of the computer. **(B)** Software that allows a kernel program to run under different computing environments. (C) 610.13-1993
(6) A program that interprets sequences of text input as commands. It may operate on an input stream or it may interactively prompt and read commands from a terminal. (C/PA) 9945-2-1993

shell-form transformer (power and distribution transformers) A transformer in which the laminations constituting the iron core surround the windings and usually enclose the greater part of them. (PE/TR) C57.12.80-1978r

shell script A file containing shell commands. If the file is made executable, it can be executed by specifying its name as a simple command. Execution of a shell script causes a shell to execute the commands within the script. Alternatively, a shell can be requested to execute the commands in a shell script

by specifying the name of the shell script as the operand to the `sh` utility. (C/PA) 9945-2-1993

Shell's method *See:* diminishing increment sort.

Shell sort *See:* diminishing increment sort.

shell, stator *See:* stator shell.

shell token string A sequence of shell tokens. A shell token string shall be a portable character string. (C/PA) 1387.2-1995

shell-type motor A stator and rotor without shaft, end shields, bearings or conventional frame. *Note:* A shell-type motor is normally supplied by a motor manufacturer to an equipment manufacturer for incorporation as a built-in part of the end product. Separate fans or fans larger than the rotor are not included. *See also:* asynchronous machine. (PE) [9]

sheltered equipment (test, measurement, and diagnostic equipment) Equipment so housed or otherwise protected that the extreme of natural and induced environments are partially or completely excluded or controlled. Examples are laboratory and shop equipment, equipment shielded from sun by a canopy or roof, and so forth. (MIL) [2]

SHF *See:* super high frequency.

shield (1) (nuclear power generating station) (instrumentation cables) Braid copper, metallic sheath, or metallic coated polyester tape (usually copper or aluminum), applied over the insulation of a conductor or conductors for the purpose of reducing elecrostatic coupling between the shielded conductors and others that may be either susceptible to, or generators of, electrostatic fields (noise). When electromagnetic shielding is intended, the term electromagnetic is usually included to indicate the difference in shielding requirement and material. (PE/IA/EDPG/PSE) 690-1984r, 1100-1999

(2) (cable systems in power generating stations) As normally applied to instrumentation cables, refers to metallic sheath (usually copper or aluminum), applied over the insulation of a conductor or conductors for the purpose of providing means for reducing electrostatic coupling between the conductors so shielded and others which may be susceptible to or which may be generating unwanted (noise) electrostatic fields. When electromagnetic shielding is intended, the term "electromagnetic" is usually included to indicate the difference in shielding requirements as well as material. To be effective at power system frequencies, electromagnetic shields would have to be made of high-permeability steel. Such shielding material is expensive and is not normally applied. Other less expensive means for reducing low-frequency electromagnetic coupling, as described herein, are preferred. (PE/EDPG) 422-1977

(3) (power and distribution transformers) A conductive protective member placed in relationship to apparatus or test components to control the shape of magnitude, or both, of electric or magnetic fields, thereby improving performance of apparatus or test equipment by reducing losses, voltage gradients, or interface. (PE/TR) C57.12.80-1978r

(4) (electromagnetic) A housing, screen, or other object, usually conducting, that substantially reduces the effect of electric or magnetic fields on one side thereof, upon devices or circuits on the other side. *See also:* signal; induction heating. (PE/EM) [4], 43-1974s

(5) (rotating machinery) (mechanical protection) An internal part used to protect rotating parts or parts of the electric circuit. In general, the word shield will be preceded by the name of the part that is being protected. (PE) [9]

(6) (induction heating) A material used to suppress the effect of an electric or magnetic field within or beyond definite regions. (IA) 54-1955w

(7) (instrumentation cables) (cable systems) A metallic sheath (usually copper or aluminum), applied over the insulation of a conductor or conductors for the purpose of providing means for reducing electrostatic coupling between the conductors so shielded and others which may be susceptible to or which may be generating unwanted (noise) electrostatic fields. (SUB/PE) 525-1992r

(8) A barrier, usually metallic, within a coaxial cable that is designed to contain the high-powered broadcast signal within the coaxial cable to reduce electromagnetic interference and signal loss. (C) 610.7-1995

(9) (magnetrons) *See also:* end shield. (IA) 54-1955w

shielded conductor cable A cable in which the insulated conductor or conductors is/are enclosed in a conducting envelope or envelopes. 30-1937w

shielded ignition harness A metallic covering for the ignition system of an aircraft engine, that acts as a shield to eliminate radio interference with aircraft electronic equipment. The term includes such items as ignition wiring and distributors when they are manufactured integral with an ignition shielding assembly. (EEC/PE) [119]

shielded insulated splice (power cable joints) An insulated splice in which a conducting material is employed over the full length of the insulation for electric stress control. (PE/IC) 404-1986s

shielded joint A cable joint having its insulation so enveloped by a conducting shield that substantially every point on the surface of the insulation is at ground potential or at some predetermined potential with respect to ground. (T&D/PE) [10]

shielded line A planar transmission line whose cross section is completely enclosed within conducting boundaries. (MTT) 1004-1987w

shielded-loop antenna (probe) An electrically small antenna consisting of a tubular electrostatic shield formed into a loop with a small gap, and containing one or more wire turns for external coupling. (AP/ANT) 145-1993

shielded-loop probe *See:* shielded-loop antenna.

shielded nonmetallic-sheathed cable A factory assembly of two or more insulated conductors in an extruded core of a moisture-resistant, flame-resistant nonmetallic material, covered with an overlapping spiral metal tape and wire shield and jacketed with an extruded moisture-, flame-, oil-, corrosion-, fungus-, and sunlight-resistant nonmetallic material. *Synonym:* SNM cable. (NESC/NEC) [86]

shielded pair (signal-transmission system) A two-wire transmission line surrounded by a sheath of conducting material to protect it from the effects of external fields, or to confine fields produced by the transmission line. *See also:* signal; waveguide. (MTT) 146-1980w

shielded strip transmission line A strip conductor between two ground planes. Some common designations are: Stripline (trade mark); Tri-plate (trade mark); slab line (round conductor); balanced strip line. *See also:* unshielded strip transmission line; strip-type transmission line. (AP/ANT) [35]

shielded transmission line (1) (signal-transmission system) A transmission line surrounded by a sheath of conducting material to protect it from the effects of external fields, or to confine fields produced by the transmission line. *See also:* signal; waveguide. (IE) [43]

(2) (waveguide) A transmission line whose elements essentially confine propagated electrical energy to a finite space inside a conducting sheath. (MTT) 146-1980w

shielded twisted pair (STP) (1) A twisted pair medium surrounded by a metallic shield to minimize electrical interference and noise. *Note:* Specifications are provided in IEEE Std 802.5. *Contrast:* unshielded twisted pair. (C) 610.7-1995

(2) Normally refers to those shielded cables with individual pairs of conductors twisted, or with a group of four conductors in a quad configuration, with any characteristic impedance. Specifically refers to those shielded cables whose pairs have a high-frequency characteristic impedance of 150 Ω and with two pair of conductors shielded from any other individual pairs. (C/LM) 8802-5-1998

shielded twisted-pair (STP) cable An electrically conducting cable, comprising one or more elements, each of which is individually shielded. There may be an overall shield, in which case the cable is referred to as shielded twisted pair cable with an overall shield. Specifically for IEEE 802.3

100BASE-TX, 150 Ω balanced inside cable with performance characteristics specified to 100 MHz (i.e., performance to Class D link standards as per ISO/IEC11801:1995). In addition to the requirements specified in ISO/IEC11801:1995, IEEE 802.3 clauses 23 and 25 provide additional performance requirements for 100BASE-T operation over STP. (LM/C) 802.3u-1995s

shielded-type cable A cable in which each insulated conductor is enclosed in a conducting envelope so constructed that substantially every point on the surface of the insulation is at ground potential or at some predetermined potential with respect to ground under normal operating conditions. (T&D/PE) [10]

shield factor (telephone circuit) The ratio of noise, induced current, or voltage when a source of shielding is present, to the corresponding quantity when the shielding is absent. (PE/EEC) [119]

shield grid (gas tube) A grid that shields the control electrode in a gas tube from the anode or the cathode, or both, with respect to the radiation of heat and the deposition of thermionic activating material and also reduces the electrostatic influence of the anode. It may be used as a control electrode. *See also:* grid; electrode. (ED) 161-1971w

shielding (1) (power cable joints) (screening) A conducting layer, applied to control the dielectric stresses within tolerable limits and minimize voids. It may be applied over the entire joint insulation, on the tapered insulation ends only, or over irregular conductor or connector surfaces. (PE/IC) 404-1986s

(2) (x-radiation limits for ac high-voltage power vacuum interrupters used in power switchgear) Barrier of attenuating material used to reduce radiation hazards. 553-1986

(3) The process of applying a conducting barrier between a potentially disturbing noise source and electronic circuitry. Shielding is used to protect cables (data and power) and electronic circuits. Shielding may be accomplished by the use of metal barriers, enclosures, or wrappings around source circuits and receiving circuits. (IA/PSE) 1100-1999

shielding angle (1) (illuminating engineering) (of a luminaire) The angle between a horizontal line through the light center and the line of sight at which the bare source first becomes visible. (IE/EEC) [126]

(2) The angle between a vertical line through the overhead ground wire and a line connecting the overhead ground wire to the shielded conductor. *See also:* direct-stroke protection (T&D/PE/SPD) [10], C62.23-1995, 1410-1997

(3) (A) (of shield wires with respect to conductors). The angle formed by the intersection of a vertical line drawn through a shield wire and a line drawn from the shield wire to a protected conductor. The angle is chosen to provide a zone of protection for the conductor so that most lightning strokes will terminate on the shield wire rather than on the conductor. **(B)** (of a lightning mast). The angle formed by the intersection of a vertical line drawn through the tip of the mast and another line drawn through the tip to earth at some selected angle with the vertical. Rotation of this angle around the structure forms a cone-shaped zone of protection for objects located within the cone. The angle is chosen so that lightning strokes will terminate on the mast rather than on an object contained within the protective zone so formed. *See also:* negative shielding angle; positive shielding angle. (SUB/PE) 998-1996

shielding effectiveness (SE) (1) For a given external source, the ratio of electric or magnetic field strength at a point before and after the placement of the shield in question. (EMC) [53]

(2) The ratio of the signal received (from a transmitter) without the shield, to the signal received inside the shield; the insertion loss when the shield is placed between the transmitting antenna and the receiving antenna. (EMC/STCOORD) 299-1997

shielding electrode An electrode intended for the reduction of electromagnetic interference signals and that is usually located between input and output transducers. (UFFC) 1037-1992w

shielding enclosure A structure that protects its interior from the effect of an exterior electric or magnetic field, or conversely, protects the surrounding environment from the effect of an interior electric or magnetic field. A high-performance shielding enclosure is generally capable of reducing the effects of both electric and magnetic field strengths by one to seven orders of magnitude depending upon frequency. An enclosure is normally constructed of metal with provisions for continuous electrical contact between adjoining panels, including doors. (EMC/STCOORD) 299-1997

shielding failure (lightning protection) The occurrence of a lightning stroke that bypasses the overhead ground wire and terminates on the phase conductor. *See also:* direct-stroke protection. (T&D/PE) [10]

shielding failure flash-over rate (SFFOR) The annual number of flashovers on a circuit or tower-line length basis caused by shielding failures. (PE/T&D) 1243-1997

shielding failure rate (SFR) The annual number of lightning events on a circuit or tower-line length basis, which bypass the overhead ground/shield wire and terminate directly on the phase conductor. This event may or may not cause flashover. (PE/T&D) 1243-1997

shield wire (1) (electromagnetic fields) A wire employed to reduce the effects on electric supply or communication circuits from extraneous sources. *See also:* inductive coordination. (SPD/PE/EEC) C62.23-1995, [119]

(2) (overheard power line or substation) A wire suspended above the phase conductors positioned with the intention of having lightning strike it instead of the phase conductor(s). *Synonyms:* overhead ground wire; static wire. (SUB/PE) 998-1996

(3) Grounded wire(s) placed near the phase conductors for the purposes of

a) Protecting phase conductors from direct lightning strokes,
b) Reducing induced voltages from external electromagnetic fields,
c) Lowering the self-surge impedance of an OHGW system, or
d) Raising the mutual surge impedance of an OHGW system to the protected phase conductors.

They may be electrically bonded directly to the structure or indirectly through short gaps. (PE/T&D/PE/T&D) 1410-1997, 1243-1997

shift (mathematics of computing) A displacement of an ordered set of characters one or more places to the left or right. If the characters are the digits of a numeral, a shift may be equivalent to multiplying by a power of the base. *See also:* arithmetic shift; logical shift. (C) 1084-1986w

shift character A control character that determines the alphabetic or numeric shift of character codes in a message. (C) 610.5-1990w

shift clock (semiconductor memory) The inputs that when operated in a prescribed manner shift internal data in a serial memory. (TT/C) 662-1980s

shift, direct-current *See:* direct-current shift.

shift-in character (SI) A code extension character, used to terminate a sequence that has been introduced by the shift-out character, that makes effective the graphic characters of the original character set. *Contrast:* shift-out character. (C) 610.5-1990w

shift key A control key that controls the interpretation of other keys. That is, when used in conjunction with another key, the representation of that other key is different from that of the key alone. *Note:* Often used to form uppercase characters. *See also:* alternate key. (C) 610.10-1994w

shift operation An operation for which the VHDL operator is **sll**, **srl**, **sla**, **sra**, **rol**, or **ror**. (C/DA) 1076.3-1997

shift-out character (SO) A code extension character that substitutes, for the graphic characters of the original character set, an alternative set of graphic characters upon which agreement has been reached or that has been designated using code extension procedures. *Contrast:* shift-in character. (C) 610.5-1990w

shift pulse A drive pulse that initiates shifting of characters in a register. (Std100) 163-1959w

shift register (1) A register in which the stored data can be moved to the right or left. (C) [20], [85]

(2) A register in which the data bits can be shifted in one direction or both; for example, if the contents are 11010010 and the register is shifted to the right, the result is x1101001; where x is a zero, one, or the bit shifted off the right end, depending on the type of shift register. *See also:* circulating register. (C) 610.10-1994w

shim (A) (rotating machinery) (mechanical) A lamination usually machined to close-tolerance thickness, for assembly between two parts to control spacing. **(B) (rotating machinery)** (magnetic) A lamination added to adjust or change the effective air gap in a magnetic circuit. *See also:* rotor; stator. (PE) [9]

shingle (photoelectric converter) Combination of photoelectric converters in series in a shingle-type structure. *See also:* semiconductor. (AES) [41]

ship control telephone system A system of sound-powered telephones (requiring no external power supply for talking) with call bells, exclusively for communication among officers responsible for control and operation of a ship. *Note:* Call bells are usually energized by hand-cranked magneto generators. (EEC/PE) [119]

shipping brace (rotating machinery) Any structure provided to reduce motion or stress during shipment, that must be removed before operation. (PE) [9]

shipping seal *See:* sealed end.

ship's service electric system On any vessel, all electric apparatus and circuits for power and lighting, except apparatus provided primarily either for ship propulsion or for the emergency system. *Note:* Emergency and interior communication circuits are normally supplied with power from the ship's service system, upon failure of which they are switched to an independent emergency generator or other sources of supply. *See also:* marine electric apparatus. (EEC/PE) [119]

shock excitation (oscillatory systems) The excitation of natural oscillations in an oscillatory system due to a sudden acquisition of energy from an external source or a sudden release of energy stored with the oscillatory system. *See also:* oscillatory circuit. (PE/EEC) [119]

shock motion (mechanical system) Transient motion that is characterized by suddenness, by significant relative displacements, and by the development of substantial internal forces in the system. *See also:* mechanical shock. (SP) [32]

shock, primary *See:* primary shock.

shockproof electric apparatus Electric apparatus designed to withstand, to a specified degree, shock of specified severity. *Note:* The severity is stated in footpounds impact on a special test stand equivalent to shock of gunfire, explosion of mine or torpedo, etc. *See also:* marine electric apparatus. (EEC/PE) [119]

shock, secondary *See:* secondary shock.

shoe (ramp shoe) Part of a vehicle-carried apparatus that makes contact with a ramp. (EEC/PE) [119]

shop instruments Instruments and meters that are used in regular routine shop or field operations. (ELM) C12.1-1982s

shop—meter A place where meters are inspected, repaired, tested, and adjusted. (ELM) C12.1-1988

shop test (laboratory test) A test made upon the receipt of a meter from a manufacturer, or prior to reinstallation. Such tests are made in a shop or a laboratory of a meter department. *See also:* service test. (EEC/PE) [119]

shoran (navigation aid terms) A radio navigation system that provides circular lines of position. The term is derived from the words short-range navigation. (AES/GCS) 172-1983w

shore feeder Permanently installed conductors from a distribution switchboard to a connection box (or boxes) conveniently located for the attachment of portable leads for supply of power to a ship from a source on shore. *See also:* marine electric apparatus. (EEC/PE) [119]

short answer interaction An instruction method employed by some computer-assisted instruction systems, in which the student is asked to provide a word or phrase in response to a question. (C) 610.2-1987

short card A special-purpose punch card that is shorter in length than a standard 80-column punch card; For example, a 51 column card. (C) 610.10-1994w

short circuit (1) (gas-tube surge protective devices) An abnormal connection of relatively low impedance, whether made accidentally or intentionally, between two points of different potential in a circuit. (SPD/PE) C62.31-1987r, C62.32-1981s

(2) An abnormal connection (including an arc) of relatively low impedance, whether made accidentally or intentionally, between two points of different potential. *Note:* The term *fault* or *short-circuit fault* is used to describe a short circuit. (SWG/IA/PE/PSP) 1015-1997, C37.100-1992

(3) The condition in which the output terminals of the power supply are directly connected together, resulting in near-zero output voltage. (PEL) 1515-2000

short circuit, adjustable, waveguide (waveguide components) A longitudinally movable obstacle which reflects essentially all the incident energy. (MTT) 147-1979w

short-circuit current (1) (electric power systems in commercial buildings) An overcurrent resulting from a fault of negligible impedance between live conductors having a difference in potential under normal operating conditions. The fault path may include the path from active conductors via earth to neutral. (IA/PSE) 241-1990r

(2) (protection and coordination of industrial and commercial power systems) An overcurrent usually defined as being in excess of ten times normal continuous rating. *See also:* overload. (IA/PSP) 242-1986r

(3) (overhead power lines) The current between a conductive object and ground through a zero impedance connection or in a closed circuit, as a result of induction or deposition of charge. (T&D/PE) 539-1990

(4) (of a battery charger) The current magnitude at the output terminals, when the terminals are short circuited and with nominal input voltage supplied to the charger. (IA/PSE) 602-1996

(5) (transformer-rectifier system) The steady-state value of the input alternating current that flows when the output direct current terminals are short-circuited and rated line alternating voltage is applied to the line terminals. This current is normally of interest when using current limiting transformers or checking current limiting devices. (PEL/ET) 295-1969r

short-circuit dc current The dc current between a conductive object and ground through a zero impedance, as a result of deposition of charge. (T&D/PE) 539-1990

short-circuit driving-point admittance *See:* admittance, short-circuit driving-point.

short-circuit duration rating (magnetic amplifier) The length of time that a short circuit may be applied to the load terminals nonrecurrently without reducing the intended life of the amplifier or exceeding the specified temperature rise. (MAG) 107-1964w

short-circuiter A device designed to short circuit the commutator bars when the motor has attained a predetermined speed in some forms of single-phase commutator-type motors. *See also:* asynchronous machine. (EEC/PE) [119]

short circuit, external dc *See:* external dc short circuit.

short-circuit feedback admittance *See:* admittance, short-circuit feedback.

short-circuit flux (magnetic sound records) That flux from a magnetic record which flows across a plane normal to the recorded medium, through a magnetic short circuit placed in intimate contact with the record. (SP) 347-1972w

short-circuit flux per unit width (magnetic sound records) The measured short-circuit flux divided by the measured width of the recorded track. *Note:* The term fluxivity has been proposed for the quantity short-circuit flux per unit width. (SP) 347-1972w

short-circuit forward admittance *See:* admittance, short-circuit forward.

short-circuit impedance (1) A qualifying adjective indicating that the impedance under consideration is for the network with a specified pair or group of terminals short-circuited. *See also:* network analysis; self-impedance. (Std100) 270-1966w

(2) (line or four-terminal network) The driving-point impedance when the far-end is short-circuited. *See also:* self-impedance. (PE/EEC) [119]

short-circuit induced current The rms power frequency current between a conductive object and ground through a zero impedance or in a closed circuit, as a result of induction. (T&D/PE) 539-1990

short-circuit inductance The apparent inductance of a winding of a transformer with one or more specified windings short circuited often taken as a means of determining the leakage inductance of a winding. (CAS/CHM) [13], [51]

short-circuiting device (power system device function numbers) A primary circuit switching device that functions to short circuit or to ground a circuit in a response to automatic or manual means. *Synonym:* grounding device. (PE/SUB) C37.2-1979s

short-circuiting relays Telecommunication circuit grounding relays are used to ground an exposed telecommunication or telephone pair, usually on open-wire "joint-use" facilities during periods of severe power system disturbance. *Synonym:* grounding relays. (PE/PSC) 487-1992

short-circuiting switch A single-pole double-throw (make-before-break) transfer switch used to transfer current away from the meter. (ELM) C12.9-1993

short-circuit input admittance *See:* admittance, short-circuit input.

short-circuit input capacitance (*n*-terminal electron device) The effective capacitance determined from the short-circuit input admittance. *See also:* electron-tube admittances. (ED) 161-1971w

short-circuit input voltamperes The product of the input voltage and input current (rms values) with the resonating winding short circuited. (PEL) 449-1998

short circuit, internal *See:* internal short circuit.

short-circuit loss (rotating machinery) The difference in power required to drive a machine at normal speed, when excited to produce a specified balanced short-circuit armature current, and the power required to drive the unexcited machine at the same speed. *See also:* asynchronous machine. (PE) [9]

short-circuit output admittance *See:* admittance, short-circuit output.

short-circuit output capacitance (*n* -terminal electron device) The effective capacitance determined from the short-circuit output admittance. *See also:* electron-tube admittances. (ED) 161-1971w

short-circuit protection (power supplies) (automatic). Any automatic current-limiting system that enables a power supply to continue operating at a limited current, and without damage, into any output overload including short circuits. The output voltage must be restored to normal when the overload is removed, as distinguished from a fuse or circuit-breaker system that opens at overload and must be closed to restore power. (AES) [41]

short-circuit ratio (SCR) (1) For a semiconductor converter, the ratio of the short-circuit capacity of the bus, in MVA, at the point of converter connection to the rating of the converter, in MW. (IA/SPC) 519-1992

(2) The ratio of the ac system three-phase short-circuit MVA (expressing the ac system impedance) to dc power. (PE/T&D) 1204-1997

short-circuit saturation curve (synchronous machines) The relationship between the current in the short-circuited armature winding and the field current. (PE) [9]

short-circuit time constant (rotating machinery) (primary winding) The time required for the direct-current component present in the short-circuit primary-winding current following a sudden change in operating conditions to decrease to 1/e Δ 0.368 of its initial value, the machine running at rated speed. *See also:* asynchronous machine. (PE) [9]

short-circuit transfer admittance *See:* admittance, short-circuit transfer.

short-circuit transfer capacitance (electron tube) The effective capacitance determined from the short-circuit transfer admittance. *See also:* electron-tube admittances. (ED) 161-1971w

short dimension Incremental dimensions whose number of digits is the same as normal dimensions except the first digit is zero, that is 0.XXXX for the example under normal dimension. *See also:* normal dimension; dimension; incremental dimension; long dimension. (IA) [61]

short-distance navigation Navigation utilizing aids usable only at comparatively short distances; this term covers navigation between approach navigation and long-distance navigation, there being no distinct, universally accepted demarcation between them. *See also:* navigation. (AES/RS) 686-1982s, [42]

short field Where two field strengths are required for a series machine, short field is the minimum-strength field connection. *Note:* The use of the term tapped field is deprecated. *See also:* asynchronous machine; direct-current commutating machine. (EEC/PE) [119]

shorting cap A device that provides a closed circuit between line and load when a photocontrol is not used. (RL) C136.10-1996

short-lever relay armature An armature with an armature ratio of 1 : 1 or less. (EEC/REE) [87]

short-line-fault transient recovery voltage The transient recovery voltage obtained when a circuit-switching device interrupts a nearby fault on the line. *Note:* Short-line-fault transient recovery voltage differs from terminal fault conditions in that the length of line adds a high-frequency saw-tooth component to the transient recovery voltage. As the distance to the fault becomes greater, the amplitude of the saw-tooth component increases, the rate of rise of the saw-tooth component decreases, and the fault current decreases. The increased amplitude adversely affects the interrupting capability of the circuit-switching device while the decrease in the rate of rise and the decrease in current makes interruption easier. The effects are not proportional and a distance is reached where interruption is most severe even though the current is less than for a terminal fault. The critical value varies considerably with the type of circuit-switching device (oil, air-blast, gas-blast, etc.), and with the particular design. The critical distance may be in the order of a mile at the higher voltages. The critical distance is less as lower voltages are considered. (SWG/PE) C37.100-1992

short packet A packet with a length of less than 64 bytes. *Synonym:* under-sized packet. *Contrast:* long packet. (C) 610.7-1995, 610.10-1994w

short stack A stack of protocols with less than seven layers. *See also:* thin stack. (C) 610.7-1995

short-time-delay phase or ground trip element A direct-acting trip device element that functions with a purposely delayed action (measured in milliseconds). (SWG/PE) C37.100-1992

short-term exposure Exposure for durations less than the corresponding averaging time. (NIR) C95.1-1999

short-term settling time Measured from the mesial point (50%) of the output, the time at which the step response enters and subsequently remains within a specified error band around the final value. The final value is defined to occur at a specified time less than one second after the beginning of the step. (IM/WM&A) 1057-1994w

short-term timing instability *See:* aperture uncertainty.

short-time current (of an air switch) The current carried by a device, an assembly, or a bus for a specified short-time interval. *See also:* short-time rating; rated short-time withstand current. (SWG/PE/IA/PSP/TR) C37.100-1992, 1015-1997, C57.12.44-1994

short-time current rating The designated rms current that a connector can carry for a specified time under specified conditions. (T&D/PE) 386-1995

short-time current ratings (of a switching device or assembly) The maximum rms total currents, including the transient direct-current component, that the device or assembly is required to carry successfully for specified short-time intervals. (SWG/PE) C37.30-1992s

short-time current tests (high-voltage switchgear) Tests that consist of the application of a current higher than the rated continuous current for specified short periods to determine the adequacy of the device to withstand short-circuit currents for the specified short times. (SWG/PE) C37.40-1981s

short-time delay An intentional time delay in the tripping of a circuit-breaker which is above the overload pickup setting. (IA/PSP) 1015-1997

short-time delay phase A direct-acting trip device element that functions with a purposely delayed action (measured in milliseconds). (IA/PSP) 1015-1997

short-time duty (power and distribution transformers) A duty that demands operation at a substantially constant current for a short and definitely specified time. (NESC/PE/TR) C57.12.80-1978r, [86], C57.16-1996

short-time overload rating (rotating electric machinery) The output that the machine can sustain for a specified time starting hot under the conditions of Section 4 of IEEE Std 11-1980, without exceeding the limits of temperature rise of Section 5. (PE/EM) 11-1980r

short-time pickup The current at which the short-time delay function is initiated. (IA/PSP) 1015-1997

short-time rating (1) (packaging machinery) The rating that defines the load which can be carried for a short and definitely specified time, the machine apparatus, or device being at approximately room temperature at the time the load is applied. (IA/PKG) 333-1980w

(2) (power and distribution transformers) Defines the maximum constant load that can be carried for a specified short time without exceeding established temperature-rise limitations, under prescribed conditions. (PE/TR) C57.12.80-1978r

(3) (of diesel-generator unit) The electric power output capability that the diesel-generator unit can maintain in the service environment for 2 h in any 24 h period, without exceeding the manufacturer's design limits and without reducing the maintenance interval established for the continuous rating. *Note:* Operation at this higher rating does not limit the use of the diesel-generator unit at its continuous rating. (PE/NP) 387-1995

(4) (of a relay) The highest value of current or voltage or their product that the relay can stand, without injury, for specified short-time intervals (for alternating-current circuits, root-mean-square total value including the direct-current component is used). The rating recognizes the limitations imposed by both the thermal and electromagnetic effects. (SWG/PE/SWG-OLD) C37.100-1992

(5) A rating applied to a circuit-breaker that, for reason of system coordination, causes tripping of the circuit-breaker to be delayed beyond the time when tripping would be caused by an instantaneous element. *See also:* rated short-time withstand current; short-time current. (IA/PSP) 1015-1997

short-time test current (thyristor converter) The value of direct current that may be applied to a unit or section for a short period (seconds) following continuous operation at a specified lower dc value under specific conditions. (IA/IPC) 444-1973w

short-time thermal current rating (current transformer) The 1 s thermal current rating of a current transformer is the root-mean-square (rms) symmetrical primary current that can be carried for 1 s with the secondary winding short-circuited without exceeding in any winding the limiting temperature. (PE/TR) [57]

short-time waveform distortion (linear waveform distortion) Distortion of time components from 125 ns to 1 μs; that is, time components of the short-time domain. (PE/BT/NP) 382-1980s, 511-1979w

short-time (symmetrical) withstand current (1) (of an air switch) The current carried by a device, an assembly, or a bus for a specified short-time interval. (SWG/PE) C37.34-1994

(2) An abnormal power-frequency current, the initial portion of which may have a dc offset (expressed in rms symmetrical amperes) that a switch is required to carry. (SWG/PE) 1247-1998

short-time (symmetrical) withstand current duration The maximum duration of short-time (symmetrical) withstand current that a switch is required to carry. (SWG/PE) 1247-1998

short-wave fade-out *See:* sudden ionospheric disturbance.

shot noise (1) (fiber optics) Noise caused by current fluctuations due to the discrete nature of charge carriers and random or unpredictable (or both) of charged particles from an emitter. *Note:* There is often a (minor) inconsistency in referring to shot noise in an optical system: many authors refer to shot noise loosely when speaking of the mean square shot noise current (amp^2) rather than noise power (watts). *See also:* quantum noise. (Std100) 812-1984w

(2) *See also:* noise. (LM/C) 802.7-1989r

shoulder The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles for emergency use and for lateral support of base and surface course. (NESC) C2-1997

shoulder lobe A radiation lobe that has merged with the major lobe, thus causing the major lobe to have a distortion that is shoulder-like in appearance when displayed graphically. *Synonym:* vestigial lobe. (AP/ANT) 145-1993

show window Any window used or designed to be used for the display of goods or advertising material, whether it is fully or partly enclosed or entirely open at the rear and whether or not it has a platform raised higher than the street floor level. (NESC/NEC) [86]

shrink link (rotating machinery) A bar with an enlarged head on each end for use like a rivet but slipped into place after expansion by heat. It tightens on cooling by shrinkage only. (IA/APP) [90]

Shugart Associates System Interface *See:* small computer systems interface.

shunt (1) (general) A device having appreciable resistance or impedance connected in parallel across other devices or apparatus, and diverting some (but not all) of the current from it. Appreciable voltage exists across the shunted device or apparatus and an appreciable current may exist in it. (Std100) 270-1966w

(2) (air switch) A flexible electrical conductor comprised of braid, cable, or flat laminations designed to conduct current around the mechanical joint between two conductors. (SWG/PE) C37.100-1992

shunt capacitance *See:* auxiliary capacitance.

shunt capacitor bank current Current, including harmonics, supplied to a shunt capacitor bank. *Note:* Current is expressed in rms amperes. (SWG/PE) C37.100-1992

shunt control A method of controlling motors employing the shunt method of transition from series to parallel connections of the motors. *See also:* multiple-unit control. (EEC/PE) [119]

shunt excitation (emergency and standby power) A source of generator field excitation power taken from the generator output, normally through power potential transformers connected directly or indirectly to the generator output terminals. (IA/PSE) 446-1995

shunt-fed vertical antenna (1) A vertical antenna connected to ground at the base and excited (or connected to a receiver) at a point suitably positioned above the grounding point. (T&D/PE) 539-1990

(2) A vertical antenna that is connected directly to ground at its base and whose feed line connects to the antenna between ground and a point suitably positioned above the base. (AP/ANT) 145-1993

shunt filter A type of filter that reduces harmonics by providing a low-impedance path to shunt the harmonics from the source away from the system to be protected. (IA/SPC) 519-1992

shunt gap An intentional gap(s) between spaced electrodes that is electrically in parallel with one or more valve elements. (SPD/PE) C62.11-1999

shunting or discharge switch (power system device function numbers) A switch that serves to open or to close a shunting circuit around any piece of apparatus (except a resistor), such as a machine field, a machine armature, a capacitor, or a reactor. *Note:* This excludes devices that perform such shunting operatings as may be necessary in the process of starting a machine by devices 6 or 42 [a starting circuit breaker or a running circuit breaker], or their equivalent, and also excludes device function 73 [a load-resistor contactor], which serves for the switching of resistors. (SUB/PE) C37.2-1979s

shunting transition *See:* shunt transition.

shunt leads (instrument) Those leads that connect a circuit of an instrument to an external shunt. The resistance of these leads is taken into account in the adjustment of the instrument. *See also:* auxiliary device to an instrument; instrument. (EEC/AII) [102]

shunt loading Loading in which reactances are applied in shunt across the conductors of a transmission circuit. *See also:* loading. (EEC/PE) [119]

shunt noninterfering fire-alarm system A manual fire-alarm system employing stations and circuits such that, in case two or more stations in the same premises are operated simultaneously, the signal from the operated box electrically closest to the control equipment is transmitted and other signals are shunted out. *See also:* protective signaling. (EEC/PE) [119]

shunt reactor (power and distribution transformers) A reactor intended for connection in shunt to an electric system for the purpose of drawing inductive current. *Note:* The normal use for shunt reactors is to compensate for capacitive currents from transmission lines, cable, or shunt capacitors. The need for shunt reactors is most apparent at light load. (PE/TR) C57.117-1986r, C57.21-1981s, C57.12.80-1978r

shunt regulator (power supplies) A device placed across the output that controls the current through a series dropping resistance to maintain a constant voltage or current output. (AES) [41]

shunt release A release energized by a source of voltage. *Note:* The voltage may be derived either from the main circuit or from an independent source. *Synonym:* shunt trip. (SWG/PE/TR) C37.100-1992, C57.12.44-1994

shunt snubber (ac adjustable-speed drives) Circuit elements, usually including a capacitor and a resistor connected in shunt with a switching device to limit the rate of rise of voltage or the peak voltage across the device (or both) when switching from a conducting to a blocking state or when subjected to an external voltage transient. *See also:* snubber. (IA/ID/SPC) 995-1987w, 936-1987w

shunt tee junction *See:* H-plane tee junction.

shunt transformer A transformer in which the primary winding is connected in shunt with a power-supply circuit, and that transfers energy to another circuit at the same or different voltage from that of the primary circuit. *See also:* transformer. (PE/TR) [57]

shunt transition (shunting transition) A method of changing the connection of motors from series to parallel in which one motor, or group of motors, is first shunted or short circuited, then open circuited, and finally connected in parallel with the other motor or motors. *See also:* multiple-unit control. (PE/EEC) [119]

shunt trip *See:* shunt release.

shunt-trip device A trip mechanism energized by a source of voltage that may be derived either from the main circuit or from an independent source. (IA/PSP) 1015-1997

shunt-trip recloser A recloser in which the tripping mechanism, by releasing the holding means, permits the main contacts to open, with both the tripping mechanism and the contact opening mechanism deriving operating energy from other than the main circuit. (SWG/PE) C37.100-1992

shunt winding *See:* common winding.

shunt-wound A qualifying term applied to a direct-current machine to denote that the excitation is supplied by a winding connected in parallel with the armature in the case of a motor, with the load in the case of a generator, or is connected to a separate source of voltage. (EEC/PE) [119]

shunt-wound generator A dc generator in which the entire field excitation is ordinarily derived from one winding consisting of many turns with a relatively high resistance. This winding is connected in parallel with the armature circuit in a self-excited generator. In a separately excited generator, the winding is connected to the load side of another generator or another dc source. (IA/MT) 45-1998

shunt-wound motor A dc motor in which the field circuit is connected either in parallel with the armature circuit or to a separate source of excitation voltage. (IA/MT) 45-1998

Shupe effect A time-variant non-reciprocity due to temperature changes along the length of the fiber. (AES) 952-1997

shutDown The lowest-power operating mode of RamLink slaves, in which all signals, except for a bused *linkOn* signal, may be ignored. (C/MM) 1596.4-1996

shutOff An unpowered state of RamLink slaves, in which a drop in the supply voltage may have caused a loss of volatile memory state. The contents of DRAM storage become undefined; storage on special RAM-devices (such as FLASH memory) may be unaffected by the shutOff state. (C/MM) 1596.4-1996

shutter (1) A protective covering used to close, or to close partially, an opening in a stator frame or end shield. In general, the word shutter will be preceded by the name of the part to which it is attached. As used for an electric machine, a shutter is rigid and hence not adjustable. *See also:* stator. (IA/EM/APP) [90]

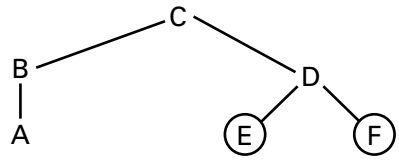
(2) (of a switchgear assembly) A device that is automatically operated to completely cover the stationary portion of the primary disconnecting devices when the removable element is either in the disconnected position, test position, or has been removed. (SWG/PE) C37.100-1992

shuttle car A vehicle on rubber tires or caterpillar treads and usually propelled by electric motors, electric energy for which is supplied by a diesel-driven generator, by storage batteries, or by a power distribution system through a portable cable. Its chief function is the transfer of raw materials, such as coal and ore, from loading machines in trackless areas of a mine to the main transportation system. (EEC/PE) [119]

shuttle car, explosion-tested *See:* explosion-tested shuttle car.

SI *See:* International System of Units; segment interconnect; shift-in character; units and letter symbols.

sibling node Relative to a node in a tree, a second node that has the same immediate predecessor or parent node. (See the corresponding figure.) *Synonym:* brother; sister.



Nodes E and F are sibling nodes

sibling node

(C) 610.5-1990w

side The physical portion of a cartridge that is accessible by a drive after one mount operation. A side contains one or more partitions. (C/SS) 1244.1-2000

side A By convention, the side of the module closest to the connector "A" row, and the same side as the keying pins. (C/BA) 1101.4-1993, 1101.3-1993

side B By convention, the side of the module farthest from the connector "A" row, and the opposite side from the keying pins. (C/BA) 1101.4-1993, 1101.3-1993

side back light (illuminating engineering) Illumination from behind the subject in a direction not parallel to a vertical plane through the optical axis of the camera. (EEC/IE) [126]

sideband attenuation That form of attenuation in which the transmitted relative amplitude of some component(s) of a modulated signal (excluding the carrier) is smaller than that produced by the modulation process. *See also:* wavefront. (AP/ANT) 145-1983s

sideband null (navigation aids) (rectilinear navigation system) The surface of position along which the resultant energy from a particular pair of sideband antennas is zero. (AES/GCS) 172-1983w

sideband-reference glide slope (instrument landing systems) (navigation aids) A modified null reference glide-slope antenna system in which the upper (sideband) antenna is replace with two antennas, both at lower heights, and fed out of phase, so that a null is produced at the desired glide-slope angle. *Note:* This system is used to reduce unwanted reflections of energy into the glide-slope sector at locations where rough terrain exists in front of the approach end of the runway, by producing partial cancellation of energy at low elevation angles. (AES/GCS) 172-1983w

sidebands (1) (A) The frequency bands on both sides of the carrier frequency within which fall the frequencies of the wave produced by the process of modulation. **(B)** The wave components lying within such bands. *Note:* In the process of amplitude modulation with a sine-wave carrier, the upper sideband includes the sum (carrier plus modulating) frequencies: the lower sideband includes the difference (carrier minus modulating) frequencies. *See also:* amplitude modulation; radio receiver. (AP/ANT) 145-1983
(2) (data transmission) A band of frequencies containing components of either the sum (upper side band) or difference (lower sideband) of the carrier and modulation frequencies. (PE) 599-1985w

sideband suppression (power-system communication) A process that removes the energy of one of the sidebands from the modulated carrier spectrum. (AP/ANT) [35]

side-break switch One in which the travel of the blade is in a plane parallel to the base of the switch. (SWG/PE) C37.100-1992

side circuit (data transmission) A circuit arranged for deriving a phantom circuit. *Note:* In the case of two-wire side circuits, the conductors of each side circuit are placed in parallel to form a side of the phantom circuit. In the case of four-wire side circuits, the lines of the two side circuits that are arranged for transmission in the same direction provide a one-way phantom channel for transmission in that same direction, the two conductors of each line being placed in parallel to provide a side for that phantom channel. Similarly, the conductors of the other two lines provide a phantom channel for transmission in the opposite direction. (PE) 599-1985w

side-circuit loading coil A loading coil for introducing a desired amount of inductance in a side circuit and a minimum amount of inductance in the associated phantom circuit. *See also:* loading. (EEC/PE) [119]

side-circuit repeating coil (side-circuit repeat coil) A repeating coil that functions simultaneously as a transformer at a terminal of a side circuit and as a device for superposing one side of a phantom circuit on that side circuit. (PE/EEC) [119]

side effect (1) (software) Processing or activities performed, or results obtained, secondary to the primary function of a program, subprogram, or operation. *See also:* subprogram; program; function. (C/SE) 729-1983s
(2) Loosely speaking, an expression has a side effect if it performs some observable action in addition to returning a value. For example, a variable assignment is a side effect. (C/MM) 1178-1990r

sideflash (lightning) A spark occurring between nearby metallic objects or from such objects to the lightning protection system or to ground. *See also:* direct-stroke protection. (T&D/PE/NFPA) [10], [114]

side flashover (lightning) A flashover of insulation resulting from a direct lightning stroke that bypasses the overhead ground wire and terminates on a phase conductor of a transmission line. *See also:* direct-stroke protection. (T&D/PE) [10]

side frequency One of the frequencies of a sideband. *See also:* amplitude modulation. (AP/ANT) 145-1983s, [123]

side lobe A radiation lobe in any direction other than that of the major lobe. *See also:* minor lobe; maximum relative side lobe level; back lobe; relative side lobe level; relative cross-polar side lobe level; mean side lobe level. (AP/ANT) 145-1993

sidelobe blanker A device that employs an auxiliary wide-angle antenna and receiver to sense whether a received pulse originates in the sidelobe region of the main antenna and if so, to gate it from the output signal. (AES) 686-1997

sidelobe canceler A device that employs one or more auxiliary antennas and receivers to allow linear subtraction of interfering signals from the desired output if they are sensed to originate in the sidelobes of the main antenna. (AES) 686-1997

side lobe level, maximum relative *See:* maximum relative side lobe level.

side lobe level, relative *See:* relative side lobe level.

sidelobes Normally undesired amplitude responses that lie outside a specified frequency or time interval. These amplitude responses are inherently related to the impulse response of the device and not to other effects, such as bulk-wave, harmonic, multiple transit echoes, or direct electromagnetic feedthrough responses. (UFFC/FT) 1037-1992w

side lobe suppression Any process, action, or adjustment to reduce the level of the side lobes or to reduce the degradation of the intended antenna system performance resulting from the presence of side lobes. (AP/ANT) 145-1993

side-lock Spurious synchronization in an automatic frequency synchronizing system by a frequency component of the applied signal other than the intended component. *See also:* television. (BT/AV) [34]

sidelooking airborne radar (SLAR) A high-resolution (in both range and angle) airborne imaging radar, without synthetic-aperture radar (SAR) processing, directed sidelooking (perpendicular to the line of flight) using large, narrow-beamwidth antennas. (AES) 686-1997

sidelooking radar A ground mapping radar used aboard aircraft involving the use of a fixed antenna beam pointing out the side of an aircraft either abeam or squinted with respect to the aircraft axis. The beam is usually a vertically oriented fan beam having a narrow azimuth width. The narrow azimuth

resolution can either be obtained with a long aperture mounted along the axis of the aircraft [sidelooking airborne radar (SLAR)] or by the use of synthetic-aperture radar (SAR) processing. (AES/GCS) 686-1997, 172-1983w

side marker lights (illuminating engineering) Lamps indicating the presence of a vehicle when seen from the front and sometimes serving to indicate its width. When seen from the side they may also indicate its length. (EEC/IE) [126]

side panel (rotating machinery) A structure enclosing or partly enclosing one side of a machine. (PE) [9]

sidereal (navigation aids) Of or pertaining to the stars. (AES/GCS) 172-1983w

sidereal period (communication satellite) The time duration of one orbit measured relative to the stars. (COM) [19]

side relay armature An armature that rotates about an axis parallel to that of the core, with the pole face on a side surface of the core. (EEC/REE) [87]

side stream scrambling A data scrambling technique, used by 100BASE-T2, to randomize the sequence of transmitted symbols and avoid the presence of spectral lines in the signal spectrum. Synchronization of the scrambler and descrambler of connected PHYs is required prior to operation. (C/LM) 802.3-1998

side thrust (disk recording) (skating force) The radial component of force on a pickup arm caused by the stylus drag. *See also:* phonograph pickup. (SP) [32]

sidetone The acoustic output of a telephone set receiver due to an acoustic input to the transmitter of the same telephone set. *Note:* Where the handset is mounted on a test fixture that includes the artificial mouth and artificial ear, the definition includes transmission through the handset proper; there may be also some vibration effect that is expected to be insignificant for handsets of modern design. There are two types of sidetone to be considered: **listener sidetone** and **talker sidetone**. (COM/TA) 269-1992

sidetone objective loudness rating (loudness ratings of telephone connections)

$$\mathrm{SOLR} = -20\log_{10}\frac{S_E}{S_M}$$

where

S_M = sound pressure at the mouth reference point (in pascals)

S_E = sound pressure at the ear reference point (in pascals)

(COM/TA) 661-1979r

sidetone path loss (telephony) The difference in dB of the acoustic output level of the receiver of a given telephone set to the acoustic input level of the transmitter of the same telephone set. (COM/TA) 269-1971w

sidetone telephone set A telephone set that does not include a balancing network for the purpose of reducing sidetone. *See also:* telephone station. (EEC/PE) [119]

sidewalk elevator A freight elevator that operates between a sidewalk or other area exterior to the building and floor levels inside the building below such area, that has no landing opening into the building at its upper limit of travel, and that is not used to carry automobiles. *See also:* elevator. (EEC/PE) [119]

side-wall pressure The crushing force exerted on a cable during installation. (NESC) C2-1997

sideways sum (mathematics of computing) A sum obtained by adding the digits of a numeral without regard to position or significance. (C) 1084-1986w

siemens (metric practice) The electric conductance of a conductor in which a current of one ampere is produced by an electric potential difference of one volt. (QUL) 268-1982s

sievert (metric practice) The dose equivalent when the absorbed dose of ionizing radiation multiplied by the dimensionless factors Q (quality factor) and N (product of any other multiplying factors) stipulated by the International Commission on Radiological Protection is one joule per kilogram. (QUL) 268-1982s

sifting sort *See:* bubble sort.

sigma (σ) The term sigma designates a group of telephone wires, usually the majority or all wires of a line, that is treated as a unit in the computation of noise or in arranging connections to ground for the measurement of noise or current balance ratio. (PE/EEC) [119]

sign (1) (power or energy) Positive, if the actual direction of energy flow agrees with the stated or implied reference direction: negative, if the actual direction is opposite to the reference direction. *See also:* network analysis. (Std100) 270-1966w

(2) (test, measurement, and diagnostic equipment) The symbol that distinguishes positive from negative numbers. (MIL) [2]

(3) *See also:* electric sign. (NESC) [86]

signal (1) (signals and paths) (microcomputer system bus) The physical representation of data. (MM/C) 796-1983r

(2) (signals and paths, 696 interface devices) The physical representation which conveys data from one point to another. For the purpose of IEEE Std 696-1983, this applies to digital electrical signals only. (MM/C) 696-1983w

(3) (A) (data transmission) A visual, audible or other indication used to convey information. **(B) (data transmission)** The intelligence, message or effect to be conveyed over a communication system. **(C) (data transmission)** A signal wave; the physical embodiment of a message. (PE/PSCC) 599-1985

(4) (overhead-power-line corona and radio noise) The intelligence, message, or effect conveyed over a communication system. (T&D/PE) 539-1990

(5) (programmable instrumentation) The physical representation of information. *Note:* For the purposes of IEEE Std 488.1-1987, this term refers to digital electrical signals only. (IM/AIN) 488.1-1987r

(6) (computers) The event or phenomenon that conveys data from one point to another. (C) [20], [85]

(7) Information about a variable that can be transmitted in a system. (IA/ICTL/IAC) [60]

(8) (telephone switching systems) An audible, visual or other indication of information. (C) [85]

(9) A phenomenon (visual, audible, or otherwise) used to convey information. The signal is often coded, such as a modulated waveform, so that it requires decoding to be intelligible. (CAS) [13]

(10) (SBX bus) The physical representation of a logical value. (C/MM) 959-1988r

(11) (STEbus) The physical representation of data. (C/MM) 1000-1987r

(12) Any communication between message-based devices consisting of a write to a signal register. (C/MM) 1155-1992

(13) A measurable quantity (e.g., a voltage) which varies in time in order to transmit information. A signal propagates along a wire or an optic fiber. It is interpreted as a sequence of bits, which is grouped into a sequence of characters by the character layer of the protocol stack. Signals are generated by a link output and are absorbed by a link input. (C/BA) 1355-1995

(14) In networking, an electrical pulse that conveys information through a transmission medium. *See also:* baseband signaling; digital signal; analog signal; broadband signaling; out-of-band signaling. (C) 610.7-1995

(15) (A) A variation of a physical quantity, used to convey data. **(B)** A time-dependent value attached to a physical phenomenon and conveying data. (C/Std100) 610.10-1994

(16) A mechanism by which a process may be notified of, or affected by, an event occurring in the system. Examples of such events include hardware exceptions and specific actions by processes or threads. The term *signal* is also used to refer to the event itself. (C/PA) 9945-1-1996, 9945-2-1993

(17) (A) The behavior controlled or observed by a test resource. **(B)** A visual, audible, or other indication used to convey information. (SCC20) 1226-1998

(18) A point in the design from which a stimulus may be directly applied or a response directly measured. (C/TT) 1450-1999

(19) A mechanism by which a process may be notified of, or affected by, an event occurring in the system. Examples of such events include hardware exceptions and specific actions by processes. The term *signal* is also used to refer to the event itself. (C) 1003.5-1999

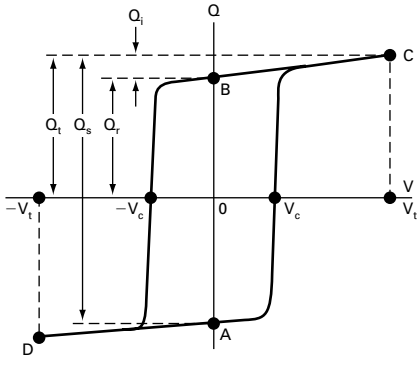
signal, actuating *See:* actuating signal.

signal aspect The appearance of a fixed signal conveying an indication as viewed from the direction of an approaching train: the appearance of a cab signal conveying an indication as viewed by an observer in the cab. (EEC/PE) [119]

signal assertion A) The act of driving a signal to the true state. B) The act of driving a bus of signals to the correct pattern of ones and zeros. (C/BA) 1496-1993w

signal back light A light showing through a small opening in the back of an electrically lighted signal, used for checking the operation of the signal lamp. (EEC/PE) [119]

signal charge The charge that flows when the condition of the device is changed from that of zero applied voltage (after having previously been saturated with either a positive or negative voltage) to at least that voltage necessary to saturate in the reverse sense. *Note:* The signal charge Q_s equals the sum of Q_r and Q_t, as illustrated in the corresponding figure. It is dependent on the magnitude of the applied voltage, which should be specified in describing this characteristic of ferroelectric devices. *See also:* ferroelectric domain.



Hysteresis loop for a ferroelectric device.

signal charge

(UFFC) 180w

signal circuit (1) Any electric circuit that supplies energy to an appliance that gives a recognizable signal. Such circuits include circuits for door bells, buzzers, code-calling systems, signal lights, and the like. *See also:* appliance. (NESC) [86]

(2) (protective relay system) Any circuit other than input voltage circuits, input current circuits, power supply circuits, or those circuits that directly or indirectly control power circuit breaker operation. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

(3) (protective relay system) Any circuit other than an input voltage circuit, input current circuit, power supply circuit, or an output circuit. (PE/PSR) C37.90.1-1989r

signal conditioning Sensor signal processing involving operations such as amplification, compensation, filtering, and normalization. (IM/ST) 1451.2-1997

signal contrast (facsimile) The ratio expressed in decibels between white signal and black signal. *See also:* facsimile signal. (COM) 168-1956w

signal converter (test, measurement, and diagnostic equipment) A device for changing a signal from one form or value to another form or value. (MIL) [2]

signal current (diode-type camera tube) The change in target current which occurs when the target is irradiated with photons, or electrons, compared to the case where no radiation is incident on the target. (ED) 503-1978w

signal decay time (measuring the performance of tone address signaling systems) The time interval between the end of the signal present condition and the beginning of the signal off condition at the end of the signal under consideration. (COM/TA) 752-1986w

signal decorrelation time *See:* decorrelation time.

signal delay The transmission time of a signal through a network. The time is always finite, may be undesired, or may be purposely introduced. *See also:* oscillograph; delay line. (IM/HFIM) [40]

signal, difference *See:* differential signal.

signal distance (1) (computers) The number of digit positions in which the corresponding digits of two binary words of the same length are different. *See also:* hamming distance. (COM/C) 312-1977w, [20]

(2) (mathematics of computing) *See also:* hamming distance. (C) 1084-1986w

signal distributing (telephone switching systems) Delivering of signals from a common control to other circuits. (COM) 312-1977w

signal-driven mode A mode of operation in which the signal `POSIX_Signals.Signal_IO` is sent to the owner of a socket whenever an I/O operation becomes possible on that socket. In this mode, `POSIX_Signals.Signal_IO` is sent when additional data could be sent on the socket, when new data arrives to be received on a socket, or a state transition occurs that would allow a send or receive call to return status without blocking. Signal-driven mode is enabled by setting the `POSIX_IO.Signal_When_Socket_Ready` flag on the socket and disabled by resetting the `POSIX_IO.Signal_When_Socket_Ready` flag. The default mode for signal driven mode is disabled. (C) 1003.5-1999

signal duration (measuring the performance of tone address signaling systems) The time interval during which a signal present condition exists continuously. (COM/TA) 752-1986w

signal electrode (camera tubes) An electrode from which the signal output is obtained. *See also:* electrode. (BT/AV) [34]

signal electronics power (thyristor converter) The power used for the analog or digital system power supplies, or both, required for the thyristor converter control and protection systems. (IA/IPC) 444-1973w

signal element (1) (unit interval) (data transmission) The part of a signal that occupies the shortest interval of signaling code. It is considered to be of unit duration in building up signal combinations. (PE) 599-1985w

(2) The logical signal during one half of a bit time which may take on the values of Logic_1 or Logic_0. (C/LM) 8802-5-1998

signal, error *See:* error signal.

signal, feedback *See:* feedback signal.

signal flow graph (network analysis) A network of directed branches in which each dependent node signal is the algebraic sum of the incoming branch signals at that node. *Note:* Thus,

$$x_1 t_{1k} + x_2 t_{2k} + \ldots + x_n t_{nk} = x_k$$

at each dependent node k, where t_{jk} is the branch transmittance of branch jk. (CAS) 155-1960w

signal frequency shift (frequency-shift facsimile system) The numerical difference between the frequencies corresponding to white signal and black signal at any point in the system. *See also:* facsimile signal. (COM) 168-1956w

signal generator A shielded source of voltage or power, the output level and frequency of which are calibrated, and usually variable over a range. *Note:* The output of known waveform is normally subject to one or more forms of calibrated modulation. (IM/HFIM) [40]

signal ground For the purpose of this guide, shall be the grounding system to which signals are referenced. (PE/EDPG) 1050-1996

signal identifier (spectrum analyzer) A means to identify the frequency of the input when spurious responses are possible. A front panel control used to identify the input frequency when spurious responses are present. (IM) 748-1979w

signal indication The information conveyed by the aspect of a signal. (EEC/PE) [119]

signaling (1) (data transmission) The production of an audible or visible signal at a station or switchboard by means of an alternating or pulsating current. In a telephone system, any of several methods used to alert subscribers or operators or to establish and control connections. (PE) 599-1985w

(2) (telephone switching systems) The transmission of address and other switching information between stations and central offices and between switching entities. (COM) 312-1977w

(3) The exchange of information specifically concerned with the establishment and control of connections, and the transfer of user-to-user and management information in a circuit-switched network. (C/LM) 802.9a-1995w

(4) The exchange of information specifically concerned with the establishment and control of connections, and the transfer of user-to-user and management information in a telecommunication network, e.g., in a PPSN. (LM/C/COM) 8802-9-1996

signaling, analog *See:* analog signaling.

signaling and doorbell transformers (power and distribution transformers) Step-down transformers (having a secondary of 30 V or less), generally used for the operation of signals, chimes, and doorbells. (PE/TR) C57.12.80-1978r

signaling, binary *See:* binary signaling.

signaling circuit Any electric circuit that energizes signaling equipment. (NESC/NEC) [86]

signaling light (illuminating engineering) A projector used for directing light signals toward a designated target zone. (EEC/IE) [126]

signal, input *See:* input signal.

signal interface The interface between a test device and the unit under test (UUT) through which signals pass. Stimuli pass from the test device to the UUT. Measured signals generally pass from the UUT to a test device. (SCC20) 993-1997

signal integration The summation of a succession of signals by writing them at the same location on the storage surface. *See also:* storage tube. (ED) 158-1962w

signal interphasing A method of simultaneously overlapping multiple transmission signals to achieve higher transmission rates. (C) 610.7-1995

signal layer The layer of the protocol stack at which signals are specified. (C/BA) 1355-1995

signal level (1) (signals and paths) (696 interface devices) The magnitude of a signal when considered in relation to an arbitrary reference magnitude. (IM/MM/C/AIN) 488.1-1987r, 696-1983w

(2) (SBX bus) The relative magnitude of a signal when compared to a reference. (MM/C) 959-1988r

(3) (STEbus) The relative magnitude of a signal when considered in relation to an arbitrary reference. The unit of representation is the volt. (C/MM/C/MM) 796-1983r, 1000-1987r

(4) (broadband local area networks) The measured voltage or power of a signal usually stated in dBmV. (LM/C) 802.7-1989r

signal line (1) (programmable instrumentation) (696 interface devices) (signals and paths) (microcomputer system bus) One of a set of signal conductors in an interface system used to transfer messages among interconnected devices. (IM/C/MM/AIN) 488.1-1987r, 796-1983r, 696-1983w, 959-1988r

(2) (STEbus) One of a set of signal conductors in an interface system used to transfer data among interconnected boards. (MM/C) 1000-1987r

(3) (NuBus) A conductor on the backplane other than ground, or power. (C/MM) 1196-1987w

(4) An electrical or optical information-carrying facility, such as a differential pair of wires or an optical fiber, with associated transmitter and receiver, carrying binary true/false logic values. (C/MM) 1596-1992

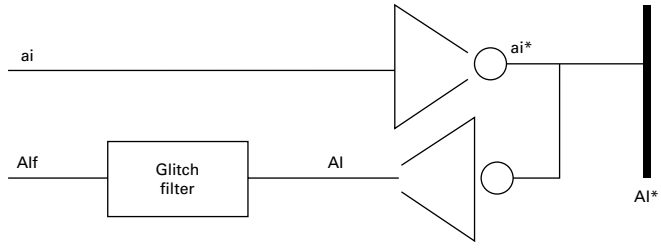
(5) An electrical or optical information-carrying facility, such as a differential pair of wires or an optical fiber, with associated driver and receiver, carrying binary true/false logic values. (C/MM) 1596.3-1996

signal lines The passive transmission lines through which the signal passes from one to another of the elements of the signal transmission system. *See also:* signal. (IE) [43]

signal names (1) Where a group of bus lines are represented by the same letters, the lines within the group are numbered; e.g., AD0*, AD1*, AD2*, etc. In order to represent a group of lines or signals in more convenient form, notation such as AD[63..0]* is used. Also, in these examples, the notation AD[ ]* is used to refer to all of the lines within the group. (C/BA) 896.2-1991w, 10857-1994, 896.4-1993w

(2) The simplified alphanumeric notation used to represent a group of lines or signals. For example, where a group of bus lines are represented by the same letters, the lines within the group are numbered, e.g., **AD0**, **AD1**, **AD2**, etc. In order to represent a group of lines or signals in more convenient form, the notation **AD[31..0]** is used. Also, the notation **AD[ ]** is used to refer to all of the lines within the group. The signal that a module applies to the module-side input of its driver is designated by a lowercase label, e.g., **ai**. The signal that a specific module applies to a bus line is designated by a lowercase label with an asterisk, e.g., **ai***. The signal that appears on a bus line as the result of the combined signals applied to it by all modules is designated by an uppercase label with an asterisk, e.g., **AI***. When appended to a signal name, the suffix "f" (filtered) refers to the bus line signal after it has passed through a receiver and a wire-or glitch filter (integrator). For example, **AIf** refers to the signal on the **AI*** line, after it has passed through an inverting receiver to become **AI** and the wire-or glitch filter to become **AIf**. See the figure below. (C/BA) 896.10-1997

signal negation The act of driving a signal to the false state. (C/BA) 1496-1993w



Signal naming convention

Signal names

signal off (measuring the performance of tone address signaling systems) Any condition where all the constituent tones of a tone signaling system are below a specified OFF level for each tone. In a single-tone signaling system, tone off and signal off are synonymous terms. *Note:* During a signal off condition, tones that are not used in the signaling system may be at a higher level. (COM/TA) 752-1986w

signal operation (elevators) Operation by means of single buttons or switches (or both) in the car, and up-or-down direction buttons (or both) at the landings, by which predetermined landing stops may be set up or registered for an elevator or for a group of elevators. The stops set up by the momentary actuation of the car buttons are made automatically in succession as the car reaches those landings, irrespective of its direction of travel or the sequence in which the buttons are actuated. The stops set up by the momentary actuation of the up-and-down buttons at the landing are made automatically by the first available car in the group approaching the landing in the corresponding direction, irrespective of the sequence in which the buttons are actuated. With this type of operation, the car can be started only by means of a starting switch or button in the car. *See also:* control. (EEC/PE) [119]

signal, output *See:* output signal.

signal output current (camera tubes or phototubes) The absolute value of the difference between output current and dark current. *See also:* phototube. (ED/BT/AV) 161-1971w, [34], [45]

signal overload point (electronic navigation) The maximum input signal amplitude at which the ratio of output to input is observed to remain within a prescribed linear operating range. *See also:* navigation. (AES/RS) 686-1982s, [42]

signal parameter (programmable instrumentation) That parameter of an electrical quantity whose values or sequence of values convey information. (IM/MM/C/AIN) 488.1-1987r, 1000-1987r, 796-1983r, 696-1983w

signal phase The initial phase of an exception operation in which all agents are notified of an error condition. *See also:* exception operation. (C/MM) 1296-1987s

signal present (measuring the performance of tone address signaling systems) Any condition where the presence of tone or tones is sufficient to be recognized as a valid digital or supervisory signal. In a single-tone signaling system, tone present and signal present are synonymous terms; in a two-tone signaling system the signal present state exists where two and only two tones each meet the signal present condition, and the two tones represent a valid combination. (COM/TA) 752-1986w

signal processing antenna system An antenna system having circuit elements associated with its radiating element(s) that perform functions such as multiplication, storage, correlation, and time modulation of the input signals. (AP/ANT) 145-1993

signal propagation delay or transmission delay Total time for a signal to pass through the switching system. For digital-to-digital interfaces (DS1) where bit integrity is maintained, the delay is the time elapsed between transmission and reception of the bit that starts a known test pattern. For analog-to-analog, digital-to-analog, or analog-to-digital transmission, T1Q1 (a study group of the Exchange Carriers Standards Association) proposes that the delay be measured as the shift in time of the envelope of a 50% amplitude modulated test signal (or its digital equivalent) at the carrier frequency of minimum delay in the voiceband channel. (COM/TA) 973-1990w

signal purity (network analyzers) A measure of freedom from frequency components other than the desired measurement frequency. It includes harmonics, subharmonics, spurious mixer products, and unwanted components of signal or local oscillator leakage. *Note:* The resulting error in measurement is a function of the detection system and of the frequency response of the network under test, as well as the signal purity. (IM/HFIM) 378-1986w

signal quality error heartbeat A signal from the transceiver to a node peripheral indicating that the transceiver is functioning properly. *Note:* This term is contextually specific to IEEE Std 802.3. (C) 610.7-1995

signal queueing When queueing is enabled for a signal, occurrences of that signal are queued in FIFO order and information is included if the signal is from a source that supplies information. Otherwise, the signal queue may be only one occurrence deep and it is implementation defined whether the data are included. Support for signal queueing is governed by the Realtime Signals option. Not all signals may support queueing. (C) 1003.5-1999

signal, rate *See:* rate signal.

signal, reference input *See:* reference input signal.

signal reference structure A system of conductive paths among interconnected equipment that reduces noise-induced voltages to levels that minimize improper operation. Common configurations include grids and planes. (IA/PSE) 1100-1999

signal relay *See:* alarm relay.

signal release The act of removing electronic drive to a signal thereby placing the driver in a high-impedance condition. Release of an SBus signal will leave the SBus signal in its last state unless the signal is specified to have bias circuits attached that return the signal to a specified state. (C/BA) 1496-1993w

signal repeater lights A group of lights indicating the signal displayed for humping and trimming. (EEC/PE) [119]

signal, return *See:* return signal.

signal rise time (measuring the performance of tone address signaling systems) The time interval between the end of the signal off condition and the beginning of the signal present condition at the beginning of a tone signal. (COM/TA) 752-1986w

signal, sampled *See:* sampled signal.

signal-shaping amplifier (telegraph practice) An amplifier and associated electric networks inserted in the circuit, usually at the receiving end of an ocean cable, for amplifying and improving the waveshape of the signals. *See also:* telegraphy. (EEC/PE) [119]

signal-shaping network (wave-shaping set) An electric network inserted (in a telegraph circuit) for improving the waveshape of the received signals. *See also:* telegraphy. (PE/EEC) [119]

signal shutter (illuminating engineering) A device which modulates a beam of light by mechanical means for the purpose of transmitting intelligence. (EEC/IE) [126]

signal skew The time difference a data bus may have relative to its corresponding strobe signal. Signal skew is a positive quantity when the strobe signal delay exceeds the bus signal delay. (C/BA) 896.2-1991w

signal state *See:* logic state.

signal threshold (dial-pulse address signaling systems) (telephony) The current or voltage value representing a transition between make and break states. The threshold may be expressed either as an absolute value (for example, 15 mA or 21 V) or as a percentage deviation between steady-state conditions (for example, the value which is 70% of the difference between make and break values, added to the off-hook value). Signaling detectors having hysteresis will have different signal threshold values for the make-break and break-make transition. (COM/TA) 753-1983w

signal-to-clutter ratio The ratio of target echo power to the power received from clutter sources lying within the same resolution element. (AES) 686-1997

signal-to-distortion ratio (C-notched noise) The ratio of input signal power to C-message weighted output distortion power. The signal level is measured with a holding tone (typically 1004 Hz) present with a wideband (200 Hz–10 kHz) level detector. The C-notch noise should be measured with a C-message filter after the holding tone has been reduced in am-

plitude by at least 50 dB with a 1010 Hz notch filter. (COM/TA) 973-1990w

signal-to-interference ratio The ratio of the magnitude of the signal to that of the interference or noise. *Note:* The ratio may be in terms of peak values or root-mean-square values and is often expressed in decibels. The ratio may be a function of the bandwidth of the system. *See also:* signal. (IE) [43]

signal-to-noise ratio (1) (video magnetic-tape recording systems) The ratio of the peak-to-peak amplitude of the video luminance signal from blanking level to reference white level (100 IRE units), 714 megavolts (mV) to the root-mean-square (rms) amplitude of the random noise, expressed in decibels.

$$\mathrm{SNR} = 20\log_{10}\frac{E_V}{E_N}$$

where

E_V = peak-to-peak amplitude of the maximum video luminance component (714 mV)

E_N = rms amplitude of random noise.

Notes: 1. Unless otherwise specified, the definition for signal-to-noise is as defined here. (BT) 618-1984w

(2) (camera tubes) The ratio of peak-to-peak signal output current to root-mean-square noise in the output current. *Note:* Magnitude is usually not measured in tubes where the signal output is taken from target. *See also:* camera tube; television. (PE/EEC) [119]

(3) (television transmission) The signal-to-noise ratio at any point is the ratio in decibels of the maximum peak-to-peak voltage of the video television signal, including synchronizing pulse, to the root-mean-square voltage of the noise. *Note:* The signal-to-noise ratio is defined in this way because of the difficulty of defining the root-mean-square value of the video signal or the peak-to-peak value of random noise. *See also:* television. (EEC/PE) [119]

(4) (mobile communication) The ratio of a specified speech-energy spectrum to the energy of the noise in the same spectrum. *See also:* television. (VT) [37]

(5) (sound recording and reproducing system) The ratio of the signal power output to the noise power in the entire pass band. 191-1953w

(6) (digital delay line) Ratio of the peak amplitude of the output doublet to the maximum peak of any noise response (or signal) outside of the doublet interval. (Includes overshoot.) (UFFC) [22]

(7) (speech quality measurements) In decibels of a speech signal, the difference between its speech level and the noise level. 297-1969w

(8) (overhead-power-line corona and radio noise) The ratio of the value of the signal to that of the noise. *Notes:* 1. This ratio is usually in terms of measured peak values in the case of impulse noise and in terms of the root-mean-square (rms) values in the case of random noise. 2. Where there is a possibility of ambiguity, suitable definitions of the signal and noise should be associated with this term; as, for example, peak signal to peak noise ratio, rms signal to rms noise ratio, peak-to-peak signal to peak-to-peak noise ratio, etc. In measurements of transmission line noise in the AM frequency range, the ratio of average station signal level to quasi-peak line noise level is generally used. 3. This ratio often may be expressed in decibels (dB). 4. This ratio may be a function of the bandwidth of the transmission or measuring system. (PE/T&D/AP/ANT) 539-1990, 599-1985w, 145-1993

(9) The ratio of a signal to the noise. (IM/WM&A) 1057-1994w

(10) The ratio of relative power of the usable signal to the noise present, expressed in decibels. (C) 610.7-1995, 610.10-1994w

(11) The ratio in dB of the power of a single- or multiple-tone test signal to the power of the background noise (after a D Filter) not related to the application of the test signal, plus all spurious signals resulting from the application of the test signal, except for 2nd-order and 3rd-order intermodulation (IMD) distortion. (COM/TA) 743-1995

(12) "Signal" refers to peak signal and "noise" refers to rms noise. (NPS) 325-1996

(13) In radar, the ratio of the power corresponding to a specified target measured at some point in the receiver to the noise power at the same point in the absence of the received signal. (AES) 686-1997

signal-to-total-distortion ratio (S/TD) The ratio in dB of the power of a single or multiple-tone test signal to the power of all spurious signals (after a D Filter) resulting from the application of the test signal plus the power from background noise. (COM/TA) 743-1995

signal transfer characteristic (diode-type camera tube) The relationship between the input image irradiance incident on the camera tube and the resulting output current signal. It is presented as a plot of the logarithm of the output signal as a function of the logarithm of the input signal. (ED) 503-1978w

signal-transfer point (telephone switching systems) A switching entity where common channel signaling facilities are interconnected. (COM) 312-1977w

signal transition distortion The deviation from the ideal time between signal transitions of a signal on a serial communication link. Contributing factors to signal transition distortion include clock oscillator frequency differences, variations in transmitter delay times and rise/fall times, and phase shifts introduced by cables. For a 1 Mb/s Manchester-encoded signal, the ideal times between transitions are 500 ns and 1 μs. A transition is defined as the time that a differential signal passes through 0 V. (EMB/MIB) 1073.4.1-2000

signal transmission system *See:* carrier.

signal, TV waveform *See:* TV waveform signal.

signal, unit-impulse *See:* unit-impulse signal.

signal, unit-ramp *See:* unit-ramp signal.

signal, unit-step *See:* unit-step signal.

signal wave A wave whose shape conveys some intelligence, message, or effect. [53]

signal winding (input winding) (saturable reactor) A control winding to which the independent variable (signal wave) is applied. (EEC/PE) [119]

signal word The word or words that designate a degree of safety alerting. The words shall always be located in a distinctive panel located in the uppermost portion of a safety sign or label. (NIR/SCC28) C95.2-1999

signature (1) Those characteristics of a waveform that help identify an event or conditions. (SWG/PE) C37.100-1992

(2) A statement of what the interface to a responsibility "looks like." A signature consists of the responsibility name, along with a property operator and the number and type of its arguments, if any. A type (class) may be specified for each argument in order to limit the argument values to being instances of that class. (C/SE) 1320.2-1998

signature analysis A technique for compressing a sequence of logic values output from a circuit under test into a small number of bits of data (signature) that, when compared to stored data, will indicate the presence or absence of faults in the circuit. (TT/C) 1149.1-1990

signature diagnosis (test, measurement, and diagnostic equipment) The examination of signature of an equipment for deviation from known or expected characteristics and consequent determination of the nature and location of malfunctions. (IM/WM&A) 194-1977w

sign bit A binary digit used to indicate the algebraic sign of a number. (C) 1084-1986w

sign character A character within a picture specification that represents the sign of a data item. *Note:* S, +, and − are commonly used as sign characters. (C) 610.5-1990w

sign digit (electronic computation) A character used to designate the algebraic sign of a number. (C) 162-1963w, 1084-1986w

signed (1) Pertaining to a representation of a number with which an algebraic sign is associated. (C) 610.5-1990w

(2) The condition of information that has an enciphered summary appended to it that is used to ensure the integrity of the data, the authenticity of the originator, and the unambiguous relationship between the originator and the data. (C/PA) 1328.2-1993w, 1326.2-1993w, 1224.2-1993w, 1327.2-1993w

signed binary arithmetic *See:* sign-magnitude arithmetic.

significance (1) (test, measurement, and diagnostic equipment) The value or weight given to a position, or to a digit in a position, in a positional numeration system. In most positional numeration systems positions are grouped in sequence of significance, usually more significant towards the left. (MIL) [2]

(2) *See also:* weight. (C) 1084-1986w

significand (1) (binary floating-point arithmetic) The component of a binary floating-point number that consists of an explicit or implicit leading bit to the left of its implied binary point and a fraction field to the right. (C/MM) 754-1985r

(2) (mathematics of computing) The component of a floating-point number that consists of an explicit or implicit leading digit to the left of its implied radix point and a fraction field to the right. *Synonyms:* fixed-point part; mantissa. *Contrast:* exponent. (C/MM) 854-1987r, 1084-1986w

significant (nuclear power generating station) Demonstrated to be important by the safety analysis of the station. (PE/NP) 381-1977w, 308-1991l

Significant Event Evaluation and Information Network (SEE-IN) An information database maintained by the Institute of Nuclear Power Operations (INPO). (PE/NP) 933-1999

significant aging mechanism An aging mechanism that, if in the normal and abnormal service environment, causes degradation during the installed life of the equipment that progressively and appreciably renders the equipment vulnerable to failure to perform its safety function(s) during design basis event conditions (DBE). (PE/NP) 1205-1993

significant code A code that identifies a particular item and also yields further information about the properties or classification of the item. *Contrast:* nonsignificant code. (C) 610.5-1990w

significant digit (1) (mathematics of computing) A digit that contributes to the accuracy or precision of a numeral. *See also:* least significant digit; most significant digit. (C) [20], 610.5-1990w, 1084-1986w

(2) (metric practice) Any digit that is necessary to define a value or quantity. (QUL) 268-1982s

(3) Any digit in a number that is necessary to define a numerical value. (SCC14) SI 10-1997

significant-digit arithmetic A method of making calculations using a modified form of floating-point representation in which the number of significant digits in the result is determined by the number of significant digits in the operands, the operations performed, and the degree of precision available. (C) 1084-1986w

significant figure* *See:* significant digit.

* Deprecated.

significant human interface An interface between personnel and equipment, facilities, software, or documentation, where the resulting human performance is a determinant in the achievement of system performance.

sign-magnitude arithmetic Computer arithmetic using numerals expressed in sign-magnitude notation. *Synonym:* signed binary arithmetic. (C) 1084-1986w

sign-magnitude notation A numeration system in which the left-most bit is interpreted as the sign bit and the remaining bits represent the magnitude. *Contrast:* twos-complement notation. (C) 1084-1986w

sign-off *See:* logoff.

sign-on *See:* login.

sign position The position at which the sign of a number is located. (C) [20], [85], 1084-1986w

silent lobing A method for scanning an antenna beam to achieve angle tracking without revealing the scanning pattern on the transmitted signal. (AES) 686-1997

silent zone Part of the skip zone at a distance greater than the range of the ground wave. (AP/PROP) 211-1997

silicon (A) A semiconducting material used in many devices such as integrated circuits and solar cells that in its pure form is a lightweight metal resembling aluminum. **(B)** A colloquial reference to an integrated circuit. (C) 610.10-1994

silicon controlled rectifier (SCR) (thyristor) An alternative name for the reverse blocking triode thyristor. *Note:* Although not an official definition, the term "unidirectional" is sometimes used to describe the single switching class of thyristors consisting of reverse-blocking and reverse-conducting thyristors. This term is useful for comparing or contrasting this class of thyristors with bidirectional thyristors. (IA/IPC) 428-1981w

silicone oil (insulating oil) A generic term for a family of relatively inert liquid organosiloxane polymers used as electrical insulation. (PE/TR) 637-1985r

silvering (electrotyping) The application of a thin conducting film of silver by chemical reduction upon a plastic or wax matrix. (PE/EEC) [119]

silver oxide cell A cell in which depolarization is accomplished by oxide of silver. *See also:* electrochemistry. (EEC/PE) [119]

silver storage battery An alkaline storage battery in which the positive active material is silver oxide and the negative contains zinc. *See also:* battery. (EEC/PE) [119]

silver-surfaced or equivalent Metallic materials having satisfactory long-term performance that operate within the temperature rise limits established for silver-surfaced electrical contact parts and conducting mechanical joints. (SWG/PE) C37.100-1992

SIM++ A programming language used for simulations on distributed computing systems. (C) 610.13-1993w

SIMD *See:* single instruction, multiple data.

similar design bar/coil A similar design bar/coil is a bar/coil of the same design and manufacture using same materials and processes as the actual production bar/coil except that it may be longer in the slot section, and/or larger in the copper and/or groundwall cross section than the actual production bar/coil. The variance in the slot section length and the cross section of the 'similar design bar/coil' and the actual production bar/coil must be identified prior to the start of the thermal cycling test. (PE/EM) 1310-1996

simple arc An arc that does not cross itself. (C) 610.4-1990w

simple buffering A buffering technique in which a buffer is allocated to a computer program for the duration of the program's execution. *Contrast:* dynamic buffering. (C) 610.12-1990

simple circuit (A) A circuit permitting the transmission of signals in either direction, but not in both simultaneously. *Contrast:* two-way circuit. **(B)** A circuit permitting the transmission of signals in one specific direction only. (C) 610.10-1994

simple combination of insulating materials (thermal classification of electric equipment and electrical insulation) A number of insulating materials, which together make possible the evaluation of any interaction between them. (EI) 1-1986r

simple electrical ground and test device A device with one terminal set and a power-operated ground-making switch for connecting the terminal set to the device ground connection system, complete with necessary isolation barriers and suitable interlocking. Voltage test ports may be provided. (SWG/PE) C37.20.6-1997

simple GCL circuit *See:* simple parallel circuit; simple series circuit.

simple interconnect A connection between two or more component pins consisting only of a net. *Contrast:* extended interconnect. (C/TT) 1149.4-1999

simple manual ground and test device A device with one or two terminal sets with provisions for connecting either terminal set through manually installed cables to the device ground connection system, complete with necessary isolation barriers and suitable interlocking. *Note:* Cables are synonymous with manually installed cords of any type. (SWG/PE) C37.20.6-1997

simple message An MTM-Bus message that consists of no more than a HEADER and, optionally, an ACKNOWLEDGE/PACKET COUNT packet pair. (TT/C) 1149.5-1995

simple network management protocol (SNMP) A protocol used for the management of network nodes and devices, used extensively on internet and other networks. The protocol provides for the communication of status and setup information between a management console and a managed device using values of objects defined in the management information base (MIB) for the managed object. (C/MM) 1284.1-1997

simple parallel circuit A linear, constant-parameter circuit consisting of resistance, inductance, and capacitance in parallel. *Synonym:* simple GCL circuit. *See also:* network analysis. (Std100) 270-1966w

simple path A path in which all vertices except the first and last in the sequence are distinct. (C) 610.5-1990w

simple rectifier A rectifier consisting of one commutating group if single-way or two commutating groups if double-way. *See also:* rectification. (IA) [62]

simple rectifier circuit A rectifier circuit consisting of one commutating group if single-way, or two commutating groups if double-way. *See also:* rectifier circuit element; rectification. (IA) [12]

simple scanning (facsimile) Scanning of only one scanning spot at a time during the scanning process. (ELM) C12.1-1982s

simple series circuit A resistance, inductance, and capacitance in series. *See also:* network analysis. (Std100) 270-1966w

simple sine-wave quantity A physical quantity that is varying with time t as either $A\sin(\omega t + q_A)$ or $A\cos(\omega + \theta_B)$ where A, ω, $_A$, θ_B are constants. (Simple denotes that A, θ_A, θ_B are constants.). *Notes:* 1. It is immaterial whether the sin or cos form is used, so long as no ambiguity or inconsistency is introduced. 2. A is the amplitude or maximum value, $\omega t + \theta_A$ (or $\omega t + \theta_B$) the phase, θ_A (or θ_B) the phase angle. However, when no ambiguity may arise, phase angle may be abbreviated phase. 3. In certain special applications, for example, modulation, $\omega t + \theta$ is called the angle (of a sine wave), (not phase angle) in order to clarify particular uses of the word "phase." Another permissible term for ($\omega t + \theta$) is argument (sine wave). (Std100) 270-1966w

simple sound source A source that radiates sound uniformly in all directions under free-field conditions. (SP) [32]

simple target A target which can be represented by only one major scattering center so that its radar cross section is relatively insensitive to viewing aspect over small angular displacements. *Note:* Examples are a sphere or an object shorter than a half wavelength. Also called a point target. (AES) 686-1997

simple thyristor converter A thyristor converter that consists of one commutating group. (IA/IPC) 444-1973w

simple tone (A) (pure tone) A sound wave, the instantaneous sound pressure of which is a simple sinusoidal function of the time. **(B) (pure tone)** A sound sensation characterized by its singleness of pitch. *Note:* Whether or not a listener hears a tone as simple or complex is dependent upon the ability, experience, and listening attitude. *See also:* complex tone. (SP) [32]

simplex (1) A communication channel that permits information transfer in one direction only. Duplex channels consist of two simplex channels simultaneously operating in opposing directions. (SUB/PE) 999-1992w

(2) (local area networks) A link segment configuration capable of transferring signals in one direction only. (C) 8802-12-1998

simplex channel (data transmission) (simplex operation) A method of operation in which communication between two stations takes place in one direction at a time. *Note:* This includes ordinary transmit-receive operation, press-to-talk operation, voice-operated carrier and other forms of manual or automatic switching from transmit to receive. (PE) 599-1985w

simplex circuit (1) (data transmission) A circuit derived from a pair of wires by using the wires in parallel with ground return. (PE) 599-1985w

(2) In networking, a circuit permitting the transmission of signals in one specific direction only. *See also:* four-wire circuit; leased circuit; channel; two-wire circuit; foreign exchange circuit; dial-up circuit. (C) 610.7-1995

Simplex Fiber Optic Link Segment A single fiber path between two Medium Attachment Units (MAUs) or PHYs, including the terminating connectors, consisting of one or more fibers joined serially with appropriate connection devices, for example, patch cables and wall plates. (C/LM) 802.3-1998

simplex lap winding (rotating machinery) A lap winding in which the number of parallel circuits is equal to the number of poles. (PE) [9]

simplex link segment A path between two Medium Dependent Interfaces (MDIs), including the terminating connectors, consisting of one or more segments of twisted pair cable joined serially with appropriate connection devices, for example, patch cords and wall plates. (C/LM) 802.3-1998

simplex operation (1) (radio transmitters) A method of operation in which communication between two stations takes place in one direction at a time. *Note:* This includes ordinary transmit-receive operation, press-to-talk operation, voice-operated carrier and other forms of manual or automatic switching from transmit to receive. *See also:* radio transmission; telegraphy. (AP/BT/ANT) 145-1983s, 182-1961w

(2) *See also:* one-way-only operation. (C) 610.7-1995

simplex signaling (telephone switching systems) A method of signaling over a pair of conductors by producing current flow in the same direction through both of the conductors. (COM) 312-1977w

simplex supervision (telephone switching systems) A form of supervision employing simplex signaling. (COM) 312-1977w

simplex transmission Transmission in which data is sent in one specific direction only. *Contrast:* duplex transmission; half-duplex transmission. (C) 610.7-1995

simplex wave winding (rotating machinery) A wave winding in which the number of parallel circuits is two, whatever the number of poles. (PE) [9]

simplicity (software) The degree to which a system or component has a design and implementation that is straightforward and easy to understand. *Contrast:* complexity. (C) 610.12-1990

simply connected region (two-dimensional space) A region, such that any closed curve in the region encloses points all of which belong to the region. (Std100) 270-1966w

simply mesh-connected circuit A circuit in which two, and only two, current paths extend from the terminal of entry of each phase conductor, one to the terminal of entry that precedes and the other to the terminal of entry that follows the first terminal in the normal sequence, and from which the amplitude of the voltages to the first terminal is normally the smallest (when the number of phases is greater than three). *See also:* network analysis. (Std100) 270-1966w

SIMSCRIPT A high-order language designed for use in performing general-purpose digital simulations. *Note:* Allows for the description of a system in terms of its "attributes," which are properties associated with "entities," which are groups of "sets." *See also:* ECSS II. (C) 610.13-1993w

SIMULA A general-purpose programming language based on ALGOL 60, with special features designed to aid the description and simulation of active processes. (C) 610.13-1993w

simuland The system being simulated by a simulation. (C) 610.3-1989w

simulate (1) (computers) To represent the functioning of one system by another, for example, to represent one computer by another, to represent a physical system by the execution of a computer program, to represent a biological system by a mathematical model. *See also:* electronic analog computer. (C) [20], [85]

(2) (modeling and simulation) To represent a system by a model that behaves or operates like the system. *See also:* emulate. (C) 610.3-1989w

simulated ESD An ESD that originates from an ESD simulator. (EMC) C63.16-1993

simulated fly ash The entrained ash produced by suspension firing in a small-scale pulverized coal combustor designed and operated with the objective of closely approximating certain selected properties of the fly ash produced in the full-scale steam generator of interest. The combustor should have the capability of providing approximately the same time/temperature profile for combustion as would occur in a full-scale boiler furnace. This process is applicable particularly when coal from a new source has never been burned in a full-scale boiler. (PE/EDPG) 548-1984w

simulated meter A simulated meter is an assembly consisting of a watthour meter cover, base, and jumper bars constructed to represent the thermal characteristics of a specific class of watthour meter to be used in the testing of a meter socket for temperature rise at continuous ampere rating. (ELM) C12.10-1987

simulated source A radioactive source consisting of one or more long-lived radionuclides that are chosen to simulate the radiations from a short-lived or unavailable radionuclide of interest. (NI) N42.12-1994

simulated sources (ionization chambers) ("dose calibrator" ionization chambers) Simulated sources usually contain long-lived radionuclides, alone or in combination, that are chosen to simulate, in terms of photon or particle emission, a short-lived radionuclide of interest. (NI) N42.13-1986

simulated times Time as represented within a simulation. *Synonym:* virtual time. *See also:* real time; fast time; slow time. (C) 610.3-1989w

simulation (1) (analog computer) The representation of an actual or proposed system by the analogous characteristics of some device easier to construct, modify, or understand. (C) 165-1977w

(2) (A) (modeling and simulation) (software) A model that behaves or operates like a given system when provided a set of controlled inputs. *Synonym:* simulation model. *See also:* emulation. **(B) (modeling and simulation) (software)** The process of developing or using a model as in definition (A). (C) 610.3-1989, 610.12-1990

(3) An instruction method employed by some computer-assisted instruction systems, in which a situation is simulated and the student must respond appropriately. *Contrast:* instructional game. (C) 610.2-1987

(4) (mathematical) The use of a model of mathematical equations generally solved by computers to represent an actual or proposed system. (C) 165-1977w

simulation application The executing software on a host computer that models all or part of the representation of one or more simulation entities. The simulation application represents or simulates real-world phenomena for the purpose of training or experimentation. Examples of simulation applications include manned vehicle simulators, computer generated forces, environment simulators and computer interfaces between a DIS network and real equipment. The simulation application receives and processes information concerning entities created by peer simulation applications through the exchange of DIS PDUs. More than one simulation application may simultaneously execute on a host computer. The simulation application is the application layer protocol entity that implements standard DIS protocol. *Note:* The term *simulation application* is used to avoid confusion between protocol entities and simulation entities. The term *simulation* may also be used in place of simulation application. (DIS/C) 1278.1-1995, 1278.3-1996, 1278.2-1995

simulation clock A counter used to accumulate simulated time. (C) 610.3-1989w

simulation entity An element of the synthetic environment that is created and controlled by a simulation application and affected by the exchange of DIS PDUs. Examples of types of simulated entities are: tank, submarine, carrier, fighter aircraft, missiles, bridges, or other elements of the synthetic environment. It is possible that a simulation application may be controlling more than one simulation entity. *Note:* Simulation entities may also be referred to as *entities*. (DIS/C) 1278.1-1995, 1278.3-1996, 1278.2-1995

simulation environment The operational environment surrounding the simulation entities. This environment includes terrain, atmospheric, and oceanographic information. It is assumed that participants in the same DIS exercise will be using environment information that is adequately correlated for the type of exercise to be performed. (DIS/C) 1278.1-1995

simulation exercise An exercise that consists of one or more interacting simulation applications. Simulations participating in the same simulation exercise share a common identifying number called the exercise identifier. These simulations also utilize correlated representations of the synthetic environment in which they operate. *See also:* exercise. (DIS/C) 1278.1-1995, 1278.2-1995, 1278.3-1996

simulation fidelity (A) The similarity, both physical and functional, between the simulation and that which it simulates. **(B)** A measure of the realism of a simulation. **(C)** The degree to which the representation within a simulation is similar to a real world object, feature, or condition in a measurable or perceivable manner. (DIS/C) 1278.3-1996

simulation game A simulation in which the participants seek to achieve some agreed-upon objective within an established set of rules. For example, a management game, a war game. *Note:* The objective may not be to compete, but to evaluate the participants, increase their knowledge concerning the simulated scenario, or achieve other goals. *Synonym:* gaming simulation. (C) 610.3-1989w

simulation host *See:* host computer.

simulation language An application-oriented programming language used to implement simulations. *See also:* continuous simulation language. (C/C) 610.13-1993w, 610.3-1989w

simulation management A process that provides centralized control of the simulation exercise. Functions of simulation management include: start, restart, maintenance, shutdown of the exercise, and collection and distribution of certain types of data. (DIS/C) 1278.1-1995

simulation model *See:* simulation.

Simulation Program with Integrated Circuit Emphasis (SPICE) A simulation language used widely to design electrical circuits. (C) 610.13-1993w

simulation site Location of one or more simulation hosts connected by a LAN. (DIS/C) 1278.2-1995

simulation time The reference time (e.g., UTC) within a simulation exercise. This time is established ahead of time by the simulation management function and is common to all participants in a particular exercise. (DIS/C) 1278.1-1995

simulation time unit (STU) A fixed unit of time that is utilized during simulation for evaluation of data. (SCC20) 1445-1998

simulator (1) (analog computer) A device used to represent the behavior of a physical system by virtue of its analogous characteristics. In this general sense, all computers are, or can be, simulators. However in a more restricted definition, a simulator is a device used to interact with, or to train, a human operator in the performance of a given task or tasks. (C) 165-1977w

(2) (modeling and simulation) (software) A device, computer program, or system that performs simulation. *See also:* emulator. (C) 610.3-1989w, 610.10-1994w, 610.12-1990

(3) (test, measurement, and diagnostic equipment) A device or program used for test purposes that simulates a desired system or condition providing proper inputs and terminations for the equipment under test. (MIL) [2]

simulator approach speed The rate at which an air discharge ESD simulator approaches the EUT or coupling plane. (EMC) C63.16-1993

simultaneous Pertaining to the occurrence of two or more events at the same instant of time. *Contrast:* concurrent. (C) 610.12-1990

simultaneous access *See:* immediate access.

simultaneous computer A parallel computer that contains a separate processing unit to perform each portion of the computation concurrently, allowing the units to be interconnected in a manner determined by the computation. *Contrast:* sequential computer. *See also:* parallel computer. (C) 610.10-1994w

simultaneous line downtime *See:* partial system downtime.

simultaneous lobing (1) (electronic navigation) A direction-determining technique utilizing the received energy of two concurrent and partially overlapped signal lobes: the relative phase, or the relative power, of the two signals received from a target is a measure of the angular displacement of the target from the equiphase or equisignal direction. Compare with lobe switching. (AP/AES/ANT) 149-1979r, [42], [35]

(2) (radar) A direction-determining technique utilizing the signals of overlapping lobes existing at the same time. *Synonym:* monopulse. (AES/AP/RS/ANT) 686-1982s, 145-1993

simultaneous peripheral output on-line *See:* spool.

simultaneous recursion (software) A situation in which two software modules call each other. (C) 610.12-1990

sin^2 *See:* sin-square.

sin^2 pulse *See:* sine-square pulse.

sin^2 step *See:* sine-square step.

SINAD signal plus noise plus distortion to noise plus distortion ratio expressed in decibels (dB), where the "signal plus noise plus distortion" is the audio power recovered from a modulated radio frequency carrier, and the "noise plus distortion" is the residual audio power present after the audio signal is removed. This ratio is a measure of audio output signal quality for a given receiver audio power output level. (EMC) 377-1980r

sinad ratio (mobile communication) A measure expressed in decibels of the ratio of: the signal plus noise plus distortion to noise plus distortion produced at the output of a receiver that is the result of a modulated-signal input. *See also:* mobile communication system. (VT) 184-1969w

sinad sensitivity (receiver performance) The minimum standard modulated carrier-signal input required to produce a specified sinad ratio at the receiver output. (VT) [37]

sine beats A continuous sinusoid of one frequency, the amplitude of which is modulated by a sinusoid of a lower frequency. (PE/SUB/NP) 693-1997, 344-1987r

sine-cosine potentiometer A function potentiometer with movable contacts attached to a rotating shaft so that the voltages appearing at the contacts are proportional to the sine and cosine of the angle of rotation of the shaft, the angle being measured from a fixed referenced position. *See also:* electronic analog computer. (C) 165-1977w

sine-current coercive force (toroidal magnetic amplifier cores) The instantaneous value of sine-current magnetizing force at which the dynamic hysteresis loop passes through zero induction. (Std100) 106-1972

sine-current differential permeability (toroidal magnetic amplifier cores) The slope of the sides of the dynamic hysteresis loop obtained with a sine-current magnetizing force. (Std100) 106-1972

sine-current magnetizing force (toroidal magnetic amplifier cores) The applied magnetomotive force per unit length for a core symmetrically cyclicly magnetized with sinusoidal current. (Std100) 106-1972

sinen shaping In an amplifier, the pulse shape produced by one CR high-pass filter section (differentiator) followed by n RC low-pass filter sections (integrators), all with different time constants, but following a particular pattern related to the differentiating time constant t. If the input signal is a step function and no other high-pass sections are in the signal path, the pulse shape is unipolar and is described by Ke-3t/t sinn(t/t), where K is a constant, t is time, and t is the time constant of the differentiator. (NPS) 325-1996

sine-square pulse (video signal transmission measurement) One cycle of a sine wave, starting and finishing at its negative peaks with an added constant amplitude component of half the peak-to-peak value, thus raising the negative peaks to zero. *Note:* A sin^2 pulse is obtained by squaring a half-cycle of a sine wave. (BT) 511-1979w

sine-square step (video signal transmission measurement) A step function whose transition from zero to the final value is the sum of a ramp and a negative sinusoid of equal durations, with zero slope at both the zero and the final value of the step. *Notes:* 1. A sin^2 step is obtained by integrating a sin^2 pulse. 2. The attractiveness of both the sin^2 pulse and the sin^2 step lies in the fact that their frequency spectra are limited: that is, they are effectively at zero amplitude beyond a given frequency. For the sin^2, pulse this frequency is a function of the half-amplitude duration (HAD) of the pulse: for the sin^2 step the frequency is a function of the 10% to 90% rise time. (Std100) 270-1964w

sine sweep test A sinusoidal input with continuously varying frequency covering the range of interest. (SWG/PE) C37.100-1992, C37.81-1989r

sine wave A wave that can be expressed as the sine of a linear function of time, or space, or both. (AP/ANT) 145-1983s

sine-wave generator An alternating-current generator whose output voltage waveform contains a single main frequency with low harmonic content of prescribed maximum level. *See also:* asynchronous machine. (PE) [9]

sine-wave response *See:* amplitude response.

sine-wave sweep (1) A sweep generated by a sine function. *See also:* oscillograph. (IM/HFIM) [40]

(2) A sweep generated by a sinusoidal function. *See also:* oscillograph. (IM) 311-1970w

singing An undesired self-sustained oscillation existing in a transmission system or transducer. *Note:* Very-low-frequency oscillation is sometimes called motor-boating. (AP/PE/ANT) 145-1983s, 599-1985w

singing margin (gain margin) The excess of loss over gain around a possible singing path at any frequency, or the minimum value of such excess over a range of frequencies. *Note:* Singing margin is usually expressed in decibels. (SP) 151-1965w

singing point (data transmission) For a circuit which is coupled back to itself, the point at which the gain is just sufficient to make the circuit break into oscillation. (PE) 599-1985w

singing point margin (data transmission) The amount of additional gain (dB) which can be inserted into a loop without sustained oscillations developing. (PE) 599-1985w

singing return loss (1) The return loss of a circuit measured with two separately transmitted signals with a flat spectral distribution between 3 dB frequencies of 260 Hz and 500 Hz (SRL low) and 2200 Hz and 3400 Hz (SRL high). The lower of the two return losses (SRL low or SRL high) will be the best measure of the margin of the circuit against singing. (COM/TA) 743-1995

(2) The minimum of SRL-low (SRL-L) and SRL-high (SRL-H). SRL-low is the frequency weighted average of the return losses in a low-frequency band (with 3 dB bandwidth from 260 Hz to 500 Hz). SRL-high is the frequency weighted average of the return loss in a high-frequency band (with 3 dB

bandwidth from 2200 Hz to 3400 Hz). The weightings are given in IEEE Std 743-1984. (COM/TA) 1007-1991r

single-address Pertaining to an instruction that has one address part. In a typical single-address instruction the address may specify either the location of an operand to be taken from storage, the destination of a previously prepared result, the location of the next instruction to be interpreted, or an immediate address operand. *See also:* one-address. (C) [20]

single-address instruction *See:* one-address instruction.

single-anode tank (single-anode tube) An electron tube having a single main anode. *Note:* This term is used chiefly for pool-cathode tubes. (ED) [45]

single aperture seal (electric penetration assemblies) (nuclear power generating station) A single seal between the containment aperture and the electric penetration assembly. (PE/NP) 317-1983r

single automatic operation (elevators) Automatic operation by means of one button in the car for each landing level served and one button at each landing so arranged that if any car or landing button has been actuated, the actuation of any other car or landing operating button will have no effect on the operation of the car until the response to the first button has been completed. *See also:* control. (EEC/PE) [119]

single-blind study A study in which the subject is unaware of his or her role as experimental or control subject in an experiment. (T&D/PE) 539-1990

single-break switch One that opens each conductor of a circuit at one point only. (SWG/PE) C37.100-1992

single-buffered DAC (hybrid computer linkage components) A digital-to-analog converter (DAC) or a digital-to-analog multiplier (DAM) with one dynamic register, which also serves as the holding register for the digital value. *Synonym:* single-buffered DAM. (C) 166-1977w

single-buffered DAM *See:* single-buffered DAC.

single cable system A type of broadband system that uses a single cable for the transmission of the inbound and outbound paths. (LM/C) 802.7-1989r

single capacitance (as applied to interrupter switches) A capacitance is defined to be a single capacitance when the crest of its inrush current does not exceed the switch inrush current capability for single capacitance. (SWG/PE) C37.100-1992

singlecast A mode of operation in which the M-module transmits data to a single S-module. Also, a message transmitted in this mode. (TT/C) 1149.5-1995

single-circuit system (protective signaling) A system of protective wiring that employs only the nongrounded side of the battery circuit, and consequently depends primarily on an open circuit in the wiring to initiate an alarm. *See also:* protective signaling. (EEC/PE) [119]

single-cycle instruction An instruction that is completely executed in one machine cycle. (C) 610.10-1994w

single-degree-freedom gyro A gyro in which the rotor is free to precess (relative to the case) about only the axis orthogonal to the rotor spin axis. *See also:* navigation. (AES/RS) 686-1982s, [42]

single electric conductor seal (1) (electric penetration assemblies) (nuclear power generating station) A mechanical assembly arranged in such a way that there is a single pressure barrier seal between the inside and the outside of the containment structure along the axis of the electric conductor. (PE/NP) 317-1983r

(2) (nuclear power generating station) A mechanical assembly providing a single pressure barrier between the electric conductors and the electric penetration. (IM) [76]

single electron distribution (scintillation counting) The pulse-height distribution associated with single electrons originating at the photocathode. (NPS) 398-1972r

single-electron PHR *See:* single-electron pulse-height resolution.

single-electron pulse-height resolution (scintillation counting) The fractional FWHM (full width at half maximum) of the single-electron distribution of a photomultiplier. (NPS) 398-1972r

single-electron rise time (scintillation counting) The anode-pulse rise time associated with single electrons originating at the photocathode. (NPS) 398-1972r

single-electron transit-time spread (scintillation counting) Transit-time spread measured with single-electron events. (NPS) 398-1972r

single-element fuse A fuse having a current-responsive element comprising one or more parts with a single fusing characteristic. (SWG/PE) C37.100-1992

single-element relay An alternating-current relay having a set of coils energized by a single circuit. (EEC/PE) [119]

single-end control (single-station control) A control system in which provision is made for operating a vehicle from one end or one location only. *See also:* multiple-unit control. (EEC/PE) [119]

single-ended amplifier An amplifier in which each stage normally employs only one active element (tube, transistor, etc.) or, if more than one active element is used, in which they are connected in parallel so that operation is asymmetric with respect to ground. *See also:* amplifier. (AP/ANT) 145-1983s

single-ended push-pull amplifier circuit (electroacoustics) An amplifier circuit having two transmission paths designed to operate in a complementary manner and connected so as to provide a single unbalanced output without the use of an output transformer. *See also:* amplifier. (SP) 151-1965w

single-ended recorder A non-differential waveform recorder, i.e., one that does not subtract the signals at two input terminals. (IM/WM&A) 1057-1994w

single event effect (SEE) Any measurable or observable change in state or performance of a microelectronic device, component, subsystem, or system (digital or analog) resulting from the passing or traversal of a single particle. (C/BA) 1156.4-1997

single-event upset (SEU) The loss of data that is caused by passage of a single ionizing particle through an array. (ED) 1005-1998

single-faced tape Fabric tape finished on one side with rubber or synthetic compound. (T&D/PE) [10]

single feeder A feeder that forms the only connection between two points along the route considered. (T&D/PE) [10]

single-font character recognition Character recognition of one character font. *Contrast:* omni-font character recognition. (C) 610.2-1987

single frequency distortion The production of frequency components other than the applied single frequency; these components may not necessarily be harmonic components. (COM/TA) 1007-1991r

single-frequency pulsing (telephone switching systems) Dial pulsing using the presence or absence of a single frequency to represent break or make intervals, respectively or vice versa. (COM) 312-1977w

single-frequency signaling (telephone switching systems) A method for conveying dial pulse and supervisory signals from one end of a trunk to the other using the presence or absence of a single specified frequency. (COM) 312-1977w

single-frequency signal-to-noise ratio (sound recording and reproducing system) The ratio of the single-frequency signal power output to the noise power in the entire pass band. *See also:* noise. 191-1953w

single-frequency simplex operation (radio communication) The operation of a two-way radio-communication circuit on the same assigned radio-frequency channel, which necessitates that intelligence can be transmitted in only one direction at a time. *See also:* channel spacing. (VT) [37]

single hoistway (elevators) A hoistway for a single elevator or dumbwaiter. *See also:* hoistway. (PE/EEC) [119]

single instruction, multiple data Pertaining to a computer architecture in which all processors receive instructions from a common source but receive data from multiple, disjoint sources. *Contrast:* single instruction, single data; multiple instruction, multiple data. (C) 610.10-1994w

single instruction, single data (SISD) Pertaining to a computer architecture in which the processors receive instructions from a common source and receive data from a common source. *See also:* multiple instruction, single data; single instruction, multiple data. (C) 610.10-1994w

single-layer winding (rotating machinery) A winding in which there is only one actual coil side in the depth of the slot. (Also known as one-coil-side-per-slot winding). *See also:* asynchronous machine. (PE) [9]

single-level encoding (software) A microprogramming technique in which different microoperations are encoded as different values in the same field of a microinstruction. *Contrast:* two-level encoding. (C) 610.12-1990

single-level interrupt A signal causing transfer of processor control to a preassigned memory location at which an interrupt processing routine starts. *Note:* The program must poll all possible sources of interrupt to determine which one requires service. (C) 610.10-1994w

single-level network subject A network subject that causes information to flow through the network at a single security level. *Contrast:* multilevel network subject. (C) 610.7-1995

single-level security The capability of protecting only one security level during processing. (C/BA) 896.3-1993w

single-line diagram *See:* one-line diagram.

single-mode bandwidth The range of frequencies between the cutoff of the dominant mode of propagation and that of the lowest higher order guided mode. (MTT) 1004-1987w

single-mode fiber (interferometric fiber optic gyro) An optical fiber waveguide in which only the lowest-order bound mode (which may consist of a pair of orthogonally polarized fields) can propagate at the wavelength of interest. (AES/GYAC) 528-1994

single-mode optical fiber An optical fiber in which a single concentrated light beam travels straight down the center of the fiber, maximizing its information-carrying capacity. *See also:* multi-mode optical fiber. (C) 610.7-1995

single mode optical waveguide (fiber optics) An optical waveguide in which only the lowest order bound mode (which may consist of a pair of orthogonally polarized fields) can propagate at the wavelength of interest. In step index guides, this occurs when the normalized frequency, V, is less than 2.405. For power-law profiles, single mode operation occurs for normalized frequency, V, less than approximately

$$2.405\sqrt{(g+2)/g}$$

where g is the profile parameter. *Note:* In practice, the orthogonal polarizations may not be associated with degenerate modes. *Synonym:* monomode optical waveguide. *See also:* normalized frequency; multimode optical waveguide; step index optical waveguide; profile parameter; power-law index profile; mode; bound mode. (Std100) 812-1984w

single-mode surface acoustic wave oscillator A surface acoustic wave oscillator in which there is only one frequency that satisfies the oscillation conditions of having positive excess gain and total phase shift of $N2\pi$ (where N is a positive integer). (UFFC) 1037-1992w

single-office exchange (telephone switching systems) A telecommunications exchange served by one central office. (COM) 312-1977w

single-operand instruction *See:* one-address instruction.

single-operator arc welder An arc-welding power supply designed to deliver current to only one welding arc. (EEC/AWM) [91]

single outage event An outage event involving only one component or one unit. (PE/PSE) 859-1987w

single-phase ac fields Fields whose space components are in phase. These fields will be produced by single-phase power lines. The field at any point can be described in terms of a single direction in space and its time-varying magnitude. *Note:* Such fields are sometimes referred to as being linearly polarized. (T&D/PE) 644-1994

single-phase circuit (1) (power and distribution transformers) An ac circuit consisting of two or three intentionally interrelated conductors that enter (or leave) a delimited region at two or three terminals of entry. If the circuit consists of two conductors, it is intended to be so energized that, in the steady state, the voltage between the two terminals of entry is an alternating voltage. If the circuit consists of three conductors, it is intended to be so energized that, in steady state, the alternating voltages between any two terminals of entry have the same period and are in phase or in phase opposition. (PE/TR) C57.12.80-1978r

(2) A circuit energized by a single alternating electromotive force. *Note:* A single-phase circuit is usually supplied through two conductors. The currents in these two conductors, counted outward from the source, differ in phase by 180° or a half cycle. (IA/MT) 45-1998

single-phase electric locomotive An electric locomotive that collects propulsion power from a single phase of an alternating-current distribution system. *See also:* electric locomotive. (EEC/PE) [119]

single-phase enclosure A metallic enclosure containing the buses and/or devices associated with one phase of a multiple-phase system. *Note:* A single gas-insulated substation need not be composed of all single-phase or all three-phase enclosures. A common compromise is to use buses in three-phase enclosures mated with equipment in single-phase enclosures. (SUB/PE) C37.122.1-1993

single-phase machine A machine that generates or utilizes single-phase alternating-current power. *See also:* asynchronous machine. (PE) [9]

single-phase motor (rotating machinery) A machine that converts single-phase alternating-current electric power into mechanical power, or that provides mechanical force or torque. (PE) [9]

single-phase symmetrical set (A) (polyphase voltages) A symmetrical set of polyphase voltages in which the angular phase difference between successive members of the set is ν radians or odd multiples thereof. The equations of symmetrical set (polyphase voltages) represent a single-phase symmetrical set of polyphase voltages if k/m is 1/2 or an odd multiple thereof. (The symmetrical set of voltages represented by the equations of symmetrical set (polyphase voltages) may be said to have single-phase symmetry if k/m is an odd (positive or negative) multiple of 1/2). *Notes:* 1. A set of polyphase voltages may have single-phase symmetry only if m, the number of members of the set, is an even number. 2. This definition may be applied to a two-phase four-wire or five-wire circuit if m is considered to be 4 instead of 2. It is not applicable to a two- phase three-wire circuit. *See also:* network analysis. **(B) (polyphase currents)** This definition is obtained from the corresponding definitions for voltage by substituting the word current for voltage, and the symbol I for E and b for a wherever they appear in the equations of symmetrical set (polyphase voltages). The subscripts are unaltered. *See also:* network analysis. (Std100) 270-1966

single-phase synchronous generator A generator that produces a single alternating electromotive force at its terminals. It delivers electric power that pulsates at double frequency. (IA/MT) 45-1998

single-phase three-wire circuit A single-phase circuit consisting of three conductors, one of which is identified as the neutral conductor. *See also:* network analysis. (Std100) 270-1966w

single-phase two-wire circuit A single-phase circuit consisting of only two conductors. *See also:* network analysis. (Std100) 270-1966w

single-phasing (rotating machinery) An abnormal operation of a polyphase machine when its supply is effectively single-phase. *See also:* asynchronous machine. (PE) [9]

single-pointer form demand register (metering) An indicating demand register from which the demand is obtained by reading the position of a pointer relative to the markings on a scale. The single pointer is resettable to zero. (ELM) C12.1-1982s

single point failure analysis A reliability analysis that identifies single components or subsystems whose failure results in system failure. (PE/NP) 933-1999

single point of failure With respect to a system, a failure that would result in the inability of that system to perform its intended function. (C/BA) 896.9-1994w, 896.3-1993w

single-polarity pulse A pulse in which the sense of the departure from normal is in one direction only. *See also:* pulse. (EEC/PE) [119]

single-pole relay A relay in which all contacts connect, in one position or another, to a common contact. (EEC/REE) [87]

single-pole switching The practice of tripping and reclosing one pole of a multiple circuit breaker without changing the state of the remaining poles, with tripping being initiated by protective relays that respond selectively to the faulted phase. *Notes:* 1. Circuit breakers used for single-pole switching must inherently be capable of individual pole opening. 2. In most single-pole switching schemes, it is the practice to trip all poles for any fault involving more than one phase. (SWG/PE) C37.100-1992

single precision (data management) (mathematics of computing) Pertaining to the use of a single computer word to represent a number. *Note:* Single precision is implied in number representation and in computer arithmetic unless multiple precision is specified. *Contrast:* triple precision; double precision; multiple precision. (C) 610.5-1990w, 1084-1986w

single-pressure-zone potheads A pressure-type pothead intended to operate with one pressure zone. *See also:* multi-pressure-zone pothead; pressure-type pothead. (PE) 48-1975s

single-pressure zone termination *See:* pressure-type termination.

single processor architecture A computer architecture that uses a single processor. *Contrast:* multiprocessor architecture. (C) 610.10-1994w

single pulse (thyristor) A gate signal applied at the commencement of the conducting interval in the form of a single pulse of predetermined duration, amplitude, and frequency. (IA/IPC) 428-1981w

single quote The character "′", also known as *apostrophe*. (C/PA) 9945-2-1993

single ring station A station that offers one attachment to the network on the primary ring. (LM/C) 802.5c-1991r

single-scan probability of detection *See:* blip-scan ratio.

single scatter approximation An approximation used in the calculation of wave scattering by a surface, volume or a collection of particles. In this approximation, the field that excites the surface element or particle, the exciting field, is assumed to be the same field that would have been present in the absence of all other surface or volume elements or particles (i.e., the exciting field is equal to the incident field). *See also:* Born approximation. (AP/PROP) 211-1997

single service One service only supplying a consumer. *Note:* Either or both lighting and power load may be connected to the service. *See also:* service. (T&D/PE) [10]

single-sheet feed A mechanism enabling a printer to print on individual sheets of paper. *Note:* Usually uses friction feed. *See also:* cut-sheet feed. (C) 610.10-1994w

single-shot blasting unit A unit designed for firing only one explosive charge at a time. *See also:* blasting unit. (EEC/PE) [119]

single-shot blocking oscillator A blocking oscillator modified to operate as a single-shot trigger circuit. *See also:* trigger circuit. (EEC/PE) [119]

single-shot multivibrator (single-trip multivibrator) A multivibrator modified to operate as a single-shot trigger circuit. *See also:* trigger circuit. (EEC/PE) [119]

single-shot trigger circuit (single-trip trigger circuit) A trigger circuit in which a triggering pulse intiates one complete cycle of conditions ending with a stable condition. *See also:* trigger circuit. (PE/EEC) [119]

single-sideband modulation (data transmission) Modulation whereby the spectrum of the modulating function is translated in frequency by a specified amount either with or without inversion. *See also:* modulation. (AP/BT/ANT) 145-1983s, 511-1979w

single-sideband transmission (data transmission) The method of operation in which one sideband is transmitted and the other sideband is suppressed. The carrier wave may be either transmitted or suppressed. (PE) 599-1985w

single-sideband transmitter A transmitter in which one sideband is transmitted and the other is effectively eliminated. (AP/ANT) 145-1983s

single-sided board A board with components on one side only. Often single-sided boards are used with right-angle connectors. (C/BA) 14536-1995

single-sided disk A floppy disk on which information can be stored reliably on only one side. (C) 610.10-1994w

single-speed floating control system (automatic control) A floating control system in which the manipulated variable changes at a fixed rate, increasing or decreasing depending on the sign of the actuating signal. *Note:* A neutral zone of values of the actuating signal, in which no action occurs, may be used. (PE/EDPG) [3]

single-station control *See:* single-end control.

single-stator electromechanical watthour meter A single-stator electromechanical watthour meter (single-phase electromechanical watthour meter or single element electromechanical watthour meter) is an electromechanical watthour meter containing only one stator. (ELM) C12.10-1987

single step (computers) Pertaining to a method of operating a computer in which each step is performed in response to a single manual operation. (C) [20], [85]

single-step execution *See:* single-step operation.

single-step operation A debugging technique in which a single computer instruction, or part of an instruction, is executed in response to an external signal. *Synonyms:* step-by-step operation; single-step execution. (C) 610.12-1990

single-stress aging A form of accelerated aging in which the level of one aging stress is intensified, while the others are minimized or held constant. (DEI/RE) 775-1993w

single-stroke bell An electric bell that produces a single stroke on its gong each time its mechanism is actuated. *See also:* protective signaling. (EEC/PE) [119]

single sweep (spectrum analyzer) Operating mode for a triggered sweep instrument in which the sweep must be reset for each operation, thus preventing unwanted multiple displays. This mode is useful for trace photography. In the interval after the sweep is reset and before it is triggered, it is said to be an armed sweep. (IM) 748-1979w

single-talk (ST) One talker speaking while the opposite transmission direction is silent. (COM/TA) 1329-1999

single throw (switching device) A qualifying term used to indicate that the device has an open and a closed circuit position only. (SWG/PE) C37.100-1992

single-throw relay A relay in which each contact form included is a single contact pair. (EEC/REE) [87]

single thyristor converter unit A thyristor converter unit connected to a dc circuit such that the direct current supplied by the converter is flowing in only one direction. The single converter section is referred to as a forward converter section. *Note:* When used without a reversing switch a single con-

verter can be used in a reversible power sense only in those cases where single-way thyristor connections or symmetrical double-way thyristor connections are used and where the dc circuit can change from accepting energy to giving up energy without the need for current reversal, for example, a heavily inductive load. When used with a reversing switch, a single converter can be used in a reversible power sense in all cases where single-way thyristor connections or uniform double-way thyristor connections are used. (IA/IPC) 444-1973w

single-tone keying (modulation systems) That form of keying in which the modulating function causes the carrier to be modulated by a single tone for one condition, which may be either a mark or a space, the carrier being unmodulated for the other condition. *See also:* telegraphy. (COM/AP/ANT) [49], 145-1983s, 270-1964w

single-track (standard track) (electroacoustics) A variable-density or variable-area sound track in which both positive and negative halves of the signal are linearly recorded. *See also:* phonograph pickup. (SP) [32]

single-transfer read cycle A cycle that is used to transfer 1, 2, 3, or 4 bytes from the responding slave to the active master, and possibly to participating slaves. The cycle begins when the active master broadcasts the addressing information on the address/data lines. Each slave checks the address to see if it is to respond to the cycle. If so, it acknowledges the address and retrieves the data from its internal storage. When the master releases the address/data lines, the responding slave places its data on them and acknowledges the transfer. The master as well as participating slaves capture the data. After all selected slaves signal their agreement, the master terminates the cycle. (C/MM) 1096-1988w

single-transfer write cycle A cycle that is used to transfer 1, 2, 3, or 4 bytes from the active master to the selected slaves(s). The cycle begins when the master broadcasts the addressing information on the address/data lines. Each slave checks the address to see if it is to participate in the cycle. The responding slave acknowledges the address broadcast. The master then switches the address/ data lines to carry data, and places its data on the bus. The selected slaves can then store the data. The responding slave acknowledges the transfer. After all selected slaves signal their agreement, the master terminates the cycle. (C/MM) 1096-1988w

single-transistor cell A memory cell consisting of one transistor. (ED) 641-1987w

single-trip multivibrator *See:* single-shot multivibrator.

single-trip trigger circuit *See:* single-shot trigger circuit.

single-tuned amplifier An amplifier characterized by a resonance at a single frequency as indicated by the s-plane representation of its gain, which is $A(s) = A_0 s/(s^2 + \omega_0 \xi s + \omega_0^2)$. It rejects low and high frequencies while having a peak gain at a center frequency $s = j\omega_0$. *See also:* amplifier. (CAS) [13]

single-tuned circuit A circuit that may be represented by a single inductance and a single capacitance, together with associated resistances. (EEC/PE) [119]

single-valued *See also:* function. (C/SE) 1320.2-1998

single-valued function A function u is single valued when to every value of x (or set of values of $x_1, x_2, \ldots, x_n$) there corresponds one and only one value of u. Thus, $u = ax$ is single valued if a is an arbitrary constant. (Std100) 270-1966w

single-valued property A property with a single-valued mapping. *Contrast:* multivalued property. (C/SE) 1320.2-1998

single-valve unit A single structure comprising only one valve. (SUB/PE) 857-1996

single-way rectifier A rectifier unit that makes use of a single-way rectifier circuit. (IA) [12]

single-way rectifier circuit A rectifier circuit in which the current between each terminal of the alternating voltage circuit and the rectifier circuit element or elements conductively connected to it flows in only one direction. (IA) [12]

single-way thyristor converter A thyristor converter in which the current between each terminal of the alternating-voltage circuit and the thyristor converter circuit element or elements conductively connected to it flows only in one direction. (IA/IPC) 444-1973w

single-winding multispeed motor A type of multispeed motor having a single winding capable of reconnection in two or more pole groupings. *See also:* asynchronous machine. (EEC/PE) [119]

single-wire line (waveguide) A surface-wave transmission line consisting of a single conductor so treated as to confine the propagated energy to the neighborhood of the wire. The treatment may consist of a coating of dielectric. (MTT) 146-1980w

singly linked list *See:* linked list.

singular point Synonymous with equilibrium point. *See also:* control system. (CS/IM) [120]

sink (1) (oscillators) The region of a Rieke diagram where the rate of change of frequency with respect to phase of the reflection coefficient is maximum. Operation in this region may lead to unsatisfactory performance by reason of cessation or instability of oscillations. *See also:* oscillatory circuit. (ED) 161-1971w

(2) A consumer of normal characters at a link interface. *See also:* normal character. (BA/C) 1355-1995

(3) The end of a delay arc; that is, the destination of the logic signal. For arcs across cell instances, the sink is the driver pin; for arcs across interconnect, the sink is the receiver pin. (C/DA) 1481-1999

sink node (network analysis) A node having only incoming branches. (CAS) 155-1960w

sin-square (linear waveform distortion) A step function whose transition from zero to the final value is the sum of a ramp and a negative sinusoid of equal durations, with zero slope at both the zero and the final value of the step. *Notes:* 1. A $\sin^2$ step is obtained by integrating a $\sin^2$ pulse. 2. The attractiveness of both the $\sin^2$ pulse and the $\sin^2$ step lies in the fact that their frequency spectra are limited; that is, they are effectively at zero amplitude beyond a given frequency. For the $\sin^2$ pulse this frequency is a function of the half-amplitude duration (HAD) of the pulse; for the $\sin^2$ step the frequency is a function of the 10% to 90% rise time. (BT) 511-1979w

sin-square pulse *See:* sine-square pulse.

S interface The interface provided at the S reference point for ISDN user-to-network interface. (LM/C/COM) 8802-9-1996

sinusoidal electromagnetic wave (radio-wave propagation) In a homogeneous medium, a wave whose electric field vector is proportional to the sine (or cosine) of an angle that is a linear function of time, or of a distance, or of both. (AP) 211-1977s

sinusoidal field A field in which the field quantities vary as a sinusoidal function of an independent variable, such as space or time. (Std100) 270-1966w

sinusoidal function A function of the form $A\sin(xa)$. A is the amplitude, x is the independent variable, and a the phase angle. Note that $\cos(x)$ may be expressed as $\sin 1x$ (6.2)0. *See also:* simple sine-wave quantity. (Std100) 270-1966w

sinusoidal response (sine-force) The forced response due to a sinusoidal stimulus. *Note:* A set of steady-state sinusoidal responses for sinusoidal inputs at different frequencies is called the frequency-response characteristic. *See also:* feedback control system. (IM) [120]

siphon recorder A telegraph recorder comprising a sensitive moving-coil galvanometer with a siphon pen that is directed by the moving coil across a traveling strip of paper. *See also:* telegraphy. (EEC/PE) [119]

SISD *See:* single instruction, single data.

sister *See:* sibling node.

site attenuation (1) The ratio of the power input of a matched, balanced, lossless, tuned dipole radiator to that at the output

of a similarly matched, balanced, lossless, tuned dipole receiving antenna for specified polarization, separation, and heights above a flat reflecting surface. It is a measure of the transmission path loss between two antennas. (EMC) C63.4-1991, 1128-1998

(2) The ratio of the power input to a matched balanced lossless tuned dipole radiator to that at the output of a similarly balanced matched lossless tuned dipole receiving antenna for specified polarization, separation, and heights above a flat reflecting surface. (EMC) C63.5-1988

(3) The ratio of the power input to a matched, balanced, lossless, wideband dipole radiator to that at the output of a similarly balanced, matched, lossless, wideband dipole receiving antenna for specified polarization, separation, and heights above a flat reflecting surface. (EMC) 1128-1998

site-attenuation deviation (SAD) The difference, in dB, of the site attenuation and the free-space distance attenuation between the transmit and receive antennas in an open-area test site (OATS), absorber-lined open-area test site (ATS), semi-anechoic chamber, or anechoic chamber. *See also:* absorber-lined open-area test site; open-area test site. (EMC) 1128-1998

site error (navigation) (navigation aids) Error due to the distortion in the electromagnetic field by objects in the vicinity of the navigational equipment. (AES/GCS) 172-1983w

site marker *See:* transit.

site, pull *See:* pull site.

site, tension *See:* tension site.

SI unit of luminance (illuminating engineering) Candela per square meter (cd/m^2); also, lumen per steradian $\times$ square meter ($lm/(sr/m^2)$ also, lumen per steradian $\times$ square meter ($lm/(sr/m^2)$). This also is called the nit. (EEC/IE) [126]

SI units Units belonging to the International System of Units. (SCC20) 771-1998

six-bit byte *See:* sextet.

six bolt *See:* conductor grip.

six-phase circuit (power and distribution transformers) A combination of circuits energized by alternating electromotive forces which differ in phase by one-sixth of a cycle, that is, 60°. *Note:* In practice, the phases may vary several degrees from the specified angle. (PE/TR) C57.12.80-1978r

64-bit supportive Uses 64-bit addresses when accessing System Memory. (C/MM) 1212.1-1993

63% response time *See:* apparent time constant.

size distribution (fly ash resistivity) Size distribution of particulate matter is the cumulative frequency of particle diameter, generally expressed on a mass basis. It describes the probability that a particle diameter x takes a value equal to or less than probability P. Size distribution rather than mean particle size shall be reported. (PE/EDPG) 548-1984w

size metric A value used to estimate properties of interconnect wholly contained in a region. The metric may be freely chosen (for example, square microns or gate sites), but it needs to be consistent between the cells and the wireload models. *See also:* wireload model. (C/DA) 1481-1999

size threshold (illuminating engineering) The minimum perceptible size of an object. It also is defined as the size which can be detected some specific fraction of the times it is presented to an observer, usually 50%. It usually is measured in minutes of arc. (EEC/IE) [126]

sizing (software) The process of estimating the amount of computer storage or the number of source lines required for a software system or component. (C) 610.12-1990

skate machine A mechanism, electrically controlled, for placing on, or removing from, the rails a skate that, if allowed to engage with the wheels of a car, provides continuous braking until the car is stopped and that may be electrically or pneumatically operated. (EEC/PE) [119]

skates Devices used in the climbing of flanged structures. (T&D/PE) 1307-1996

skating force *See:* side thrust.

skeleton frame (rotating machinery) A stator frame consisting of a simple structure that clamps the core but does not enclose it. (PE) [9]

skew (1) (measuring the performance of tone address signaling systems) In a two-tone signal, the time interval from the start of the higher-frequency tone present condition. Skew is negative if the higher-frequency tone starts before the lower-frequency tone. (COM/TA) 752-1986w

(2) (facsimile) The deviation of the received frame from rectangularity due to asynchronism between scanner and recorder. Skew is expressed numerically as the tangent of the angle of the deviation. (COM) 168-1956w

(3) (magnetic storage) The angular displacement of an individual printed character, group of characters, or other data, from the intended or ideal placement. (MIL/C) [2], [20], [85]

(4) (MULTIBUS) The time difference between signals because of timing differences for logic and backplane delays. (C/MM) 1296-1987s

(5) The difference between the propagation delays of two or more signals on any bus line. (BA/C) 10857-1994, 896.4-1993w

(6) The angular or longitudinal deviation of a tape or disk track from a specified reference. (C) 610.10-1994w

(7) The difference in time that is unintentionally introduced between changing signal levels (incident edges) that occur on parallel signal lines. This difference results in an uncertain position with respect to time among parallel signals. (C/MM) 1596.3-1996

(8) The timing ambiguity associated with the occurrence of an automatic test equipment (ATE) Input/Output (I/O) event that is due to the physical limitations of the ATE digital driver and detector electronics. (SCC20) 1445-1998

skew between pairs The difference in arrival times of two initially coincident signals propagated over two different pairs, as measured at the receiving end of the cable. Total skew includes contributions from transmitter circuits as well as the cable. (C/LM) 802.3-1998

skewed slot (rotating machinery) A slot of a rotor or stator of an electric machine, placed at an angle to the shaft so that the angular location of the slot at one end of the core is displaced from that at the other end. Slots are commonly skewed in many types of machines to provide more uniform torque, less noise, and better voltage waveform. *See also:* rotor; stator. (PE) [9]

skewing factor S0.1 or S.02 (of a peak) The ratio (FW.1M)/(1.823 FWHM) or (FW.02M)/(2.376 FWHM). For an ideal Gaussian shape, the factors are 1.000. If the peak is wider at FW.1M or FW.02M than it should be relative to FWHM, the factors are >1.000. (For a perfect Gaussian peak, FW.1M/FWHM = [(ln 0.1)/(ln 0.5)]1/2 = 1.823 and FW.02M/FWHM = [(ln 0.02)/(ln 0.5)]1/2) = 2.376). (NPS) 325-1996

skew ray (fiber optics) A ray that does not intersect the optical axis of a system (in contrast with a meridional ray). *See also:* optical axis; meridional ray; geometric optics; axial ray; hybrid mode; paraxial ray. (Std100) 812-1984w

skew time (FASTBUS acquisition and control) The minimum time that the assertion of a FASTBUS timing signal must be delayed after the assertion of information and/or control signals to allow for differences in propagation time of signals on a FASTBUS segment. (NID) 960-1993

skew timing check A timing check that specifies the maximum time between two signal transitions. This timing check is frequently applied to dual-clock flip-flops to specify the maximum separation of the active edges of the two phases of the clock. (C/DA) 1481-1999

skiatron† **(A)** A dark-trace storage-type cathode-ray tube. **(B)** A display employing an optical system with a dark-trace tube. *See also:* dark-trace tube. (AES/RS) 686-1990

† Obsolete.

skidder *See:* wheel tractor.

skid wire (pipe-type cable) (power distribution, underground cables) Wire or wires, usually D shaped, applied open spiral with curved side outward with a suitable spacing between turns over the outside surface of the cable. Its purpose is to facilitate cable pulling and to provide mechanical protection during installation. (PE) [4]

skill A cognitive and/or physical control process so highly practiced as to require little or no conscious supervision. (PE/NP) 1082-1997

skim tape Filled tape coated on one or both sides with a thin film of uncured rubber or synthetic compound to produce a coating suitable for vulcanization. (T&D/PE) [10]

skin depth (1) (waveguide) Of a conducting material, at a given frequency, the depth at which the surface current density is reduced by one neper. (MTT) 146-1980w

(2) *See also:* penetration depth. (AP/PROP) 211-1997

skin effect (induction heating) Tendency of an alternating current to concentrate in the areas of lowest impedance. (IA) 54-1955w

skin effect heating (electrical heating systems) An electric heating system where a conductor inside a ferromagnetic material generates heat via I^2R losses in the conductor and ferromagnetic material. (IA/PC) 844-1991

skip (1) (computers) To ignore one or more instructions in a sequence of instructions. (C/C) [20], [85]

(2) In Physical Design Exchange Format (PDEF), skip is the spacing between the ordered cell, spare_cell, and/or cluster instances in rows and/or columns of a datapath. (C/DA) 1481-1999

skip distance (1) (data transmission) (navigation aids) The minimum separation for which radio waves of a specified frequency can be transmitted at a specified time (interval) between two points on the earth by reflection from the regular ionized layers of the ionosphere. (PE/AES/GCS) 599-1985w, 172-1983w

(2) For a given frequency, the minimum distance at which the sky wave is returned to the Earth. *Note:* Given frequency is the maximum usable frequency for the skip distance. (AP/PROP) 211-1997

skip distance focusing Ionospheric focusing observed in the vicinity of the skip distance. (AP/PROP) 211-1997

skip zone An area of the surface of the Earth surrounding a transmission point bounded by the skip distance in all directions. (AP/PROP) 211-1997

skiving (A) The process of assembling a fitting to a hose. **(B)** The process of trimming outside of a hose to fit the inside dimensions of a fitting. (T&D/PE) 957-1995

skookum *See:* snatch block.

sky compass (navigation aids) A type of astro compass, designed for use in the arctic during long periods of twilight. (AES/GCS) 172-1983w

sky condition *See:* cloudy sky; overcast sky; partly cloudy sky; clear sky.

sky factor (illuminating engineering) The ratio of the illuminance on a horizontal plane at a given point inside a building due to the light received directly from the sky, to the illuminance due to an unobstructed hemisphere of sky of uniform luminance equal to that of the visible sky. (EEC/IE) [126]

sky light (illuminating engineering) Visible radiation from the sun redirected by the atmosphere. (EEC/IE) [126]

sky noise (communication satellite) Noise contribution of the sky (often the galaxies). *See also:* background noise. (COM) [25]

sky radiometric temperature The observed brightness temperature of the sky, caused by emissions from the Earth's atmosphere as well as cosmic and galactic radiation. (AP/PROP) 211-1997

sky wave A radio wave propagated obliquely toward, and returned from, the ionosphere. *Note:* This term has sometimes been called an ionospheric wave but that term is intended to connote internal waves in ionospheric plasmas. (AP/PE/T&D/PROP) 211-1997, 1260-1996

sky-wave contamination (navigation aids) Degradation of the received ground-wave signal, or of the desired sky-wave signal, by the presence of delayed ionospheric-wave components of the same transmitted signal. (AES/GCS) 172-1983w

sky-wave correction (navigation aids) (navigation) A correction for sky-wave propagation errors applied to measured position data; the amount of the correction is established on the basis of an assumed ionosphere height. (AES/GCS) 172-1983w

sky-wave station-error (sky-wave synchronized loran) (navigation aid terms) The error of station synchronization due to the effect of variations of the ionosphere on the time of transmission of the synchronizing signal from one station to the other. (AES/GCS) 172-1983w

sky wire *See:* overhead ground wire.

sky wire-coupling protector *See:* static wire-coupling protector.

SL *See:* special link.

slabbing or arcwall machine A power-driven mobile-cutting machine that is a single-purpose cutter in that it cuts only a horizontal kerf at variable heights. (EEC/PE) [119]

slab interferometry (fiber optics) The method for measuring the index profile of an optical fiber by preparing a thin sample that has its faces perpendicular to the axis of the fiber, and measuring its index profile by interferometry. *Synonym:* axial slab interferometry. *See also:* interferometer. (Std100) 812-1984w

slab line (waveguide) A uniform transmission line consisting of a round conductor between two extended parallel conducting surfaces, so that the propagating wave is essentially confined between the surfaces. (MTT) 146-1980w

slack-rope switch (elevators) A device that automatically causes the electric power to be removed from the elevator driving-machine motor and brake when the hoisting ropes of a winding-drum machine become slack. *See also:* control. (PE/EEC) [119]

slack stringing The method of stringing conductor slack without the use of a tensioner. The conductor is pulled off the reel by a pulling vehicle and is dragged along the ground, or the reel is carried along the line on a vehicle and the conductor is deposited on the ground. As the conductor is dragged to, or past, each supporting structure, the conductor is placed in the travelers, normally with the aid of finger lines. (T&D/PE) 524-1992r

slant distance (1) (navigation aids) The distance between two points that are not at the same elevation. (AES/GCS) 172-1983w

(2) The distance between two points that are not at the same elevation. Used in contrast to ground distance. (AES) 686-1997

slanted array compressor (SAC) A device containing dispersive transducer arrays that have a length-wise centerline that is inclined at an oblique angle to the incident propagation direction. (UFFC) 1037-1992w

slant range (navigation aids) The slant distance between a radar and a target. (AES/GCS) 686-1997, 172-1983w

slant-voltage-rated (multiple voltage rated) distribution cutout A distribution cutout intended primarily for application on three-phase solidly grounded neutral (multi-grounded) systems where prescribed conditions exist. (SWG/PE) C37.40-1993, C37.100-1992

slant voltage (multiple voltage) ratings of a distribution cutout A pair of maximum voltage ratings assigned to a distribution cutout intended primarily for application on three-phase solidly grounded neutral (multigrounded) systems where construction conditions are such that two cutouts will normally operate in series to clear phase-to-phase faults. In applying these cutouts, the system line-to-line voltage must be equal to or less than the maximum voltage rating to the right of the slant (/), and the system line-to-ground voltage must be equal to or less than the maximum voltage rating to

the left of the slant (/). *Note:* Slant voltage rated cutouts may be used in single-phase applications where the normal frequency recovery voltage across the cutout does not exceed the maximum voltage rating to the left of the slant (/). (SWG/PE) C37.100-1992

SLAR *See:* sidelooking airborne radar.

slash The literal character "/". This character is also known as *solidus*. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

slave (1) (test, measurement, and diagnostic equipment) A device that follows an order given by a master remote control. (MIL) [2]

(2) (VSB) A functional module that detects bus cycles initiated by the active master and, when those cycles select it, transfers data between itself and the master. The VSB specification defines a mechanism through which any number of slaves can participate in a bus cycle. All slaves that are selected by the cycle are called "selected slaves." However, only one of the selected slaves is allowed to acknowledge the cycle and respond to the active master. This slave is called the "responding slave." All other selected slaves are called "participating slaves." Slaves that are not selected by the cycle are called "idle slaves." (MM/C) 1096-1988w

(3) (VMEbus) A functional module that detects data transfer bus (DTB) cycles initiated by a master and, when those cycles specify its participation, transfers data between itself and the master. (BA/C) 1014-1987

(4) (STD bus) A card that responds to a bus transaction. (MM/C) 961-1987r

(5) (NuBus) A bus device that responds to a transaction. (C/MM) 1196-1987w

(6) A module that can be addressed and is capable of participating in bus transactions. (C/BA) 10857-1994, 896.4-1993w, 896.3-1993w

(7) A module that can be addressed and is capable of participating in, but not initiating, bus transactions. (C/BA) 1014.1-1994w

(8) A device that responds to masters according to the FBP. (NID) 960-1993

(9) An input-output device that is driven or controlled by a master unit. (C) 610.10-1994w

(10) The entity that responds to RamLink transactions (the transaction addressing is sufficient to support up to 63 slaves on each RamLink ringlet). (C/MM) 1596.4-1996

(11) A device that gathers data or performs control operations in response to requests from the master, and sends response messages in return. A slave device may also generate unsolicited responses (DNP 3.0 specific). (PE/SUB) 1379-1997

Slave *See:* SBus Slave.

slave, attached *See:* attached slave.

Slave Busy (BSY) bit A bit in the Slave Status register of every S-module that is set by the S-module when the application logic of the S-module is executing a previously transmitted MTM-bus instruction or is executing its power-up sequence. (TT/C) 1149.5-1995

Slave Controller state A state of the fsm required of S-modules that controls S-module Link Layer behavior during message transmission to the module. (TT/C) 1149.5-1995

Slave Data Fault (SDF) bit A bit in the Bus Error register of all S-modules. An S-module sets this bit when it is transmitting on the MSD signal and detects a fault on that signal. (TT/C) 1149.5-1995

slave drive *See:* electric drive; follower drive.

slaved tracking (power supplies) A system of interconnection of two or more regulated supplies in which one (the master) operates to control the others (the slaves). The output voltage of the slave units may be equal or proportional to the output voltage of the master unit. (The slave output voltages track the master output voltage in a constant ratio). *See also:* master/slave operation; complementary tracking. (AES/PE) [41], [78]

slave Physical Layer In a 100BASE-T2 link containing a pair of PHYs, the PHY that recovers its clock from the received signal and uses it to determine the timing of transmitter operations. It also uses the slave transmit scrambler generator polynomial for side stream scrambling. Master and slave PHY status is determined during the Auto-Negotiation process that takes place prior to establishing the transmission link. *See also:* master physical layer. (C/LM) 802.3-1998

slave relay *See:* auxiliary relay; relay.

slave state *See:* problem state.

slave station (navigation) (navigation aids) A station in which some characteristic of its emission is controlled by a master station. (AES/GCS) 172-1983w

Slave Status register A status register that is required to be implemented in the MTM-Bus interface logic of every S-module. Bits in this register are used to record such items of module status as interrupt enable status, whether an error condition has occurred, whether a module application-related error has occurred, whether the module has failed its Built-In Self Test, etc. (TT/C) 1149.5-1995

slave-sweep switching (oscilloscopes) A combination of sweep switching and multiple-trace operation in which a specific channel is displayed with a specific sweep. (IM) 311-1970w

slaving (gyros) The use of a torquer to maintain the orientation of the spin axis relative to an external reference, such as a pendulum or magnetic compass. (AES/GYAC) 528-1994

SLC *See:* software life cycle.

sled *See:* running board.

sleet hood (of a switch) A cover for the contacts to prevent sleet from interfering with successful operation of the switch. (SWG/PE) C37.100-1992

sleetproof (1) (general) So constructed or protected that the accumulation of sleet will not interfere with successful operation. (SWG/PE) C37.30-1971s, C37.100-1981s

(2) (power and distribution transformers) So constructed or protected that the accumulation of sleet (ice) under specified test conditions will not interfere with the successful operation of the apparatus. (PE/TR) C57.12.80-1978r

sleeve (1) (plug) (three-wire telephone-switchboard plug). A cylindrically shaped contacting part, usually placed in back of the tip or ring but insulated therefrom. (EEC/PE) [119]

(2) (rotating machinery) A tubular part designed to fit around another part. *Note:* In a sleeve bearing, the sleeve is that component that includes the cylindrical inner surface within which the shaft journal rotates. (PE) [9]

(3) *See also:* compression joint. (T&D/PE) 524-1992r

sleeve bearing (rotating machinery) A bearing with a cylindrical inner surface in which the journal of a rotor (or armature) shaft rotates. *See also:* rotor. (PE) [9]

sleeve conductor *See:* sleeve wire.

sleeve-dipole antenna A dipole antenna surrounded in its central portion by a coaxial conducting sleeve. *See also:* antenna. (AP/ANT) 145-1993

sleeve-monopole antenna An antenna consisting of half of a sleeve-dipole antenna projecting from a ground plane. *Synonym:* sleeve-stub antenna. (AP/ANT) 145-1993

sleeve-stub antenna *See:* sleeve-monopole antenna.

sleeve supervision The use of the sleeve circuit for transmitting supervisory signals. (EEC/PE) [119]

sleeve-type suppressor A suppressor designed for insertion in a high-tension ignition cable. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

sleeve wire (telephone switching systems) That conductor, usually accompanying the tip and ring leads of a switched connection, that provides for miscellaneous functions necessary to the control and supervision of the connection. In cord-type switchboards, the sleeve wire is that conductor associated with the sleeve contacts of the jacks and plugs. (COM) 312-1977w

sleeving trailer *See:* splicing cart.

slew A measure of the shape of the waveform constituting a logic state transition. A slew value can have the dimensions of time, in which case it is a slew time, or the dimensions of voltage-per-time, in which case it is a slew rate. The delay and power calculation system (DPCS) allows either interpretation if used consistently. (C/DA) 1481-1999

slew-dependent delay That part of an input-to-output delay that can be attributed to the signal at the input of the arc taking longer to make a transition than is considered ideal. (C/DA) 1481-1999

slewing (gyros) The rotation of the spin axis about an axis parallel to that of the applied torque causing the rotation. (AES/GYAC) 528-1994

slewing rate (1) (power supplies) A measure of the programming speed or current-regulator-response timing. The slewing rate measures the maximum rate-of-change of voltage across the output terminals of a power supply. Slewing rate is normally expressed in volts per second ($\Delta E/\Delta T$) and can be converted to a sinusoidal frequency-amplitude product by the equation (E_{pp}) = slewing rate/π, where E_{pp} is the peak-to-peak sinusoidal volts. Slewing rate = $\pi f(E_{pp})$. *See also:* high-speed regulator. (AES) [41]

(2) (thyristor) A rate at which the output changes in response to a step change in control signal input. (IA/IPC) 428-1981w

slewing speed (test, measurement, and diagnostic equipment) A continuous speed, usually the maximum at which a tape reader or other rotating device can search for information. (MIL) [2]

slew limit The value of output transition rate of change for which an increased amplitude input step causes no change. (IM/WM&A) 1057-1994w

slew rate (1) Rate of change of (ac voltage) frequency. (IA/PSE) 1100-1999

(2) A measure of how quickly a signal takes to make a transition; that is, a voltage-per-unit time. Slew rate is inversely related to slew time and is sometimes used incorrectly where slew time is intended. (C/DA) 1481-1999

slew time A measure of how long a signal takes to make a transition; that is, the rise time or fall time. Slew time is inversely related to slew rate. The way a slew time value is abstracted from the continuous waveform at a cell pin varies with different cell characterization methods. (C/DA) 1481-1999

SLIC *See:* selective listing in combination index.

slicer (amplitude gate) (clipper-limiter) A transducer that transmits only portions of an input wave lying between two amplitude boundaries. *Note:* The term is used especially when the two amplitude boundaries are close to each other as compared with the amplitude range of the input. (PE/EEC) [119]

slide rail (rotating machinery) A special form of soleplate which is long in the direction of the machine axis to permit sliding the stator frame in the axial direction. (PE) [9]

slide-screw tuner (1) (transmission lines and waveguides) An impedance or matching transformer that consists of a slotted waveguide or coaxial-line section and an adjustable screw or post that penetrates into the guide or line and can be moved axially along the slot. *See also:* waveguide. (IM/HFIM) [40]

(2) (waveguide components) A waveguide or transmission line tuner employing a post of adjustable penetration, adjustable in position along the longitudinal axis of the waveguide. (MTT) 147-1979w

sliding contact An electric contact in which one conducting member is maintained in sliding motion over the other conducting member. *See also:* contactor. (EEC/PE) [119]

sliding load A load sliding inside or along a fixed length of waveguide or transmission line. *See also:* waveguide. (IM/HFIM) [40]

sliding short circuit A short-circuit termination that consists of a section of waveguide or transmission line fitted with a sliding short-circuiting piston (contacting or noncontacting) that ideally reflects all the energy back toward the source. *See also:* waveguide. (IM/HFIM) [40]

sliding window A protocol used to allow a sender to transmit multiple packets before waiting for an acknowledgment. *Note:* The protocol places a small window in the sequence and transmits all packets that lie inside the window. The window size is adjusted based on the successful rate of packet transmission. *See also:* Go-Back-N; selective retransmission. (C) 610.7-1995

sliding window demand The block demand calculated over an integration period that includes sub-intervals of previous demand calculations. (AMR/SCC31) 1377-1997

slime, anode *See:* anode slime.

slinging wire A wire used to suspend and carry current to one or more cathodes in a plating tank. *See also:* electroplating. (EEC/PE) [119]

sling, traveler *See:* traveler sling.

slip (1) (A) (rotating machinery) The quotient of: the difference between the synchronous speed and the actual speed of a rotor, to the synchronous speed, expressed as a ratio, or as a percentage. **(B) (rotating machinery)** The difference between the speed of a rotating magnetic field and that of a rotor, expressed in revolutions per minute. **(C) (rotating machinery)** (electric couplings) The difference between the speeds of the two rotating members. *See also:* asynchronous machine. (PE) [9]

(2) In an induction machine, the difference between its synchronous speed and its operating speed. It may be expressed in the following ways:

a) As a percent of synchronous speed
b) As a decimal fraction of synchronous speed
c) Directly in revolutions per minute

(IA/MT) 45-1998

SLIP *See:* Symmetric List Processing Language.

slip, controlled *See:* controlled slip.

slip-grip *See:* conductor grip.

slip regulator (rotating machinery) A device arranged to produce a reduction in speed below synchronous speed greater than would be obtained inherently. Such a device is usually in the form of a variable impedance connected in the secondary circuit of a slip ring induction motor. (PE) [9]

slip relay A relay arranged to act when one or more pairs of driving wheels increase or decrease in rotational speed with respect to other driving wheels of the same motive power unit. *See also:* multiple-unit control. (EEC/PE) [119]

slip ring *See:* collector ring.

slip-ring induction motor *See:* wound-rotor induction motor.

slip-ring short-circuiting device *See:* brush-operating device.

slip, uncontrolled *See:* uncontrolled slip.

sliver A pulse with a duration less than that specified for that signal (e.g., truncated clock signal). (C/LM) 802.3-1998

slope (1) The gain (or loss) versus frequency characteristic of cable, amplifiers, and other devices. (LM/C) 802.7-1989r

(2) The ratio of the voltage change to the current change over the full (inductive plus capacitive) linearly controlled range of the static var compensator (SVC) at nominal voltage, expressed as a percentage. (PE/SUB) 1031-2000

slope angle *See:* glide-slope angle.

slope compensation The action of a slope-compensated gain control. The gain of the amplifier and the slope of amplifier equalization are changed simultaneously to provide equalization for different lengths of cable; normally specified in terms of cable loss. (LM/C) 802.7-1989r

slope detector (telephony) (dial-pulse address signaling systems) A circuit that provides a means of accurately measuring the open and closed intervals of a contact even though the contact may be shunted by a contact protection network or

measured from the far end of a metallic loop, or both. (COM/TA) 753-1983w

slot (1) (rotating machinery) A channel or tunnel opening onto or near the air gap and passing essentially in an axial direction through the rotor or stator core. A slot usually contains the conductors of a winding, but may be used exclusively for ventilation. *See also:* rotor; stator. (PE) [9]
(2) (VMEbus) A position where a printed-circuit board (pcb) can be inserted into the backplane. When the system has a J1 and a J2 backplane (or a combination J1/J2 backplane) each slot provides a pair of 96-pin connectors. When the system has only a J1 backplane, then each slot provides a single 96-pin connector. (C/BA) 1014-1987
(3) (VSB) A position where a board can be inserted into a backplane. Each VSB slot provides at least one 96-pin connector. (C/MM) 1096-1988w
(4) (NuBus) A backplane location that accepts a NuBus module. (C/MM) 1196-1987w
(5) A module-insertion position provided by the backplane and associated card cage. (C/MM) 1596-1992
(6) A position where a module can be inserted into an VXIbus backplane. Each slot provides the 96-pin J connectors to interface with the board P connectors. It may have to provide one, two, or three connectors. (C/MM) 1155-1992
(7) A mechanical location on a backplane. (C/BA) 896.2-1991w, 896.10-1997
(8) A module connector position on a crate segment backplane (see position). (NID) 960-1993
(9) The protocol data unit (PDU) of 53 octets used to transfer segments. It contains a segment of 52 octets and a 1 octet Access Control Field (ACF). There are two type of slots: Pre-Arbitrated (PA) slots and Queued Arbitrated (QA) slots. (LM/C) 8802-6-1994
(10) *See also:* expansion slot. (C) 610.10-1994w

slot antenna (data transmission) A radiating element formed by a slot in a conducting surface. (PE/AP/ANT) 599-1985w, 145-1993

slot array An antenna array formed of slot radiators. *See also:* antenna. (Std100) [84]

slot cell (rotating machinery) A sheet of insulation material used to line a slot before the winding is placed in it. *See also:* rotor; stator. (PE) [9]

slot coupling factor (navigation aid terms) (slot-antenna array) The ratio of the desired slot current to the available slot current, controlled by changing the depth of penetration of the slot probe into the waveguide. (AES/GCS) 172-1983w

slot current ratio (slot-antenna array) (navigation aid terms) The relative slot currents in the slots of the waveguide reading from its center to its end, with the maximum taken as 1; this ratio is dependent upon the slot spacing factor and the slot coupling factor. (AES/GCS) 172-1983w

slot discharge (rotating machine) Sparking between the outer surface of coil insulation and the grounded slot surface, caused by capacitive current between conductors and iron. The resulting current pulses have a fundamental frequency of a few kilohertz. *See also:* asynchronous machine. (PE) [9]

slot-discharge analyzer (rotating machinery) An instrument designed for connection to an energized winding of a rotating machine, to detect pulses caused by slot discharge, and to discriminate between them and pulses otherwise caused. *See also:* asynchronous machine. (PE) [9]

slot insulation (rotating machinery) A sheet or deposit of insulation material used to line a slot before the winding is placed in it. *See also:* asynchronous machine. (PE) [9]

slot line A planar transmission line consisting of two semi-infinite coplanar conductors affixed to the same side of an insulating substrate of arbitrary thickness and separated by a finite gap. (MTT) 1004-1987w

slot liner (rotating machinery) Separate insulation between an embedded coil side and the slot which can provide mechanical and electrical protection. (PE) [9]

slot packing (rotating machinery) Additional insulation used to pack embedded coil sides to ensure a tight fit in the slots. *See also:* stator; rotor. (PE) [9]

slot pitch (rotating machinery) The peripheral distance between fixed points in corresponding positions in two consecutive slots. *Synonym:* tooth pitch. (PE) [9]

slot section Portion of the stator bar/coil which after installation in the rotating electric machine is enclosed in the stator core slot. The outer surface of the slot section of bars/coils is treated with semiconducting (or conducting) materials, commonly referred to as semiconducting (or conducting) tapes or paints. (PE/EM) 1310-1996

slot separator insulation *See:* insulation slot separator.

slot space factor (rotating machinery) The ratio of the cross-sectional area of the conductor metal in a slot to the total cross-sectional area of the slot. *See also:* asynchronous machine. (PE) [9]

slot spacing factor (slot-antenna array) (navigation aids) A value proportional to the size of the angle between the slot location and the null of the internal standing wave; this factor is dependent upon frequency. (AES/GCS) 172-1983w

slotted armature (rotating machine) An armature with the winding placed in slots. *See also:* armature. (PE) [9], [84]

slotted section (slotted waveguide) (slotted line) A section of a waveguide or shielded transmission line the shield of which is slotted to permit the use of a carriage and travelling probe for examination of standing waves. *See also:* auxiliary device to an instrument. (AP/IM/ANT/HFIM) [35], [40], [84]

slot time A multipurpose parameter used in CSMA/CD technique that describes the contention behavior of the MAC sublayer of a LAN. *Note:* This value represents the amount of time during which a collision will occur if two stations transmit simultaneously. It is calculated as a function of the propagation delay of the network. *Synonym:* contention interval. (C) 610.7-1995

slot-type antenna (aircraft) A slot in the normal streamlined metallic surface of an aircraft, excited electromagnetically by a structure within the aircraft. Radiation is thus obtained without projections that would disturb the aerodynamic characteristics of the aircraft. Radiation from a slot is essentially directive. (EEC/PE) [119]

slot wedge (rotating machinery) The element placed above the turns or coil sides in a stator or rotor slot, and held in place by engagement of wedge (slots) grooves along the sides of the coil slot, or by projections from the sides of the slot tending to close the top of the slot. *Note:* A wedge may be a thin strip of material provided solely as insulation or to provide temporary retention of the coils during the manufacturing process. It may be a piece of structural insulating material or high-strength metal to hold the coils in the slot. Slots in laminated cores are normally wedged with insulating material. *See also:* stator; rotor. (PE) [9]

slow-closure device (hydraulic turbines) A cushioning device that retards the closing velocity of the servomotor from a predetermined servomotor position to zero servomotor position. (PE/EDPG) 125-1988r

slow-operate relay A slugged relay that has been specifically designed for long operate time but not for long release time. Caution: The usual slow-operate relay has a copper slug close to the armature, making it also at least partially slow to release. (PE/EM) 43-1974s

slow-operating relay A relay that has an intentional delay between energizing and operation. *See also:* electromagnetic relay. (EEC/PE) [119]

slow-release relay A relay that has an intentional delay between de-energizing and release. *Note:* The reverse motion need not have any intentional delay. *See also:* electromagnetic relay. (PE/EM) 43-1974s

slow release time characteristic, relay *See:* relay slow-release time characteristic.

slow-speed starting A control function that provides for starting an electric drive only at the minimum-speed setting. *See also:* starter. (IA/ICTL/IAC) [60]

slow time (A) Simulated time with the property that a given period of actual time represents less than that period of time in the system being modeled; for example, in a simulation of the internal workings of a computer, running the simulation for one second may result in the model advancing time by only a microsecond; that is, simulated time advances slower than actual time. **(B)** The duration of activities within a simulation in which simulated time advances slower than actual time. *Contrast:* real time; fast time. (C) 610.3-1989

slow wave An electromagnetic wave propagating close to a boundary with a phase velocity less than that which would exist in an unbounded medium having the same electromagnetic properties. *See also:* fast wave. (AP/PROP) 211-1997

slow-wave circuit (microwave tubes) A circuit whose phase velocity is much slower than the velocity of light. For example, for suitably chosen helixes the wave can be considered to travel on the wire at the velocity of light but the phase velocity is less than the velocity of light by the factor that the pitch is less than the circumference. (ED) [45]

slug *See:* connector link.

slug, relay *See:* relay slug.

slug tuning A means for varying the frequency of a resonant circuit by introducing a slug of material into either the electric or magnetic fields or both. *See also:* radio transmission; network analysis. (AP/ANT) 145-1983s

sluice Open water trough, also used to describe operation of a turbine when operated under free discharge conditions to release flood flows. (PE/EDPG) 1020-1988r

slush compound A non-drying oil, grease, or similar organic compound that, when coated over a metal, affords at least temporary protection against corrosion. (IA) [59]

small computer systems interface A data-transfer interface used to connect multiple peripheral devices, such as disk drives, tapes, or printers to computer systems while taking up only one slot in the computer. *Note:* Previously, this was known as Shugart Associates Systems Interface. (C) 610.10-1994w

small ion (dc electric-field strength and ion-related quantities) An ion comprised of molecules or molecular clusters bound together by charge. Mobilities are in the range of 10^{-5} m^2/Vs to 2×10^{-4} m^2/Vs. Typical radius is less than 1×10^{-9} m. *Note:* To avoid confusion with the more general term "ion," the use of the term "small ion" is encouraged. (T&D/PE) 539-1990, 1227-1990r

small-perturbation method An approximate technique for estimating the scattering from a perturbed boundary or from perturbations in the constitutive parameter(s) of a medium applicable when the perturbation is small compared to a reference parameter or scale such as the wavelength in the boundary case. (AP/PROP) 211-1997

small-power producer A non-utility generation source that is a qualifying small-power production facility under PURPA and the Federal Energy Regulatory Commission (FERC). (SUB/PE) 1109-1990w

small scale integration (SSI) (A) Pertaining to an integrated circuit containing less than 100 transistors in its design. *Contrast:* ultra-large scale integration; medium scale integration; very large scale integration; large scale integration. **(B)** Pertaining to an integrated circuit containing fewer than 10 elements. (C) 610.10-1994

small-signal (light-emitting diodes) A signal which when doubled in magnitude does not produce a change in the parameter being measured that is greater than the required accuracy of the measurement. (ED) [127]

small-signal forward transadmittance The value of the forward transadmittance obtained when the input voltage is small compared to the beam voltage. *See also:* electron-tube admittances. (ED) 161-1971w

small signal performance (1) (excitation systems for synchronous machines) The response of an excitation cotrol system, excitation system, or elements of an excitation system to signals that are small enough that nonlinearities can be disregarded in the analysis of the response, and operation can be considered to be linear. (PE/EDPG) 421.1-1986r **(2) (excitation systems)** The response to signals that are small enough so that nonlinearities are insignificant. (PE/EDPG) 421.2-1990

small-signal permittivity The incremental change in electric displacement per unit electric field when the magnitude of the measuring field is very small compared to the coercive electric field. (Measurements are usually made at a frequency of one kilohertz or higher). The small signal relative permittivity κ is equal to the ratio of the absolute permittivity e to the permittivity of free space e_0, that is, $\kappa = \epsilon / \epsilon_0$. *Note:* The value of the small-signal permittivity may depend on the remanent polarization, electric field, mechanical stress, sample history, or frequency of the measuring field. *See also:* remanent polarization; Curie-Weiss temperature. (UFFC) [21]

small-signal resistance (semiconductor rectifiers) The resistive part of the quotient of incremental voltage by incremental current under stated operating conditions. *See also:* rectification. (IA) [12]

SMALLTALK A high-order language based on the metaphor of objects sending messages to one another. *See also:* object-oriented language. (C) 610.13-1993w

small wiring *See:* secondary and control wiring.

smart actuator An actuator version of a smart transducer. (IM/ST) 1451.2-1997

smart sensor A sensor version of a smart transducer. (IM/ST) 1451.2-1997

smart terminal An intelligent terminal that is preprogrammed for a particular application, for example, a word processing workstation with integrated spell checking. (C) 610.10-1994w

Smart Transducer A transducer that provides functions over and above that necessary for generating a correct representation of a sensed or controlled physical quantity. This functionality typically simplifies the integration of the transducer into applications in a networked environment. (IM/ST) 1451.1-1999, 1451.2-1997

Smart Transducer Interface Module (STIM) (1) A module that contains the Transducer Electronic Data Sheet, logic to implement the transducer interface, the transducer(s) and any signal conversion or signal conditioning. This standard expressly requires that no operating mode of the Smart Transducer Interface Module ever permit these components to be physically separated. They may, however, be separated during manufacturing and repair. (IM/ST) 1451.2-1997 **(2)** The supporting electronics on the transducer side of the hardware interface to the NCAP. In IEEE 1451.1, an STIM and an NCAP combined form a Networked Smart Transducer. In the various IEEE 1451.X standards, for example IEEE 1451.2, the term STIM may have a more precise meaning within the scope of the particular standard. (IM/ST) 1451.1-1999

Smart Transducer object model An object model for a Smart Transducer. The model includes an interface to a transducer object and a transducer bus. (IM/ST) 1451.1-1999

smashboard signal A signal so designed that the arm will be broken when passed in the stop position. (EEC/PE) [119]

SME *See:* subject matter expert; systems management entity.

SMFA *See:* specific management functional areas.

SMIB *See:* security management information base.

smog *See:* fog.

smoke The airborne solid and liquid particulates and gases evolved when a material undergoes pyrolysis or combustion. (DEI) 1221-1993w

smoke detector (fire protection devices) A device which detects the visible or invisible particles of combustion. (NFPA) [16]

smooth To apply procedures that decrease or eliminate rapid fluctuations in data. (C) 1084-1986w

smooth current (rotating electric machinery) Current that remains unidirectional and the ripple of which does not exceed 3%. (PE/EM) 11-1980r

smoothing Any image enhancement technique in which the effect of noise in the original image is reduced. *Synonyms:* noise suppression; noise cleaning. (C) 610.4-1990w

smoothing reactor for HVDC transmission A smoothing reactor for HVDC application is a reactor intended for connection in series with an HVDC converter, or an HVDC transmission line or insertion in the intermediate dc circuit of a back-to-back link, for the purpose of

— Reducing harmonics in the dc line.
— Complying, in conjunction with dc filters, with the dc side telephone interference requirements.
— Limiting the surge-current amplitude during faults and disturbances; especially the limitation of cable discharge currents in the case of a long dc cable.
— Providing a high impedance to the flow of harmonics in the case of a cable link (high capacitance of cable).
— Limiting the rate of rise of inverter dc current in the case of inverter ac network disturbances; thus reducing the risk of commutation failures.
— Improving the dynamic stability of the dc transmission system (commutation failures).

Smoothing reactors may be built using either of two designs: dry-type air cooled or oil-immersed. Dry-type smoothing reactors are of air-core design. Oil-immersed smoothing reactors utilize magnetic-core materials as an inherent part of their design. (PE/TR) 1277-2000

smothered-arc furnace A furnace in which the arc or arcs is covered by a portion of the charge. (EEC/PE) [119]

SMT *See:* station management.

S/N *See:* signal-to-noise ratio.

SNA *See:* systems network architecture.

snake *See:* conductor cover; fish tape.

snap-action relay contacts A contact assembly having two or more equilibrium positions, in one of which the contacts remain with substantially constant contact pressure during the initial motion of the actuating member, until a condition is reached at which stored energy snaps the contacts to a new position of equilibrium. (EEC/REE) [87]

snaphook A connector comprised of a hook-shaped member with a normally closed keeper or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object. There are two types of snaphooks: a) The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection, or b) The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. (T&D/PE) 1307-1996

snapover When used in connection with alternating-current testing, a quasi-flashover or quasi-sparkover, characterized by failure of the alternating-current power source to maintain the discharge, thus permitting the dielectric strength of the specimen to recover with the test voltage still applied. (PE/PSIM) [55]

snapshot A copy of all or portions of the data contained in storage or in a database at a particular point in time. *Note:* Considered a "picture" of the data. (C) 610.5-1990w

snapshot dump (A) A dynamic dump of the contents of one or more specified storage areas. *See also:* dynamic dump; change dump; postmortem dump; static dump; selective dump; memory dump. **(B) (computers)** A selective dynamic dump performed at various points in a machine run. (C) 610.12-1990, [20], [85]

snarf The action taken by a a module when it takes a copy of data passing by on the bus, even though it did not request it. (C/BA) 10857-1994, 896.3-1993w, 896.4-1993w

snatch block (power line maintenance) (conductor stringing equipment) A device normally designed with a single sheave, a shell, and an attachment hook or shackle. One side of the shell can be opened to eliminate the need for threading of the line. It is commonly used for lifting loads on a single line, or as a device to control the position or direction, or both, of a fall line or pulling line *Synonyms:* skookum; Washington; Western. (T&D/PE) 516-1995, 524-1992r

Snell's law The relationship between angles of incidence, reflection and transmission, and material constitutive parameters, for a plane wave incident on a planar boundary between media of differing electromagnetic constitutive parameters. Often expressed as:

$\theta_i = \theta_r$

and

$n_i \sin\theta_i = n_t \sin\theta_t$

where

θ_i = the angle of incidence
θ_r = the angle of reflection
θ_t = the angle of transmission
n_i = the real part of the refractive index of the material in which the wave is incident
n_t = the real part of the refractive index of the other material

(AP/PROP) 211-1997

SNM cable *See:* shielded nonmetallic-sheathed cable.

SNOBOL *See:* StriNg-Oriented symBOlic Language.

snoop The action taken by a module on a transaction when it is not the master that originated the transaction or the repository of last resort for the data, but it still monitors the transaction. Cache memories snoop transactions to maintain coherence. (C/BA) 10857-1994, 896.4-1993w, 896.3-1993w

snow (1) (intensity-modulated display) A varying speckled background caused by noise. *See also:* television; radar. (BT/AV) [34]

(2) (overhead power lines) Precipitation composed of white or translucent ice crystals, chiefly in complex branched hexagonal form and often agglomerated into snowflakes. For weather observation purposes, the intensity of snow is characterized as:

a) "Very light," when scattered flakes do not completely cover or wet an exposed surface, regardless of duration;
b) "Light," when the visibility is 1.0 km or more;
c) "Moderate," when the visibility is less than 1.0 km but more than 0.5 km;
d) "Heavy," when the visibility is less than 0.5 km The classification of snowfall according to its intensity is identical to that of rain, where the equivalent amount of water accumulated in millimeters per hour is measured. An easier but less accurate approach uses the depth of the accumulated snow.

(T&D/PE) 539-1990

snow brake A constant application of light friction brake intended to create enough heat to mitigate the buildup of snow and ice, which would interfere with the brake actuators. (VT) 1475-1999

S/N ratio *See:* signal-to-noise ratio.

SNRM *See:* set normal response mode.

snr psoph (data transmission) Signal-to-noise ratio measured with psophometrically weighted receiver; expressed in dB (decibels). (PE) 599-1985w

snub *See:* anchor.

snubber (1) (converter circuit elements) (self-commutated converters) An auxiliary circuit element or combination of elements employed to modify the transient voltage or current of a semiconductor device. *See also:* shunt snubber; series snubber; polarized snubber. (IA/SPC) 936-1987w

(2) (load commutated inverter synchronous motor drives) An auxiliary circuit element or combination of elements employed to modify the transient voltage or current of a semi-

conductor device during switching. (A) (shunt snubber) Circuit elements, usually including a capacitor and a resistor connected in shunt with a switching device to limit the rate of rise of voltage or the peak voltage across the device (or both) when switching from a conducting to a blocking state or when subjected to an external voltage transient. (B) (series snubber) Circuit elements, usually including an inductor, connected in series with a switching device to limit the rate of rise or fall of current through the device when switching on or off, respectively. (IA/ID) 995-1987w

snub structure A structure located at one end of a sag section and considered as a *zero* point for sagging and clipping offset calculations. The section of line between two such structures is the sag section, but more than one sag section may be required in order to sag properly the actual length of conductor that has been strung. *Synonyms:* zero structure; O structure. (T&D/PE) 524-1992r

SO *See:* shift-out character.

soak, relay *See:* relay soak.

sock *See:* woven wire grip.

socket A file of a particular type that is used as a communications endpoint for process-to-process communication. (C) 1003.5-1999

socket address An address associated with a socket or remote endpoint. The address may include multiple parts, such as a network address associated with a host system and an identifier for a specific endpoint. (C) 1003.5-1999

socket cover The removable portion of the enclosure that provides access to the meter socket wiring. (ELM) C12.7-1993

socket identifier (socket ID) A byte used to uniquely identify the socket. A socket ID can be well known or can be dynamically assigned. (C/MM) 1284.4-2000

socket rim That part of a ring-type meter socket that is required to accommodate the socket sealing ring that holds a detachable watthour meter in place. The socket rim may be a part of the cover that is secured in place by a fastener such as a latch or crossbar. (ELM) C12.7-1993

sockets An interface to transport protocol. (C/PA) 1003.23-1998

socket sealing ring (watthour meter sockets) A ring used to overlap the socket rim and the detachable watthour meter cover ring to hold and provide means for sealing a detachable watthour meter in place. C12.7-1993

sock line *See:* pulling line.

sodium vapor lamp transformers (power and distribution transformers) (multiple-supply type) Transformers, autotransformers, or reactors for operating sodium vapor lamps for all types of lighting applications, including indoor, outdoor area, roadway, and other process and specialized lighting. (PE/TR) C57.12.80-1978r

SOE *See:* sequence-of-events.

sofar (navigation aids) A system of navigation providing hyperbolic lines of position determined by shore listening stations. (AES/GCS) 172-1983w

soft copy A copy of computer output in a form other than a printed page. For example, data displayed on a display device. *Contrast:* hard copy. (C) 610.2-1987, 610.6-1991w

soft error* *See:* transient error.

* Deprecated.

soft failure A failure that permits continued operation of a system with partial operational capability. *Contrast:* hard failure. (C) 610.12-1990

soft font *See:* downloadable font.

soft hyphen *See:* discretionary hyphen.

soft limiting *See:* limiter circuit.

soft region A cluster which does not have a specified physical location in a floorplan. It may have constraints on how closely the cells within the cluster are placed relative to each other. A soft region may be located within a hard region. (C/DA) 1481-1999

soft-sector Pertaining to a magnetic disk that is segmented by recorded data marks on the disk; the location of a sector is determined by the distance from a magnetically or photoelectrically sensed starting mark, known as an index mark. *Note:* This can refer to either a floppy diskette or a hard disk but generally refers to the former, which has one punched hole, known as an index hole, which marks the first sector. *Contrast:* hard-sector. (C) 610.10-1994w

soft start (1) (thyristor) At turn-on, a gradual increase in output at a predetermined rate from zero or a set minimum to a desired maximum. (IA/IPC) 428-1981w

(2) The ability of a controlling device to apply power to a load upon energization in a proportional manner, irrespective of values of the controlling signals. (IA/PC) 844-1991

soft start reset (thyristor) Reset of soft start to initial conditions when ac power is interrupted. (IA/IPC) 428-1981w

software (1) Computer programs, procedures, and possibly associated documentation and data pertaining to the operation of a computer system. (SE/C) 610.12-1990

(2) (programmable digital computer systems in safety systems of nuclear power generating stations) Computer programs and data. 7432-1982w

(3) The programs, procedures, rules, and any associated documentation pertaining to the operation of an information processing system. (C/PA) 14252-1996

(4) A generic term referring to software objects or a structured set of files. This term can refer to the objects forming the hierarchical structure (software objects), or to the actual files and control_files (software files). (C/PA) 1387.2-1995

(5) Computer programs and computer databases. (C/SE) J-STD-016-1995

(6) Computer programs, procedures, and associated documentation and data pertaining to the operation of a computer system. (C/SE) 1062-1998

software accuracy (programmable digital computer systems in safety systems of nuclear power generating stations) The software attribute that provides a quantitative measure of the magnitude of error. 7432-1982w

software acquisition process The period of time that begins with the decision to acquire a software product and ends when the product is no longer available for use. The software acquisition process typically includes nine steps associated with planning the organizational strategy, implementing an organization's process, determining the software requirements, identifying potential suppliers, preparing contract requirements, evaluating proposals and selecting the supplier, managing supplier performance, accepting the software, and using the software. (C/SE) 1062-1998

software characteristic (software) An inherent, possibly accidental, trait, quality, or property of software (for example, functionality, performance, attributes, design constraints, number of states, lines or branches). (C/SE) 610.12-1990, 1008-1987r

software_collection A grouping of software objects that are managed by the software_administration utilities. Software_collections are the sources and targets of these utilities. This standard defines two types of software_collections: installed _ software and distributions. (C/PA) 1387.2-1995

software common class The common class describing the common attributes associated with the hierarchical structure of software objects defined by this standard. (C/PA) 1387.2-1995

software component A general term used to refer to a software system or an element, such as module, unit, data, or document. (C/SE) 1061-1998

software configuration item, or subsystem A collection of software elements treated as a unit for the purpose of configuration management. (C/SE) 1016.1-1993w

software configuration management *See:* configuration management.

software consistency (programmable digital computer systems in safety systems of nuclear power generating sta-

tions) The software attribute that provides uniform design and implementation techniques and notation. 7432-1982w

software data base A centralized file of data definitions and present values for data common to, and located internal to, an operational software system. *See also:* data; file. (C/SE) 729-1983s

software data protection (SDP) A means of preventing inadvertent write or access to different operating modes. (ED) 1005-1998

software defined network A network based on a public circuit-switched network that gives the user the appearance of a private network. (C) 610.7-1995

software definition files The files containing the software structure and detailed attributes for distributions, installed_software, bundles, products, subproducts, filesets, files, and control_files. This includes the INDEX and INFO files and the PSF. To communicate metadata information relating to both distributions and installed software, software definition files serve as input to, or output from, the various software administration utilities. The format used by software administration utilities to store metadata relating to installed software is undefined. (C/PA) 1387.2-1995

software design description (SDD) A representation of software created to facilitate analysis, planning, implementation, and decision making. The software design description is used as a medium for communicating software design information, and may be thought of as a blueprint or model of the system. (C/SE) 1012-1998, 1016-1998

software design document The output of design process in a presentable format, traditionally, a paper-based document. (C/SE) 1016.1-1993w

software design process Organized tasks and activities of design, having appropriate specification. (C/SE) 1016.1-1993w

software design process specification Know-how, technology of design, that specify operationally how to use methodology of design (standardized itself) together with standards for evaluating design, tools to support design automation, and documentation required to represent design information. (C/SE) 1016.1-1993w

software development A set of activities that results in software products. Software development may include new development, modification, reuse, reengineering, maintenance, or any other activities that result in software products. (C/SE) J-STD-016-1995

software development cycle (software) The period of time that begins with the decision to develop a software product and ends when the software is delivered. This cycle typically includes a requirements phase, design phase, implementation phase, test phase, and sometimes, installation and checkout phase. *Notes:* 1. The phases listed above may overlap or be performed iteratively, depending upon the software development approach used. 2. This term is sometimes used to mean a longer period of time, either the period that ends when the software is no longer being enhanced by the developer, or the entire software life cycle. *Contrast:* software life cycle. (C) 610.12-1990

software development file (1) A collection of material pertinent to the development of a given software unit or set of related units. Contents typically include the requirements, design, technical reports, code listings, test plans, test results, problem reports, schedules, and notes for the units. *Synonyms:* software development folder; software development notebook; unit development folder. (C) 610.12-1990
(2) A repository for material pertinent to the development of a particular body of software. Contents typically include (either directly of by reference) considerations, rationale, and constraints related to requirements definition, design, and implementation; developer-internal test information; and schedule and status information. (C/SE) J-STD-016-1995

software development folder *See:* software development file.

software development library (SDL) (1) A software library containing computer readable and human readable information relevant to a software development effort. *Synonyms:* program support library; project library. *Contrast:* system library; master library; software repository; production library. (C) 610.12-1990
(2) A controlled collection of software, documentation, other intermediate and final software products, and associated tools and procedures used to facilitate the orderly development and subsequent maintenance of software. (C/SE) J-STD-016-1995

software development notebook *See:* software development file.

software development plan (SDP) A project plan for a software development project. (C) 610.12-1990

software development process (1) The process by which user needs are translated into a software product. The process involves translating user needs into software requirements, transforming the software requirements into design, implementing the design in code, testing the code, and sometimes, installing and checking out the software for operational use. *Note:* These activities may overlap or be performed iteratively. *See also:* incremental development; spiral model; waterfall model; rapid prototyping. (C) 610.12-1990
(2) An organized set of activities performed to translate user needs into software products. (C/SE) J-STD-016-1995

software diversity A software development technique in which two or more functionally identical variants of a program are developed from the same specification by different programmers or programming teams with the intent of providing error detection, increased reliability, additional documentation, or reduced probability that programming or compiler errors will influence the end results. *See also:* diversity. (C) 610.12-1990

software documentation Technical data or information, including computer listings and printouts, in human-readable form, that describe or specify the design or details, explain the capabilities, or provide operating instructions for using the software to obtain desired results from a software system. *See also:* data; documentation; software; system; system documentation; design; user documentation. (C/SE) 729-1983s

software element A deliverable or in-process document produced or acquired during software development or maintenance. Specific examples include but are not limited to:

a) Project planning documents (for example, software development plans, and software verification and validation plans);
b) Software requirements and design specifications;
c) Test effort documentation;
d) Customer-deliverable documentation;
e) Program source code;
f) Representation of software solutions implemented in firmware;
g) Reports (for example, review, audit, projectect status) and data (for example, defect detection test).

(C/SE) 1028-1988s

software engine An engine characterized by a self-contained software module that performs a set of low-level tasks when called by an application program; for example, a database engine or an inference engine. (C) 610.10-1994w

software engineering (A) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software. **(B)** The study of approaches as in definition (A). (C/SE) 1209-1992, 610.12-1990

software engineering environment The hardware, software, and firmware used to perform a software engineering effort. Typical elements include computer equipment, compilers, assemblers, operating systems, debuggers, simulators, emulators, test tools, documentation tools, and database management systems. (C/SE) 610.12-1990, 1348-1995

software error An error in a software element which, when executed, results in unintended system operation. (VT/RT) 1483-2000

software error tolerance (programmable digital computer systems in safety systems of nuclear power generating stations) The software attribute that provides continuity of operation under postulated non-nominal conditions. 7432-1982w

software experience data Data relating to the development or use of software that could be useful in developing models, reliability predictions, or other quantitative descriptions of software. (C/SE) 729-1983s

software feature (1) (software unit testing) A software characteristic specified or implied by requirements documentation (for example, functionality, performance, attributes, or design constraints). (C/SE) 1008-1987r, 610.12-1990

(2) A distinguishing characteristic of a software item (e.g., performance, portability, or functionality). (C/SE) 829-1998

software file A generic term referring to the files and control_ files that are contained within software objects and managed by the utilities in this standard. (C/PA) 1387.2-1995

software_file common class The common class that relates the two types of files defined by this standard, namely the actual files that make up the software, plus the control_files that are executed by the utilities when operating on software. (C/PA) 1387.2-1995

software_files A generic term referring to file andcontrol_ file objects (those that share the same software_file common class). (C/PA) 1387.2-1995

software hazard A software condition that is a prerequisite to an accident. (C/SE) 1228-1994

software hierarchy Hierarchical organization of objects that are managed by the software administration utilities. (C/PA) 1387.2-1995

software implementation-defined behavior Behavior, for a correct program construct and correct data, that depends on the software implementation and that each implementation shall document. (C/DA) 1481-1999

software implementation limits Restrictions imposed by an implementation. (C/DA) 1481-1999

software-intensive system A system for which software is a major technical challenge and is perhaps the major factor that affects system schedule, cost, and risk. In the most general case, a software-intensive system is comprised of hardware, software, people, and manual procedures. (C/SE) 1362-1998

software item (1) An aggregation of software, such as a computer program or database, that satisfies an end use function and is designated for purposes of specification, qualification testing, interfacing, configuration management, or other purposes. Software items are selected based on tradeoffs among software function, size, host or target computers, developer, support strategy, plans for reuse, criticality, interface considerations, need to be separately documented and controlled, and other factors. A software item is made up of one or more software units. (C/SE) J-STD-016-1995

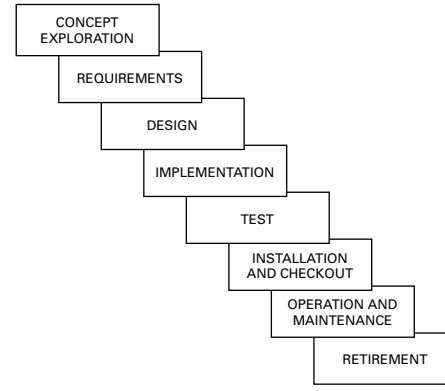
(2) Source code, object code, job control code, control data, or a collection of these items. (C/SE) 829-1998

software librarian The person responsible for establishing, controlling, and maintaining a software library. *See also:* software library. (C/SE) 729-1983s

software library (1) A controlled collection of software and related documentation designed to aid in software development, use, or maintenance. Types include master library, production library, software development library, software repository, system library. *Synonym:* program library. (C) 610.12-1990

(2) A collection of object code units that may be linked, either statically or at run-time, with other libraries and/or object code modules to produce a software program. (C/DA) 1481-1999

software life cycle (1) The period of time that begins when a software product is conceived and ends when the software is no longer available for use. The software life cycle typically includes a concept phase, requirements phase, design phase, implementation phase, test phase, installation and checkout phase, operation and maintenance phase, and, sometimes, retirement phase. (See the corresponding figure.) *Note:* These phases may overlap or be performed iteratively.



sample software life cycle

(C) 610.12-1990

(2) The various phases for software development from initial conception to final release and maintenance. (PE/EDPG) 1150-1991w

(3) The system or product cycle initiated by a user need or a perceived customer need and terminated by discontinued use of the product. The software life cycle typically includes a concept phase, requirements phase, design phase, implementation phase, test phase, installation and checkout phase, operation and maintenance phase, and, sometimes, retirement phase. These phases may overlap in time or may occur iteratively. (C/SE) 1362-1998

(4) The period of time that begins when a software product is conceived and ends when the software is no longer available for use. (C/SE) 1490-1998

software life cycle process (SLCP) The project-specific description of the process that is based on a project's software life cycle (SLC) and the Organizational Process Assets (OPA). *See also:* Organizational Process Asset. (C/SE) 1074-1997

software location The directory relative to the installed_software root directory where the relocatable files of the software have been located. (C/PA) 1387.2-1995

software maintenance (1) The set of activities that takes place to ensure that software installed for operational use continues to perform as intended and fulfill its intended role in system operation. Software maintenance includes improvements, aid to users, and related activities. (C/SE) J-STD-016-1995

(2) Modification of a software product after delivery to correct faults, to improve performance or other attributes, or to adapt the product to a modified environment. (C/SE) 1219-1998

(3) (software) *See also:* maintenance. (C) 610.12-1990

software model A symbolic model whose properties are expressed in software; for example, a computer program that models the effects of climate on the world economy. *Contrast:* narrative model; mathematical model; graphical model. (C) 610.3-1989w

software modularity (programmable digital computer systems in safety systems of nuclear power generating stations) 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. 7432-1982w

software monitor (software) A software tool that executes concurrently with another program and provides detailed infor-

mation about the execution of the other program. *See also:* monitor; hardware monitor. (C) 610.12-1990

software object An object that inherits attributes of the software common class, meaning a bundle, product, subproduct, or fileset object. (C/PA) 1387.2-1995

software packaging layout The format for software in a distribution. It contains the metadata for the distribution catalog in a well-defined exported form, as well as the files for the software objects in that distribution. (C/PA) 1387.2-1995

software pattern match string A sequence of one of more strings, each made up of a sequence of one or more characters from the shell "Pattern Matching Notation" strings described in 3.13, of POSIX.2, and with the meaning defined in that clause. If there are two or more strings, the strings are separated by the | character. A software pattern match shall be portable character string. (C/PA) 1387.2-1995

software product (1) Software or associated information created, modified, or incorporated to satisfy a contract. Examples include plans, requirements, design, code, databases, test information, and manuals. (C/SE) J-STD-016-1995
(2) (A) A complete set of computer programs, procedures, and associated documentation and data. **(B)** One or more of the individual items in (A). (C/SE) 1028-1997
(3) The complete set of computer programs, procedures, and associated documentation and data designated for delivery to a user. (C/SE) 1062-1998

software product requirements document The document that describes the full requirements for the software product that is to be developed. *Note:* Equivalent names used in the software industry are: user requirements, segment specification, software product requirements specification, and technical requirements section of the contract. (C/SE) 1298-1992w

software project The set of work activities, both technical and managerial, required to satisfy the terms and conditions of a project agreement. A software project should have specific starting and ending dates, well-defined objectives and constraints, established responsibilities, and a budget and schedule. A software project may be self-contained or may be part of a larger project. In some cases, a software project may span only a portion of the software development cycle. In other cases, a software project may span many years and consist of numerous subprojects, each being a well-defined and self-contained software project. (C/SE) 1058-1998, 1490-1998

software project management The process of planning, organizing, staffing, monitoring, controlling, and leading a software project. (C/SE) 1058.1-1987s

software project management plan The controlling document for managing a software project. A software project management plan defines the technical and managerial project functions, activities, and tasks necessary to satisfy the requirements of a software project, as defined in the project agreement. (C/SE) 1058.1-1987s

software quality (1) (A) The totality of features and characteristics of a software product that bear on its ability to satisfy given needs; for example, conform to specifications. **(B)** The degree to which software possesses a desired combination of attributes. **(C)** The degree to which a consumer or user perceives that software meets his or her composite expectations. **(D)** The composite characteristics of software that determine the degree to which the software in use will meet the expectations of the customer. *See also:* software; specification; software product. (C/SE) 729-1983
(2) The ability of software to satisfy its specified requirements. (C/SE) J-STD-016-1995

software quality assurance *See:* quality assurance.

software quality management That aspect of the overall software management function:Software management that determines and implements the software quality policy. (C/SE) 1074-1995s

software quality metric A function whose inputs are software data and whose output is a single numerical value that can be interpreted as the degree to which software possesses a given attribute that affects its quality. (C/SE) 1061-1998

software quality policy The overall quality intentions and direction of an organization as regards software quality, as expressed by top management. (C/SE) 1074-1995s

software reliability (1) (software reliability) The probability that software will not cause the failure of a system for a specified time under specified conditions. The probability is a function of the inputs to and use of the system as well as a function of the existence of faults in the software. The inputs to the system determine whether existing faults, if any, are encountered. (SE/C) 982.2-1988, 982.1-1988, 729-1983s
(2) The ability of a program to perform a required function under stated conditions for a stated period of time. *See also:* software; program; function; system; failure. (C/SE) 729-1983s

software reliability management The process of optimizing the reliability of software through a program that emphasizes software error prevention, fault detection and removal, and the use of measurements to maximize reliability in light of project constraints such as resources (cost), schedule, and performance. (C/SE) 982.2-1988, 982.1-1988

software repository A software library providing permanent, archival storage for software and related documentation. *Contrast:* system library; software development library; master library; production library. (C) 610.12-1990

software requirements review (SRR) (A) A review of the requirements specified for one or more software configuration items to evaluate their responsiveness to and interpretation of the system requirements and to determine whether they form a satisfactory basis for proceeding into preliminary design of the configuration items. *Note:* This review is called software specification review by the U.S. Department of Defense. *See also:* system requirements review. **(B)** A review as in definition (A) for any software component. (C) 610.12-1990

software requirements specification (SRS) Documentation of the essential requirements (i.e., functions, performance, design constraints, and attributes) of the software and its external interfaces. The software requirements are derived from the system specification. (C/SE) 1012-1998

software reuse The reapplication of previously developed software or information associated with that software. (SCC20) 1226-1998

software reuse resources Reuse libraries, stores of reusable assets, software reuse services, and suppliers. (C/SE) 1430-1996

software safety Freedom from software hazards. (C/SE) 1228-1994

software safety program A systematic approach to reducing software risks. (C/SE) 1228-1994

software sneak analysis A technique applied to software to identify latent (sneak) logic control paths or conditions that could inhibit a desired operation or cause an unwanted operation to occur. *See also:* software. (C/SE) 729-1983s

software_spec A string that is used to identify one or more software objects for input to a software administration utility. (C/PA) 1387.2-1995

software specification review (SSR) *See:* software requirements review.

software system (1) Software that is the subject of a single software project. (C/SE) 1074-1995s
(2) A system consisting solely of software and possibly the computer equipment on which the software operates. (C/SE) J-STD-016-1995
(3) A software-intensive system for which software is the only component to be developed or modified. *See also:* software-intensive system. (C/SE) 1362-1998

software test incident (software unit testing) (software) Any event occurring during the execution of a software test that requires investigation. (C/SE) 610.12-1990, 1008-1987r

software tools (1) 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, flowcharter, monitor, test case generator, and timing analyzer. (PE/C/NP) 7-4.3.2-1993, 610.12-1990

(2) Computer programs used to aid in the development, testing, analysis, or maintenance of a computer program or its documentation. (C/SE) 730.1-1995

software transition The set of activities that enables responsibility for software development to pass from one organization, usually the organization that performs initial software development, to another, usually the organization that will perform software maintenance. (C/SE) J-STD-016-1995

software unit An element in the design of a software item; for example, a major subdivision of a software item, a component of that subdivision, a class, object, module, function, routine, or database. Software units may occur at different levels of a hierarchy and may consist of other software units. Software units in the design may or may not have a one-to-one relationship with the code and data entities (routines, procedures, databases, data files, etc.) that implement them or with the computer files containing those entities. (C/SE) J-STD-016-1995

software user document Body of material that provides information to users; typically printed or stored on some medium in the format of a printed document. (C/SE) 1063-1987r

software verification and validation plan (SVVP) A plan describing the conduct of software V&V. (C/SE) 1012-1998

software verification and validation report (SVVR) Documentation of V&V results and software quality assessments. (C/SE) 1012-1998

soil structure interaction (SSI) A general concept for effects caused by the influence of the soil dynamic behavior on the response of a structure. (SUB/PE) C37.122.1-1993

solar activity The emission of electromagnetic radiation and particles from the sun, including slowly varying components and transient components caused by phenomena such as solar flares. (AP/PROP) 211-1997

solar activity center A region on the sun containing the sources of variable electromagnetic and corpuscular radiation. (AP/PROP) 211-1997

solar activity index A number characterizing solar activity. Examples are international relative sunspot number, twelve-month running mean sunspot number, and monthly mean solar radio-noise flux. (AP/PROP) 211-1997

solar array (photovoltaic power system) A group of electrically interconnected solar cells assembled in a configuration suitable for oriented exposure to solar flux. (AES) [41]

solar constant (1) (illuminating engineering) The irradiance (averaging 1 353 W/m^2 (125.7 W/ft^2), from the sun at its mean distance from the earth 92.9×10^6 miles (1.5×10^{11}m), before modification by the earth's atmosphere. (EEC/IE) [126]

(2) (electric power systems in commercial buildings) The solar intensity incident on a surface that is oriented normal to the sun's rays and located outside the earth's atmosphere at a distance from the sun that is equal to the mean distance between the earth and the sun. (IA/PSE) 241-1990r

solar cycle The magnitude of slowly varying components of solar activity as a function of time. The solar cycle has a period of approximately 11 years. *Note:* The cycle is not symmetrical. It rises to a maximum in approximately 4 years and declines to a minimum in approximately 7 years. (AP/PROP) 211-1997

solar induced currents (power fault effects) Spurious, quasi-direct currents flowing in grounded power differences due to geomagnetic storms resulting from the particle emission of solar flares erupting from the surface of the sun. *Synonym:* geomagnetically induced currents. *See also:* auroral effects. (PE/PSC) 367-1987s

solar noise (communication satellite) Electrical noise generated by the sun. Exceeds other background noise sources by several orders of magnitude. (COM) [25]

solar panel *See:* solar array.

solar radiation simulator (illuminating engineering) A device designed to produce a beam of collimated radiation having a spectrum, flux density, and geometric characteristics similar to those of the sun outside the earth's atmosphere. (EEC/IE) [126]

solar wind (communication satellite) Energetic particles emitted by the sun and travelling through space. (COM) [19]

solderability That property of a metal surface to be readily wetted by molten solder. (EEC/AWM) [105]

soldered joints The connection of similar or dissimilar metals by applying molten solder, with no fusion of the base metals. (EEC/AWM) [105]

solder projections Icicles, nubs, and spikes are undesirable protrusions from a solder joint. (EEC/AWM) [105]

solder side By convention, the side of the module opposite to the component side. This is the left side when looking at an IEEE 1101.1 system through the front door. (C/MM) 1101.2-1992

solder splatter Unwanted fragments of solder. (EEC/AWM) [105]

solenoid An electric conductor wound as a helix with a small pitch, or as two or more coaxial helixes. *See also:* solenoid magnet. (Std100) 270-1966w

solenoid magnet (solenoid) An electromagnet having an energizing coil approximately cylindrical in form, and an armature whose motion is reciprocating within and along the axis of the coil. (IA/ICTL/IAC) 270-1966w, [60]

solenoid relay *See:* plunger relay.

soleplate (rotating machinery) A support fastened to a foundation on which a stator frame foot or a bracket arm can be mounted. *See also:* slide rail. (PE) [9]

solicited messages A negotiated data transfer in message space. *See also:* message space; data transfer. (C/MM) 1296-1987s

solicited status Information generated by the peripheral in response to a command from the host. (C/MM) 1284-1994

solid angle (ω) (laser maser) The ratio of the area on the surface of a sphere to the square of the radius of that sphere. It is expressed in steradians. (LEO) 586-1980w

solid angle factor (Q) (illuminating engineering) A function of the solid angle (ω) subtended by a source and is given by

$$Q = 20.4\omega = 1.52\omega^{0.2} - 0.075$$

See also: index of sensation. (EEC/IE) [126]

solid-beam efficiency The ratio of the power received over a specified solid angle when an antenna is illuminated isotropically by uncorrelated and unpolarized waves to the total power received by the antenna. *Note:* This term is sometimes used to mean the ratio of the power received corresponding to a particular polarization over the solid angle to the total power received. Equivalently, the term is used to mean the ratio of the power radiated over a specified solid angle by the antenna corresponding to a particular polarization to the total power radiated. (AP/ANT) 145-1993

solid bushing (outdoor electric apparatus) A bushing in which the major insulation is provided by a ceramic or analogous material. (PE/TR) 21-1976

solid conductor A conductor consisting of a single wire. *See also:* conductor. (T&D/PE) [10]

solid contact A contact having relatively little inherent flexibility and whose contact pressure is supplied by another member. (SWG/PE) C37.100-1981s

solid coupling (rotating machinery) A coupling that makes a rigid connection between two shafts. *See also:* rotor. (PE) [9]

solid electrolytic capacitor A capacitor in which the dielectric is primarily an anodized coating on one electrode, with the

remaining space between the electrodes filled with a solid semiconductor. (PE/EM) 43-1974s

solid enclosure An enclosure that will neither admit accumulations of flyings or dust nor transmit sparks or flying particles to the accumulations outside. (EEC/PE) [119]

solid insulations (cable-insulation materials) Firm, essentially homogeneous, dielectric materials comprising virtually complete solid-phase structures and having no liquid phase. (PE) 402-1974w

solid-iron cylindrical-rotor generator *See:* cylindrical-rotor generator.

solidly grounded (power and distribution transformers) Grounded through an adequate ground connection in which no impedance has been inserted intentionally. *Note:* Adequate as used herein means suitable for the purpose intended. (PE/TR) C57.12.80-1978r

solid-material fuse unit A fuse unit in which the arc is drawn through a hole in solid material. (SWG/PE) C37.40-1993, C37.100-1992

solid modeling A method of displaying solid constructions on a graphical display device using geometric forms such as cubes, cones, spheres, and cylinders. (C) 610.6-1991w

solid-pole synchronous motor A salient-pole synchronous motor having solid steel pole shoes, and either laminated or solid pole bodies. (PE) [9]

solid rotor (A) (rotating machinery) A rotor, usually constructed of a high-strength forging, in which slots may be machined to accommodate the rotor winding. **(B) (rotating machinery)** A spider-type rotor in which spider hub is not split. *See also:* rotor. (PE) [9]

solid-state component A component whose operation depends on the control of electric or magnetic phenomena in solids, for example, a transistor, crystal diode, ferrite core. (C) [20], [85]

solid state controller An electric controller that utilizes a static power converter as the primary switching device. (IA/MT) 45-1998

solid-state converter static (induction and dielectric heating equipment) A solid state generator or power source that utilizes semiconductor devices to control the switching of currents through inductive and capacitive circuit elements and thus generate a useable alternating current at a desired output frequency. (IA) 54-1955w

solid-state device (control equipment) A device that may contain electronic components that do not depend on electronic conduction in a vacuum or gas. The electrical function is performed by semiconductors or the use of otherwise completely static components such as resistors, capacitors, etc. (PE/PSE) 94-1970w

solid state network relay A solid state relay which performs the combined functions of the master and phasing relays. (PE/TR) C57.12.44-1994

solid-state protector A protective device that employs solid-state circuit elements that provide a combination of high speed voltage and current sensing. These protectors are a combination of voltage clamps (avalanche diodes) and crowbar devices (multilayer diodes similar to SCRs), and are designed to limit the voltage to a specific value and to reduce current flow to low values of milliamperes within nanoseconds. They are usually integrated into the terminal apparatus. (PE/PSC) 487-1992

solid-state relay (or relay unit) A static relay or relay unit constructed exclusively of solid-state components. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

solid-state scanning (facsimile) A method in which all or part of the scanning process is due to electronic commutation of a solid-state array of thin-film photosensitive elements. *See also:* facsimile. (COM) [49]

solid-type paper-insulated cable Oil-impregnated, paper-insulated cable, usually lead covered, in which no provision is made for control of internal pressure variations. (T&D/PE) [10]

solitary wave A propagating wave disturbance where the effects of media dispersion and non-linearity compensate one another to produce a self-preserving wave shape. *Synonym:* soliton. (AP/PROP) 211-1997

soliton *See:* solitary wave.

solution *See:* check solution.

solution domain The environment in which a solution or set of solutions resides. *See also:* problem domain. (C/SE) 1362-1998

solvent cleaning (electroplating) Cleaning by means of organic solvents. *See also:* electroplating. (PE/EEC) [119]

solventless (rotating machinery) A term applied to liquid or semiliquid varnishes, paints, impregnants, resins, and similar compounds that have essentially no change in weight or volume when converted into a solid or semisolid. (PE) [9]

somatic cells *See:* genetic effect.

son *See:* child node.

sonar (navigation aids) A general name for sonic and ultrasonic ranging, sounding and communication systems. (AES/GCS) 172-1983w

son file A file that contains data that have been updated from those in another file, called the father file. *See also:* grandfather file; father file. (C) 610.5-1990w

sonic delay line *See:* acoustic delay line.

sonic depth finder (navigation aids) A direct reading instrument which determines the depth of water by measuring the time interval between emission of sound and the return of its echo from the bottom. (AES/GCS) 172-1983w

sonic pen A pick device that is sensitive to audio signals. *See also:* light pen. (C) 610.6-1991w, 610.10-1994w

sonne (navigation aid terms) A radio navigation aid that provides a number of characteristic signal zones which rotate in a time sequence; a bearing may be determined by observation (by interpolation) of the instant at which transition occurs from one zone to the following zone. *See also:* consol. (AES/GCS) 172-1983w

sonobuoy (navigation aid terms) A buoy with equipment for automatically transmitting a radio signal when triggered by an underwater sound signal. (AES/GCS) 172-1983w

sort To arrange data or items in an ordered sequence by applying specific rules. (MIL/C) [2], [85], [20]
(2) (A) (data management) To arrange items according to a specified order of their sort keys. For example, to arrange the records of a personnel file into alphabetical sequence using the sort key "Employee-name." *See also:* radix sort; internal sort; distribution sort; merge sort; exchange sort; selection sort; insertion sort; external sort. **(B) (data management)** To segregate items into subsets according to specified criteria. **(C) (data management)** A process that achieves the arrangement or segregation described in definition (A) or (B). (C) 610.5-1990

sort by merging (data management) To sort the items of a set by splitting the set into subsets, sorting the subsets, and merging the subsets. *Synonym:* sequence by merging. *See also:* order-by-merging. (C) 610.5-1990w

sorter (1) A person, device, or computer routine that sorts. (C) [20], [85]
(2) (data management) A mechanical device that deposits punched cards in pockets based on the hole patterns in the cards. (C) 610.5-1990w
(3) *See also:* card sorter. (C) 610.10-1994w

sorting item (A) That item of a set that is actively being exchanged or manipulated with other elements during the sorting process. *See also:* sort selection. **(B)** Any element of a set that has a probability of being selected by a sort selection. (C) 610.5-1990

sorting rewind time In a tape merge sort, the length of time needed to rewind a tape to its original position. (C) 610.5-1990w

sorting-sequencing key *See:* sort key.

sorting string A string of characters used as a sort key. (C) 610.5-1990w

sort key A key field whose value is used to determine the position of items within a sorted set. *Synonyms:* sorting-sequencing key; sequencing key. *See also:* sorting string; sort. (C) 610.5-1990w

sort order* *See:* order.

* Deprecated.

sort pass (A) In a sorting algorithm, a single processing of all the items of a set. **(B)** A phase of a merge sort that reads a subset of unsorted data items, orders them, and places the ordered subset on a data medium. This process is repeated until all input data is placed in some subset. The merge phase is then begun to merge the subsets into one ordered set. (C) 610.5-1990

sort selection (A) The choice of a particular sorting algorithm. **(B)** The process of choosing an item to be exchanged with another item as part of a selection sorting process. *See also:* sorting item. (C) 610.5-1990

SOS *See:* radio distress signal.

sound (A) An oscillation in pressure, stress, particle displacement, particle velocity, etc., in a medium with internal forces (for example, elastic, viscous), or the superposition of such propagated oscillations. **(B)** An auditory sensation evoked by the oscillation described above. *Note:* In case of possible confusion, the term sound wave or elastic wave may be used for concept (A) and the term sound sensation for concept (B). Not all sound waves can evoke an auditory sensation, for example, an ultrasonic wave. 2. The medium in which the sound exists is often indicated by an appropriate adjective, for example, air-borne, water-borne, structure-borne. (SP) [32]

sound absorption (A) The change of sound energy into some other form, usually heat, in passing through a medium or on striking a surface. **(B)** The property possessed by material and objects, including air, of absorbing sound energy. (SP) [32]

sound-absorption coefficient (surface) The ratio of sound energy absorbed or otherwise not reflected by the surface, to the sound energy incident upon the surface. Unless otherwise specified, a diffuse sound field is assumed. (SP) [32]

sound analyzer A device for measuring the band pressure level, or pressure spectrum level, of a sound at various frequencies. *Notes:* 1. A sound analyzer usually consists of a microphone, an amplifier and wave analyzer, and is used to measure amplitude and frequency of the components of a complex sound. 2. The band pressure level of a sound for a specified frequency band is the effective root-mean-square sound pressure level of the sound energy contained within the bands. *See also:* instrument. 157-1951w

sound articulation (percent sound articulation) The percent articulation obtained when the speech units considered are fundamental sounds (usually combined into meaningless syllables). *See also:* volume equivalent. (PE/EEC) [119]

sound buoy (navigation aid terms) A buoy equipped with a characteristic sound signal. *See also:* buoy. (AES/GCS) 172-1983w

sound-detection system (protective signaling) A system for the protection of vaults by the use of sound-detecting devices and relay equipment to pick up and convert noise, caused by burglarious attack on the structure, to electric impulses in a protection circuit. *See also:* protective signaling. (EEC/PE) [119]

sound-effects filter (electroacoustics) A filter used to adjust the frequency response of a system for the purpose of achieving special aural effects. *See also:* filter. (SP) 151-1965w

sound energy Of a given part of a medium, the total energy in this part of the medium minus the energy that would exist in the same part of the medium with no sound waves present. (SP) [32]

sound field A region containing sound waves. (SP) [32]

sounding, active *See:* active sounding.

sound intensity (1) (power station noise control) The average rate of sound energy radiated by a source per unit time. (PE/EDPG) 640-1985w

(2) (sound-energy flux density) (sound power density) (in a specified direction at a point) The average rate of sound energy transmitted in the specified direction through a unit area normal to this direction at the point considered. *Notes:* 1. The sound intensity in any specified direction a of a sound field is the sound-energy flux through a unit area normal to that direction. This is given by the expression

$$I_a = \frac{1}{T}\int_0^T p v_a \mathrm{d}t$$

where

T = an integral number of periods or a long time compared to a period
p = the instantaneous sound pressure
v_a = the component of the instantaneous particle velocity in the direction a
t = time

2. In the case of a free plane or spherical wave having an effective sound pressure, p, the velocity of propagation c, in a medium of density ρ, the intensity in the direction of propagation is given by

$$I = \frac{p^2}{\rho c}$$

(SP) [32]

sound level (1) (measurement of sound pressure levels of ac power circuit breakers) Weighted sound pressure level obtained by the use of a metering characteristic and the weightings A, B, C (or other) as specified. The weighting used must be indicated. (SWG/PE) C37.100-1992, C37.082-1982r

(2) (overhead power lines) A weighted sound pressure level, obtained by the use of metering characteristics and the weightings A, B, C, or D specified in ANSI S1.4-1983. The weightings employed must always be stated. The reference pressure is always 20 μPa. *Notes:* 1. The meter reading (in decibels) corresponds to a value of the sound pressure integrated over the audible frequency range with a specified frequency weighting and integration time. 2. A suitable method of stating the weighting is, for example, "The A-weighted sound level was 43 dB," or "The sound level was 490 dB (A)." 3. Weightings are based on psychoacoustically determined time or frequency responses in objective measuring equipment. This is done to obtain data that better predict the subjective listener reaction than would wide-band measurements with a meter having either an instantaneous time response or a slow average or rms response. (T&D/PE) 539-1990

sound level, A-weighted *See:* A-weighted sound level.

sound-level meter An instrument including a microphone, an amplifier, an output meter, and frequency-weighting networks for the measurement of noise and sound levels in a specified manner. *Notes:* 1. The measurements are intended to approximate the loudness level of pure tones that would be obtained by the more-elaborate ear balance method. 2. Loudness level in phons of a sound is numerically equal to the sound pressure level in decibels relative to 0.0002 μbar of a simple tone of frequency 1000 Hz that is judged by the listeners to be equivalent in loudness. 3. Specifications for sound-level meters are given in American National Standard Specification for Sound-Level Meters, S1.4-1971 (or latest revision thereof). *See also:* instrument. (SP) [32]

sound power (power station noise control) The total sound energy radiated by a source per unit time. (PE/EDPG) 640-1985w

sound power level (L_w) (1) (airborne sound measurements on rotating electric machinery) The sound power level, in

decibels, is equal to 10 times the logarithm to the base 10 of the ratio of a given power to the reference power, 10^{-12} W.

$$L_W = 10\log_{10}\left(\frac{W}{W_0}\right)$$

where
L_w = sound power level
W = measured sound power in watts
W_0 = reference power

(PE/EM) 85-1973w

(2) (in decibels) Ten times the logarithm to the base ten of the emitted sound power (w) to the reference power of 10^{-12} W, (w_o), or

$$L_W = 10 \times \log_{10}\left(\frac{W}{W_0}\right)$$

(PE/TR) C57.12.90-1999

sound power level, A-weighted *See:* A-weighted sound power level.

sound pressure (1) (power station noise control) The instantaneous pressure measured in a sound wave, that is, the variation in atmospheric pressure. (PE/EDPG) 640-1985w

(2) (transmission performance of telephone sets) The sound pressure at a point, is the total instantaneous pressure at that point, in the presence of a sound wave, minus the static pressure at that point. (COM/TA) 269-1983s

sound pressure, effective *See:* effective sound pressure.

sound pressure, instantaneous *See:* instantaneous sound pressure.

sound pressure level (1) (overhead power lines) Twenty times the logarithm to the base 10 of the ratio of the pressure of a sound to the reference pressure, expressed in decibels. The reference pressure shall be explicitly stated. *Notes:* 1. The following reference pressures are in common use: 20 micropascals (μPa), and (2) 0.1 pascal (Pa). Reference pressure (A) is in general use for measurements concerned with hearing and with sound in air and liquids, while reference pressurehas gained widespread acceptance for calibration of transducers and various kinds of sound measurements in liquids. 2. Unless otherwise explicitly stated, it is to be understood that the sound pressure is the effective (rms) sound pressure. 3. It is to be noted that in many sound fields the sound pressure ratios are not the square roots of the corresponding power ratios.

(SWG/T&D/PE) 539-1990, C37.082-1982r

(2) The sound pressure level, in decibels, of a sound is 20 times the logarithm to the base 10 of the ratio of the pressure of this sound to the reference pressure.

(COM/TA) 269-1992, 1206-1994

(3) Twenty times the logarithm to the base 10 of the ratio of the pressure of a sound to the reference sound pressure. Unless otherwise specified, the effective rms pressure to be used. The reference sound pressure is 20 μPa. Unit: decibel (dB).

(SWG/PE) C37.100-1992

(4) [in decibels (dB)] Twenty times the logarithm to the base 10 of the ratio of the measured sound pressure (p) to a reference pressure (p_o) of 20 (μPa), or

$$L_p = (20 \times \log_{10})\frac{p}{p_o}$$

(PE/TR) C57.12.90-1993s

(5) Twenty times the logarithm to the base 10 of the ratio of the pressure of the sound to the reference pressure. The reference pressure is normally 1 Pascal (Pa), and sound pressure levels are expressed in dB re 1 Pa (dBPa). When a reference pressure of 20 μPa is used, the sound pressure level will be expressed as dBSPL. Unless otherwise indicated, rms values of pressure are used. Most telephony acoustic measurements are referenced to 1 Pa. However, measurements such as receive noise and room noise are generally referenced to 20 uPa. *Note:* 0 dB Pa = 94 dBSPL, 0 dBSPL = 20 μPa, 1 Pa = 1 N/m^2. An A-weighted sound pressure level in dB (dBSPL, A-weighted) is often abbreviated as dBA or dB(A).

(COM/TA) 1329-1999

sound probe A device that responds to some characteristic of an acoustic wave (for example, sound pressure, particle velocity) and that can be used to explore and determine this characteristic in a sound field without appreciably altering the field. *Note:* A sound probe may take the form of a small microphone or a small tubular attachment added to a conventional microphone. *See also:* instrument. (SP) [32]

sound recording system A combination of transducing devices and associated equipment suitable for storing sound in a form capable of subsequent reproduction. *See also:* phonograph pickup. (SP) [32]

sound reflection coefficient (surface) The ratio of the sound reflected by the surface to the sound incident upon the surface. Unless otherwise specified, reflection of sound energy in a diffuse sound field is assumed. (SP) [32]

sound reproducing system A combination of transducing devices and associated equipment for reproducing recorded sound. (SP) [32]

sound spectrum analyzer (sound analyzer) A device or system for measuring the band pressure level of a sound as a function of frequency. (SP) [32]

sound tract (electroacoustics) A band that carries the sound record. In some cases, a plurality of such bands may be used. In sound film recording, the band is usually along the margin of the film. *See also:* phonograph pickup. (SP) [32]

sound transmission coefficient (interface or partition) The ratio of the transmitted to incident sound energy. Unless otherwise specified, transmission of sound energy between two diffuse sound fields is assumed. (SP) [32]

source (1) (laser maser) Taken to mean either laser of laser-illuminated reflecting surface. (LEO) 586-1980w

(2) (metal-nitride-oxide field-effect transistor) Region in the device structure of an insulated-gate-field-effect transistor (IGFET) which contains the terminal from which charge carries flow into channel toward the drain. It has the potential which is less attractive than the drain for the carriers in the channel. (ED) 581-1978w

(3) The node that creates a send or echo packet. The source nodeId is contained in the third symbol of the packet.

(C/MM) 1596-1992

(4) A generator of normal characters at a link interface. *See also:* normal character. (C/BA) 1355-1995

(5) The specification of a source distribution object for a software administration utility. The source host provides a means to locate the source role and the source path is a path accessible to the source host. (C/PA) 1387.2-1995

(6) A node that initiates a bus transfer.

(C/MM) 1394-1995

(7) The start of a delay arc; that is, the origin of the logic signal. For arcs across cell instances, the source is the receiver pin; for arcs across interconnect, the source is the driver pin.

(C/DA) 1481-1999

source address (SA) (1) The address of a device or storage location from which data is to be transferred. *Contrast:* destination address; destination.

(C) 610.12-1990, 610.10-1994w

(2) (local area networks) A field in the message packet format identifying the sending end node. (C) 8802-12-1998

source, calibrated *See:* calibrated source.

source, check *See:* check source.

source code (1) Computer instructions and data definitions expressed in a form suitable for input to an assembler, compiler, or other translator. *Note:* A source program is made up of source code. *Contrast:* object code. (C) 610.12-1990

(2) When dealing with the Shell Command Language, source code is input to the command language interpreter; the term *shell script* is synonymous with this meaning. When dealing with the C-Language Bindings Option, source code is input to a C compiler conforming to the C Standard. When dealing with another ISO/IEC conforming language, source code is input to a compiler conforming to that ISO/IEC standard. Source code also refers to the input statements prepared for

the following standard utilities: `awk`, `bc`, `ed`, `lex`, `localedef`, `make`, `sed`, and `yacc`. Source code can also refer to a collection of sources meeting any or all of these meanings. (C/PA) 9945-2-1993

(3) A piece of software that has not yet been compiled or assembled, and appears in the language used by the programmer, and thus cannot yet run on a machine. (PE/SUB) 1379-1997

source code generator *See:* code generator.

source data card A data card which contains manually or mechanically recorded data that are to be subsequently punched into the same card. (C) 610.10-1994w

source document A document containing information that is to be input to a computer. For example, an original invoice, a library charge-out card, or a machine-readable document. (C) 610.2-1987

source domain The MD that supplies a piece of trace information. (C/PA) 1224.1-1993w

source efficiency (fiber optics) The ratio of emitted optical power of a source to the input electrical power. (Std100) 812-1984w

source ground (signal-transmission system) Potential reference at the physical location of a source, usually the signal source. *See also:* signal. (IE) [43]

source host The host portion of a source specification. (C/PA) 1387.2-1995

source impedance (1) The impedance presented by a source of energy to the input terminals of a device, or network. *See also:* self-impedance; network analysis; input impedance. (SP/IM/HFIM) 151-1965w, [40]

(2) The Thevenin equivalent impedance of an electrical system at the terminal of a transmission line. In network applications, this impedance can vary depending on the location of the fault on the transmission line and the status (i.e., opened or closed) of other terminals associated with the transmission line. (PE/PSR) C37.113-1999

(3) The source impedance is defined to begin at the power source termination and end at the power source return termination. Hence, all cabling is included in the source impedance. The cables and interconnects used in the system should be used during test. Line impedance stabilization networks (LISNs) may be used in series with each input line to provide a uniform standard for source impedance. Different LISNs may be used for different test applications to test the UUT. (PEL) 1515-2000

source language (software) The language in which the input to a machine-aided translation process is represented. For example, the language used to write a computer program. *Contrast:* target language. (C) 610.2-1987, 610.12-1990

source/load impedance (loudness ratings of telephone connections) The source/load impedance used for determining loudness ratings is considered to be 900 Ω resistive. *See also:* source impedance; load impedance. (COM/TA) 661-1979r

source node (1) (network analysis) A node having only outgoing branches. (CAS) 155-1960w

(2) A terminal node which originates data. *See also:* destination node. (C/BA) 1355-1995

source of fault current A terminal that contributes a significant amount of current to a fault on the protected line. Note that it is not necessary for generation to be connected to a terminal for it to be a source of fault current. For instance, large synchronous motor loads can contribute significant amounts of fault current for a few cycles within the duration of fault clearing. Transformers can also be a significat source of zero-sequence currents to unbalanced faults involving ground if they have winding with a grounded neutral connected to the line, and also have a delta or zig-zag winding. (PE/PSR) C37.113-1999

source path The pathname portion of a source specification. (C/PA) 1387.2-1995

source program (software) A computer program that must be compiled, assembled, or otherwise translated in order to be executed by a computer. *Contrast:* object program. (C) 610.12-1990

source quench In networking, a method for controlling congestion in which a device detects the congestion and requests that the source stop transmitting. *See also:* fair queuing. (C) 610.7-1995

source, radioactive *See:* radioactive source.

source, radioactivity standard *See:* radioactivity standard source.

source resistance The resistance presented to the input of a device by the source. *See also:* measurement system. (EEC/EMI) [112]

source resistance rating The value of source resistance that, when injected in an external circuit having essentially zero resistance, will either double the dead band or shift the dead band by one-half its width. *See also:* measurement system. (EEC/EMI) [112]

source role Where the software exists in a form suitable for distribution, forming a context for the establishment of a repository of software from which the manager may choose to distribute to targets. Software exists in the source until it is removed by a task initiated by the manager. The source role provides a repository where software may be stored and provides access for those roles that require the software. (C/PA) 1387.2-1995

source routing (1) A bridging technique where frames contain the list of bridges and networks that must be traversed for the frame to reach the destination. In this scheme, the transmitter must know the route to the destination before sending the frame. *Contrast:* spanning tree. (C) 610.7-1995

(2) A mechanism to route frames through a bridged LAN. Within the source routed frame, the station specifies the route that the frame will traverse. (C/LM) 8802-5-1998

(3) The capability for a source to specify the path that a frame will use to traverse the bridged network. (C/LM/CC) 8802-2-1998

Source Routing Transparent (SRT) The bridging technology defined by ISO/IEC 10038:1993, annex C, as an extension to the transparent bridging rules allowing the source station to specify the path through the bridged network (source routing). (C/LM/CC) 8802-2-1998

source segment In a hierarchical database, a segment that contains the data used to construct a secondary index. (C) 610.5-1990w

source/sink device Source devices originate signals, whereas sink devices terminate signals. Examples of source/sink devices include channel banks and digital crossconnect systems. (COM/TA) 1007-1991r

source statements (SS) The encoded logic of the software product. (C/SE) 1045-1992

source-to-line impedance ratio (SIR) The ratio of the source impedance behind a relay terminal to the line impedance. (PE/PSR) C37.113-1999

SP *See:* space character.

SPA *See:* scratchpad area.

space (1) (data transmission) One of the two possible conditions of an element (bit); an open line in a neutral circuit. In Morse code, a duration of two unit intervals between characters and six unit intervals between words. (PE) 599-1985w

(2) (A) To advance the reading or display position according to a prescribed format. **(B) (data management)** A site intended for the storage of data such as a location in a storage medium. **(C) (data management)** A basic unit of area such as the size of a single character. **(D) (data management)** One or more space characters. (C) [20], 610.5-1990

(3) The absence of a signal; for example, in data communications, the "zero's" state. *Contrast:* mark. (C) 610.10-1994w

(4) The lighter element of a bar code—usually formed by the background between the darker elements of the bar code. (PE/TR) C57.12.35-1996

⟨space⟩ The character defined as ⟨space⟩. The ⟨space⟩ character is a member of the space character class of the current locale, but represents the single character and not all of the possible members of the class. (C/PA) 9945-2-1993

space character (1) A graphic character that is usually represented by a blank site in a series of graphics. The space character, though not a control character, has the function equivalent to that of a format effector that causes the print or display position to move one position forward without producing the printing or display of any graphic. Similarly, the space character may have a function equivalent to that of an information separator. *See also:* null character; space. (C) 610.5-1990w

(2) A byte (hex 20) used in text strings that represents a space. (C/MM) 1284.1-1997

space charge (1) (general) A net excess of charge of one sign distributed throughout a specified volume. (ED) 161-1971w

(2) (thermionics) Electric charge in a region of space due to the presence of electrons and/or ions. *See also:* electron emission. (ED) 161-1971w

space-charge-control tube *See:* density-modulated tube.

space-charge debunching Any process in which the mutual interactions between electrons in the stream disperse the electrons of a bunch. (ED) 161-1971w

space-charge density (thermionics) The space charge per unit volume. *See also:* electron emission. (ED) 161-1971w

space-charge filter (A) A device used to measure net space-charge density in which a filter medium is used to remove the charge from an air stream. **(B)** A device, used to measure net space-charge density, in which a filter medium is used to remove the charge from an airstream. (T&D/PE) 1227-1990, 539-1990

space-charge–free electric field The electric field due to a system of energized electrodes, excluding the effect of space charge present in the interelectrode space. (T&D/PE) 539-1990

space-charge generation (1) (germanium gamma-ray detectors) (charged-particle detectors) (x-ray energy spectrometers) (semiconductor radiation detectors) The thermal generation of free charge carriers in the space-charge region. (NPS/NID) 759-1984r, 301-1976s, 300-1988r

(2) (in a semiconductor radiation detector) The thermal generation of free charge carriers in the depletion region. (NPS) 325-1996

space-charge grid A grid, usually positive, that controls the position, area, and magnitude of a potential minimum or of a virtual cathode in region adjacent to the grid. *See also:* electrode; grid. (ED) 161-1971w

space-charge-limited current (electron vacuum tubes) The current passing through an interelectrode space when a virtual cathode exists therein. *See also:* electrode current. (ED) 161-1971w

space-charge perturbation of the electric field in the interelectrode space A change in the electric field caused by the presence of space charge in the interelectrode space. *Note:* The electric field at ground level under dc transmission lines is generally increased due to the presence of monopolar space charge having the same polarity as the nearest conductor. This increase is generally termed "field enhancement." (T&D/PE) 539-1990

space-charge region (1) (x-ray energy spectrometers) (charged-particle detectors) (of a semiconductor radiation detector) A region in which the net charge density is significantly different from zero. *See also:* depletion region. (NPS/ED/NID) 759-1984r, 216-1960w, 301-1976s, 300-1988r

(2) *See also:* depletion region. (NPS) 325-1996

space correction A method of register control that takes the form of a sudden change in the relative position of the web. (IA/ICTL/IAC) [60]

spacecraft (communication satellite) Any type of space vehicle, including an earth satellite or deep-space probe, whether manned or unmanned, and also rockets and high-altitude balloons which penetrate the earth's outer atmosphere. (COM) [19]

space current (electron tube) Synonym in a diode or equivalent diode of cathode current. *See also:* electrode current; leakage current; load current; quiescent current. (ED) [45], [84]

space diversity *See:* space diversity reception.

space diversity reception (data transmission) That form of diversity reception that utilizes receiving antennas placed in different locations. (PE) 599-1985w

space-division digital switching (telephone switching systems) Digital switching with separate paths for each call. (COM) 312-1977w

space-division switching (1) (telephone switching systems) A method of switching that provides a separate path for each of the simultaneous calls. (COM) 312-1977w

(2) A circuit-switching method in which each connection through the switch takes a physically separate and dedicated path. *See also:* circuit switching; message switching; time multiplexed switching. (C) 610.7-1995

space factor (rotating machinery) The ratio of the sum of the cross-sectional areas of the active or specified material to the cross-sectional area within the confining limits specified. *See also:* asynchronous machine; slot space factor. (PE) [9]

space, head *See:* head space.

space heater (1) A heater that warms occupied spaces. (PE) [9]

(2) (rotating machinery) A device that warms the ventilating air within a machine and prevents condensation of moisture during shut-down periods. (PE) [9]

space pattern (television) A geometrical pattern on a test chart designed for the measurement of geometric distortion. (BT) 202-1954w

space potential The electric potential at any point in space relative to some reference potential, usually ground. It is the electric potential difference between the reference point and the point in question. (T&D/PE) 539-1990

space probe (communication satellite) A spacecraft with a trajectory extending into deep space. (COM) [19]

spacer (insulators) An insulator used to support the inner conductor in the enclosure. (SUB/PE) C37.122-1993, C37.122.1-1993

spacer buggy *See:* conductor car.

spacer cable A type of electric supply line construction consisting of an assembly of one or more covered conductors, separated from each other and supported from a messenger by insulating spacers. (NESC) C2-1997

spacer cart *See:* conductor car.

space-referenced navigation data (navigation aids) Data in terms of a coordinate system referenced to inertial space. (AES/GCS) 172-1983w

spacer insulator As used in a gas-insulated system an insulator used to support the inner conductor in the enclosure. (SWG/SUB/PE) C37.122-1983s, C37.100-1992

spacer shaft (rotating machinery) A separate shaft connecting the shaft ends of two machines. *See also:* armature. (PE) [9]

space, state *See:* state space.

space-tapered array antenna An array antenna whose radiation pattern is shaped by varying the density of driven radiating elements over the array surface. *Synonym:* density-tapered array antenna. (AP/ANT) 145-1993

space-time adaptive processing (STAP) In airborne moving-target indication (MTI), a method of processing that compensates for the adverse effects of platform motion by adaptively

placing antenna nulls in the directions of large clutter echoes and/or large noise or jamming sources. *Note:* It simultaneously employs the signals received from the multiple elements of an adaptive phased array antenna (spatial domain) and the signals from multiple pulse repetition periods (time domain) to provide adaptive processing in both the time and spatial domains. (AES) 686-1997

spacing (data transmission) A term which originated with telegraph to indicate an open key condition. Present usage implies the absence of current or carrier on a circuit. It also indicates the binary digit 0 in computer language. (PE) 599-1985w

spacing bicycle *See:* conductor car.

spacing pulse (data transmission) A spacing pulse or space is the signal pulse that, in direct-current neutral operation, corresponds to a circuit open or no current condition. *See also:* pulse. (COM) [49]

spacing wave (telegraph communication) (back wave) The emission that takes place between the active portions of the code characters or while no code characters are being transmitted. *See also:* radio transmitter. (AP/ANT) 145-1983s

spalling Spontaneous separation of a surface layer from a metal. (IA) [59]

span (measuring devices) The algebraic difference between the upper and lower values of a range. *Notes:* 1. For example:

a) Range 0 to 150, span 150;
b) Range −20 to 200, span 220;
c) Range 20 to 150, span 130;
d) Range −100 to −20, span 80.

2. The following compound terms are used with suitable modifications in the units: measured variable span, measured signal span, etc. 3. For multirange devices, this definition applies to the particular range that the device is set to measure. *See also:* instrument. (EEC/EMI) [112]

(2) (A) (overhead conductors) The horizontal distance between two adjacent supporting points of a conductor. **(B) (overhead conductors)** That part of any conductor, cable, suspension strand, or pole line between two consecutive points of support. *See also:* cable. (T&D/PE) [10]

span frequency-response rating The maximum frequency in cycles per minute of sinusoidal variation of measured signal for which the difference in amplitude between output and input represents an error no greater than five times the accuracy rating when the instrument is used under rated operating conditions. The peak-to-peak amplitude of the sinusoidal variation of measured signal shall be equivalent to full span of the instrument. It must be recognized that the span frequency-response rating is a measure of dynamic behavior under the most adverse conditions of measured signal (that is, the maximum sinusoidal excursion of the measured signal). The frequency response for an amplitude of measured signal less than full span is not proportional to the frequency response for full span. The relationship between the frequency response of different instruments at any particular amplitude of measured signal is not indicative of the relationship that will exist at any other amplitude. *See also:* accuracy rating. (EEC/EMI) [112]

span length The horizontal distance between two adjacent supporting points of a conductor. (NESC) C2-1997

spanned record A record that is partially contained in more than one block; that is, it spans a block boundary. *See also:* unblocked record; blocked record. (C) 610.5-1990w

spanning tree A bridging technique where a network of randomly interconnected bridges can automatically build a logical tree structure so as to guarantee a unique path between any pair of stations on the network. In this scheme, the transmitter does not have to know how to route the frame to the destination; that is the job of the bridges. *Contrast:* source routing. (C) 610.7-1995

spanning tree algorithm The abstract distributed algorithm that determines the active topology of an ISO/IEC 10038 Bridged Local Area Network. (C/LM) 802.1G-1996

spanning tree explorer (STE) A type of source-routed frame that will traverse the network following the spanning tree path created by the transparent bridging rules. (C/LM/CC) 8802-2-1998

spanning tree protocol The protocol that MAC Bridges use in exchanging information across Local Area Networks, in order to compute the active topology of a Bridged Local Area Network in accordance with the Spanning Tree Algorithm. (C/LM) 802.1G-1996

spanning tree route (STR) A term used to denote the configuration of transparent bridges such that every segment is connected to the root of the network through exactly one path. A frame sent without routing information (NSR) traverses the network on the spanning tree path according to the rules for transparent bridging. A frame sent with a routing type of STE is forwarded through the network on the spanning tree path, but is forwarded by the rules for SRT bridges (note that a bridge that does not support source routing will not forward STE frames). (C/LM/CC) 8802-2-1998

span, ruling *See:* ruling span.

span, sag *See:* sag span.

span step-response-time rating The time that the step-response time will not exceed for a change in measured signal essentially equivalent to full span when the instrument is used under rated operating conditions. The actual span step-response time shall not be less than 2/3 of the span step-response-time rating. (For example, for an instrument of 3-second span step-response-time rating, the span step-response time, under rated operating conditions, will be between 3 and 2 seconds.) It must be recognized that the step-response time for smaller steps is not proportional to the step-response time for full span. *Note:* The end device shall be considered to be at rest when it remains within a band of plus and minus the accuracy rating from its final position. *See also:* accuracy rating. (EEC/EMI) [112]

span wire An auxiliary suspension wire that serves to support one or more trolley contact conductors or a light fixture and the conductors that connect it to a supply system. (NESC) C2-1997

spare This record is unused at this time. It is reserved for expansion of the standard. (NPS/NID) 1214-1992r

spare_cell A cell instance that is presently not part of the logical function of a design, and therefore is not included in the design's logical netlist. A spare_cell is typically reserved for future logic modifications to be implemented through changes in the interconnect layers of the chip. (C/DA) 1481-1999

spare equipment Equipment complete or in parts, on hand for repair or replacement. *See also:* reserve equipment. (T&D/PE) [10]

spare only point interface Point for which cabinet space only is provided for the future addition of wiring and other necessary plug-in equipment. (SUB/PE) C37.1-1994

spare point (for supervisory control or indication or telemeter selection) A point that is not being utilized but is fully equipped with all of the necessary devices for a point. (SWG/PE) C37.100-1992

spare point interface Point equipment that is not being utilized but is fully wired and equipped. (SUB/PE) C37.1-1994

spark (overhead-power-line corona and radio noise) A sudden and irreversible transition from a stable corona discharge to a stable arc discharge. It is a luminous electrical discharge of short duration between two electrodes in an insulating medium. It is generally brighter and carries more current than corona, and its color is mainly determined by the type of insulating medium. It generates radio noise of wider frequency spectrum (extending into hundreds of megahertz) and wider magnitude range than corona. A spark is not classified as corona. (T&D/PE) 539-1990

spark capacitor A capacitor connected across a pair of contact points, or across the inductance that causes the spark, for the purpose of diminishing sparking at these points. *Note:* The

use of the term "spark condenser" for the term spark capacitor is deprecated. (PE) [9]

spark condenser* *See:* spark capacitor.

* Deprecated.

spark gap (1) An air dielectric between two electrodes that may be a combination of several basic shapes that is used to protect telecommunication circuits from damage due to voltage stress in excess of their dielectric capabilities. It may or may not be adjustable. (PE/PSC) 487-1992

(2) Any short-air space between two conductors electrically insulated from or remotely electrically connected to each other. (PE/T&D/NFPA) 1410-1997, [114]

spark-gap converter, mercury-hydrogen *See:* mercury-hydrogen spark-gap converter.

spark-gap modulation A modulation process that produces one or more pulses or energy by means of a controlled spark-gap breakdown for application to the element in which modulation takes place. *See also:* oscillatory circuit. (AP/ANT) 145-1983s

spark gaps (wire-line communication facilities) Spark gaps consist of air dielectric between two electrodes which may be a combination of several basic shapes. Spark gaps are used to protect communication circuits from damage due to voltage stress in excess of their dielectric capabilities. (PE/PSC) 487-1980s

spark killer An electric network, usually consisting of a capacitor and resistor in series, connected across a pair of contact points, or across the inductance that causes the spark, for the purpose of diminishing sparking at these points. *See also:* network analysis. (EEC/PE) [119]

sparkover (1) A disruptive discharge between electrodes in a gas or liquid. (PE/PSIM) 4-1995

(2) A disruptive discharge between electrodes of a measuring gap, voltage-control gap, or gap-type protective device. (SPD/PE) C62.11-1999

(3) A disruptive discharge between electrodes of a measuring gap, voltage-control gap, or protective device. (SPD/PE) C62.62-2000

spark-plug suppressor A suppressor designed for direct connection to a spark plug. *See also:* electromagnetic compatibility. (EMC) [53]

spark transmitter A radio transmitter that utilizes the oscillatory discharge of a capacitor through an inductor and a spark gap as the source of its radio-frequency power. *See also:* radio transmitter. (AP/BT/ANT) 145-1983s, 182-1961w

sparse data scan (SDS) A technique by which arrays of modules with low data occupancy may be scanned efficiently, i.e, without accessing every potential data site. (NID) 960-1993

sparse medium A medium with a low volume fraction of discrete objects, typically less than 1%. In such a medium, multiple scattering is negligibly small. *See also:* homogeneous dense medium; inhomogeneous dense medium. (AP/PROP) 211-1997

spatial average The root mean square of the field over an area equivalent to the vertical cross section of the adult human body, as applied to the measurement of electric or magnetic fields in the assessment of whole-body exposure. The spatial average is measured by scanning (with a suitable measurement probe) a planar area equivalent to the area occupied by a standing adult human (projected area). In most instances, a simple vertical, linear scan of the fields over a 2 m height (approximately 6 ft), through the center of the projected area, will be sufficient for determining compliance with the maximum permissible exposures (MPEs). (NIR) C95.1-1999

spatial coherence (1) (laser maser) (electromagnetic) The correlation between electromagnetic fields at points separated in space. *See also:* coherence area. (LEO) 586-1980w

(2) (fiber optics) *See also:* coherent. 812-1984w

spatial disturbance (diode-type camera tube) In the output signal from a television camera consists of a broad variety of spurious signals, some of which are observable when no optical input is present, while others are input-level dependent. Spatial disturbances are characterized as either independent of time or as having a temporal variation long with respect to a frame interval, provided the operating conditions, including position and temperature, remain fixed. Tolerance for spatial distrubance covers a broad range, depending upon the application. Cosmetic considerations ultimately reduce to a cost decision. Spurious signals have been classified in the following categories:

a) (Fixed pattern) This is a modulation of a uniform background which may be either spatially periodic or random.
b) (Shading) This consists of a broad area continuous variation in the background signal, with or without an optical input. The signal corresponding to uniform irradiance is either curved or tilted, causing a brightness variation in the display.
c) (Moire) This is a periodic amplitude modulation in the output which is not present in the input, usually due to the interaction of two or more periodic tube elements such as the field mesh, scanning raster, and target.
d) (Blemishes) These are bright or dark spots or streaks whose effect is equivalent to viewing the scene through a dirty window. Blemishes affect limited portions of the raster.
e) (Geometric distortion) This includes any skewing, bending, displacement or rotation of the image. It can be localized or include the entire raster.

See also: image storage. (ED) 503-1978w

spatial locality The tendency for a program to reference closely related clusters of memory addresses over short time intervals. (C/BA) 10857-1994

spatially aligned bundle *See:* aligned bundle.

spatially coherent radiation *See:* coherent.

SPCS *See:* stored program control.

SPD *See:* surge-protective device.

special addition* *See:* double-precision addition.

* Deprecated.

special-billing call (telephone switching systems) A call charged to a special number. (COM) 312-1977w

special character (character set) A character that is neither a numeral, a letter, nor a blank, for example, virgule, asterisk, dollar sign, equals sign, comma, period. (C) [20], [85]

(2) (A) (data management) A character that is not in the alphabet, but that is used for punctuation or another special purpose. For example, blank, comma, period, or asterisk. **(B) (data management)** A graphic character in a character set that is not a letter, not a digit, and not a space character. **(C) (data management)** In COBOL, a character that is neither numeric nor alphabetic. (C) 610.5-1990

special color rendering index (illuminating engineering) Measure of the color shift of various standardized special colors including saturated colors, typical foliage, and Caucasian skin. It also can be defined for other color samples when the spectral reflectance distributions are known. (EEC/IE) [126]

special combination protective devices (wire-line communication facilities) (open-wire or hot-line protectors) Combined isolating and drainage transformer type protectors used in conjunction with, but not limited to, horn gaps and grounding relays, are used on open-wire lines to provide protection against lightning, power contacts, or high values or induced voltage. (PE/PSC) 487-1980s

special-date logic Logic found in programs using specific reserved dates to trigger exceptions to normal date data processing. *Note:* The normally valid (abbreviated) date-specifiers 99-12-31 or 99-09-09 might be used as an expiration date on tape archives to mean "never expire" or the normally valid date of 00-01-01 might be used to indicate an unknown or out-of-range date, all being ambiguous reserved dates, since they conflict with actual valid date representations which, when encountered, would trigger the special-date

logic erroneously. On the other hand, unconditionally invalid date-specifiers 99-99-99 or 00-00-00 used as reserved dates would not erroneously trigger the special-date logic because such unambiguous reserved dates do not conflict with any real (valid) intrinsic dates. (C/PA) 2000.1-1999

special-dial tone (telephone switching systems) A tone for certain features that indicates that a customer can use his or her calling device. (COM) 312-1977w

special function signal A signal line in a connecting cable from a bedside communications controller (BCC) to a device communications controller (DCC) that conducts other than serial data or power. The two special function signals are SENSE/INT/SYNC-IN and SENSE/INT/SYNC-OUT. Special function signals convey indications of physical connection and disconnection, use of interrupts, frame transmission, interrupt requests, and synchronization pulses. (EMB/MIB) 1073.4.1-2000

specialId A reserved nodeId value associated with special-send packets. (C/MM) 1596-1992

specialize A change by an instance from being an instance of its current class to being additionally an instance of one (or more) of the subclasses of the current subclass. A specialized instance acquires a different (lower) lowclass. *Contrast:* respecialize; unspecialize. (C/SE) 1320.2-1998

specialized common carrier (1) A company that provides private line communications services, for example, voice, teleprinter, data, facsimile transmission. *See also:* value-added service; common carrier. (LM/COM) 168-1956w

(2) A common carrier providing a limited set of services. For example, only private line services. (C) 610.7-1995

special link (SL) A transmission system that replaces the normal medium. (C/LM) 802.3-1998

special logic Many programs use specific dates to trigger exceptions to normal date processing. A common example is expiration date on tape archives. Rather than adding another flag to the tape header, the date 1999-9-9 is used by many systems to mean never expire. Other dates have been used to indicate an unknown or out-of-range date. Since there is no standard for this practice, the specific dates used may be difficult to trace. The potential for dramatic failures increases in 1999 due to date code flags and various other Year 2000 problems. (C/PA) 2000.2-1999

special parameter In the shell command language, a parameter named by a single character from the following list:

* @ # ? ! − $ 0

(C/PA) 9945-2-1993

special permission The written consent of the authority having jurisdiction. (NESC/NEC) [86]

special process (replacement parts for Class 1E equipment in nuclear power generating stations) (nuclear power quality assurance) A process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product. (PE/NP) 934-1987w, [124]

special-purpose computer A computer designed to solve a restricted class of problems. *Contrast:* general-purpose computer. *See also:* incremental computer; dedicated computer. (C) [20], [85], 610.10-1994w

special-purpose electronic test equipment *See:* special-purpose test equipment.

special-purpose motor A motor with special operating characteristics or special mechanical construction, or both designed for a particular application and not falling within the definition of a general-purpose or definite-purpose motor. *See also:* direct-current commutating machine; asynchronous machine. (PE/IA/APP) [9], [82]

special-purpose test equipment (test, measurement, and diagnostic equipment) Equipment used for test, repair and maintenance of a specified system, subsystem or module, having application to only one or a very limited number of systems. (MIL) [2]

special send A packet having one of a particular set of special addresses and a special format used for initialization, such as "reset" or "clear." (C/MM) 1596-1992

specialty transformer (power and distribution transformers) A transformer generally intended to supply electric power for control, machine tool, Class 2, signaling, ignition, luminous-tube, cold-cathode lighting series street-lighting, low-voltage general purpose, and similar applications. See the following types of transformers: individual-lamp; series street-lighting; energy-limiting; high-reactance; non-energy-limiting; high power factor; low power factor; insultating; individual-lamp insulating; group-series loop insulating; luminous tube; ignition; series circuit lighting; signaling and doorbell; control; machine tool control; general-purpose; mercury vapor lamp (multiple-supply type); sodium vapor lamp (multiple-supply type); saturable reactor (saturable-core reactor); electronic. *See also:* secondary voltage rating; Class 2 transformer; secondary short-circuit current rating of a high-reactance transformer; IR-drop compensation transformer; kVA or volt-ampere short-circuit input rating of a high-reactance transformer; series transformer rating. (PE/TR) C57.12.80-1978r

special unit capacity purchases (electric power supply) That capacity that is purchased or sold in transactions with other utilities and that is from a designated unit on the system of the seller. It is understood that the seller does not provide reserve capacity for this type of capacity transaction. *See also:* generating station. (PE/PSE) [54]

specific With respect to a class, the attribute types that may appear in an instance of the class but not in an instance of its superclasses. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

specific absorption (SA) The quotient of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume (dV) of a given density (ρ).

$$SA = \frac{dW}{dm} = \frac{dW}{\rho dV}$$

The specific absorption is expressed in units of joules per kilogram (J/kg). (NIR) C95.1-1999

specific absorption rate (SAR) The time derivative of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of given density (ρ).

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dV}\right)$$

SAR is expressed in units of watts per kilogram (W/kg). (NIR) C95.1-1999

specific acoustic impedance (unit area acoustic impedance) (at a point in the medium) The complex ratio of sound pressure to particle velocity. (SP) [32]

specific acoustic reactance The imaginary component of the specific acoustic impedance. (SP) [32]

specific acoustic resistance The real component of the specific acoustic impedance. (SP) [32]

specific address *See:* absolute address.

specifically routed frame (SRF) A frame sent with a routing information field that describes the exact path that the frame will take through the bridged network. (C/LM/CC) 8802-2-1998

specification (1) (software) A document that specifies, in a complete, precise, verifiable manner, the requirements, design, behavior, or other characteristics of a system or component, and, often, the procedures for determining whether these provisions have been satisfied. *See also:* formal specification; requirements specification; product specification. (C) 610.12-1990

(2) A document that prescribes, in a complete, precise, verifiable manner, the requirements, design, behavior, or characteristics of a system or system component. (C/PA) 14252-1996

(3) A document that fully describes a design element or its interfaces in terms of requirements (functional, performance, constraints, and design characteristics) and the qualification conditions and procedures for each requirement. (C/SE) 1220-1998

Specification and Description Language (SDL) A specification language for telecommunications and distributed systems that provides both textual and graphic description techniques. (C) 610.13-1993w

specification change notice A document used in configuration management to propose, transmit, and record changes to a specification. *See also:* engineering change; notice of revision; configuration control. (C) 610.12-1990

specification element A product, subsystem, assembly, component, subcomponent, subassembly, or part of the specification tree described by a specification. (C/SE) 1220-1994s

specification language (1) An application-oriented computer language, often a machine-processible combination of natural and formal language, used to express the requirements, design, behavior, or other characteristics of a system or component. For example, a design language or requirements specification language. *Contrast:* compiler specification language; programming language; query language. *See also:* design language. (C) 610.13-1993w, 610.12-1990

(2) *See also:* Rule and Constraint Language. (C/SE) 1320.2-1998

specification, system *See:* system specification.

specification tree (1) A diagram that depicts all of the specifications for a given system and shows their relationships to one another. (C) 610.12-1990

(2) A hierarchy of specification elements and their interface specifications that identifies the elements and the specifications related to design elements of the system configuration which are to be controlled. (C/SE) 1220-1998

specification verification *See:* verification.

specific code *See:* absolute code.

specific coordinated methods Those additional methods applicable to specific situations where general coordinated methods are inadequate. *See also:* inductive coordination. (EEC/PE) [119]

specific creepage distance For bushings for pure dc application, the specific creepage distance is the creep distance divided by the rated voltage for the DC system where the bushing is intended to be used. For bushings for combined voltage application, the specific creepage distance is the creep distance divided by Z * Vd where:

Z = number of six pulse bridges in series

V_d = dc rated voltage per valve bridge.

(PE/TR) C57.19.03-1996

specific detectivity *See:* D*.

specific emission The rate of emission per unit area. (Std100) [84]

specific heat (electric power systems in commercial buildings) The ratio of the quantity of heat required to raise the temperature of a given mass of a substance 1° to the heat required to raise the temperature of an equal amount of water by 1°. (IA/PSE) 241-1990r

specific inductive capacitance *See:* relative capacitivity.

specific intensity (*I*) A positive real quantity I, in general a function of position r, direction s, frequency f, and time t, representing the quantity of power dP flowing outward through an elemental area dA at a particular location r, within an elemental solid angle $d\Omega$ containing a particular direction s, within a frequency interval $(f, f+df)$:

$$dP = I(r, s, f, t)s\ dA\ d\Omega\ df$$

(AP/PROP) 211-1997

specific management functional areas A category of systems management user requirements. (C) 610.7-1995

specific repetition frequency (navigation aids) (loran) One of a set of closely-spaced pulse repetition frequencies derived from the basic repetition frequency and associated with a specific set of synchronized stations. (AES/GCS) 172-1983w

specific repetition rate *See:* specific repetition frequency.

specific unit capacity (power operations) Capacity which is purchased, or sold, in transactions with other systems and which is from a designated unit on the system of the seller. (PE/PSE) 858-1987s

specified achromatic lights (A) Light of the same chromaticity as that having an equi-energy spectrum. **(B)** The standard illuminants of colorimetry A, B, and C, the spectral energy distributions of which were specified by the International Commission on Illumination (CIE) in 1931, with various scientific applications in view. Standard A: incandescent electric lamp of color temperature 2854 K. Standard B: Standard A combined with a specified liquid filter to give a light of color temperature approximately 4800 K. Standard C: Standard A combined with a specified liquid filter to give a light of color temperature approximately 6500 K. **(C)** Any other specified white light. *See also:* color. (BT/AV) [34], [84]

specified breakaway torque (rotating machinery) The torque which a motor is required to develop to break away its load from rest to rotation. (PE) [9]

specified mechanical load (SML) The bending moment load at which irreversible visible damage may be evident. SML is supplied from the manufacturer. (PE/SUB) 693-1997

speckle (1) The random distribution of intensity in space. (AP/PROP) 211-1997

(2) A mottled effect in coherent radar images, such as those from synthetic-aperture radar (SAR) and laser radar caused by random additive and subtractive interference of signals from individual scatterers within each resolution cell. *Note:* This is the same as target fluctuation for isolated targets. (AES) 686-1997

speckle noise *See:* modal noise.

speckle pattern (fiber optics) A power intensity pattern produced by the mutual interference of partially coherent beams that are subject to minute temporal and spatial fluctuations. *Note:* In a multimode fiber, a speckle pattern results from a superposition of mode field patterns. If the relative modal group velocities change with time, the speckle pattern will also change with time. If, in addition, differential mode attenuation is experienced, modal noise results. *See also:* modal noise. (Std100) 812-1984w

spectral bandwidth (light-emitting diodes) The difference between the wavelengths at which the spectral radiant intensity is 50% (unless otherwise stated) of the maximum value. The term spectral linewidth is sometimes used. (ED) [127]

spectral brightness (of an object) The total power radiated by an object per unit solid angle per unit projected area per unit bandwidth. *Note:* In radiative transfer theory it is called the spectral specific intensity. In infrared radiometry it is called the spectral radiance. (AP/PROP) 211-1997

spectral characteristic (A) (television) The set of spectral responses of the color separation channels with respect to wavelength. *Notes:* 1. The channel terminals at which the characteristics apply must be specified, and an appropriate modifier, such as pickup spectral characteristic or studio spectral characteristic may be added to the term. 2. Because of nonlinearity, some spectral characteristics depend on the magnitude of radiance used in the measurement. 3. Nonlinearizing and matrixing operations may be performed within the channels. 4. The spectral taking characteristics are uniquely related to the chromaticities of the display primaries. **(B)** (camera tube) A relation, usually shown by a graph, between wavelength and sensitivity per unit wavelength interval. **(C)** (luminescent screen) The relation, usually shown by a graph, between wavelength and emitted radiant power per unit wavelength interval. *Note:* The radiant power is commonly expressed in arbitrary units. **(D)** (phototube) A relation, usually shown by

a graph, between the radiant sensitivity and the wavelength of the incident radiant flux. (BT/AV) 201-1979

spectral-conversion luminous gain (optoelectronic device) The luminous gain for specified wavelength-intervals of both incident and emitted luminous flux. *See also:* optoelectronic device. (ED) [46]

spectral-conversion radiant gain (optoelectronic device) The radiant gain for specified wavelength intervals of both incident and emitted radiant flux. *See also:* optoelectronic device. (ED) [46]

spectral data The channel data are stored with the channel number at the beginning of each record. The channel number is six characters. The first channel is channel 0. The channel data is 10 characters per number, separated by a space. There are 5 channels per line giving a total line length of 61 characters, including the end-of-record character. Leading spaces are interpreted as zeros. (NPS/NID) 1214-1992r

spectral-directional emissivity $\varepsilon(\theta, \tau, \lambda, T)$ (of an element of surface of a temperature radiator at any wavelength and in a given direction) The ratio of its spectral radiance at that wavelength and in the given direction to that of a black body at the same temperature and wavelength.

$$\varepsilon(\lambda, \theta, \phi, T) = L_\lambda(\lambda, \theta, \phi, T)/L_{\text{blackbody}}(\lambda, T)$$

(EEC/IE) [126]

spectral emissivity (element of surface of a temperature radiator at any wavelength) The ratio of its radiant flux density per unit wavelength interval (spectral radiant exitance) at that wavelength to that of a blackbody at the same temperature. *See also:* radiant energy. (IE/EEC) [126]

spectral-hemispherical emissivity, $\varepsilon(\lambda, T)$ (of an element of surface of a temperature radiator) The ratio of its spectral radiant exitance to that of a blackbody at the same temperature. *Note:* Hemispherical emissivity is frequently called "total" emissivity. "Total" by itself is ambiguous, and should be avoided since it may also refer to "spectral-total" (all wavelengths) as well as "directional-total" (all directions). (EEC/IE) [126]

spectral irradiance (fiber optics) Irradiance per unit wavelength interval at a given wavelength, expressed in watts per unit area per unit wavelength interval. *See also:* irradiance; radiometry. (Std100) 812-1984w

spectral line (1) (fiber optics) A narrow range of emitted or absorbed wavelengths. *See also:* line spectrum; monochromatic; spectral width; line source. (Std100) 812-1984w **(2)** A sharply peaked portion of the spectrum that represents a specific feature of the incident radiation, usually the full energy of a monoenergetic radiation. (NPS) 300-1988r

spectral luminous efficacy (illuminating engineering) (of radiant flux) $(K(\lambda) = \Phi_{\omega\lambda}/\Phi_{e\lambda})$ The quotient of the luminous flux at a given wavelength by the radiant flux at that wavelength. It is expressed in lumens per watt. *Note:* This term formerly was called "luminosity factor." The reciprocal of the maximum luminous efficacy of radiant flux is sometimes called "mechanical equivalent of light;" that is, the ratio between radiant and luminous flux at the wavelength of maximum luminous efficacy. The most probable value is 0.00146 W/lm, corresponding to 683 lm/W as the maximum possible luminous efficacy. For scotopic vision values (13.7) the maximum luminous efficacy is 1754 "scotopic" lm/W. (EEC/IE) [126]

spectral luminous efficiency (illuminating engineering) (of radiant flux) The ratio of the luminous efficacy for a given wavelength to the value at the wavelength of maximum luminous efficacy. It is dimensionless. *Note:* The term "spectral luminous efficiency" replaces the previously used terms "relative luminosity" and "relative luminosity factor." (EEC/IE) [126]

spectral luminous flux (light-emitting diodes) The luminous flux per unit wavelength interval at wavelength l that is, lumens per nanometer. (ED) [127]

spectral luminous gain (optoelectronic device) Luminous gain for a specified wavelength interval of either the incident or the emitted flux. *See also:* optoelectronic device. (ED) [46]

spectral luminous intensity (light-emitting diodes) The luminous intensity per unit wavelength (at wavelength λ), that is, candela per nanometer. (ED) [127]

specific MAC service The service provided by the MAC protocol and procedures of a specific Local Area Network technology (which can contain features not present in other specific MAC services or in the ISO/IEC 10039 MAC service). (C/LM) 802.1G-1996

spectral-noise density (sound recording and reproducing system) The limit of the ratio of the noise output within a specified frequency interval to the frequency interval, as that interval approaches zero. *Note:* This is approximately the total noise within a narrow frequency band divided by that bandwidth in hertz. *See also:* noise. 191-1953w

spectral power density Power per unit bandwidth, in watts per Hertz. (AP/PROP) 211-1997

spectral power flux density The power density per unit bandwidth in watts per square meter per Hertz. (AP/PROP) 211-1997

spectral quantum efficiency (diode-type camera tube) ($\eta\lambda$) The average number of electrons produced in the output signal per photon incident on the camera tube faceplate at a particular photon energy or wavelength. It is a dimensionless quantity that can be conveniently calculated from the spectral response *R*l through the relation

$$\eta\lambda = \frac{1241\ R_\lambda}{\lambda}$$

where $R\lambda$ is in amperes per watt and λ in nanometers. (ED) 503-1978w

spectral quantum yield (photocathodes) The average number of electrons photoelectrically emitted from the photocathode per incident photon of a given wavelength. *Note:* The spectral quantum yield may be a function of the angle of incidence and of the direction of polarization of the incident radiation. *See also:* phototube. (NPS) 175-1960w

spectral radiance (1) (fiber optics) Radiance per unit wavelength interval at a given wavelength, expressed in watts per steradian per unit area per wavelength interval. *See also:* radiance; radiometry. (Std100) 812-1984w **(2) (laser maser)** The power transmitted in a radiation field per unit frequency (or wavelength) interval unit solid angle unit area normal to a given direction $(W \cdot nm^{-1} \cdot sr^{-1} \cdot m^{-2})$. (LEO) 586-1980w

spectral radiant energy (light-emitting diodes) $(Q_\lambda = dQ_e/d_\lambda)$ Radiant energy per unit wavelength interval at wavelength l; that is, joules per nanometer. (ED) [127]

spectral radiant flux (light-emitting diodes) ($\phi\lambda = d\phi_e/d\lambda$) Radiant flux per unit wavelength interval at wavelength l: that is watts per nanometer. (IE/EEC/ED) [126], [127]

spectral radiant gain (optoelectronic device) Radiant gain for a specified wavelength interval of either the incident or the emitted radiant flux. *See also:* optoelectronic device. (ED) [45]

spectral radiant intensity (light-emitting diodes) ($I\lambda = dI_e/d\lambda$) The radiant intensity per unit wavelength interval: for example watts per (steradian-nanometer). (IE/EEC/ED) [126], [127]

spectral range (acoustically tunable optical filter) The wavelength region over which the dynamic transmission is greater than some specified minimum value. (UFFC) [17]

spectral reflectance (illuminating engineering) $(\rho(\lambda) = \Phi_{r\lambda}/\Phi_{i\lambda})$ The ratio of the reflected flux to the incident flux at a particular wavelength, l, or within a small band of wavelengths, Dl, about l. *Note:* The various geometrical aspects of reflectance may each be considered restricted to a specific region of the spectrum and may be so designated by the addition of the adjective "spectral." (EEC/IE) [126]

spectral response (diode-type camera tube) The spectral response (R_μ) of a camera is the current produced in the output signal per incident radiant power in the input signal as a function of the photon energy frequency, or wavelength. Units: amperes watt^{-1} (AW^{-1}). (ED) 503-1978w

spectral response characteristic *See:* spectral sensitivity characteristic.

spectral responsivity (fiber optics) Responsivity per unit wavelength interval at a given wavelength. *See also:* responsivity. (Std100) 812-1984w

spectral selectivity (photoelectric device) The change of photoelectric current with the wavelength of the irradiation. *See also:* photoelectric effect. (ED) [45], [84]

spectral sensitivity characteristic (camera tubes or phototubes) The relation between the radiant sensitivity and the wavelength of the incident radiation, under specified conditions of irradiation. *Note:* Spectral sensitivity characteristic is usually measured with a collimated beam at normal incidence. *See also:* phototube. (BT/ED/AV) [34], [45]

spectral temperature (laser maser) (of a radiation field) The temperature of a black body which produces the same spectral radiance as the radiation field at a given frequency and in a given direction. (LEO) 586-1980w

spectral-total directional emissivity (illuminating engineering) (ε, ϕ, T) (of an element of surface of a temperature radiator in a given direction) The ratio of its radiance to that of a blackbody at the same temperature.

$$\varepsilon(\theta, \phi, T) == L(\theta, \phi, T)/L_{\text{blackbody}}) (T)$$

where θ and ϕ are directional angles and T is temperature. (EEC/IE) [126]

spectral-total hemispherical emissivity, ε (of an element of surface of a temperature radiator) The ratio of its radiant exitance to that of a blackbody at the same temperature.

$$\varepsilon = \frac{1}{\pi} \int \varepsilon(\theta, \phi) \cdot \cos\theta \cdot d\omega = \frac{1}{\pi} \int \int \varepsilon$$

$$(\lambda, \theta, \phi) \cdot \cos\theta \cdot d\omega \cdot d\lambda == M(T)/M_{\text{blackbody}} (T)$$

(EEC/IE) [126]

spectral transmittance (illuminating engineering) ($\tau(\lambda) = \Phi_{t\lambda}/\Phi_{i\lambda}$) The ratio of the transmitted flux to the incident flux at a particular wavelength, l, or within a small band of wavelengths, Dl, about l. *Note:* The various geometrical aspects of transmittance may each be considered restricted to a specific region of the spectrum and may be so designated by the addition of the adjective "spectral." (EEC/IE) [126]

spectral tristimulus values Values per unit wavelength interval and unit spectral radiant flux. *Note:* Spectral tristimulus values have been adopted by the International Commission on Illumination (CIE). They are tabulated as functions of wavelength throughout the spectrum and are the basis for the evaluation of radiant energy as light. (EEC/IE) [126]

spectral width (fiber optics) A measure of the wavelength extent of a spectrum. *Notes:* 1. One method of specifying the spectral linewidth is the full width at half maximum (FWHM), specifically the difference between the wavelengths at which the magnitude drops to one half of its maximum value. This method may be difficult to apply when the line has a complex shape. 2. Another method of specifying spectral width is a special case of root-mean-square (rms) deviation where the independent variable is wavelength (λ), and $f(\lambda)$ is a suitable radiometric quantity. 3. The relative spectral width ($\Delta\lambda/\lambda$) is frequently used, where $\Delta\lambda$; is obtained according to Note 1 or Note 2. *See also:* root-mean-square deviation; coherence length; line spectrum; material dispersion. (Std100) 812-1984w

spectral width, full-width half maximum (FWHM) The absolute difference between the wavelengths at which the spectral radiant intensity is 50% of the maximum. (C/LM) 802.3-1998

spectral window (fiber optics) A wavelength region of relatively high transmittance, surrounded by regions of low transmittance. *Synonym:* transmission window. (Std100) 812-1984w

spectrophotometer (illuminating engineering) An instrument for measuring the transmittance and reflectance of surfaces and media as a function of wavelength. (EEC/IE) [126]

spectroradiometer (illuminating engineering) An instrument for measuring radiant flux as a function of wavelength. (EEC/IE) [126]

spectrum (1) (germanium gamma-ray detectors) (radiation) (x-ray energy spectrometers) (charged-particle detectors) A distribution of the intensity of radiation as a function of energy or its equivalent electric analog (such as charge or voltage) at the output of a radiation detector. (NPS/NID) 325-1986s, 759-1984r, 301-1976s

(2) (fiber optics) *See also:* optical spectrum. 812-1984w

(3) (data transmission) The distribution of the amplitude (and sometimes phase) of the components of a wave as a function of frequency. Spectrum is also used to signify a continuous range of frequencies, usually wide in extent, within which waves have some specified common characteristic. (PE) 599-1985w

(4) (radiation) A distribution of the intensity of radiation as a function of energy, or a distribution of the amplitudes of the electrical pulses caused by the radiation. (NPS) 300-1988r

spectrum amplitude (impulse strength and impulse bandwidth) The voltage spectrum of a pulse can be expressed as

$$V(\omega) = R(\omega) + jX(\omega) = \int_{-\infty}^{+\infty} v(t)\, e^{-j\omega t} dt$$

where

$$R(\omega) = \int_{-\infty}^{+\infty} v(t) \cos \omega t \, dt$$

$$X(\omega) = \int_{-\infty}^{+\infty} v(t) \sin \omega t \, dt$$

and

$$\omega = 2\pi f$$

Notes: 1. See IEEE Std 263-1965, Measurement of Radio Noise Generated by Motor Vehicles and Affecting Mobile Communications Receivers in the Frequency Range 25 to 1000 megahertz. The spectrum then has the amplitude characteristic

$$A(\omega) = \sqrt{R^2(\omega) + X^2(\omega)} \qquad (V/\text{rad})/\text{s}$$

and the phase characteristic

$$\varphi(\omega) = \tan^{-1} \frac{X(\omega)}{R(\omega)}$$

The inverse transform can be written

$$v(t) = \frac{1}{\pi} \int_0^{\infty} A(\omega) \cos [\omega t + \varphi(\omega)] \, d\omega$$

for real $v(t)$. The spectrum amplitude is also expressible in volts per hertz (volt-seconds) as follows:

$$S(f) = 2A(\omega)$$

It is this form that is used as the basis for calibration of commercially available impulse generators. A practical impulse is a function of time duration short compared with the reciprocals of all frequencies of interest. 2. For a rectangular pulse, the spectrum is flat within about 1 dB up to a frequency for which the pulse duration is equal to 1/4 cycle. Its spectrum amplitude $S(f)$ is substantially uniform in this frequency range and is equal to twice the area under the impulse time function or 2s. At frequencies higher than this it is still of interest to define the spectrum amplitude that will usually be less than 2σ. In most broadband impulse generators a dc voltage is used to charge a calibrated coaxial transmission line. The pulses are produced when the line is discharged into its

terminating impedance through mechanically activated contacts. These mechanical contacts may be parts of either a vibrating diaphragm or mercury wetted relay switches. By proper choice of transmission line length and resistive termination, it is possible to produce impuls es having a predictable uniform spectrum amplitude range. The advent of solid-state switches has made it possible to switch on a sine wave for a precisely measurable time interval (τ), producing in the frequency band in the vicinity of the sine wave a spectrum simulating that produced by an impulse. The spectrum amplitude at that particular frequency can be measured in terms of a measurement of the amplitude of the sine wave when not switched, and a measurement of the on time (τ_0) for the switch. (EMC) 376-1975r

spectrum analyzer (1) An instrument generally used to display the power distribution of an incoming signal as a function of frequency. *Notes:* 1. Spectrum analyzers are useful in analyzing the characteristics of electrical waveforms in general since, by repetitively sweeping through the frequency range of interest, they display all components of the signal. 2. The display format may be a cathode ray tube or chart recorder. (IM) [14]

(2) An instrument that measures the power of a complex signal in many bands. The frequency bands can be either constant absolute bandwidth or constant percentage bandwidth. (COM/TA) 269-1992

(3) An instrument that measures the power of a signal in multiple frequency bands. The frequency bands may be constant bandwidth (e.g., fast Fourier transform (FFT) analyzer), or constant percentage bandwidth (e.g., real-time filter analyzer). (COM/TA) 1329-1999

(4) A test instrument which measures and displays the measurements of amplitude versus frequency for a given signal. Its frequency range should be at least 100 Hz to 1500 MHz; resolution bandwidth should be at least 10 Hz to 3 MHz; the video bandwidth should be at least 1 Hz to 3 MHz, and amplitude range should be at least −135 to +35 dBm. (PEL) 1515-2000

spectrum, angular *See:* angular spectrum.

spectrum, angular power *See:* angular power spectrum.

spectrum, energy *See:* energy spectrum.

spectrum intensity (impulse strength and impulse bandwidth) (For spectra which have a continuous distribution of components components are not discrete over the frequency range of interest). The spectrum intensity is the ratio of the power contained in a given frequency range to the frequency range as the frequency range approaches zero. It has the dimensions watt-seconds or joules and is usually stated quantitatively in terms of watts per hertz. (EMC) 376-1975r

spectrum level (spectrum density level) (specified signal at a particular frequency) The level of that part of the signal contained within a band 1 Hz wide, centered at the particular frequency. Ordinarily, this has significance only for a signal having a continuous distribution of components within the frequency range under consideration. The words spectrum level cannot be used alone but must appear in combination with a prefatory modifier: for example, pressure, velocity, voltage. *Note:* For illustration, if L_{ps} is a desired pressure spectrum level, p the effective pressure measured through the filter system, p_0 reference sound pressure, Δf the effective bandwidth of the filter system, and $\Delta_0 f$ the reference bandwidth (1 Hz), then

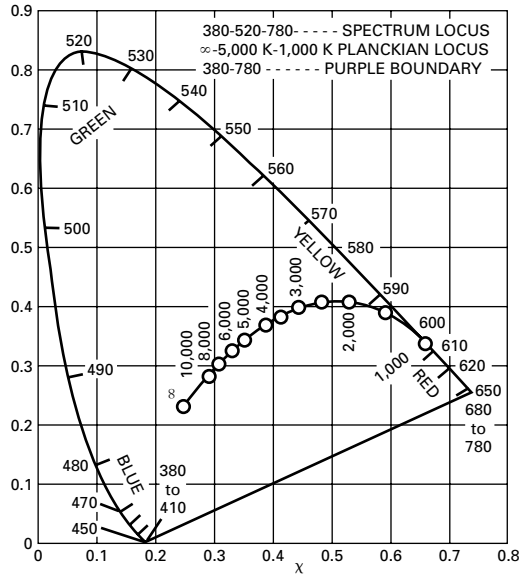
$$L_{ps} = L_p - 10\log_{10}\frac{\Delta df}{\Delta_0 f}$$

For computational purposes, if L_{ps} is the band pressure level observed through a filter of bandwidth Δf, the above relation reduces to

$$L_{ps} = \log_{10}\frac{p^2/\Delta f}{p_0^2/\Delta_0 f}$$

(SP/ACO) [32]

spectrum locus (1) (color) The locus of points representing the chromaticities of spectrally pure stimuli in a chromaticity diagram. (See the corresponding figure.)



Chromaticity diagram

spectrum locus

(BT/AV) 201-1979w

(2) (illuminating engineering) The locus of points representing the colors of the visible spectrum in a chromaticity diagram. (EEC/IE) [126]

spectrum mask A graphic representation of the required power distribution as a function of frequency for a modulated transmission. (C/LM) 802.3-1998

specular angle (illuminating engineering) That angle between the perpendicular to the surface and the reflected ray that is numerically equal to the angle of incidence and that lies in the same plane as the incident ray and the perpendicular but on the opposite side. (EEC/IE) [126]

specular reflection (1) (laser maser) A mirrorlike reflection. (LEO) 586-1980w

(2) The reflection of a wave when incident on an infinite planar surface. The angle of incidence is equal to the angle of reflection. (EMC) 1128-1998

(3) The process by which all or part of a wave, incident on a smooth surface, is returned to the original medium, in accordance with Snell's law of reflection. (AP/PROP) 211-1997

(4) (fiber optics) *See also:* reflection. 812-1984w

specular surface (illuminating engineering) A surface from which the reflection is predominantly regular. *See also:* regular reflection. (EEC/IE) [126]

(2) (A) A surface, smooth enough that all energy is reflected from it or transmitted across it in those directions specified by Snell's law. **(B)** A planar interface separating two media. (AP/PROP) 211-1997

speech interpolation The method of obtaining more than one voice channel per voice circuit by giving each subscriber a speech path in the proper direction only at times when his speech requires it. (EEC/PE) [119]

speech level (speech quality measurements) The speech level defined and measured subjectively by comparison of the speech signal with a signal obtained by passing pink noise through a filter with A-weighting characteristics that has been judged to be equal to it in loudness. *Note:* The value of the speech level is defined to be the A-weighted sound pressure level of this noise [dB(A)]. 297-1969w

speech network (transmission performance of telephone sets) An electrical circuit that connects the transmitter and the receiver to a telephone line or telephone test loop and to each other. (COM/TA) 269-1983s

speech quality (speech quality measurements) A characteristic of a speech signal that can be described in terms of subjective and objective parameters. Speech quality is evaluated only in terms of the subjective parameter of preference. 297-1969w

speech reference signal (speech quality measurements) Used as a standard of reference for the purpose of preference testing, a speech signal which is artificially degraded in a measurable and reproducible way. 297-1969w

speech signals Utterances in their acoustical form or electrical equivalent. 297-1969w

speech synthesizer An input-output device that can process or generate the sound of human speech. *See also:* voice-operated device. (C) 610.10-1994w

speech test signal (speech quality measurements) A speech signal whose speech quality is to be evaluated. 297-1969w

speed (hydraulic turbines) The instantaneous speed of rotation of the turbine expressed as a percent of rated speed. (PE/EDPG) 125-1977s

speed adjustment (control) A speed change of a motor accomplished intentionally through action of a control element in the apparatus or system governing the performance of the motor. *Note:* For an adjustable-speed direct-current motor, the speed adjustment is expressed in percent (or per unit) of base speed. Speed adjustment of all other motors is expressed in percent (or per unit) of rated full-load speed. *See also:* base speed; electric drive; adjustable-speed motor. (IA/IAC) [60]

speed changer (1) (hydraulic turbines) A device for changing the governor speed reference. (PE/EDPG) 125-1988r
(2) (gas turbines) A device by means of which the speed-governing system is adjusted to change the speed or power output of the turbine during operation. *See also:* asynchronous machine. (PE/EDPG) 282-1968w, [5]

speed-changer high-speed stop (gas turbines) A device that prevents the speed changer from moving in the direction to increase speed or power output beyond the position for which the device is set. *See also:* asynchronous machine. (PE/EDPG) 282-1968w, [5]

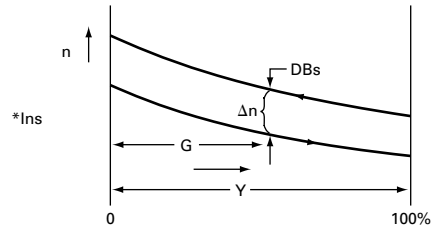
speed code (1) The code used to indicate various bit rates for Serial Bus: S25 indicates 24.576 Mbit/s for TTL backplanes; S50 indicates 49.152 Mbit/s for BTL and ECL backplanes; S100 indicates the 98.304 Mbit/s base rate for cable; S200 and S400 indicate 196.608 Mbit/s and 393.216 Mbit/s for the cable. (C/MM) 1394-1995
(2) The code used to indicate bit rates for Serial Bus. (C/MM) 1394a-2000

speed controller (control systems for steam turbine-generator units) Includes only those components and control elements that are responsive to speed and speed reference, and that supplies an input signal to the control mechanism for the purpose of controlling speed. (PE/EDPG) 122-1985s

speed-control mechanism (electric power system) All equipment such as relays, servomotors, pressure or power-amplifying devices, levers, and linkages between the speed governor and the governor-controlled valves. (PE/PSE) 94-1991w

speed deadband (hydraulic turbines) The total magnitude of the change in steady-state speed, expressed in percent of rated speed, required to reverse the direction of travel of the turbine control servomotor. (See the corresponding figure.) One half of the governor speed deadband is termed the governor speed insensitivity.

$DB_S = \Delta n$



speed deadband

(PE/EDPG) 125-1977s, [5]

speed deviation (hydraulic turbines) The instantaneous difference between the actual speed and a reference speed. (PE/EDPG) 125-1977s

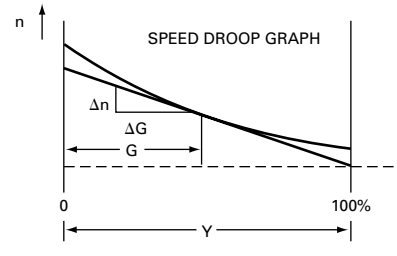
speed droop (hydraulic turbines) The speed droop and speed regulation graphs may indicate a nonlinear relationship between the two measured variables depending on the adjustment of the governor speed changer and the quantity (servomotor position or generator power output) used to develop the feedback signal used in the governor system. Speed droop and speed regulation are considered positive when speed increases with a decrease in gate position or power output. (See the corresponding figure.) The slope of the speed droop graph at a specified point of operation *G*. The change in a steady-state speed expressed in percent of rated speed corresponding to the 100% turbine servomotor stroke with no change in setting of any governor adjustments and with the turbine supplying power to a load independently of any other power source.

$$D_S = \left(\frac{-\Delta n}{\Delta G}\right) \cdot (100)$$

Speed droop is classified as either permanent or temporary:

a) *(permanent speed droop).* The speed droop that remains in steady state after the decay action of the damping device has been completed.

b) *(temporary speed droop).* The speed droop in steady state that would occur if the decay action of the damping device were blocked and the permanent speed droop were made inactive.



speed droop graph

(PE/EDPG) 125-1977s

speed-droop changer (hydraulic turbines) A device for changing the speed droop. (PE/EDPG) 125-1988r

speed-governing system (1) (automatic generation control on electric power systems) The control system used to maintain the rotational speed of a turbine-generator unit. The system consists of the speed governor, the speed-control mechanism, and the governor-controlled valves on a steam turbine or gates on a hydro turbine. (PE/PSE) 94-1991w
(2) Control elements and devices for the control of the speed or power output of a gas turbine. This includes a speed governor, speed changer, fuel-control mechanism, and other devices and control elements. (PE/EDPG) 282-1968w, [4]

speed governor (1) (electric power system) Includes only those elements that are directly responsive to speed and that position or influence the action of other elements of the speed-governing system. *See also:* asynchronous machine; speed-governing system. (PE/EDPG) 282-1968w, [5]

(2) (electric power system) A device that varies the governor-controlled valves to adjust energy input levels to maintain a uniform speed of a rotating machine. (PE/PSE) 94-1991w

speed limit A control function that prevents a speed from exceeding prescribed limits. Speed-limit values are expressed as percent of maximum rated speed. If the speed-limit circuit permits the limit value to change somewhat instead of being a single value, it is desirable to provide either a curve of the limit value of speed as a function of some variable, such as load, or to give limit values at two or more conditions of operation. *See also:* feedback control system. (IA/ICTL/APP/IAC) [69], [60]

speed-limit indicator A series of lights controlled by a relay to indicate the speeds permitted corresponding to the track conditions. (EEC/PE) [119]

speed/load control system (control systems for steam turbine-generator units) A system that controls the speed and load of a steam turbine-generator. The system typically includes the speed and load sensing and referencing elements, the controller(s), the control mechanism(s), and the control valve(s). (PE/EDPG) 122-1985s

speed/load reference changer (control systems for steam turbine-generator units) A device or devices by means of which the control system reference may be adjusted to change the speed or load of the turbine while the turbine is in operation. (PE/EDPG) 122-1985s

speed of transmission (data transmission) The instantaneous rate of which information is processed by a transmission facility. This quantity is usually expressed in characters per unit time or bits per unit time. (Rate of transmission is in more common use.) (PE) 599-1985w

speed of transmission, effective *See:* effective speed of transmission.

speed of vision (illuminating engineering) The reciprocal of the duration of the exposure time required for something to be seen. (EEC/IE) [126]

speed or frequency matching device (power system device function numbers) A device that functions to match and hold the speed or the frequency of a machine or of a system equal to, or approximately equal to, that of another machine, source or system. (PE/SUB) C37.2-1979s

speed range All the speeds that can be obtained in a stable manner by action of part (or parts) of the control equipment governing the performance of the motor. The speed range is generally expressed as the ratio of the maximum to the minimum operating speed. *See also:* electric drive. (IA/ICTL/IAC) [60]

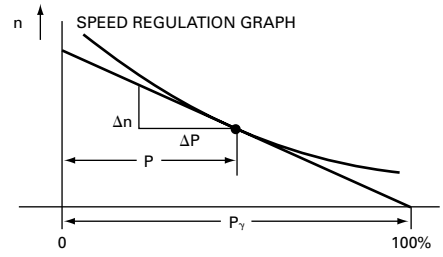
speed ratio (1) (high-voltage switchgear) The ratio between 0.1s and 300 s or 600 s minimum melting currents, whichever is specified, which designates the relative speed of the fuse link. (SWG/PE) C37.40-1981s

(2) *See also:* clearing time; fuse tube; melting-speed ratio. (SWG/PE) C37.100-1992

speed ratio control A control function that provides for operation of two drives at a preset ratio of speed. *See also:* feedback control system. (IA/ICTL/IAC) [60]

speed-regulating rheostat A rheostat for the regulation of the speed of a motor. *See also:* control. (IA/ICTL/IAC) [60], [84]

speed regulation (speed governing of hydraulic turbines) The slope of the speed regulation graph at a specified point P of operation. The change in steady-state speed expressed in percent of rated speed when the power output of the unit is reduced from rated power output to zero power output under rated head with no change in setting of any governor adjustments and with the unit supplying power to a load independently of any other power source. (See the corresponding figure.)



$$R_S = \left(\frac{-\Delta n/100}{\Delta P/P_r}\right) \cdot (100)$$

speed regulation graph

speed regulation changer (hydraulic turbines) A device for changing the speed regulation. (PE/EDPG) 125-1988r

speed regulation characteristic (rotating machinery) The relationship between speed and the load of a motor under specified conditions. *See also:* asynchronous machine. (PE) [9]

speed regulation of a constant-speed direct-current motor The change in speed when the load is reduced gradually from the rated value to zero with constant applied voltage and field-rheostat setting, expressed as a percent of speed at rated load. (EEC/PE) [119]

speed-sensing elements (hydraulic turbines) The speed-responsive elements that determine speed and influence the action of other elements of the governing system. Included are the means used to transmit a signal proportional to the speed of the turbine to the governor. (PE/EDPG) 125-1988r

speed variation Any change in speed of a motor resulting from causes independent of the control-system adjustment, such as line-voltage changes, temperature changes, or load changes. *See also:* electric drive. (IA/ICTL/IAC) [60]

SPeedy ImplemenTation of SNOBOL A version of SNOBOL that requires less memory and provides faster execution than SNOBOL. (C) 610.13-1993w

sphere illumination (illuminating engineering) The illumination on a task from a source providing equal illuminance in all directions about that task, such as a uniformly illuminated sphere with the task located at the center. (EEC/IE) [126]

spherical array A two-dimensional array of elements whose corresponding points lie on a spherical surface. (AP/ANT) 145-1993

spherical diffraction Transhorizon propagation due to diffraction by the spherical surface of the Earth, or more generally by any rounded obstacle which is extremely large in relation to the wavelength. (AP/PROP) 211-1997

spherical hyperbola (navigation aid terms) The locus of the points on the surface of a sphere having a specified constant difference in great circle distances from two fixed points on the sphere. (AES/GCS) 172-1983w

spherical propagation function The function given by:

$$f(r) = \frac{e^{-jkr}}{r}$$

where

r = the range from the source

jk = the propagation constant of the medium

(AP/PROP) 211-1997

spherical reduction factor (illuminating engineering) The ratio of the mean spherical luminous intensity to the mean horizontal intensity. (EEC/IE) [126]

spherical reflector A reflector that is a portion of a spherical surface. *See also:* antenna. (AP/ANT) 145-1993

spherical-seated bearing (rotating machinery) (self-aligning bearing) A journal bearing in which the bearing liner is supported in such a manner as to permit the axis of the journal to be moved through an appreciable angle in any direction. *See also:* bearing. (PE) [9]

spherical support seat (rotating machinery) A support for a journal bearing in which the inner surface that mates with the bearing shell is spherical in shape, the center of the sphere coinciding approximately with the shaft centerline, permitting the axis of the bearing to be aligned with that of the shaft. *See also:* bearing. (PE) [9]

spherical wave A wave with equiphase surfaces that form a family of concentric spheres. (AP/PROP) 211-1997

SPICE *See:* Simulation Program with Integrated Circuit Emphasis.

spider (rotating machinery) (rotor spider) A structure supporting the core or poles of a rotor from the shaft, and typically consisting of a hub, spokes, and rim, or some modified arrangement of these. (PE) [9]

spider rim *See:* rim.

spider web (rotating machinery) The component of a rotor that provides radial separation between the hub or shaft and the rim or core. *See also:* rotor. (PE) [9]

spike (1) (pulse terminology) A distortion in the form of a pulse waveform of relatively short duration superimposed on an otherwise regular or desired pulse waveform. *See also:* preshoot. (IM/WM&A) 194-1977w

(2) (as applied to relaying) An output signal of short duration and limited crest derived from an alternating input of specified polarity. *Note:* The duration of a spike usually does not exceed 1 ms. (SWG/PE) C37.100-1992

spike leakage energy (microwave gas tubes) The radio-frequency energy per pulse transmitted through the tube before and during the establishment of the steady-state radio-frequency discharge. *See also:* gas tube. (ED) 161-1971w

spikes *See:* transient overvoltages.

spike train (electrotherapy) (courant iteratif) A regular succession of pulses of unspecified shape, frequency, duration, and polarity. *See also:* electrotherapy. (EMB) [47]

spill (1) (charge-storage tubes) The loss of information from a storage element by redistribution. (ED) 161-1971w

(2) (liquid-filled power transformers) Spills, leaks, and other uncontrolled discharges of polychlorinated biphenyls (PCBs) constitute the disposal of PCBs. *See also:* disposal. (LM/C) 802.2-1985s

spillover In the transmit mode of a reflector antenna, the power from the feed that is not intercepted by the reflecting elements. (AP/ANT) 145-1993

spillover loss (radar) In a transmitting antenna having a focusing device such as a reflector or lens illuminated by a feed, spillover loss is the reduction in gain due to the portion of the power radiated by the feed in directions that do not intersect the focusing device. By reciprocity, the same loss occurs when the same antenna is used for reception. (AES/RS) 686-1982s

spillway Section of dam, or structure near dam, for flow of excess water. (PE/EDPG) 1020-1988r

spinaxis (navigation aids) The axis of rotation of a gyroscope. (AES/GCS) 172-1983w

spin axis (SA) (gyros) The axis of rotation of the rotor. (AES/GYAC) 528-1994

spin-axis-acceleration detuning error (dynamically tuned gyro) The error in a dynamically tuned gyro whereby deflection of the flexure, resulting from acceleration along the spin axis, can cause a shift in the tuning frequency. This will result in a change in the gyro output when there also exists a pickoff or capture loop offset. (AES/GYAC) 528-1994

spindle A device within a disk drive that maintains the axis of rotation and the force to rotate the disk. (C) 610.10-1994w

spindle speed (numerically controlled machines) The rate of rotation of the machine spindle usually expressed in terms of revolutions per minute. (IA) [61]

spindle wave (electrobiology) A sharp, rather large wave considered of diagnostic importance in the electroencephalogram. *See also:* electrocardiogram. (EEC/PE) [119]

spin-input-rectification drift rate (gyros) The drift rate in a single-degree-of-freedom gyro resulting from coherent oscillatory rates about the spin reference axis (SRA) and input reference axis (IRA). It occurs only when gyro and loop dynamics allow the gimbal to move away from null in response to the rate about the input reference axis, resulting in a cross coupling of the spin reference axis rate. This drift rate is a function of the input rate amplitudes and the phase angle between them. (AES/GYAC) 528-1994

spinner† Rotating part of a radar antenna, together with directly associated equipment, used to impart any subsidiary motion, such as conical scanning, in addition to the primary slewing of the beam. (AES/RS) 686-1990

† Obsolete.

spinning reserve Unloaded generation that is synchronized and ready to serve additional demand. (PE/PSE) 858-1993w

spin-offset coefficient (accelerometer) The constant of proportionality between bias change and the square of angular rate for an accelerometer that is spun about an axis parallel to its input reference axis and that passes through its effective center of mass for angular velocity. (AES/GYAC) 528-1994

spin-output-rectification drift rate (gyros) The drift rate in a single-degree-of-freedom gyro resulting from coherent oscillatory rates about the spin reference axis (SRA) and output reference axis (ORA). It occurs only when gyro and loop dynamics allow the float motion to lag case motion when subjected to a rate about the output reference axis, resulting in a cross coupling of the spin reference axis rate. This drift rate is a function of the input rate amplitudes and the phase angle between them. (AES/GYAC) 528-1994

spin reference axis (SRA) (gyros) An axis normal to the input reference axis and nominally parallel to the spin axis when the gyro output has a specified value, usually null. (AES/GYAC) 528-1994

spin-wait A condition during multi-unit synchronization where a processor remains in a tight loop, retesting a variable while waiting for the value to be changed by another unit. This condition may waste processor time and cost considerable bus bandwidth if the test variable must be read from system memory in another unit. (C/MM) 1212.1-1993

spiral antenna An antenna consisting of one or more conducting wires or tapes arranged as a spiral. *Note:* Spiral antennas are usually classified according to the shape of the surface to which they conform (for example, conical or planar spirals), and according to the mathematical form (for example, equiangular or archimedean). (AP/ANT) 145-1993

spiral distortion (camera tubes or image tubes using magnetic focusing) A distortion in which image rotation varies with distance from the axis of symmetry of the electron optical system. (ED) 161-1971w

spiral four (1) A quad in which the four conductors are twisted about a common axis, the two sets of opposite conductors being used as pairs. *Synonym:* star quad. *See also:* cable. (EEC/PE) [119]

(2) A cable element that comprises four insulated connectors twisted together. Two diametrically facing conductors form a transmission pair. *Note:* Cables containing star quads can be used to interchangeably with cables consisting of pairs, provided the electrical characteristics meet the same specifications. *Synonym:* star quad. (LM/C) 802.3u-1995s

spiral model A model of the software development process in which the constituent activities, typically requirements analysis, preliminary and detailed design, coding, integration, and testing, are performed iteratively until the software is complete. *Contrast:* waterfall model. *See also:* prototyping; incremental development. (C) 610.12-1990

spiral scanning (electronic navigation) Scanning in which the direction of maximum response describes a portion of a spiral. *See also:* antenna. (AP/ANT) [35]

SPL (sound-pressure level) *See:* sound pressure level.

s-plane In the Laplace transform, the notation $\sigma = \sigma + \varphi\omega$ is introduced. The s-plane is a coordinate system with s as the abscissa and w as the ordinate. The letter "p" is sometimes used instead of "s." (CAS) [13]

splashproof (packaging machinery) So constructed and protected that external splashing will not interfere with successful operation. *See also:* traction motor. (SWG/PE/VT/IA/ICTL/LT/PKG) C37.30-1971s, C37.100-1981s, 16-1955w, 333-1980w

splashproof enclosure An enclosure in which the openings are so constructed that drops of liquid or solid particles falling on the enclosure or coming towards it in a straight line at any angle not greater than 100° from the vertical cannot enter the enclosure either directly or by striking and running along a surface. (IA/MT) 45-1998

splashproof machine An open machine in which the ventilating openings are so constructed that drops of liquid or solid particles falling on the machine or coming towards it in a straight line at any angle not greater than 100° downward from the vertical cannot enter the machine either directly or by striking and running along a surface. *See also:* asynchronous machine. (PE) [9]

splice (1) (power cable joints) The physical connection of two or more conductors to provide electrical continuity. (PE/IC) 404-1986s

(2) (optical waveguide) *See also:* optical waveguide splice 812-1984w

(3) *See also:* compression joint. (T&D/PE) 524-1992r

splice box (mine type) An enclosed connector permitting short sections of cable to be connected together to obtain a portable cable of the required length. *See also:* mine feeder circuit.

splice loss *See:* insertion loss.

splice release block *See:* hold-down block.

splice site The location along the line where the conductors are temporarily anchored to join the conductors together to form a splice. (T&D/PE) 524a-1993r

splice, wire rope *See:* wire rope splice.

splicing cart (conductor stringing equipment) A unit which is equipped with a hydraulic pump and compressor (press) and all other necessary equipment for performing splicing operations on conductors. *Synonyms:* splicing truck; splicing trailer; sleeving trailer. (T&D/PE) 524a-1993r, 524-1992r

splicing chamber *See:* manhole.

splicing trailer *See:* splicing cart.

splicing truck *See:* splicing cart.

split acceptor A master module that splits the current transaction upon detecting SR* asserted. (C/BA) 896.4-1993w

split-anode magnetron A magnetron with an anode divided into two segments, usually by slots parallel to its axis. *See also:* magnetron. (ED) 161-1971w

split-beam cathode-ray tube (double-beam cathode-ray tube) A cathode-ray tube containing one electron gun producing a beam that is split to produce two traces on the screen. (ED) [45]

split brush Either an industrial or fractional-horsepower brush consisting of two pieces that are used in place of one brush. The adjacent sides of the split brush are parallel to the commutator bars. *Note:* A split brush is normally mounted so that the plane formed by the adjacent contacting brush sides is parallel to or passes through the rotating axis of the rotor. *See also:* brush; asynchronous machine. (EEC/EM/LB) [101]

split collector ring (rotating machinery) A collector ring that can be separated into parts for mounting or removal without access to a shaft end. *See also:* rotor. (PE) [9]

split-conductor cable A cable in which each conductor is composed of two or more insulated conductors normally connected in parallel. *See also:* segmental conductor. (T&D/PE) [10]

split-core-type current transformer *See:* current transformer.

split fitting A conduit split longitudinally so that it can be placed in position after the wires have been drawn into the conduit, the two parts being held together by screws or other means. *See also:* raceway. (EEC/PE) [119]

split-gate tracker A form of range tracker using a pair of time gates called an *early gate* and a *late gate*, contiguous or partly overlapping in time. *Note:* When tracking is established, the pair of gates straddles the received pulse that is being tracked. The position of the pair of gates then gives a measure of the time of arrival of the pulse (i.e., the range of the target from which the echo is received). Deviation of the pair of gates from the proper tracking position increases the signal energy in one gate and decreases it in the other, thus producing an error signal that moves the pair of gates so as to reestablish equilibrium. (AES) 686-1997

split hub (rotating machinery) A hub that can be separated into parts for ease of mounting on removal from a shaft. *See also:* rotor. (PE) [9]

split hydrophone *See:* split transducer.

split initiator A slave module that asserts sr* to require that the current transaction be split. (C/BA) 896.4-1993w

split key A foreign key containing two or more attributes, where at least one of the attributes is a part of the entity's primary key and at least one of the attributes is not a part of the primary key. (C/SE) 1320.2-1998

split node (network analysis) A node that has been separated into a source node and a sink node. *Notes:* 1. Splitting a node interrupts all signal transmission through that node. 2. In splitting a node, all incoming branches are associated with the resulting sink node, and all outgoing branches with the resulting source node. (CAS) 155-1960w

split operation A request to exchange data or an event that cannot be satisfied while all its participants remain interlocked. Rather, the participants record the requested action and, at a later time, when the exchange can be completed, reestablish a communication path to complete it. (C/BA) 1014.1-1994w

split-phase electric locomotive A single-phase electric locomotive equipped with electric devices to change the single-phase power to polyphase power without complete conversion of the power supply. *See also:* electric locomotive. (EEC/PE) [119]

split-phase motor A single-phase induction motor having a main winding and an auxiliary winding, designed to operate with no external impedance in either winding. The auxiliary winding is energized only during the starting operation of the auxiliary-winding circuits and is open-circuited during running operation. *See also:* asynchronous machine. (PE) [9]

split projector *See:* split transducer.

split rotor (rotating machinery) A rotor that can be separated into parts for mounting or removal without access to a shaft end. *See also:* rotor. (PE) [9]

split-sleeve bearing (rotating machinery) A journal bearing having a bearing sleeve that is split for assembly. *See also:* bearing. (PE) [9]

splitter Splitters divide or combine power. The power division causes an insertion loss and a small amount of internal loss that contributes to the attenuation of the signals passing through the device. The splitter has a common port and split port(s). The signals between the common and split port(s) has an insertion loss of 10 log n, where n equals the number of power splits. The splitter also has an isolation that attenuates signals passing between port(s). (LM/C) 802.7-1989r

splitter, optical *See:* optical directional coupler.

split-throw winding (rotating machinery) A winding wherein the conductors that constitute one complete coil side in one slot do not all appear together in another slot. *See also:* asynchronous machine. (PE) [9]

split transaction (1) An operation in which the request is transmitted in one bus transaction and the response is transmitted in a separate subsequent bus transaction. (C/BA) 896.3-1993w, 896.4-1993w

(2) A transaction that consists of separate request and response subactions. On a backplane bus, for example, a split transaction is one in which bus mastership is relinquished between the request and response subactions. Few buses permit split transactions. *See also:* unified transaction. (C/MM) 1596-1992

(3) A transaction that consists of separate request and response subactions. On a backplane bus, for example, bus ownership is relinquished between the request and response subactions. A transaction that is not split is called a unified transaction. (C/MM) 1212-1991s

(4) A system transaction in which the request is transmitted in one bus transaction and the response is transmitted in a separate subsequent bus transaction. (C/BA) 10857-1994

(5) A transaction where the responder releases control of the bus after sending the acknowledge and then some time later starts arbitrating for the bus so it can start the response subaction. Other subactions may take place on the bus between the request and response subactions for the transaction. (C/MM) 1394-1995

(6) A transaction where unrelated subactions may take place on the bus between its request and response subactions. (C/MM) 1394a-2000

split transducer (audio and electroacoustics) A directional transducer in which electroacoustic transducing elements are so divided and arranged that each division is electrically separate. (SP) [32]

split-winding protection A form of differential protection in which the current in all or part of the winding is compared to the normally proportional current in another part of the winding. (SWG/PE) C37.100-1992

SPMP *See:* software project management plan.

spoiler resistors (power supplies) Resistors used to spoil the load regulation of regulated power supplies to permit parallel operation when not otherwise provided for. (AES) [41]

s pole *See:* junction pole.

sponge (electrodeposition) A loose cathode deposit that is fluffy and of the nature of a sponge, contrasted with a reguline metal. (EEC/PE) [119]

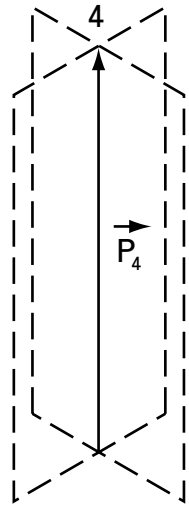
spontaneous emission (1) (fiber optics) Radiation emitted when the internal energy of a quantum mechanical system drops from an excited level to a lower level without regard to the simultaneous presence of similar radiation. *Note:* Examples of spontaneous emission include:

1) radiation from a light emitting diode (LED), and
2) radiation from an injection laser below the lasing threshold.

See also: superradiance; light-emitting diode; injection laser diode; stimulated emission. (Std100) 812-1984w

(2) (laser maser) The emission of radiation from a single electron, atom, molecule, or ion in an excited state at a rate independent of the presence of applied external fields. (LEO) 586-1980w

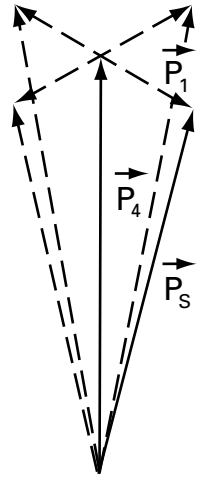
spontaneous polarization (primary ferroelectric terms) Magnitude of the polarization within a single ferroelectric domain in the absence of an external electric field. A spontaneous polarization P_s is a fundamental property of all pyroelectric crystals, although it is reversible or reorientable only in ferroelectrics. Most ferroelectric phases originate from a nonpolar prototypic phase and all of the polarization is reorientable. However, if the prototypic phase is polar, only a portion of the total spontaneous polarization may be reoriented. This reorientable or reversible portion is commonly called the spontaneous polarization. The corresponding figures illustrate an example of a case where the prototypic phase is tetragonal (4*mm*) and the ferroelectric phase is monoclinic (*m*), one of the two special polar groups. The spontaneous polarization, P_s in the second part of the figure, is composed of a switchable part, P_1, and a nonswitchable component, P_4; thus P_s is reorientable when P_1 switches between any of its four allowed states. In this example the pyroelectric vector is not collinear with the polar axis P_s, and both P_1 and P_s may independently change direction with temperature. The unit cell is the smallest group of atoms within a crystal whose repetition in space generates the whole crystal. It is electrically neutral in all states of the crystal, but on this microscopic scale, P_s is associated with a polar displacement of the ionic and electronic charges within the crystalline unit cell, and this, in turn, gives rise to a microscopic electric dipole moment. In ferroelectric crystals, dipoles in adjacent unit cells are aligned in the same direction, resulting in a net P_s within a macroscopic volume (much larger than a unit cell) called a domain.



Note: The polar axis lies along the four-fold axis of symmetry.

Polar prototype phase, tetragonal (4 mm)

spontaneous polarization



Note: The spontaneous polarization is not collinear with the prototype four-fold axis.

Ferroelectric phase in the monoclinic symmetry (m), derived from the tetragonal prototype phase

(UFFC) 180-1986w

spontaneous strain (primary ferroelectric terms) The summation of all the strains necessary to convert a ferroelastic crystal from the nonferroelastic prototype state to one of the ferroelastic orientation states. The prototype state, by definition, has zero spontaneous strain. A ferroelastic crystal can be switched from one ferroelastic orientation state to another by mechanical stress. Any two of the states are identical or enantiomorphous in crystal structure but different in mechanical strain tensor at zero mechanical stress (and at zero electrical field). (UFFC) 180-1986w

spool To read input data, or write output data, to auxiliary or main storage for later processing or output, in order to permit input/output devices to operate concurrently with job execution. Derived from the acronym SPOOL for Simultaneous Peripheral Output On Line. (C) 610.12-1990, 610.10-1994w

(2) (A) Secondary storage used as an interim holding area for output waiting to be printed as in definition (1) above. **(B)** A cylinder without flanges on which tape may be wound. *Synonym:* hub. *Contrast:* reel. *See also:* bore. (C) 610.10-1994

spooler A program that initiates and controls spooling. (C) 610.12-1990

spool insulator An insulating element of generally cylindrical form having an axial mounting hole and a circumferential groove or grooves for the attachment of a conductor. *See also:* insulator; tower. (T&D/PE/EEC/IEPL) [10], [89]

sporadic E layer An ionospheric layer of the E region which is thin, transient and of limited geographical extent. *Note:* An equatorial sporadic E layer occurs regularly during the day in association with the equatorial electrojet. *Synonym:* Es layer. (AP/PROP) 211-1997

sporadic ionization Ionization of the upper atmosphere, irregularly distributed in space and time, and abnormally high relative to the average ionization level of the region in which it is produced. (AP/PROP) 211-1997

sporadic tasks Asynchronous tasks that may have hard (rigid) deadlines that must be met, but have a minimum interarrival duration between instances (typically by enforcement). (C/BA) 896.3-1993w

spot (oscilloscopes) (cathode-ray tubes) The illuminated area that appears where the primary electron beam strikes the phosphor screen of a cathode-ray tube. *Note:* The effect of the impact on this small area of the screen is practically instantaneous. *See also:* oscillograph; cathode-ray tube. (IM/ED/HFIM) [40], [45], [84]

spotlight (illuminating engineering) A form of floodlight usually equipped with lens and reflectors to give a fixed or adjustable narrow beam. (EEC/IE) [126]

spotlight synthetic-aperture radar A form of SAR in which very high resolution is obtained by steering the real antenna beam to dwell longer on a scene or target than allowed by a fixed antenna. (AES) 686-1997

spot measurement (point-in-time measurement) A measurement that is performed at some instant and point in space that does not provide information regarding temporal or spatial variations of the field. (T&D/PE) 1308-1994

spot network A small network, usually at one location, consisting of two or more primary feeders, with network units and one or more load service connections. (PE/TR) C57.12.44-1994

spot-network type A unit substation which has two stepdown transformers, each connected to an incoming high-voltage circuit. The outgoing side of each transformer is connected to a common bus through circuit breakers equipped with relays which are arranged to trip the circuit breaker on reverse power flow to the transformer and to reclose the circuit breaker upon the restoration of the correct voltage, phase angle and phase sequence at the transformer secondary. The bus has one or more outgoing radial (stub end) feeders. (PE/TR) C57.12.80-1978r

spot noise figure (spot noise factor) (transducer at a selected frequency) The ratio of the output noise power per unit bandwidth to the portion thereof attributable to the thermal noise in the input termination per unit-bandwidth, the noise temperature of the input termination being standard (290 kelvins). The spot noise figure is a point function of input frequency. *See also:* signal-to-noise ratio; noise figure. (PE/EEC) [119]

spot projection (facsimile) The optical method of scanning or recording in which the scanning or recording spot is defined in the path of the reflected or transmitted light. *See also:* recording; scanning. (COM) 168-1956w

spot punch A punch device used for punching one hole at a time into a punch card. (C) 610.10-1994w

spot size The diameter of a pixel on a display surface. *Synonym:* beam spot size. (C) 610.6-1991w

spot speed (facsimile) The speed of the scanning or recording spot within the available line. *Note:* This is generally measured on the subject copy or on the record sheet. *See also:* recording; scanning. (COM) 168-1956w

spotting (electroplating) The appearance of spots on plated or finished metals. (PE/EEC) [119]

spot-type fire detector (fire protection devices) A device whose detecting element is concentrated at a particular location. (NFPA) [16]

spot wobble (television) A process wherein a scanning spot is given a small periodic motion transverse to the scanning lines at a frequency above the picture signal spectrum. (BT/AV) 201-1979w

spray plume *See:* positive prebreakdown streamers.

spread, Doppler *See:* Doppler spread.

spread F A phenomenon observed on ionograms displaying a wide range of delays of echo pulses, near the F region critical frequencies. *Notes:* 1. The echoes usually are spread in the frequency and virtual height domains on an ionogram. 2. Spread F commonly occurs at night at low latitudes (e.g., near the magnetic dip equator) and at high latitudes. (AP/PROP) 211-1997

spreading factor For propagation in isotropic unbounded media, that amplitude factor that accounts for geometric spreading of the field intensity. *Note:* In the far field region of plane, cylindrical, and spherical waves this factor is 1, $r^{-1/2}$, and r^{-1} respectively, where r is the distance from the source to the observation point. (AP/PROP) 211-1997

spreading loss (1) (wave propagation) The reduction in radiant-power surface density due to spreading. (Std100) 270-1966w

(2) The decrease in power or power density due to divergence of the outward energy flow of cylindrical and spherical waves. (AP/PROP) 211-1997

spread sheet *See:* electronic spread sheet.

spread spectrum A modulation technique for multiple access, or for increasing immunity to noise and interference. (C/COM) 610.7-1995, [19]

spread, time delay *See:* time delay spread.

spring-actuated stepping relay A stepping relay that is cocked electrically and operated by spring action. *See also:* relay. (EEC/REE) [87]

spring attachment (burglar-alarm system) (trap) A device designed for attachment to a movable section of the protected premises, such as a door, window, or transom, so as to carry the electric protective circuit in or out of such section, and to indicate an open- or short-circuit alarm signal upon opening of the movable section. *Synonym:* spring contact. *See also:* protective signaling. (PE/EEC) [119]

spring barrel The part that retains and locates the short-circuiter. *See also:* rotor. (EEC/PE) [119]

spring buffer A buffer that stores in a spring the kinetic energy of the descending car or counterweight. *See also:* elevator. (EEC/PE) [119]

spring-buffer load rating (elevators) The load required to compress the spring an amount equal to its stroke. *See also:* elevator. (EEC/PE) [119]

spring-buffer stroke (elevators) The distance the contact end of the spring can move under a compressive load until all coils are essentially in contact. *See also:* elevator. (PE/EEC) [119]

spring contact An electric contact that is actuated by a spring. (EEC/PE) [119]

spring-loaded bearing (rotating machinery) A ball bearing provided with a spring to ensure complete angular contact

between the balls and inner and outer races, thereby removing the effect of diametral clearance in both bearings of a machine provided with ball bearing at each end. *See also:* bearing. (PE/EEC) [119]

spring operation Stored-energy operation by means of spring-stored energy. (SWG/PE) C37.100-1992

sprinkler supervisory system A supervisory system attached to an automatic sprinkler system that initiates signal transmission automatically upon the occurrence of abnormal conditions in valve positions, air or water pressure, water temperature or level, the operability of power sources necessary to the proper functioning of the automatic sprinkler, etc. *See also:* protective signaling. (EEC/PE) [119]

sprite engine A graphics controller that supports sprites; small, high-resolution objects that can be moved about the display surface. (C) 610.10-1994w

sprocket feed *See:* tractor feed.

sprocket hole (1) (test, measurement, and diagnostic equipment) The hole in a tape that is used for electrical timing or mechanically driving the tape. (MIL) [2]
(2) *See also:* feed hole. (C) 610.10-1994w

sprocket track *See:* feed track.

SPS *See:* Symbolic Programming Systems.

SPSS *See:* Statistical Package for Social Sciences.

spurious bulk-wave signals Unwanted signals caused by bulk wave excitation existing at the surface acoustic wave filter output. (UFFC) 1037-1992w

spurious components Persistent sine waves at frequencies other than the harmonic frequencies. *See also:* harmonic distortion. (IM/WM&A) 1057-1994w

spurious count (1) (nuclear techniques) A count from a scintillation counter other than one purposely generated or one due directly to ionizing radiation. *See also:* scintillation counter. (NPS) 398-1972r
(2) A count caused by any event other than the passage into or through the counter tube of the ionizing radiation to which it is sensitive. (NI/NPS) 309-1999

spurious emission power (land-mobile communications transmitters) Any part of the radio frequency output that is not a component of the theoretical output, as determined by the type of modulation and specified bandwidth limitations. (EMC) 377-1980r

spurious emission power radiation field (land-mobile communications transmitters) That portion of the spurious emission power which may be radiated from a transmitter enclosure and which can be measured in the near or far field regions. (EMC) 377-1980r

spurious emissions (transmitter performance) Any part of the radio-frequency output that is not a component of the theoretical output, as determined by the type of modulation and specified bandwidth limitations. *See also:* audio-frequency distortion. (VT) [37]

spurious initiation Attempts to establish a communication connection or association, using a false identity or through the replay of a previous, legitimate initiation sequence. Spurious initiation includes spoofing or masquerading attempts in the communication system, and coupled with other attacks, could result in unauthorized disclosure or modification of information, unauthorized receipt of services, or denial of service to legitimate users or critical functions. (C/BA) 896.3-1993w

spurious output (signal generators) (nonharmonic) Those signals in the output of a source that have a defined amplitude and frequency and are not harmonically related to the fundamental frequency. This definition excludes sidebands due to residual and intentional modulation. *See also:* signal generator. (IM/HFIM) [40]

spurious pulse (1) (nuclear techniques) A pulse in a scintillation counter other than one purposely generated or one due directly to ionizing radiation. *See also:* scintillation counter. (NPS) 398-1972r
(2) (dial-pulse address signaling systems) (telephony) The intermittent and undesired change of state in a circuit from its on-hook condition (spurious make) or off-hook condition (spurious break) lasting more than 1ms. (COM/TA) 753-1983w

spurious pulse mode An unwanted pulse mode, formed by the chance combination of two or more pulse modes, that is indistinguishable from a pulse interrogation or pulse reply. (IM/WM&A) 194-1977w

spurious radiation (radio-noise emissions) Any emission from an electronic communications equipment at frequencies outside its occupied bandwidth. (EMC) C63.4-1988s

spurious reflections Unwanted signals caused by reflection of surface acoustic wave or bulk waves from substrate edges or electrodes. (UFFC) 1037-1992w

spurious response (1) (general) Any response, other than the desired response, of an electric transducer or device. (PE) 599-1985w
(2) (mobile communication or electromagnetic compatibility) Output, from a receiver, due to a signal or signals having frequencies other than that to which the receiver is tuned. *See also:* electromagnetic compatibility. (VT) [37]
(3) (spectrum analyzer) A characteristic of a spectrum analyzer wherein the displayed frequency does not conform to the input frequency. (IM) 748-1979w
(4) (frequency-modulated mobile communications receivers) Any receiver response that occurs because of frequency conversions other than the desired frequency translations in the receiver. (VT) 184-1969w

spurious-response ratio (radio receivers) The ratio of: A) the field strength at the frequency that produces the spurious response to B) the field strength at the desired frequency, each field being applied in turn, under specified conditions, to produce equal outputs. *Note:* Image ratio and intermediate-frequency-response ratio are special forms of spurious response ratio. *See also:* radio receiver. 188-1952w

spurious transmitter output (1) (A) (general) Any part of the radio-frequency output that is not implied by the type of modulation (amplitude modulation, frequency modulation, etc.) and specified bandwidth. *See also:* radio transmitter.
(B) (conducted) Any spurious output of a radio transmitter conducted over a tangible transmission path. *Note:* Power lines, control leads, radio-frequency transmission lines and waveguides are all considered as tangible paths in the foregoing definition. Radiation is not considered as tangible path in the foregoing definition. Radiation is not considered a tangible path in this definition. *See also:* radio transmitter.
(C) (inband) Spurious output of a transmitter within its specified band of transmission. *See also:* radio transmitter.
(D) (radiated) Any spurious output radiated from a radio transmitter. *Note:* The radio transmitter does not include the associated antenna and transmission lines. *See also:* radio transmitter. (BT) 182-1961
(2) (extraband) *See also:* extraband spurious transmitter output. (EMC) 377-1980r

spurious tube counts (radiation counter tubes) Counts in radiation-counter tubes, other than background counts and those caused by the source measured. *Note:* Spurious counts are caused by failure of the quenching process, electric leakage, and the like. Spurious counts may seriously affect measurement of background counts. (ED) 161-1971w

sputtering (cathode sputtering) (electroacoustics) A process sometimes used in the production of the metal master wherein the original is coated with an electric conducting layer by means of an electric discharge in a vacuum. *Note:* This is done prior to electroplating a heavier deposit. *See also:* phonograph pickup. (SP) [32]

SQL *See:* Structured Query Language.

SQL engine A relational engine that accepts SQL commands and accesses the database in order to obtain the requested data. (C) 610.10-1994w

square-law detection The form of detection of an amplitude-modulated signal in which the output voltage is a linear function of the square of the envelope of the input wave. (IT) [123]

squareness ratio (magnetic storage) (material in a symmetrically cyclically magnetized condition) The ratio of the flux density at zero magnetizing force to the maximum flux density; the ratio of the flux density when the magnetizing force has changed halfway from zero toward its negative limiting value, to the maximum flux density. *Note:* Both these ratios are functions of the maximum magnetizing force. (C) [20]

square wave (1) (data transmission) A periodic wave that alternately for equal lengths of time assumes one of two fixed values, the time of transition being negligible in comparison. (PE) 599-1985w

(2) (pulse terminology) A periodic rectangular pulse train with a duty factor of 0.5 or an on-off ratio of 1.0. (IM/WM&A) 194-1977w

square-wave response (1) (camera tubes) The ratio of the peak-to-peak signal amplitude given by a test pattern consisting of alternate black and white bars of equal widths to the difference in signal between large-area blacks and large-area whites having the same illuminations as the black and white bars in the test pattern. *Note:* Horizontal square-wave response is measured if the bars run perpendicular to the direction of horizontal scan. Vertical square-wave response is measured if the bars run parallel to the direction of horizontal scan. *See also:* amplitude response. (ED) 161-1971w

(2) (diode-type camera tube) Square-wave spatial inputs may be used, in which case the response curve is called the contrast transfer function or square-wave amplitude response. Units: lines per picture height. (ED) 503-1978w

square-wave response characteristic (camera tubes) The relation between square-wave response and the ratio of a raster dimension to the bar width in the square-wave response test pattern. *Note:* Unless otherwise specified, the raster dimension is the vertical height. *See also:* amplitude response characteristic; television. (ED) 161-1971w

squaring amplifier (as applied to relaying). A circuit that produces a block. (SWG/PE) C37.100-1992

squeezable waveguide A variable-width waveguide for shifting the phase of the radio-frequency wave traveling through it by mechanically squeezing the dimensions of a rectangular waveguide. (AES) 686-1997

squeeze section (transmission lines and waveguides) A length of rectangular waveguide so constructed as to permit alteration of the broad dimension with a corresponding alteration in electrical length. *See also:* waveguide. (IM/HFIM) [40]

squeeze trace (electroacoustics) A variable-density sound track wherein, by means of adjustable masking of the recording light beam and simultaneous increase of the electric signal applied to the light modulator, a track having variable width with greater signal-to-noise ratio is obtained. *See also:* phonograph pickup. (SP) [32]

squelch (1) (radio receivers) A circuit function that acts to suppress the audio output of a receiver when noise power that exceeds a predetermined level is present. (VT) 184-1969w

(2) Facility incorporated in radio receivers to disable their signal output while the received carrier signal level is less than a preset value. (SUB/PE) 999-1992w

squelch circuit (1) (data transmission) A circuit for preventing a radio receiver from producing audio-frequency output in the absence of a signal having predetermined characteristics. A squelch circuit may be operated by signal energy in the receiver pass band, by noise quieting, or by a combination of the two (ratio squelch). It may also be operated by a signal having special modulation characteristics (selective squelch). (PE) 599-1985w

(2) A circuit for preventing production of an unwanted output in the absence of a signal having predetermined characteristics. (SWG/PE) C37.100-1992

squelch clamping (frequency-modulated mobile communications receivers) The characteristic of the receiver, when receiving a normal signal, in which the squelch circuit under certain conditions of modulation will cause suppression of the audio output. (VT) 184-1969w

squelch selectivity (frequency-modulated mobile communications receivers) The characteristic that permits the receiver to remain squelched when a radio-frequency signal not on the receiver's tuned frequency is present at the input. (VT) 184-1969w

squelch sensitivity (frequency-modulated mobile communications receivers) The minimum radio-frequency signal input level, with standard test modulation required to increase the audio power output from the reference threshold squelch adjustment condition to within 6 dB of the reference audio power output. (VT) 184-1969w

squiggle A short "s"-shaped line attached at one end to an arrow label and at the other end to an arrow segment. A squiggle binds an object type set (arrow label) to an object set (arrow segment). (C/SE) 1320.1-1998

squint A condition in which a specified axis of an antenna, such as the direction of maximum directivity or of a directional null, departs slightly from a specified reference axis. *Notes:* 1. Squint is often the undesired result of a defect in the antenna; but in certain cases, squint is intentionally designed in in order to satisfy an operational requirement. 2. The reference axis is often taken to be the mechanically defined axis of the antenna; for example, the axis of a paraboloidal reflector. (AP/ANT) 145-1993

(2) (A) The angle between the major lobe axis of each lobe and the central axis in a lobe-switching or simultaneous-lobing (monopulse) antenna. **(B)** The angular difference between the axis of antenna radiation and a selected geometric axis, such as the axis of the reflector, the center of the cone formed by movement of the radiation axis, or the broadside direction of a moving vehicle. (AES) 686-1997

squint angle The angle between a specified axis of an antenna, such as the direction of maximum directivity or a directional null, and the corresponding reference axis. (AP/ANT) 145-1993

squint-mode synthetic-aperture radar A SAR in which the beam is pointed other than at right angles to the flight path of the airborne radar platform. (AES) 686-1997

squirrel-cage induction motor A motor in which the secondary circuit consists of a squirrel-cage winding suitably disposed in slots in the secondary core. (IA/MT) 45-1998

squirrel-cage rotor (rotating machinery) A rotor core assembly having a squirrel-cage winding. *See also:* rotor. (PE) [9]

squirrel-cage winding (1) (rotating machinery) A winding, usually on the rotor of a machine, consisting of a number of conducting bars having their extremities connected by metal rings or plates at each end. (PE) [9]

(2) A permanently short-circuited winding, usually uninsulated (primarily used in induction machines) having its conductors uniformly distributed around the periphery of the machine and joined by continuous end rings. (IA/MT) 45-1998

squitter Random output pulses from a transponder caused by ambient noise or by an intentional random triggering system, but not by the interrogation pulses. (AES) 686-1997

SR *See:* symbol rate.

SRA *See:* spin reference axis.

SRAM *See:* static random-access memory.

SRF *See:* specifically routed frame.

SRH *See:* service request handler.

SRM *See:* standard reference material.

SRR *See:* software requirements review; system requirements review.

SRS *See:* standard response spectrum; software requirements specification.

SRT *See:* Source Routing Transparent.

SS *See:* source statements.

SSAC *See:* steel supported aluminum conductor.

SSAP *See:* address fields.

SSB *See:* single-sideband modulation.

SSD *See:* start of stream delimiter.

SSI *See:* small scale integration; soil structure interaction.

SSR *See:* software specification review.

ST *See:* symbol time.

stability (1) An aspect of system behavior associated with systems having the general property that bounded input perturbations result in bounded output perturbations. *Notes:* 1. A stable system will ultimately attain a steady state. 2. Deviations from this steady state due to component aging or environmental changes do not indicate instability, but a change in the system. *See also:* transient stability; steady-state stability. (CAS) [13]

(2) (perturbations) For convenience in defining various stability concepts, only those parameters or signals that are perturbed are explicitly exhibited, or mentioned, that is, for perturbations in initial states, a perturbed solution is denoted

$$\varphi(\mathbf{x}(t_0) + \Delta\mathbf{x}(t_0);t)$$

where $\Delta\mathbf{x}(t_0)$ represents the perturbation in initial state. Finally, the perturbed-state solution is denoted $\Delta\varphi = \varphi(\mathbf{x}(t_0) + \Delta\mathbf{x}(t_0);t) - \varphi(\mathbf{x}(t_0);t)$. (IM) [120]

(3) (power system stability) In a system of two or more synchronous machines connected through an electric network, the condition in which the difference of the angular positions of the rotors of the machines either remains constant while not subjected to a disturbance, or becomes constant following an aperiodic disturbance. *Note:* If automatic devices are used to aid stability, their use will modify the steady-state and transient stability terms to: steady-state stability with automatic devices; transient stability with automatic devices. Automatic devices as defined for this purpose are those devices that are operating to increase stability during the period preceding and following a disturbance as well as during the disturbance. Thus relays and circuit breakers are excluded from this classification and all forms of voltage regulators included. Devices for inserting and removing shunt or series impedance may or may not come within this classification depending upon whether or not they are operating during the periods preceding and following the disturbance. *See also:* transient stability; steady-state stability. (T&D/PE) [10]

(4) (oscilloscopes) The property of retaining defined electrical characteristics for a prescribed time and environment. *Notes:* 1. Deviations from a stable state may be called drift if it is slow, or jitter or noise if it is fast. In triggered-sweep systems, triggering stability may refer to the ability of the trigger and sweep systems to maintain jitter-free displays of high- frequency waveforms for long (seconds to hours) periods of time. 2. Also, the name of the control used on some oscilloscopes to adjust the sweep for triggered, free-running, or synchronized operation. *See also:* sweep mode control. (IM) 311-1970w

(5) (hydraulic turbines) Characteristics of the governing system pertaining to limitation of oscillations of speed or power under sustained conditions, to damping of oscillations of speed following rejection of load, and to damping of speed oscillations under isolated load conditions following sudden load changes. (PE/EDPG) 125-1977s

(6) (electrothermic power meters) For a constant input rf power, constant ambient temperature and constant power line voltage, the variation in rf power indication over stated time intervals. *Note:* Long term stability or drift is the maximum acceptable change in 1 h. Short-term stability or fluctuation is the maximum (peak) change in 1 min. (IM) 544-1975w

(7) (nuclear power generating station) The ability of a module to attain and maintain a steady state. (PE/NP) 381-1977w

(8) (A) (software) The ability to continue unchanged despite disturbing or disruptive events. **(B) (software)** The ability to return to an original state after disturbing or disruptive events. (C/SE) 729-1983

(9) (accelerometer) (gyros) A measure of the ability of a specific mechanism or performance coefficient to remain invariant when continuously exposed to a fixed operating condition. (This definition does not refer to dynamic or servo stability.) (AES/GYAC) 528-1994

stability, absolute *See:* absolute stability.

stability, asymptotic *See:* asymptomatic stability.

stability, bounded-input-bounded-output *See:* bounded-input-bounded-output stability.

stability, conditional *See:* conditional stability.

stability drift (electric conversion) Gradual shift or change in the output over a period of time due to change or aging of circuit components. (All other variables held constant). (T&D/PE) [26]

stability, driven *See:* driven stability.

stability, equiasymptotic *See:* equiasymptotic stability.

stability, excitation-system *See:* excitation-system stability.

stability factor The ratio of a stability limit (power limit) to the nominal power flow at the point of the system to which the stability limit is referred. *Note:* In determining stability factors it is essential that the nominal power flow be specified in accordance with the one of several bases of computation, such as rating or capacity of, or average or maximum load carried by, the equipment or the circuits. *See also:* alternating-current distribution. (T&D/PE) [10]

stability, finite-time *See:* finite-time stability.

stability, global *See:* global stability.

stability in-the-whole *See:* control system; global stability.

stability, Lagrange *See:* Lagrange stability.

stability limit (electric systems) (power limit) The maximum power flow possible through some particular point in the system when the entire system or the part of the system to which the stability limit refers is operating with stability. *See also:* alternating-current distribution. (T&D/PE) [10]

stability, long-term *See:* long-term stability.

stability, Lyapunov *See:* Lyapunov stability.

stability of a limit cycle Synonymous with orbital stability. *See also:* control system. (CS/IM) [120]

stability of the speed-governing system (gas turbines) A characteristic of the system that indicates that the speed-governing system is capable of actuating the turbine fuel-control valve so that sustained oscillations in turbine speed, or rate of energy input to the turbine, are limited to acceptable values by the speed-governing system. (PE/EDPG) 282-1968w, [5]

stability of the temperature-control system (gas turbines) A characteristic of the system that indicates that the temperature-control system is capable of actuating the turbine fuel-control valve so that sustained oscillations in rate of energy input to the turbine are limited to acceptable values by the temperature-control system during operation under constant system frequency. (PE/EDPG) 282-1968w, [5]

stability, orbital *See:* orbital stability.

stability, practical *See:* finite-time stability.

stability, quasi-asymptotic *See:* quasi-asymptotic stability.

stability, relative *See:* relative stability.

stability, short-time *See:* finite-time stability.

stability, synchronous-machine regulating-system *See:* synchronous-machine regulating-system stability.

stability, total *See:* total stability.

stability, trajectory *See:* trajectory stability.

stability, uniform-asymptotic *See:* uniform-asymptotic stability.

stabilization (1) (control system feedback) Act of attaining stability or of improving relative stability. *See also:* feedback control system. (PE/EDPG) [3]

(2) (navigation aids) (navigation) Maintenance of a desired orientation of a vehicle or device with respect to one or more reference directions. (AES/GCS) 172-1983w

(3) (direct-current amplifier) *See also:* drift stabilization.

stabilization, drift *See:* drift stabilization.

stabilization network (analog computer) As applied to operational amplifiers, a network used to shape the transfer characteristics to eliminate or minimize oscillations when feedback is provided. (C) 165-1977w

stabilized feedback Feedback employed in such a manner as to stabilize the gain of a transmission system or section thereof with respect to time or frequency or to reduce noise or distortion arising therein. *Note:* The section of the transmission system may include amplifiers only, or it may include modulators. *See also:* feedback. (AP/ANT) 145-1983s

stabilized flight (navigation aids) That type of flight which obtains control information from devices which sense orientation with respect to external references. (AES/GCS) 172-1983w

stabilized shunt-wound generator Same as the shunt-wound type, except that a series field winding is added. The series field winding is proportioned such that it does not require equalizers for satisfactory parallel operation. The voltage regulation of this type of generator should be the same as shunt-wound generators. (IA/MT) 45-1998

stabilized shunt-wound motor A shunt-wound motor that has a light series winding added to prevent a rise in speed, or to obtain a slight reduction in speed, with increase of load. (IA/MT) 45-1998

stabilized-variable model A model in which some of the variables are held constant and the others are allowed to vary; for example, a model of a controlled climate in which humidity is held constant and temperature is allowed to vary. (C) 610.3-1989w

stabilizer, excitation control system *See:* excitation control system stabilizer.

stabilizer, power system *See:* power system stabilizer.

stabilizing winding (power and distribution transformers) A delta connected auxiliary winding used particularly in Y-connected three-phase transformers for such purposes as the following:

a) To stabilize the neutral point of the fundamental frequency voltages;
b) to minimize third-harmonic voltage and the resultant effects on the system;
c) to mitigate telephone influence due to third-harmonic currents and voltages;
d) to minimize the residual direct-current magnetomotive force on the core;
e) to decrease the zero-sequence impedance of transformers with Y-connected windings.

Note: A winding is regarded as a stabilizing winding if its terminals are not brought out for connection to an external circuit. However, one or two points of the winding which are intended to form the same corner point of the delta may be brought out for grounding, or grounded internally to the tank. For a three-phase transformer, if other points of the winding are brought out, the winding should be regarded as a normal winding as otherwise defined. (PE/TR) C57.12.80-1978r

stable (1) (excitation systems) Possessing stability, where, for a feedback control system or element, stability is the property such that its output is asymptotic, that is, will ultimately attain a steady-state, within the linear range and without continuing external stimuli. For certain nonlinear systems or elements, the property such that the output remains bounded, that is, in a limit cycle of continued oscillation, when the input is bounded. *See also:* conditional stability; asymptomatic stability; bounded-input-bounded-output stability. (PE/EDPG) 421A-1978s

(2) Pertaining to a state of a circuit in which the circuit will remain until an input signal causes a change to another state. *Contrast:* unstable. *See also:* monostable; bistable. (C) 610.10-1994w

stable circuit A circuit that alternates between its two unstable states. (C) 610.10-1994w

stable element (navigation aids) (navigation) An instrument or device which maintains a desired orientation independently of the motion of the vehicle. (AES/GCS) 172-1983w

stable limit cycle One that is approached asymptotically by a state trajectory for all initial states sufficiently close. (CS/PE/EDPG) [3]

stable oscillation A response that does not increase indefinitely with increasing time: an unstable oscillation is the converse. *Note:* The response must be specified or understood: a steady current in a pure resistance network would be stable, although the total charge passing any cross section of a network conductor would be increasing continuously. (Std100) 270-1966w

stable platform (navigation aids) A gimbal-mounted platform, usually containing gyros and accelerometers, whose purpose is to maintain a desired orientation in inertial space, independent of the motion of the vehicle. (AES/GCS) 172-1983w

stack (1) (A) (data management) A list in which items are appended to and retrieved from the same end of the list, known as the top. That is, the next item to be retrieved is the item that has been in the list for the shortest time. *Synonyms:* storage stack; push-down stack. *Contrast:* pushdown list; queue; pushdown storage. **(B) (data management)** A line formed by items waiting for service in a system in which the next item to exit the line is the item that has been in the line for the shortest time. **(C) (data management)** To arrange in, or to form a stack as in definition (A). (C) 610.5-1990

(2) (software) A list that is accessed in a last-in, first-out manner. *See also:* list; queue. (C/SE) 729-1983s

(3) A last-in, first-out (LIFO) data structure. This document sometimes uses the phrase "the stack" to mean "the Forth data stack". (C/BA) 1275-1994

(4) An area in memory for the temporary storage of data. *Note:* Can be implemented using either last-in-first-out or first-in-first out. *Synonym:* pushdown storage. *See also:* evaluation stack; pushup storage. (C) 610.10-1994w

stack architecture A computer architecture whose design relies on a push-down stack to store data and process operands. *Contrast:* register architecture. (C) 610.10-1994w

stack diagram A notational convention used to show the effect of a Forth word on the data stack and, where applicable, the input buffer and return stack. See ANSI X3.215-1994 for syntactic details. (C/BA) 1275-1994

stacked-beam radar A radar that forms two or more simultaneous receive beams at the same azimuth but at different elevation angles. *Note:* The beams are usually contiguous or partly overlapping. Each stacked beam feeds an independent receiver channel. (AES) 686-1997

stacker *See:* card stacker.

stack height A dimension used to define the spacing between adjacent surfaces of mezzanine cards or a mezzanine card and its host. (C/BA) 1301.4-1996

stack indicator *See:* stack pointer.

stack, insulator *See:* insulator stack.

stack pointer A data item that specifies the address of the data item most recently stored in a stack. *Synonym:* stack indicator. (C) 610.5-1990w

stack storage *See:* pushdown storage.

staff-hour An hour of effort expended by a member of the staff. (C/SE) 1045-1992

stage (1) (communication practice) One step, especially if part of a multistep process, or the apparatus employed in such a step. The term is usually applied to an amplifier. *See also:* amplifier. (EEC/PE) [119]

(2) (thermoelectric device) One thermoelectric couple or two or more similar thermoelectric couples arranged thermally in parallel and electrically connected. *See also:* thermoelectric device. (ED) [46], 221-1962w

stage efficiency The ratio of useful power delivered to the load (alternating current) and the plate power input (direct current). *See also:* network analysis. (AP/ANT) 145-1983s

stagger (facsimile) Periodic error in the position of the recorded spot along the recorded line. *See also:* recording. (COM) 168-1956w

staggered-repetition-interval moving-target indicator A moving-target indicator with multiple interpulse intervals. The interval may vary either from pulse to pulse or from scan to scan. (AES/RS) 686-1990

staggered-repetition-interval waveform A waveform in which the pulse repetition interval (PRI) changes from pulse to pulse, to fill blind speeds or to distinguish echoes having ambiguous range or Doppler shifts. *Note:* Not to be confused with changing PRI from scan to scan or from one group of pulses to another, which can be described as multiple-PRI or PRI-diversity waveforms. (AES) 686-1997

staggering The offsetting of two channels of different carrier systems from exact sideband frequency coincidence in order to avoid mutual interference. (EEC/PE) [119]

staggering advantage The effective reduction, in decibels, of interference between carrier channels, due to staggering. (EEC/PE) [119]

stagger time, relay *See:* relay stagger time.

stagger-tuned amplifier An amplifier consisting of two or more single-tuned stages that are tuned to different frequencies. *See also:* amplifier. (EEC/PE) [119]

stain spots (electroplating) Spots produced by exudation, from pores in the metal, of compounds absorbed from cleaning, pickling plating solutions. The appearance of stain spots is called spotting out. (PE/EEC) [119]

staircase (pulse terminology) Unless otherwise specified, a periodic and finite sequence of steps of equal magnitude and of the same polarity. (IM/WM&A) 194-1977w

staircase signal (television) A waveform consisting of a series of discrete steps resembling a staircase. (BT/AV) 201-1979w

STAIRS A nonprocedural computer language used in manipulation of textual data. (C) 610.13-1993w

stairstepping The jagged effect that results from representing a diagonal line or curve by pixels arranged in horizontal or vertical rows and columns on a display surface. *Synonym:* jaggies. *See also:* aliasing. (C) 610.6-1991w

stairstep sweep (oscilloscopes) An incremental sweep in which each step is equal. The electric deflection waveform producing a stairstep sweep is usually called a staircase or stairstep waveform. *See also:* incremental sweep; oscillograph. (IM/HFIM) [40], 311-1970w

stalled tension control A control function that maintains tension in the material at zero speed. *See also:* electric drive. (IA/ICTL/IAC) [60]

stalled torque control A control function that provides for the control of the drive torque at zero speed. *See also:* electric drive. (IA/ICTL/IAC) [60]

stalo (STALO) Acronym for stable local oscillator. A highly stable radio-frequency local oscillator used for heterodyning signals to produce an intermediate frequency (IF). (AES) 686-1997

stamper (electroacoustics) A negative (generally made of metal by electroforming) from which finished pressings are molded. *See also:* phonograph pickup. (SP) [32]

stand-alone (1) Pertaining to hardware or software that is capable of performing its function without being connected to other components; for example, a stand-alone word processing system. (C) 610.12-1990

(2) Pertaining to a system that is self-contained and not connected to other systems or system components. (C) 610.10-1994w

stand-alone data dictionary *See:* passive data dictionary.

stand-alone testing A test of a component performed before it is assembled onto a board or other substrate; for example, using ATE. (TT/C) 1149.1-1990

stand-alone word processing Word processing performed on a system that does not depend on the resources of other equipment to perform word processing activities. *Contrast:* dedicated word processing; shared-resource word processing; shared-logic word processing. (C) 610.2-1987

standard (1) (A) (radiation protection) (instrument or source) (national standard) An instrument, source, or other system or device maintained and promulgated by the U.S. National Bureau of Standards as such. **(B) (radiation protection) (instrument or source)** (derived or secondary standard) A calibrated instrument, source, or other system or device directly relatable (that is, with no intervening steps) to one or more U.S. National Standards. **(C) (radiation protection) (instrument or source)** (laboratory standard) A calibrated instrument, source, or other system or device without direct one-step relatability to the U.S. National Bureau of Standards, maintained and used primarily for calibration and standardization. (NI) N323-1978

(2) (transmission lines and waveguides) A device having stable, precisely defined characteristics that may be used as a reference. (IM/HFIM) [40]

(3) (test, measurement, and diagnostic equipment) A laboratory type device which is used to maintain continuity of value in the units of measurement by periodic comparison with higher echelon or national standards. They may be used to calibrate a standard of lesser accuracy or to calibrate test and measurement equipment directly. (MIL) [2]

(4) (A) (instrument or source) (National Standard) An instrument, source, or other system or device maintained and promulgated by the U.S. National Institute of Standards and Technology (NIST). **(B) (instrument or source)** (Transfer Standard) A physical measurement standard that has been compared directly or indirectly with the national standard. This standard is typically a measurement instrument or a radiation source used as a laboratory standard. **(C) (instrument or source)** (Laboratory Standard) An instrument, source, or other system or device calibrated by comparisons with a standard other than a U.S. National Standard. (NI) N42.17B-1989

(5) A document, established by consensus and approved by an accredited standards development organization, that provides, for common and repeated use, rules, guidelines, or characteristics for activities or their results, aimed at the achievement of the optimum degree of order and consistency in a given context. (C/PA) 14252-1996

(6) (A) A set of detailed technical guidelines, used as a means of establishing uniformity in an area of computing development. **(B)** Pertaining to the set of guidelines, as in (A). For example, a standard interface or a standard definition. **(C)** An agreement among any number of organizations that defines certain characteristics, specifications, or parameters related to a particular aspect of computer technology. For example, ANSI, ISO, and IEEE are standards-making bodies. *Note:* Such organizations may include industrial, academic, or governmental entities. **(D)** In software engineering, mandatory requirements employed and enforced to prescribe a disciplined uniform approach to software development, that is, mandatory conventions and practices are in fact standards. *See also:* standard language; convention; de facto standard; language standard. (C) 610.7-1995, 610.10-1994

(7) An agreement among any number of organizations that defines certain characteristics, specification, or parameters related to a particular aspect of computer technology. For example, ANSI, ISO, and IEEE are standards-making bodies. *Note:* Such organizations may include industrial, academic, or governmental entities. (C) 610.10-1994w

standard adapter A two-port device having standard connectors for joining together two waveguides or transmission lines with nonmating standard connectors. (IM/HFIM) 474-1973w

standard antenna (amplitude-modulation broadcast receivers) An open single-wire antenna (including the lead-in wire) having an effective height of 4 m. (CE) 186-1948w

standard antenna calibration site A flat, open area site, devoid of nearby scatterers such as trees, power lines, and fences, that has a large metallic groundplane. (EMC) C63.5-1988, C63.4-1988s

standard antenna input voltages (amplitude-modulation broadcast receivers) Four standard antenna input voltages are specified for the purpose of certain tests, as follows:

1) A "distant signal voltage" is taken as 86 dB below 1 V, or 50 μV.
2) A "mean-signal voltage" is taken as 46 dB below 1 V, or 5 000 μV.
3) A "local signal voltage" is taken as 20 dB below 1 V, or 100 000 μV.
4) A "strong-signal voltage" is taken as 1 V.

(CE) 186-1948w

standard atmosphere for refraction An atmosphere for which the refractivity is determined by the equation:

$$N(h) = 315 \exp(-0.136h)$$

where h is the altitude in kilometers above mean sea level. *Note:* The standard atmosphere for refraction is almost identical to the standard radio atmosphere up to a height of one kilometer. *Synonym:* reference atmosphere for refraction. *See also:* refractive index gradient. (AP/PROP) 211-1997

standard binary *See:* binary.

standard bus An abbreviated notation used throughout this document, rather than the more exact "physical bus standard that claims conformance to this specification." (C/MM) 1212-1991s

standard cable The standard cable formerly used for specifying transmission losses had, in American practice, a linear series resistance and linear shunt capacitance of 88 ohms and 0.054 microfarad, respectively, per loop mile, with no inductance or shunt conductance. (EEC/PE) [119]

standard cell A cell that serves as a standard of electromotive force. *See also:* unsaturated standard cell; electrochemistry; auxiliary device to an instrument; Weston normal cell. (EEC/PE) [119]

standard chopped lightning impulse A standard lightning impulse chopped by an external gap after 2–5 μs. (PE/PSIM) 4-1995

standard chopped wave impulse voltage shape A standard lightning impulse that is intentionally interrupted on the tail by spark over of a gap or other equivalent chopping device. Usually the time to chop is 2–3 μs. (PE/C) 1313.1-1996

standard code The operating, block signal, and interlocking rules of the Association of American Railroads. (EEC/PE) [119]

standard compass A magnetic compass so located that the effect of the magnetic mass of the vessel and other factors that may influence compass indication is the least practicable. (EEC/PE) [119]

standard connector (fixed and variable attenuators) A connector, the critical mating dimensions of which have been standardized to assure nondestructive mating. *Notes:* 1. It butts against its mating standard connector only in the mechanical reference plane. 2. It joins to its waveguide or transmission line with a minimum discontinuity. 3. All its discontinuities are to the maximum extent possible, self-compensated, not within the mating connector. (IM/HFIM) 474-1973w

standard connector pair (fixed and variable attenuators) Two standard connectors designed to mate with each other. (IM/HFIM) 474-1973w

standard de-emphasis characteristic (frequency modulation) A falling response with modulation frequency, complementary to the standard pre-emphasis characteristic and equivalent to an RC circuit with a time constant of 75 μs. *Note:* The de-emphasis characteristic is usually incorporated in the audio circuits of the receiver. (BT) 185-1975w

standard development organization An accredited organization that formally develops and coordinates standards for use by a community. (C/PA) 14252-1996

standard deviation The square root of the variance of a random 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 random 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). (NI) N42.23-1995

standard directivity The maximum directivity from a planar aperture of area A, or from a line source of length L, when excited with a uniform amplitude, equiphase distribution. *Notes:* 1. For planar apertures in which $A >> \lambda^2$. The value of the standard directivity is $4\pi A/\lambda^2$, with λ the wavelength and with radiation confined to a half space. 2. For line sources with $L >> \lambda$, the value of the standard directivity is $2L/\lambda$. *Synonym:* reference directivity. (AP/ANT) 145-1993

standard electrode potential An equilibrium potential for an electrode in contact with an electrolyte, in which all of the components of a specified electrochemical reaction are in their standard states. The standard state for a gas is the pressure of one atmosphere, for an ionic constituent it is unit ion activity, and it is a constant for a solid. *See also:* electrochemistry. (EEC/PE) [119]

standard error An output stream usually intended to be used for diagnostic messages. (C/PA) 9945-2-1993

standard form *See:* normalized form.

standard frequency (electric power system) A precise frequency intended to be used for a frequency reference. *Note:* In the U.S. a frequency of 50 Hz is recognized as a standard for all ac lighting and power systems. (IA/PE/MT/PSE) 45-1983s, 94-1991w

standard full impulse voltage wave (1) (insulation strength) An impulse that rises to crest value of volage in 1.2 μs (virtual time) and drops to 0.5 crest value of voltage in 50 μs (virtual time), both time being measured from the same origin and in accordance with established standards of impulse testing techniques. *Note:* The virtual value for the duration of the wavefront is 1.67 times the time taken by the voltage to increase from 30% to 90% of its crest value. The origin from which time is measured is the intersection with the zero axis of a straight line drawn through points on the front of the voltage wave at 30%and 90% crest value. (EEC/LB) [100] **(2) (mercury lamp transformers)** An impulse that rises to crest value of voltage in 1.5 μs (nominal time) and drops to 0.5 crest value of voltage in 40 μs (nominal time), both times being measured from the same time origin and in accordance with established standards of impulse testing techniques. *See also:* basic impulse insulation level. (EEC/LB) [98]

Standard Generalized Markup Language (SGML) A text-formatting language. (C) 610.13-1993w

standard gravity By international agreement, the standard value of gravity acceleration magnitude, or $g_o = 9.80665$ m/s^2, which corresponds closely to the plumb-bob-gravity-acceleration magnitude measured at 45° latitude and sea level. In the calibration of accelerometer scale factor, the local value g of plumb-bob-gravity-acceleration magnitude is used as a reference. If an absolute measurement of scale factor is required, a conversion to the standard gravity unit g_o or to m/s2 has to be made. (AES/GYAC) 1293-1998

standard illuminant (illuminating engineering) A hypothetical light source of specified relative spectral power distribution. *Note:* The International Commission on Illumination has specified spectral power distributions for standard illuminants A, B, and C, and several D-illuminants. (EEC/IE) [126]

standard illuminant A (illuminating engineering) A blackbody at a temperature of 2856 K. It is defined by its relative spectral power distribution over the range from 300 nm to 830 nm. (EEC/IE) [126]

standard illuminant B (illuminating engineering) A representation of noon sunlight with a correlated color temperature of approximately 4900 K. It is defined by its relative spectral power distribution over the range from 320 nm to 770 nm. *Note:* It is anticipated that at some future date, that is yet to be decided, illuminant B will be dropped from the list of recommended standard illuminants. (EEC/IE) [126]

standard illuminant C (illuminating engineering) A representation of daylight having a correlated color temperature of approximately 6800 K. It is defined by its relative spectral power distribution over the range from 320 nm to 770 nm. *Note:* It is anticipated that at some future date, that is yet to be decided, illuminant C will be dropped from the list of recommended standard illuminants. (EEC/IE) [126]

standard illuminant D65 (illuminating engineering) A representation of daylight at a correlated color temperature of approximately 6500 K. It is defined by its relative spectral power distribution over the range from 300 nm to 830 nm. *Note:* At present, no artificial source for matching this illuminant has been recommended. (EEC/IE) [126]

standard input An input stream usually intended to be used for primary data input. (C/PA) 9945-2-1993

standard insulation class (instrument transformers) Denotes the maximum voltage in kilovolts that the insulation of the primary winding is designed to withstand continuously. *See also:* instrument transformer. (ELM) C12.1-1982s

standardization *See:* laboratory reference standards; echelon; laboratory working standards.

standardization coefficient A factor used for the direct conversion of a net area counting rate of a gamma-ray peak of a given energy, E, and from a specific radionuclide, i, to the activity of that radionuclide. (NI) N42.14-1991

standardize *See:* check; normalize.

standardized profile A balloted, formal, harmonized document that specifies a profile. (C/PA) 14252-1996

standard language Any language that conforms to an existing language standard. For example, ALGOL 60 and ALGOL 68 are considered standard languages. (C) 610.13-1993w, 610.10-1994w

standard lightning impulse (1) (power and distribution transformers) An impulse that rises to crest value of voltage in 1.2 μs (virtual time) and drops to 0.5 crest value of voltage in 50 μs (virtual time), both times being measured from the same origin and in accordance with established standards of impulse testing techniques. It is described as a 1.2/50 μs impulse. *Note:* The virtual value for the duration of the wavefront is 1.67 times the time taken by the voltage to increase from 30% to 90% of its crest value. The origin from which time is measured is the intersection with the zero axis of a straight line drawn through points on the front of the voltage wave at 30% and 90% crest value. (PE/TR) C57.12.80-1978r

(2) A full lightning impulse having a virtual front time of 1.2 μs and a virtual time to half-value of 50 μs. (PE/PSIM) 4-1995

(3) The wave shape of the standard impulse used is 1.2/50 μs (when not in conflict with products standards). (SPD/PE) C62.22-1997

(4) A unidirectional surge having a 30–90% equivalent rise time of 1.2 μs and a time to half value of 50 μs. (PE/T&D) 1243-1997

standard lightning impulse voltage shape An impulse that rises to crest value of voltage in 1.2 μs (virtual time) and drops to 0.5 crest value of voltage in 50 μs (virtual time), both times being measured from the same origin and in accordance with established standards of impulse testing techniques. It is described as a 1.2/50 impulse. (PE/C) 1313.1-1996

standard logic type The type STD_ULOGIC defined by IEEE Std 1164-1993, or any type derived from it, including, in particular, one-dimensional arrays of STD_ULOGIC or of one of its subtypes. (C/DA) 1076.3-1997

standard loop input signals (A) (amplitude-modulation broadcast receivers) A "distant-signal" loop input is taken as 86 dB below 1 V/m, or 5 000 μV/m. **(B) (amplitude-modulation broadcast receivers)** A "mean-signal" loop input is taken as 46 dB below 1 V/m, or 5 000 μV/m. **(C) (amplitude-modulation broadcast receivers)** A "local-signal" loop input is taken a 26 dB below 1 V/m, or 50 000 μV/m. **(D) (amplitude-modulation broadcast receivers)** A "strong-signal" loop input is taken as 14 dB below 1 V/m, or 200 000 μV/m. *Note:* The above loop field intensities are not equivalent to the standard antenna input voltages for the corresponding class of service. For example, the "mean-signal" voltage for antenna operation is 5 000 μV. This corresponds to a field intensity if 1 250 μV/m assuming a standard 4-meter antenna, whereas the mean-signal voltage for loop receivers is arbitrarily taken as 5 000 μV/m. (CE) 186-1948

standard maximum usable frequency *See:* maximum usable frequency.

standard M gradient *See:* refractive index gradient.

standard microphone A microphone the response of which is accurately known for the condition under which it is to be used. *See also:* instrument. (EEC/PE) [119]

standard N gradient *See:* standard refractive index gradient.

standard noise temperature (interference terminology) The temperature used in evaluating signal transmission systems for noise factor 290 K (27°C). *See also:* interference. (IE) [43]

standard observer (television) (color) (CIE 1931) Receptor of radiation whose colorimetric characteristics correspond to the distribution coefficients $\bar{x}_\lambda, \bar{y}_\lambda, \bar{z}_\lambda$ adopted by the International Commission on Illumination (CIE) in 1931. (BT/AV) 201-1979w

standard operating duty *See:* operating duty.

standard output An output stream usually intended to be used for primary data output. (C/PA) 9945-2-1993

standard pitch *See:* standard tuning frequency.

standard potential (standard electrode potential) The reversible potential for an electrode process when all products and reactants are at unit activity on a scale in which the potential for the standard hydrogen half-cell is zero. (GSD) [71], 315-1975r

standard power-frequency short-duration voltage shape A sinusoidal voltage with frequency between 48 Hz and 62 Hz, and duration of 60 s. *Note:* Some apparatus standards (e.g., transformers) use a modified wave shape when practical test considerations or particular dielectric strength characteristics make such modification necessary. (PE/C) 1313.1-1996

standard propagation The propagation of radio waves over a smooth spherical Earth of uniform dielectric constant and conductivity, under conditions of standard refraction in the atmosphere. *See also:* refractive index gradient. (AP/PROP) 211-1997

standard radio atmosphere An atmosphere whose vertical refractivity gradient is equal to the standard refractive index gradient. *See also:* refractive index gradient. (AP/PROP) 211-1997

standard radio horizon The radio horizon corresponding to propagation through the standard radio atmosphere. *See also:* refractive index gradient. (AP/PROP) 211-1997

standard reference material Material characterized by the U.S. National Institute of Standards and Technology (NIST) for the activity of radionuclides and issued with a certificate that gives the results of the characterization. (NI) N42.23-1995

standard reference position (of a contact) The nonoperated or de-energized position of the associated main device to which the contact position is referred. *Note:* Standard reference positions of typical devices are shown in the following table:

Device	Standard Reference Position
Circuit breaker	Main contacts open
Disconnecting switch	Main contacts open
Relay	De-energized position
Contactor	De-energized position
Valve	Closed position

(SWG/PE) C37.100-1992

standard refraction *See:* refractive index gradient.

standard refractive index gradient A standard value of vertical gradient of refractivity, namely 39.2?N-Units/km, used in studies of the refraction of radio waves in the troposphere. *Note:* This value corresponds, approximately, to the median value of the gradient in the first kilometer of altitude in temperate regions. *Synonym:* standard N gradient. *See also:* refractive index gradient. (AP/PROP) 211-1997

standard refractive index modulus gradient *See:* refractive index gradient.

standard register (motor meter) (dial register) A four- or five-dial register, each dial of which is divided into ten equal parts, the division marks being numbered from zero to nine, and the gearing between the dial pointers being such that the reltive movements of the adjacent dial pointers are in opposite directions and in a 10-to-1 ratio. *See also:* watthour meter. (PE/EEC) [119]

standard resistor (resistance standard) A resistor that is adjusted with high accuracy to a specified value, is but slightly affected by variations in temperature, and is substantially constant over long periods of time. *See also:* auxiliary device to an instrument. (PE/EEC) [119]

standard response spectrum (SRS) A required response system (RRS) that is artificially created to cover the standard testing of relays and whose shape is defined. The SRS may be terminated at any convenient frequency above 35 Hz. (SWG/PE) C37.100-1992

standard rod gap A gap between the ends of the two one-half-inch square rods cut off squarely and mounted on suppots so that a length of rod equal to or greater than one-half the gap spacing overhangs the inner edge of each support. It is intended to be used for the approximate measurement of crest voltages. *See also:* instrument. (EEC/PE) [119]

standards Mandatory requirements employed to prescribe a disciplined, uniform approach to software development, maintenance, and operation. (C/SE) 730.1-1995

standards—basic reference Those standards with which the values of the electrical units are maintained in the laboratory, and that serve as the starting point of the chain of sequential measurements carried out in the laboratory. (ELM) C12.1-1988

standards—dc-ac transfer Instruments used to establish the equality of an rms current or voltage (or the average values of alternating power) with the corresponding steady-state dc quantity. (ELM) C12.1-1988

standards—laboratory reference (metering) Standards that are used to assign and check the values of laboratory secondary standards. (ELM) C12.1-1988, C12.1-1982s

standards—laboratory secondary (metering) Standards that are used in the routine calibration tasks of the laboratory. (ELM) C12.1-1988, C12.1-1982s

standards—national Those standards of electrical measurements that are maintained by the National Institute of Standards and Technology. (ELM) C12.1-1988

standards—transport Standards of the same nominal value as the basic reference standards of a laboratory (and preferably of equal quality) that are regularly intercompared with the basic group but are reserved for periodic interlaboratory comparison tests to check the stability of the basic reference group. (ELM) C12.1-1988

standard source (illuminating engineering) An artificial source having the same spectral distribution as a specified standard illuminant. (EEC/IE) [126]

standard source A (illuminating engineering) A tungsten filament lamp operated at a color temperature of 2856 K (International Practical Temperature Scale, 1968) and approximating the relative spectral power distribution of standard illuminant A. (EEC/IE) [126]

standard source B (illuminating engineering) An approximation of standard illuminant B obtained by a combination of Source A and a special filter. (EEC/IE) [126]

standard source C (illuminating engineering) An approximation of standard illuminant C obtained by a combination of Source A and a special filter. (EEC/IE) [126]

standard source diameter (x-ray energy spectrometers) The diameter of the x-ray emission source which is used to measure the response characteristics of the spectrometer. Unless otherwise specified, this is assumed to be a point source. (NPS/NID) 759-1984r

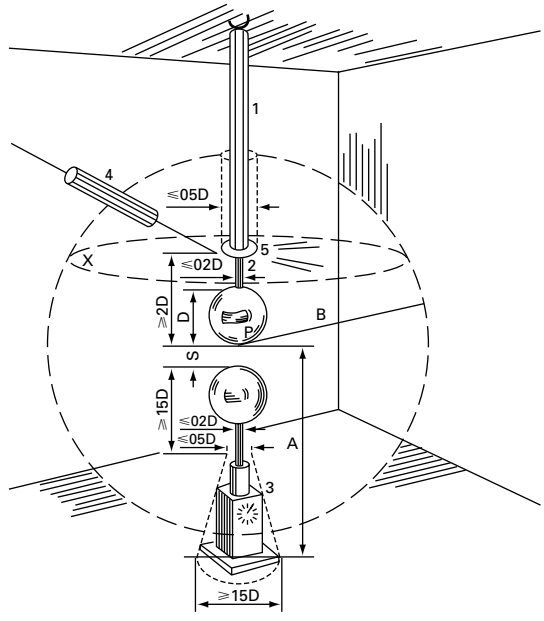
standard sources ("dose calibrator" ionization chambers) A general term used to refer to the standard sources listed below:

— National radioactivity standard source. A calibrated radioactive source prepared and distributed as a standard reference material by the US Bureau of Standards.

— Certified radioactivity standard source. A calibrated radioactive source, with stated accuracy, whose calibration is certified by the source supplier as traceable to the National Radioactive Measurements System.

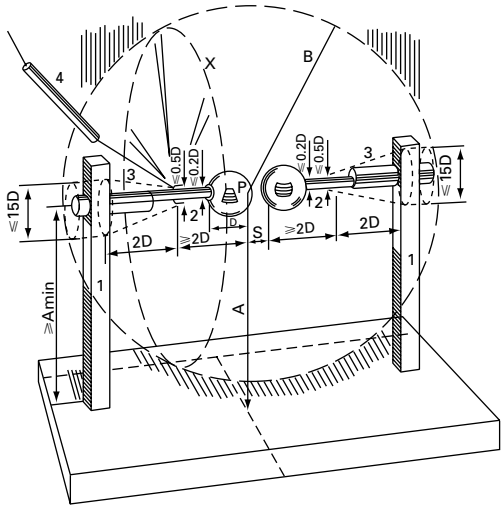
(NI) N42.13-1986

standard sphere gap (high voltage testing) A peak-voltage device constructed and arranged in accordance with this document. It consists of two metal spheres of the same diameter, D, with their shanks, operating gear, insulating supports, supporting frame, and leads for connections to the point at which the voltage is to be measured. Standard values of D are 625 mm, 125 mm, 250 mm, 500 mm, 750 mm, 1000 mm, 1500 mm, and 2000 mm. The spacing between the spheres is designated as S. The points on the two spheres that are closest to each other are called the sparking points. In practice, the disruptive discharge may occur between other neighboring points. The corresponding figures A and B show two arrangements; one of which is typical of sphere gaps with a vertical axis, and the other, of sphere gaps with a horizontal axis.



Key: 1. Insulating support; 2. Sphere shank; 3. Operating gear, showing maximum dimensions; 4. High-voltage connection with series resistor; 5. Stress distributor, showing maximum dimensions; P Sparking point of high-voltage sphere; A Height of P above ground plane; B Radius of space free from external structures; X item 4 not to pass through this plane within a distance from B from P. Note: The figure is drawn to scale for a 100 cm sphere gap at radius spacing.

standard sphere gap (figure A)



Key: 1. Insulating support; 2. Sphere shank; 3. Operating gear, showing maximum dimensions; 4. High-voltage connection with series resistor; P Sparking point of high-voltage sphere; A Height of P above ground plane; B Radius of space free from external structures; X item 4 not to pass through this plane within a distance from B from P. Note: This figure is drawn to scale for a 25 cm sphere gap at radius spacing.

standard sphere gap (figure B)

(PE/PSIM) 4-1978s

standard structure A particular C structure, defined in `std_stru.h`, that contains fields used to pass data over the procedural interface (PI) (thus avoiding large numbers of arguments). Most functions of the PI have a pointer to a *standard structure* as their first argument. (C/DA) 1481-1999

standard switching impulse (power and distribution transformers) A full impulse having a front time of 250 μs and a time to half value of 2500 μs. It is described as a 250/2500 impulse. *Note:* It is recognized that some apparatus standards may have to use a modified wave shape where practical test considerations or particular dielectric strength characteristics make some modification imperative. Transformers, for example, use a modified switching impulse wave with the following characteristics: 1) Time to crest greater than 100 μs; 2) Exceeds 90% of crest value for at least 200 μs; 3) Time to first voltage zero on tail not less than 1000 μs, except where core saturation causes the tail to become shorter.

(PE/TR) C57.12.80-1978r

standard switching impulses The wave shapes of standard impulse tests depend on equipment being tested:

a) For air insulation and switchgear: 250/2500 μs
b) For transformer products: 100/1000 μs
c) For arrester sparkover tests:
1) 30–60/90–180 μs
2) 50–300/400–900 μs
3) 1000–2000/3000–6000 μs (The tail duration is not critical)

(SPD/PE) C62.22-1997

standard switching impulse voltage shape A full impulse having a time-to-crest of 250 μs and a time to half value of 2500 μs. It is described as a 250/2500 impulse. *Note:* Some apparatus standards use a modified wave shape where practical test considerations or particular dielectric strength characteristics make some modification imperative.

(PE/C) 1313.1-1996

standard systems (electric installations on shipboard) The following systems of distribution are recognized as standard:

a) Two-wire with single-phase alternating current, or direct current.
b) Three-wire with single-phase alternating current, or direct current.
c) Three-phase three-wire, alternating current.
d) Three-phase, four-wire, alternating current.

(IA/MT) 45-1983s

standard television signal A signal that conforms to certain accepted specifications. *See also:* television.

(EEC/PE) [119]

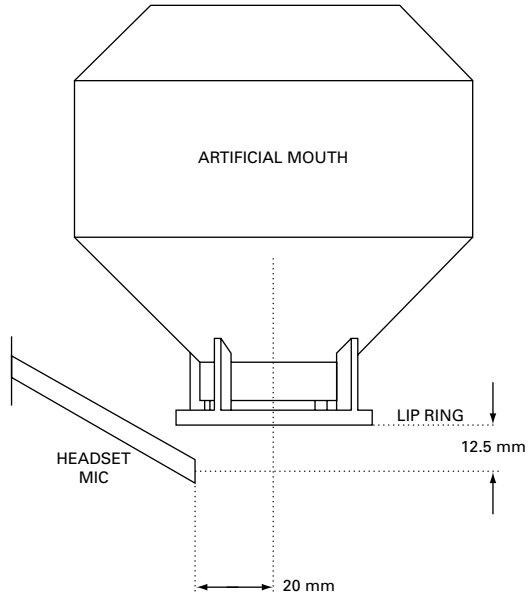
standard test fiber A silica graded index multi-mode optical fiber with a core diameter of 100 μm, an outside diameter of 140 μm, a numerical aperture of 0.29, a bandwidth of 400 MHz-km at 1300 nm and terminated in a standard subminiature assembly (SMA) connector. (C/BA) 1393-1999

standard test frequencies in the broadcast band (amplitude-modulation broadcast receivers) The standard group of seven carrier frequencies for testing is 540, 600, 800, 1 000, 1 200, 1 400, and 1 600 kilocycles. The standard group of three carrier frequencies for testing is 600, 1 000, and 1 400 kilocycles. (CE) 186-1948w

standard test interface language (STIL) A syntax for the description of device stimulus and expected response used for stimulus development, as well as input to automated test equipment (ATE). (C/TT) 1450-1999

standard test modulation (frequency-modulated mobile communications receivers) Sixty percent of the rated system deviation at a frequency of 1 kilohertz. (VT) 184-1969w

standard test position (STP) The default test position for a headset that does not have a fixed spatial relationship between the location of their transmitter and receiver sound ports. See the figure below.



headset transmitter port in standard test position (STP)

(COM/TA) 1206-1994

standard test problem (test, measurement, and diagnostic equipment) An evaluation of the performance of a system, or any part of it, conducted by setting parameters into the system; the parameters are operated on and the results obtained from system read outs. (MIL) [2]

standard test tone (data transmission) A 1mW (0 dBm) 1000 Hz signal applied to the 600 Ω audio portion of a circuit at a zero transmission level reference point. If referred to a point with a relative level other than 0, the absolute power of the tone shall be adjusted to suit the relative level at the point of application. (PE) 599-1985w

standard track *See:* single-track.

standard transmitter test modulation (land-mobile communications transmitters) The standard test modulation shall

be 60% of the maximum rated deviation at 1 kKz. (EMC) 377-1980r

standard tuning frequency (standard musical pitch) The frequency for the note A4, namely, 440 Hz. (SP) [32]

standard voltages (electric installations on shipboard) The following voltages are recognized as standard:

	Alternating Current (volts)	Direct Current (volts)
Lighting	115	115
Power	115–200–220–440	115 and 230
Generators	120–208–230–450	120 and 240

Note: Satisfactory to use 120 V lamps

standard volume indicator (volume measurements of electrical speech and program waves) A device for the indication of volume, and having the characteristic described in IEEE Std 152-1953w. *Note:* A standard volume indicator consists of at least two parts: 1) A meter; and 2) an attenuator (adjustable loss) or pad (fixed loss).

standard watthour meter *See:* portable standard watthour meter; reference standard watthour meter.

standard-wave error (navigation aids) (direction finder measurements) The bearing error produced by a wave whose vertically and horizontally polarized electric fields are equal and phased so as to give maximum error in the DF, and whose incidence direction is arranged to be 45°. (AES/GCS) 172-1983w

standard working axis (of a semiconductor x-ray energy spectrometer) A straight line drawn between the center of the entrance window on the detector and the specified location of the source of x rays. (NPS/NID) 759-1984r

standBy A lower-power operating mode of RamLink slaves, in which a change in the flag line is sufficient to quickly reactivate attached chips. (C/MM) 1596.4-1996

standby *See:* reserve; alternative.

standby current The current flowing in any specific conductor (including a conductive case) when the device is connected as intended to the energized power system at rated voltage with no connected load. (SPD/PE) C62.62-2000

standby current, dc *See:* direct-current standby current.

standby equipment Equipment not normally in operation that is available on demand to perform a specific function. (PE/NP) 933-1999

standby failure rate (reliability data for pumps and drivers, valve actuators, and valves) The probability (per hour) of failure for those components which are normally dormant or in a standby state until tested or required to operate to perform their function. (PE/NP) 500-1984w

standby losses The losses produced with the HVDC converter station energized, but with the valves blocked. (SUB/PE) 1158-1991r

standby monitor A station on the ring that is not in active monitor mode. The function of the standby monitor in normal ring operation is to assure that an active monitor is operating. (C/LM) 8802-5-1998

standBy packet An event packet that initiates the transition into the standBy state. (C/MM) 1596.4-1996

standby power The power consumption while the chip is not performing any read or write operation. (ED) 641-1987w

standby power, ac *See:* alternating-current standby power.

standby power supply (nuclear power generating station) (diesel-generator unit) The power supply that is selected to furnish electric energy when the preferred power supply is not available. (PE/NP) 387-1995, 308-1991

standby power system (emergency and standby power) An independent reserve source of electric energy that, upon failure or outage of the normal source, provides electric power of acceptable quality so that the user's facilities may continue in satisfactory operation. (IA/PSE) 446-1995

standby redundancy (1) (software) In fault tolerance, the use of redundant elements that are left inoperative until a failure occurs in a primary element. *Contrast:* active redundancy. (C) 610.12-1990

(2) That redundancy wherein the alternative means for performing a given function are inoperative until needed. (R) [29]

standby service (electric power utilization) Service through a permanent connection not normally used but available in lieu of, or as a supplement to, the usual source of supply. (PE/PSE) 346-1973w, 858-1993w

standby time *See:* idle time.

ST and CBT *See:* sharing transformer and current balancing transformer.

standing-on-nines carry (mathematics of computing) A carry process in which a carry digit transferred to a given digit place is further transferred to the next higher digit place if the current sum in the given digit place is nine. *See also:* carry. (C) [20], 1084-1986w, [85]

standing wave (1) (overhead power-line corona and radio noise) A wave in which, for any component of the field, the ratio of its instantaneous value at one point to that at any other point does not vary with time. *Notes:* 1. A standing wave is most frequently produced by reflection. The sum of the incident and reflected waves, if they are periodic, will produce a standing wave. 2. Commonly, a standing wave is a periodic wave in which the amplitude of the displacement in the medium is a periodic function of the distance in the direction of any line of propagation of the waves. (T&D/PE) 539-1990

(2) A wave formed by the interference of two oppositely traveling plane waves having the same frequency and polarization. (AP/PROP) 211-1997

standing-wave antenna An antenna whose excitation is essentially equiphase, as the result of two feeding waves that traverse its length from opposite directions, their combined effect being that of a standing wave. (AP/ANT) 145-1993

standing-wave detector *See:* standing-wave meter.

standing wave dissipation factor (waveguide) The ratio of the transmission loss in an unmatched waveguide to that in the same waveguide when matched. (MTT) 146-1980w

standing-wave indicator *See:* standing-wave meter.

standing-wave loss factor The ratio of the transmission loss in an unmatched waveguide to that in the same waveguide when matched. *See also:* waveguide. (MTT) 146-1980w

standing-wave machine *See:* standing-wave meter.

standing-wave meter (standing-wave indicator) (standing-wave machine) (standing-wave detector) An instrument for measuring the standing-wave ratio in a transmission line. In addition, a standing-wave meter may include means for finding the location of maximum and minimum amplitudes. See table on previous page. *See also:* instrument. (PE/EEC) [119]

standing wave ratio (1) (data transmission) The ratio of the amplitude of a standing wave at an antinode to the amplitude of a node. *Note:* The standing wave ratio in a uniform transmission line is

$$\frac{1 + p}{1 - p}$$

where p = the reflection coefficient. (T&D/PE) 539-1990, 599-1985w

(2) (waveguide) At a given frequency in a uniform transmission line or waveguide, the ratio of the maximum to the minimum amplitudes of corresponding components of the field (or the voltage or current) along the waveguide in the direction of propagation. *Note:* The standing wave ratio is occasionally expressed as the reciprocal of the ratio defined above. (MTT) 148-1959w, 146-1980w

standing-wave-ratio indicator (standing-wave-ratio meter) A device or part thereof used to indicate the standing-wave ratio. *Note:* In common terminology, it is the combination of

amplifier and meter as a supplement to the slotted line or bridge, etc., when performing impedance or reflection measurements. (IM/WM&A) 181-1977w

stand, reel *See:* reel stand.

standstill locking (rotating machinery) The occurrence of zero or unusably small torque in an energized polyphase induction motor, at standstill, for certain rotor positions. *See also:* asynchronous machine. (PE) [9]

Stanford Artificial Intelligence Language A dialect of LISP that was developed at Stanford's Artificial Intelligence Laboratory. (C) 610.13-1993w

STAP *See:* space-time adaptive processing.

star-bus topology A topology where the stations are physically star-wired to a hub but which logically act like a bus. *Note:* This is a common wiring scheme when using traditional point-to-point media such as twisted pair and optical fiber in a bus network. *See also:* bus topology; star-ring topology; star topology; bus-ring topology; loop topology; ring topology; tree topology. (C) 610.7-1995

star chain (navigation aids) A radio navigation transmitting system comprising a master station about which three (or more) slave stations are symmetrically located. (AES/GCS) 172-1983w

star-connected circuit A polyphase circuit in which all the current paths of the circuit extend from a terminal of entry to a common terminal or conductor (which may be the neutral conductor). *Note:* In a three-phase system this is sometimes called a Y (or wye) connection. (IA/PSE) 1100-1999

star connection *See:* Y connection.

star coupler (fiber optics) A passive device in which power from one or several input waveguides is distributed amongst a larger number of output optical waveguides. *See also:* tee coupler; optical combiner. (Std100) 812-1984w

star-delta starter A switch for starting a three-phase motor by connecting its windings first in star and then in delta. *See also:* starter. (IA/ICTL/IAC) [60], [84]

star-delta starting The process of starting a three-phase motor by connecting it to the supply with the primary winding initially connected in star, then reconnected in delta for running operation. (PE) [9]

star ground *See:* radial ground.

star network A set of three or more branches with one-terminal of each connected at a common node. *See also:* network analysis. (Std100) 270-1966w

star quad A cable element that comprises four insulated conductors twisted together. Two diametrically facing conductors form a transmission pair. *Note:* Cables containing star quads can be used interchangeably with cables consisting of pairs, provided the electrical characteristics meet the same specifications. (C/LM) 802.3-1998

star rectifier circuit A circuit that employs six or more rectifying elements with a conducting period of 60 electrical degrees plus the commutating angle. *See also:* rectification. (EEC/PE) [119]

star-ring topology A topology having a logical arrangement of a ring with a physical implementation of a star. This results in a system with relatively short cables, as in a ring network, and allows maintenance to be performed from a single point, as in a star network. *Note:* This is accomplished by connecting each node over a cable to a wiring closet and connecting all cables in a ring topology within the wiring closet. This is the common way in which IEEE 802.5 token rings are built. *See also:* bus-ring topology; star topology; bus topology; star-bus topology; tree topology; loop topology; ring topology. (C) 610.7-1995

start (1) An electric controller for accelerating a motor from rest to normal speed and to stop the motor. (IA/ICTL/MT/PKG) 45-1983s, 333-1980w

(2) (gas tube) A control electrode, the principal function of which is to establish sufficient ionization to reduce the anode breakdown voltage. *Note:* This has sometimes been referred to as a "trigger electrode." (ED) 161-1971w

start and stop characters Distinct bar/space patterns used at the beginning and end of each bar code symbol that provide initial timing references and direction-of-read information to the coding logic. (PE/TR) C57.12.35-1996

start bit (1) In asynchronous transmission, a signal that lasts a single bit time, indicating the beginning of a character. *Contrast:* stop bit. (C) 610.7-1995

(2) For the low-speed version of the Physical layer, a bit that is encoded identically to a logic "0" data bit that is used to delineate the beginning of each individual octet transmission. (EMB/MIB) 1073.4.1-2000

Start Current The current taken from the line when the motor is producing rated start torque at rated voltage and frequency. (PE/NP) 1290-1996

start cycle A cycle that initiates a transaction. The address and transfer type are valid during this cycle. (C/MM) 1196-1987w

start-dialing signal (semiautomatic or automatic working) (telecommunications) A signal transmitted from the incoming end of a circuit, following the receipt of a seizing signal, to indicate that the necessary circuit conditions have been established for receiving the numerical routing information. (COM) [49]

start-diesel signal That input signal to the diesel-generator unit start logic that initiates a diesel-generator unit start sequence. (PE/NP) 387-1995

start element (1) (data transmission) In a character transmitted in a start-stop system, the first element in each character, which serves to prepare the receiving equipment for the reception and registration of the character. The start element is a spacing signal. (PE) 599-1985w

(2) *See also:* start signal. (C) 610.7-1995

starter (1) (illuminating engineering) A device used in conjunction with a ballast for the purpose of starting an electric-discharge lamp. (EEC/IE) [126]

(2) An electric controller that is used to accelerate a motor from rest to normal speed and to stop the motor. (A device designed for starting a motor in either direction of rotation includes the additional function of reversing and should be designated a controller.) (IA/MT) 45-1998

starter gap (gas tube) The conduction path between a starter and the other electrode to which starting voltage is applied. *Note:* Commonly used in the glow-discharge cold-cathode tube. (ED) 161-1971w

starters (fluorescent lamps) Devices that first connect a fluorescent or similar discharge lamp in a circuit to provide for cathode preheating and then open the circuit so that the starting voltage is applied across the lamp to establish an arc. Starters also include a capacitor for the purpose of assisting the starting operation and for the suppression of radio interference during lamp starting and lamp operation. They may also include a circuit-opening device arraned to disconnect the preheat circuit if the lamp fails to light normally. (NPS) 325-1972s

starter voltage drop (glow-discharge cold-cathode tube) The starter-gap voltage drop after conduction is established in the starter gap. (ED) 161-1971w

starting (rotating machinery) The process of bringing a motor up to speed from rest. *Note:* This includes breaking away, accelerating and if necessary, synchronizing with the supply. (PE) [9]

starting address The address of the first instruction of a computer program in main storage. *Note:* This address may or may not be the same as the program's origin, depending upon whether there are data preceding the first instruction. *Contrast:* origin. *See also:* loaded origin; assembled origin. (C) 610.12-1990

starting amortisseur An amortisseur, the primary function of which is the starting of the synchronous machine and its connected load. (EEC/PE) [119]

starting anode An electrode that is used in establishing the initial arc. *See also:* rectification. (EEC/PE) [119]

starting attempt (electric generating unit reliability, availability, and productivity) The action to bring a unit from shutdown to the in-service state. Repeated initiations of the starting sequence without accomplishing corrective repairs are counted as a single attempt. (PE/PSE) 762-1987w

starting capacitance (capacitor motor) The total effective capacitance in series with the auxiliary winding for starting operation. *See also:* asynchronous machine.

starting circuit breaker (power system device function numbers) A device whose principal function is to connect a machine to its source of starting voltage. (SUB/PE) C37.2-1979s

starting current (1) (rotating machinery) The current drawn by the motor during the starting period. (A function of speed or slip). *See also:* asynchronous machine. (PE) [9]
(2) (oscillators) The value of electron-stream current through an oscillator at which selfsustaining oscillations will start under specified conditions of loading. *See also:* magnetron. (ED) 161-1971w

starting failure (electric generating unit reliability, availability, and productivity) The inability to bring a unit from some unavailable state or reserve shutdown state to the in-service state within a specified period. The specified period may be different for individual units. Repeated failures within the specified starting period are counted as a single starting failure. (PE/PSE) 762-1987w

starting motor An auxiliary motor used to facilitate the starting and accelerating of a main machine to which it is mechanically connected. *See also:* asynchronous machine. (PE) [9]

starting open-phase protection The effect of a device operative to prevent connecting the load to the supply unless all conductors of a polyphase system are energized. (IA/IAC) [60]

starting operation (A) (single-phase motor) The range of operation between locked rotor and switching for a motor employing a starting-switch or relay. **(B) (single-phase motor)** The range of operation between locked rotor and a point just below but not including breakdown-torque speed for a motor not employing a starting switch or relay. *See also:* asynchronous machine. (PE) [9]

starting point (A) (for common channel signaling [CCS] incoming trunk). Receipt of the initial address message (IAM). **(B)** For non-centralized automatic message accounting (CAMA) p*er-trunk-signaling incoming trunk).* End of valid called-number digit reception. **(C)** (for CAMA per-trunk-signaling incoming trunk). End of reception of first automatic number identification (ANI) digit [exclusive of start of dialing or key pulse (KP) signal and information digit] or first operator number identification (ONI) digit. *See also:* ending point; cross-office delay. (COM/TA) 973-1990

starting reactor (power and distribution transformers) A current-limiting reactor for decreasing the starting current of a machine or device. *See also:* reactor. (PE/TR) C57.12.80-1978r, [57]

starting resistor (rotating machinery) A resistor connected in a secondary or field circuit to modify starting performance of an electric machine. *See also:* rotor; stator. (PE) [9]

starting rheostat A rheostat that controls the current taken by a motor during the period of starting and acceleration, but does not control the speed when the motor is running normally. (IA/ICTL/IAC) [60]

starting sheet (electrorefining) A thin sheet of refined metal introduced into an electrolytic cell to serve as a cathode surface for the deposition of the same refined metal. *See also:* electrorefining. (EEC/PE) [119]

starting-sheet blank (electrorefining) A rigid sheet of conducting material designed for introduction into an electrolytic cell as a cathode for the deposition of a thin temporarily adherent deposit to be stripped off as a starting sheet. *See also:* electrorefining. (EEC/PE) [119]

starting success (electric generating unit reliability, availability, and productivity) The occurrence of bringing a unit from some unavailable state or the reserve shutdown state to the in-service state within a specified period. The specified period may be different for individual units. (PE/PSE) 762-1987w

starting-switch assembly The make-and-break contacts, mechanical linkage, and mounting parts necessary for starting or running, or both starting and running, split-phase and capacitor motors. *Note:* The starting-switch assembly may consist of a stationary-contact assembly and a contact that moves with the rotor. (EEC/PE) [119]

starting switch, centrifugal *See:* centrifugal starting switch.

starting switch, relay *See:* relay starting switch.

starting temperature (grounding device) The winding temperature at the start of the flow of thermal current. (PE/SPD) 32-1972r

starting test (rotating machinery) A test taken on a machine while it is accelerating from standstill under specified conditions. *See also:* asynchronous machine. (PE) [9]

starting torque (1) (electric coupling) The minimum torque of an electric coupling developed with the output member stationary and the input member rotating, with excitation applied. *Note:* Starting torque is usually specified with rated speed of rotation and rated excitation applied. (EM/PE) 290-1980w
(2) (synchronous motor) The torque exerted by the motor during the starting period. (A function of speed or slip). (PE) [9]

starting-to-running transition contactor (power system device function numbers) A device that operates to initiate or cause the automatic transfer of a machine from the starting to the running power connection. (PE/SUB) C37.2-1979s

starting voltage (radiation counters) The voltage applied to a Geiger-Mueller tube at which pulses of 1 V amplitude appear across the tube when irradiated. *See also:* anticoincidence. (ED) [45]

starting winding (rotating machinery) A winding, the sole or main purpose of which is to set up or aid in setting up a magnetic field for producing the torque to start and accelerate a rotating electric machine. (PE) [9]

startle shock An electric shock from a steady-state or a discharge current that, if it occurred unexpectedly, would produce an unintentional muscular reflex. (T&D/PE) 539-1990

Start_of_Packet Delimiter (SPD) In 1000BASE-X, a single code-group 8B/10B ordered_set used to delineate the starting boundary of a data transmission sequence for a single packet. (C/LM) 802.3-1998

start of packet byte A single byte (hex A5, decimal 165) that is used by both the printer device and the host to quickly determine whether or not they are synchronized. (C/MM) 1284.1-1997

start of stream delimiter (ssd) (1) A pattern of defined code words used to delineate the boundary of a data transmission sequence on the Physical Layer stream. The SSD is unique in that it may be recognized independent of previously defined code-group boundaries and it defines subsequent code-group boundaries for the stream it delimits. For 100BASE-T4, SSD is a pattern of three predefined sosb code-groups (one per wire pair) indicating the positions of the first data code-group on each wire pair. For 100BASE-X, SSD consists of the code-group sequence /J/K/. For 100BASE-T2, the SSD is indicated by two consecutive pairs of predefined PAM5×5 symbols (±2, ±2) (±2, 0) which are generated using unique SSD/ESD coding rules. (C/LM) 802.3-1998
(2) (local area networks) Reserved code patterns that identify the beginning of the MII channel transmission frame. The ssd indicates the transmission priority of the packet. (C) 8802-12-1998

star topology A topology in which stations are connected to a single central switching facility. *See also:* bus topology; star-ring topology; ring topology; bus-ring topology; star-bus topology; tree topology; loop topology. (C) 610.7-1995

start-pulsing signal (telephone switching systems) A signal transmitted from the receiving end to the sending end of a trunk to indicate that the receiving end is in a condition to receive pulsing. (COM) 312-1977w

star tracker *See:* astrotracker.

start-record signal A signal used for starting the process of converting the electric signal to an image on the record sheet. *See also:* facsimile signal. (COM) 168-1956w

start signal (1) (start-stop system) Signal serving to prepare the receiving mechanism for the reception and registration of a character, or for the control of a function. (COM) [49]

(2) (facsimile) A signal that initiates the transfer of a facsimile equipment condition from standby to active. *See also:* facsimile signal. (COM) 168-1956w

(3) (telephone switching systems) In multifrequency and key pulsing, a signal used to indicate that all digits have been transmitted. (COM) 312-1977w

(4) (data management) A signal at the beginning of a start-stop character that prepares the receiving device for the reception of the code elements. *Note:* A start signal is limited to one signal element generally having the duration of unit interval. (C) 610.5-1990w

(5) In asynchronous transmission, a signal preceding a character that prepares the receiving device for the reception of code elements. *Synonym:* start element. *Contrast:* stop signal. (C) 610.7-1995

start-stop character A character including one start signal at the beginning and one or two stop signals at the end. (C) 610.5-1990w

start-stop printing telegraphy That form of printing telegraphy in which the signal-receiving mechanisms are started in operation at the beginning and stopped at the end of each character transmitted over the channel. *See also:* telegraphy. (EEC/PE) [119]

start-stop signal A signal composed of a sequence or group of signal elements, each group representing a character or block, having a duration equal to the duration of an integral number of unit intervals and which are separated by time intervals for which the duration is not fixed. (C) 610.7-1995

start-stop system (data transmission) A system in which each group of code elements corresponding to a character is preceded by a start element which serves to prepare the receiving equipment for the reception and registration of a character, and is followed by a stop element during which the receiving equipment comes to rest in preparation for the reception of the next character. (PE) 599-1985w

start-stop tape drive A tape drive capable of coming to a complete stop and restarting in the gap between two recorded data blocks. *Contrast:* streaming tape drive. (C) 610.10-1994w

start-stop transmission (1) (data transmission) A synchronous transmission in which a group of code elements corresponding to a character signal is preceded by a start signal which serves to prepare the receiving mechanism for the reception and registration of a character and is followed by a stop signal which serves to bring the receiving mechanism to rest in preparation for the reception of the next character. (PE) 599-1985w

(2) *See also:* asynchronous transmission. (C) 610.7-1995

start time *See:* acceleration time.

start transition (data transmission) In a character transmitted in a start-stop system, the mark-to-space transition at the beginning of the start element. (PE) 599-1985w

startup (of a relay) The action of a relay as it just departs from complete reset. Startup is also used as a qualifying term to identify the minimum value of the input quantity that will permit this condition. (SWG/PE) C37.100-1992

startup current (1) The transient current of a heating cable immediately following energization. (IA/PC) 515.1-1995

(2) The current response of a heating cable or surface heating device following energization. (IA) 515-1997

startup testing All testing of the generating unit from initial-powered rotation to verify suitability for operation. (PE/EDPG) 1248-1998

starvation A condition that occurs when one or more modules perform no useful work for an indefinite period of time due to lack of access to the bus or other system resources. (C/BA) 1014.1-1994w, 10857-1994, 896.3-1993w

starved electrolyte cell *See:* absorbed electrolyte cell.

statcoulomb The unit of charge in the centimeter-gram-second electrostatic system. It is that amount of charge that repels an equal charge with a force of one dyne when they are in a vacuum, stationary, and one centimeter apart. One statcoulomb is approximately 3.335×10^{-10} C. (Std100) 270-1966w

State An unordered, finite datatype. Each state value is identified by an associated name. (C/PA) 1224.1-1993w

state (1) (high-level microprocessor language) The condition of the target microprocessor, given in terms of the contents of its registers, internal flags, local memory, etc. (C/MM) 755-1985w

(2) (A) (modeling and simulation) (software) A condition or mode of existence that a system, component, or simulation may be in; for example, the pre-flight state of an aircraft navigation program or the input state of given channel. **(B) (modeling and simulation) (software)** The values assumed at a given instant by the variables that define the characteristics of a system, component, or simulation. *Synonym:* system state. *See also:* steady state. (C) 610.3-1989, 610.12-1990

(3) (power outages) Component or unit state is a particular condition or status of a component or a unit which is important for outage reporting purposes. (PE/PSE) 859-1987w

(4) The language-independent syntax for a family on unordered, finite datatypes. Each state value is identified by an associated name. (C/PA) 1351-1994w

(5) The input to and information stored in a circuit or device. *Note:* A full description of the state of a device allows its future behavior to be predicted for any combination of inputs. (C) 610.10-1994w

(6) A condition that characterizes the behavior of a function/subfunction or element at a point in time. (C/SE) 1220-1998

state class A kind of class that represents a set of real or abstract objects (people, places, events, ideas, things, combinations of things, etc.) that have common knowledge or behavior. A state class represents instances with changeable state. The constituent instances of a state class can come and go and can change state over time, i.e., their property values can change. (C/SE) 1320.2-1998

state data (software unit testing) Data that defines an internal state of the test unit and is used to establish that state or compare with existing states. (SE/C) 1008-1987r, 610.12-1990

state diagram (software) A diagram that depicts the states that a system or component can assume, and shows the events or circumstances that cause or result from a change from one state to another. (C) 610.12-1990

state element (high-level microprocessor language) A microprocessor component containing a distinguishable part of the state information, such as a single register. (MM/C) 755-1985w

state machine A model of a system in which all values are discrete, as in a digital computer. (C) 610.3-1989w

statement (1) (computer programming) A meaningful expression or generalized instruction in a source language. (C) [20], [85]

(2) (software) In a programming language, a meaningful expression that defines data, specifies program actions, or directs the assembler or compiler. *See also:* control statement; assignment statement; declaration. (C) 610.12-1990

statement of work A document used by the acquirer as a means to identify, describe, and specify the tasks to be performed under the contract. (C/SE) 1062-1998

statement testing (software) Testing designed to execute each statement of a computer program. *Contrast:* path testing; branch testing. (C) 610.12-1990

state-of-charge factor Actual capacity of a battery expressed as a percentage of a fully-charged capacity. *Note:* This is based on experience, application (cycling/float service), and charging parameters. (VT) 1476-2000

state of chromatic adaptation (illuminating engineering) The condition of the chromatic properties of the visual system at a specified moment as a result of exposure to the totality of colors of the visual field currently and in the past. *See also:* chromatic adaptation. (EEC/IE) [126]

state of polarization (of a plane wave [field vector]) At a given point in space, the condition of the polarization of a plane wave [field vector] as described by the axial ratio, tilt angle, and sense of polarization. *Synonym:* polarization state. (AP/ANT) 145-1993

state of statistical control (pulse measurement process) That state wherein a degree of consistency among repeated measurements of a characteristic, property, or attribute is attained. (IM/WM&A) 181-1977w

State Sequence Error (SSE) bit A bit in the Bus Error register of all S-modules. An addressed S-module sets this bit to indicate that the S-module's Slave Link Layer Controller has entered the ERROR Slave Controller State. (TT/C) 1149.5-1995

state space (1) (automatic control) A space which contains the state vectors of a system. *Note:* The number of state variables in the system determines the dimension of the state space. *See also:* control system. (PE/EDPG) [3]

(2) Memory that is used to store the parameters, variables, workspace, etc., related to an I/O transaction that is currently being processed. (C/MM) 1212.1-1993

state, system *See:* system state.

state trajectory (automatic control) The vector function describing the dependence of the state on time and initial state. *Note:* If ϕ is the state trajectory, then

$$\phi(t_0,x_0) = x_0$$

$$\phi(t_2,x_0) = \phi[t_2,\phi(t_1,x_0)]$$

(PE/EDPG) [3]

state transition A change from one state to another in a system, component, or simulation. (C) 610.3-1989w

state transition diagram A graphical means of expressing the allowed states of an object and the allowed transitions from one state to another. (IM/ST) 1451.1-1999

state variable A variable that defines one of the characteristics of a system, component, or simulation. The values of all such variables define the state of the system, component, or simulation. (C) 610.3-1989w

state variable formulation (excitation systems) (eigenvalue, eigenvector, characteristic equation) A system may be mathematically modeled by assigning variables $x_1, x_2, \ldots, x_n$ to system parameters: when these xs comprise the minimum number of parameters which completely specify the system, they are termed "states" or "state variables." System states arranged in a n-vector form a state vector. The mathematical model of the system may be manipulated into the form

$$(dx)/(dt) = \dot{H} = AX + bu$$

$$Y = CX + bu$$

where X is the system state vector, u is the input vector, Y is the output vector, and A, b, C, d are matrices of appropriate dimension which specify the system. Such a model is known as a state variable or modern control formulation.

$$\det(A - \lambda I) = 0$$

is called the characteristic equation and has n roots which are called eigenvalues (det (·) denotes determinant). When eigenvalues are real, they are the negative inverses of closed loop system time constants. Eigenvalues are also the pole locations of the closed loop transfer function. Any vector e_i such that

$$(A - \lambda_i I)e_i = 0$$

$$\|e_i\| \neq 0$$

is called an eigenvector of the eigenvalue $\lambda_i(\|\cdot\|)$ denotes the square root of the sum of the squares of all entries of a vector. All n eigenvectors of a system form a modal matrix of matrix A when arranged side-by-side in a square matrix. The modal matrix is used in certain analytic procedures in modern control theory whereby large, complex systems are decoupled into many first order systems. (PE/EDPG) 421A-1978s

state variables (automatic control) Those whose values determine the state. (PE/EDPG) [3]

state vector (automatic control) One whose components are the state variables. (PE/EDPG) [3]

static (1) (atmospherics) Interference caused by natural electric disturbances in the atmosphere, or the electromagnetic phenomena capable of causing such interference. *See also:* radio transmitter. (PE/EEC) [119]

(2) (adjective) (automatic control) Referring to a state in which a quantity exhibits no appreciable change within an arbitrarily long time interval. (PE/EDPG) [3]

(3) (software) Pertaining to an event or process that occurs without computer program execution; for example, static analysis, static binding. *Contrast:* dynamic. (C) 610.12-1990

static accuracy (analog computer) Accuracy determined with a constant output. (C) 165-1977w

static analysis (software) The process of evaluating a system or component based on its form, structure, content, or documentation. *Contrast:* dynamic analysis. *See also:* walkthrough; inspection. (C) 610.12-1990

static analyzer (software) A software tool that aids in the evaluation of a computer program without executing the program. Examples include syntax checkers, compilers, cross-reference generators, standards enforcers, and flowcharters. *See also:* dynamic analyzer; computer program; syntax; compiler; program. (C/SE) 729-1983s

static binding (software) Binding performed prior to the execution of a computer program and not subject to change during program execution. *Contrast:* dynamic binding. (C) 610.12-1990

static breakpoint A breakpoint that can be set at compile time, such as entry into a given routine. *See also:* data breakpoint; epilog breakpoint; code breakpoint; prolog breakpoint; programmable breakpoint. (C) 610.12-1990

static breeze *See:* convective discharge.

static characteristic (electron tube) A relation, usually represented by a graph, between a pair of variables such as electrode voltage and electrode current, with all other voltages maintained constant. (ED) [45]

static characteristic, relay *See:* relay static characteristic.

static charge Any electric charge at rest, e.g., charge on capacitor. Static charge is often loosely used to describe discharge conditions resulting from electric field coupling. (T&D/PE) 524a-1993r, 1048-1990

static check *See:* problem check.

static compensator (STATCOM) A static synchronous generator operated as a shunt-connected static var compensator (SVC), whose capacitive or inductive output current can be controlled independently of the ac system voltage. (PE/SUB) 1031-2000

static converter A unit that employs solid state devices such as semiconductor rectifiers or controlled rectifiers (thyristors), gated power transistors, electron tubes, or magnetic amplifiers to change ac power to dc power, dc power to ac power, or fixed frequency ac power to variable frequency ac power. (IA/MT) 45-1998

static decay (charge-storage tubes) Decay that is a function only of the target properties, such as lateral and transverse leakage. *See also:* charge-storage tube. (ED) 158-1962w

static dissipative Having a level of resistivity that typically leads to charge dissipation. (SPD/PE) C62.47-1992r

static dose rate test Test of the permanent changes induced by radiation that are obtained by a comparison of characteristics before and after exposure at a given dose rate. (ED) 1005-1998

static dump (1) (software) A dump that is produced before or after the execution of a computer program. *Contrast:* dynamic dump. *See also:* selective dump; memory dump; snapshot dump; postmortem dump; change dump. (C) 610.12-1990 **(2) (computers)** A dump that is performed at a particular point in time with respect to a machine run, frequently at the end of a run. (C) [20], [85]

static electrode potential The electrode potential that exists when no current is flowing between the electrode and the electrolyte. *See also:* electrolytic cell. (EEC/PE) [119]

static error (software) An error that is independent of the time-varying nature of an input. *Contrast:* dynamic error. (C) 610.12-1990, 165-1977w

static exciter Nonrotating source of direct current for the synchronous generator field, utilizing controlled rectifiers. (PE/EDPG) 1020-1988r

static friction *See:* stiction.

static induced current The charging and discharging current of a pair of Leyden jars or other capacitors, which current is passed through a patient. *See also:* electrotherapy. (EMB) [47]

staticize (A) (electronic digital computation) To convert serial or time-dependent parallel data into static form. **(B) (electronic digital computation)** Occasionally, to retrieve an instruction and its operands from storage prior to its execution. (C) 162-1963

staticizer (electronic computation) A storage device for converting time-sequential information into static parallel information. (Std100) 270-1966w

static Kraemer system (rotating machinery) A system of speed control below synchronous speed for wound-rotor induction motors. Slip power is recovered through the medium of a static converter equipment electrically connected between the secondary winding of the induction motor and a power system. *See also:* asynchronous machine. (PE) [9]

static load line The locus of all simultaneous average values of output electrode current and voltage, for a fixed value of direct-current load resistance. (ED) [45]

static magnetic cell *See:* magnetic cell.

static method A method that can be executed without an instance of its package. (C/BA) 1275-1994

static model (1) A model of a system in which there is no change; for example, a scale model of a bridge, studied for its appearance rather than for its performance under varying loads. *Contrast:* dynamic model. (C) 610.3-1989w **(2)** A kind of model that describes an interrelated set of classes (and/or subject domains) along with their relationships and responsibilities. *Contrast:* dynamic model. (C/SE) 1320.2-1998

static noise (atmospherics) (telephone practice) Interference caused by natural electric disturbances in the atmosphere, or the electromagnetic phenomena capable of causing such interference. *See also:* static. (PE/PSR) C37.93-1976s

static optical transmission (acousto-optic device) The ratio of the transmitted zero order intensity, I_0, to the incident light intensity, I_{in}, when the acoustic drive power is off: thus $T = I_0/I_n$. (UFFC) [23]

static overvoltage (surge arresters) An overvoltage due to an electric charge on an isolated conductor or installation. (PE) [8]

static patterns A set of controlled, time-invariant patterns. (SCC20) 1445-1998

static phase offset The constant difference between the phase of the recovered clock and the optimal sampling position of the received data. (LM/C) 802.5-1989s

static plow (cable plowing) A plowing unit that depends upon drawbar pull only for its movement through the soil. (T&D/PE) 590-1977w

static power converter Any static power converter with control, protection, and filtering functions used to interface an electric energy source with an electric utility system. Sometimes referred to as power conditioning subsystems, power conversion systems, solid-state converters, or power conditioning units. (DESG) 1035-1989w

static pressure (audio and electroacoustics) (at a point in a medium) The pressure that would exist at that point in the absence of sound waves. (SP/ACO) [32]

static radiation test (metal nitride oxide semiconducter arrays) A test of the permanent changes induced by radiation obtained by a comparison of characteristics before and after exposure. (ED) 641-1987w, 581-1978w

static random-access memory (SRAM) A static form of random-access memory that does not require periodic refresh to retain data. *Contrast:* dynamic random-access memory. (C) 610.10-1994w

static regulation Expresses the change from one steady-state condition to another as a percentage of the final steady-state condition.

$$\text{Static Regulation} = \frac{E_{\text{initial}} - E_{\text{final}}}{E_{\text{final}}}$$

(AES) [41]

static regulator A transmission regulator in which the adjusting mechanism is in self-equilibrium at any setting and requires control power to change the setting. *See also:* transmission regulator. (EEC/PE) [119]

static relay (or relay unit) A relay or relay unit in which the designed response is developed by electronic, solid-state, magnetic or other components without mechanical motion. *Note:* A relay that is composed of both static and electromechanical units in which the designed response is accomplished by static units may be referred to as a static relay. (SWG/PE) C37.100-1992

static resistance (semiconductor rectifier device) (forward or reverse) The quotient of the voltage by the current at a stated point on the static characteristic curve. *See also:* rectification. (IA) [12]

static routing A routing strategy that determines the path to be followed by network traffic using the information and algorithms fixed at the time of network generation. (C) 610.7-1995

static short-circuit ratio (arc-welding apparatus) The ratio of the steady-state output short-circuit current of a welding power supply at any setting to the output current at rated load voltage for the same setting. (EEC/AWM) [91]

static, solid-state converter *See:* solid-state converter static.

static storage A type of storage that does not require periodic refreshment for retention of data. *Contrast:* dynamic storage. *See also:* static random-access memory. (C) 610.10-1994w

static test (1) (A) (test, measurement, and diagnostic equipment) A test of a non-signal property, such as voltage and current, of an equipment or of any of its constituent units, performed while the equipment is energized. **(B) (test, measurement, and diagnostic equipment)** A test of a device in a stationary of helddown position as a means of testing and measuring its dynamic reactions. (MIL) [2] **(2)** The computer-control state that applies a predetermined set of voltages and conditions to the analog computer, allowing a static check to be performed. (C) 610.10-1994w, 165-1977w

static timing error The constant part of the difference in time between the ideal sampling point for the received data and the actual sampling point. (C/LM) 8802-5-1998

static torque (electric coupling) The minimum torque an electric coupling will transmit or develop with no relative motion between the input and output members, with excitation applied. *Note:* Static torque is usually specified for rated excitation. (EM/PE) 290-1980w

static value (light-emitting diodes) A non-varying value or quantity of measurement at a specified fixed point, or the slope of the line from the origin to the operating point on the appropriate characteristic curve. (ED) [127]

static var compensator (SVC) A shunt-connected static var generator or absorber whose output is adjusted to exchange capacitive or inductive current to maintain or control specific parameters of the electrical power system (typically bus voltage). (PE/SUB) 1031-2000

static var system (SVS) A combination of different static and mechanically switched var compensators whose outputs are coordinated. (PE/SUB) 1031-2000

static volt-ampere characteristic (arc-welding apparatus) The curve or family of curves that gives the terminal voltage of a welding power supply as ordinate, plotted against output load current as abscissa, is the static volt-ampere characteristic of the power supply. (EEC/AWM) [91]

static wave current (electrotherapy) The current resulting from the sudden periodic discharging of a patient who has been raised to a high potential by means of an electrostatic generator. *See also:* electrotherapy. (EMB) [47]

static wire *See:* shield wire; overhead ground wire.

static wire-coupling protector A device for protecting carrier terminals that are used in conjunction with overhead, insulated ground wires (static wires) of a power transmission line. *Synonym:* sky wire-coupling protector. (PE/PSC) 487-1992

station (1) One of the input or output devices on a communications network. *Synonym:* data station. *See also:* secondary station; device; server; primary station. (C) 610.7-1995
(2) A facility where several components of a system are located. (PE/PSE) 858-1993w
(3) Any device that contains an IEEE 802.11 conformant medium access control (MAC) and physical layer (PHY) interface to the wireless medium (WM). (C/LM) 8802-11-1999
(4) A physical device that may be attached to a shared medium local area network (LAN) to transmit and receive information on that shared medium. A data station is identified by a destination address. *Synonym:* data station. (EMB/MIB) 1073.4.1-2000
(5) (generating station grounding) *See also:* generating station. (PE/EDPG) 665-1987s
(6) *See also:* semiautomatic station; automatic station; remote station; master station. (SWG/PE/SUB) C37.100-1992, C37.1-1994

Station When capitalized, Station refers to DTR station or a C-Port in Station Emulation mode. (C/LM) 802.5t-2000

stationarity (seismic qualification of Class 1E equipment for nuclear power generating stations) A condition that exists when a waveform is stationary and when its amplitude distribution, frequency content, and other descriptive parameters are statistically constant with time. (PE/NP) 344-1987r

stationary appliance (electric systems) An appliance that is not easily moved from one place to another in normal use. *See also:* appliance. (NESC) [86]

stationary battery A storage battery designed for service in a permanent location. *See also:* battery. (EEC/PE) [119]

stationary-contact assembly The fixed part of the starting-switch assembly. *See also:* starting-switch assembly. (EEC/PE) [119]

stationary contact member A conducting part having a contact surface that remains substantially stationary. (SWG/PE) C37.100-1992

stationary-mounted device One that cannot be removed except by the unbolting of connections and mounting supports. *See also:* drawout-mounted device. (SWG/PE) C37.100-1992

stationary phase approximation A technique for evaluating or estimating integrals whose integrands have rapid variations in phase everywhere except near stationary phase points. (AP/PROP) 211-1997

stationary phase point Point in space near which the phase of a function is slowly varying. (AP/PROP) 211-1997

stationary relay contact The member of a contact pair that is not moved directly by the actuating system. (EEC/REE) [87]

stationary satellite (communication satellite) A synchronous satellite with an equatorial, circular and direct orbit. A stationary satellite remains fixed in relation to the surface of the primary body. *Note:* A geo-stationary satellite is a stationary earth satellite. (COM) [19]

stationary system (excitation systems) (time invarient) Let a system have zero input response Z(t), then the system is stationary (time invarient) if the response to input R(t) is C(t) + Z(t) and the response to input R(t + T) is C(t + T) + Z(t). Otherwise the system is nonstationary. *Note:* A stationary system is modelled mathematically by a stationary differential equation the coefficients of which are not functions of time. (PE/EDPG) 421A-1978s

stationary wave *See:* standing wave.

station auxiliary (generating station) (generating stations electric power system) An auxiliary at a generating station not assigned to a specific unit. (PE/EDPG) 505-1977r

station auxiliary losses The electric power required to feed the HVDC station auxiliary loads. (SUB/PE) 1158-1991r

station basic rate A data transfer rate belonging to the extended service set (ESS) basic rate set that is used by a station for specific transmissions. The station basic rate may change dynamically as frequently each medium access control (MAC) protocol data unit (MPDU) transmission attempt, based on local considerations at that station. (C/LM) 8802-11-1999

station blackout The complete loss of ac electric power to the essential and nonessential switchgear buses in a nuclear power plant (i.e., loss of offsite electric power system concurrent with turbine trip and unavailability of the onsite emergency ac power system). Station blackout does not include the loss of available ac power to buses fed by station batteries through inverters or by alternate ac sources. (PE/NP) 765-1995

station changing (communication satellite) The changeover of service from one earth station to another, especially in a system using satellites that are not stationary. (COM) [19]

station check (supervisory control, data acquisition, and automatic control) (supervisory check, status update) The automatic selection, in a definite order, of all the supervisory alarm and indication points associated with one remote station or all remote stations of a system, and the transmission of all the indications to the master station. (SWG/SUB/PE) C37.1-1987s, C37.100-1992

station-control error (electric power system) The actual station generation minus assigned station generation. (PE/PSE) 94-1991w

station equipment (data transmission) A broad term used to denote equipment located at the customer's premises. The equipment may be owned by the telephone company or the customer. If the equipment is owned by the customer it is referred to as the customer's equipment. (PE) 599-1985w

station ground A ground grid or any equivalent system of grounding electrodes buried beneath or adjacent to the gas-insulated substation that determines the rise of ground voltage level relative to remote earth and controls the distribution of voltage gradients within the gas-insulated substation area during a fault. (SWG/SUB/PE) C37.122-1983s, C37.122.1-1993, C37.100-1992

station identification (supervisory control, data acquisition, and automatic control) A sequence of signal elements used to identify a station. (SWG/PE/SUB) C37.1-1987s, C37.100-1992

station line (telephone switching systems) Conductors carrying direct current between a central office and a main station, private branch exchange, or other end equipment. (COM) 312-1977w

station lobe The wiring that connects a LAN station or other device to a hub, excluding equipment and station attachment cables. (C) 610.7-1995

station-loop resistance (telephone switching systems) The series resistance of the loop conductors, including the resistance of an off-hook station. (COM) 312-1977w

station management (SMT) The conceptual control element of a station that interfaces with all of the layers of the station and is responsible for the setting and resetting of control parameters, obtaining reports of error conditions, and determining if the station should be connected to or disconnected from the medium. (C/LM) 8802-5-1998

station number (subroutines for CAMAC) The number n represents an integer which is the station number component of a CAMAC address. (NPS) 758-1979r

station, peaking *See:* peaking station.

station, pumped storage *See:* pumped storage station.

station ringer *See:* telephone ringer.

station, run-of-river *See:* run-of-river station.

station service (SS) (1) (power operations) Facilities that provide power for station use in a generating, switching, converting, or transforming station. (PE/PSE) 858-1987s, 346-1973w

(2) The set of services that support transport of medium access control (MAC) service data units (MSDUs) between stations within a basic service set (BSS). (C/LM) 8802-11-1999

station service power The power used to operate a station. (PE/PSE) 94-1991w

station service transformer (generating stations electric power system) A transformer that supplies power from a station high-voltage bus to the station auxiliaries and also to the unit auxiliaries during unit startup and shutdown or when the unit auxiliaries transformer is not available, or both. (PE/TR/EDPG) C57.116-1989r, 505-1977r

station, steam-electric *See:* steam-electric station.

station, storage *See:* storage station.

station-to-station call (telephone switching systems) A call intended for a designated main station. (COM) 312-1977w

station-type cubicle switchgear (SC) Metal-enclosed power switchgear characterized by the following required features:

— The main switch and interrupting device is of the stationary mounted type, composed of a primary circuit compartment and a secondary or mechanism compartment; arranged with gang-operated isolating switches that are mechanically interlocked with the main switching and interrupting device.

— Each phase for the major parts of the primary circuit switching or interrupting devices, buses, and line-to-ground potential transformers is completely enclosed (or segregated) by grounded metal barriers that have no intentional openings between compartments. Specifically included are mechanically interlocked doors in front of or a part of the primary circuit compartment of the circuit switching and interrupting device so that when the group operated isolating switches are closed, no primary parts can be exposed by the attempted opening of the interlocked doors.

— All live parts are enclosed within grounded metal compartments.

— Primary bus conductor and connections are bare.

— Mechanical interlocks are provided for proper operating sequence under normal operating conditions.

— Secondary control devices and their wiring are isolated by grounded metal barriers from all primary circuit elements with the exception of short lengths of wire, such as at instrument transformer terminals.

— The doors to the secondary or mechanism compartment of the primary switching or interrupting device are to provide access to the secondary or control equipment within the housing without danger of exposure to the primary circuit parts.

Note: Auxiliary vertical sections may be required for mounting devices or for use as bus transition. (SWG/PE) C37.100-1992, C37.20.2-1993

station-type regulator A regulator designed for ground-type installations in stations or substations. (PE/TR) C57.15-1999

station-type transformer (power and distribution transformers) A transformer designed for installation in a station or substation. (PE/TR) C57.12.80-1978r

Statistical Analysis System (SAS) A programming language used for statistical analysis, data manipulation, and application development. (C) 610.13-1993w

statistical BIL The crest values of a standard lightning impulse for which the insulation exhibits a 90% probability of withstand (or a 10% probability of failure) under specified conditions, applicable specifically to self-restoring insulations. (SPD/PE/C) C62.22-1997, 1313.1-1996

statistical BSL The crest value of a standard switching impulse for which the insulation exhibits a 90% probability of withstand (or a 10% probability of failure), under specified conditions, applicable to self-restoring insulations. (PE/SPD/C) C62.22-1997, 1313.1-1996

statistical delay (gas tube) The time lag from the application of the specified voltage to initiate the discharge to the beginning of breakdown. *See also:* gas tube. (ED) [45]

statistical descriptors Many sounds have sound-pressure levels that are not constant in time and cannot, without qualification, be adequately characterized by a single value of sound level. One method for dealing with fluctuating or intermittent sounds is to examine the sound level statistically as a function of time. Statistical descriptors are often applied to A-weighted sound levels. They are called exceedance levels or *L*-levels. For example, the L_{10} is the A-weighted sound level exceeded for 10% of the time over a specified time period. The other 90% of the time, the sound level is less than the L_{10}. Similarly, the L_{50} is the sound level exceeded 50% of the time; the L_{90} is the sound level exceeded 90% of the time; etc. (T&D/PE) 656-1992

statistical indicators Parameters based on past plant-specific or generic experience used to predict the failure of identical or similar equipment based on time or stress histories. (PE/NP) 933-1999

statistically homogeneous Having statistical characteristics that are independent of the specific locations at which those characteristics are measured. (AP/PROP) 211-1997

statistically isotropic Having statistical characteristics that are independent of the directions along which those characteristics are measured. (AP/PROP) 211-1997

statistical multiplexer A multiplexer that uses time division multiplexing technique by dynamically allocating telecommunication line time to each of the various attached terminals, according to whether a terminal is active or inactive at a particular moment. (C) 610.7-1995

Statistical Package for Social Sciences (SPSS) A nonprocedural language used for statistical analysis of research results, particularly data collected in polls and surveys. (C) 610.13-1993w

statistical pattern recognition An approach to pattern recognition that uses probability and statistical methods to assign patterns to pattern classes. (C) 610.4-1990w

statistical sparkover voltage A transient overvoltage level that produces a 97.72% probability of sparkover (i.e., two standard deviations above the 50% sparkover voltage value). *Note:* IEC uses 90%. (T&D/PE) 516-1995

statistical terms related to corona effects Terms applied to the procedures of data collection, classification, and presentation relating to corona effects. (T&D/PE) 539-1990

statistical test model (software) A model that relates program faults to the input data set (or sets) which cause them to be encountered. The model also gives the probability that these faults will cause the program to fail. *See also:* model; data. (C/SE) 729-1983s

statistical withstand voltage (1) A transient overvoltage level that produces a 0.14% probability of sparkover (i.e., three standard deviations below the 50% sparkover voltage value). *Note:* IEC uses 2%. (T&D/PE) 516-1995

(2) The voltage that an insulation is capable of withstanding with a given probability of failure, corresponding to a specified probability of failure (e.g., 10%, 0.1%). (PE/SPD/C) C62.22-1997, 1313.1-1996

stat mux *See:* statistical multiplexer.

stator (1) (watthour meter) An assmbly of an induction watthour meter, which consists of a voltage circuit, one or more current circuits, and a combined magnetic circuit so arranged that their joint effect, when energized, is to exert a driving torque on the rotor by the reaction with currents induced in an individual or common conducting disk. (ELM) C12.1-1982s

(2) (rotating machinery) The portion that includes and supports the stationary active parts. The stator includes the stationary portions of the magnetic circuit and the associated winding and leads. It may, depending on the design, include a frame or shell, winding supports, ventilation circuits, coolers, and temperature detectors. A base, if provided, is not ordinarily considered to be part of the stator. (PE) [9]

stator bar A unit of winding on the stator of a machine. *See also:* stator coil; bar. (PE/EM) 1129-1992r

stator coil (rotating machinery) A unit of a winding on the stator of a machine. *See also:* stator. (PE) [9]

stator coil pin (rotating machinery) A rod through an opening in the stator core, extending beyond the faces of the core, for the purpose of holding coils of the stator winding to a desired position. *See also:* stator. (PE) [9]

stator core (rotating machinery) The stationary magnetic-circuit of an electric machine. It is commonly an assembly of laminations of magnetic steel, ready for winding. *See also:* stator. (PE) [9]

stator-core lamination (rotating machinery) A sheet of material usually of magnetic steel, containing teeth and winding slots, or containing pole structures, that forms the stator core when assembled with other identical or similar laminations. *See also:* stator. (PE) [9]

stator frame (rotating machinery) The supporting structure holding the stator core or core assembly. *Note:* In certain types of machines, the stator frame may be made integral with one end shield. *See also:* stator. (PE) [9]

stator iron (rotating machinery) A term commonly used for the magnetic steel material or core of the stator of a machine. *See also:* stator. (PE) [9]

stator mounting lug (rotating machinery) A part attached to the outer surface of stator core or a stator shell to provide a means for the bolting or equivalent attachment to the appliance, machine, or other foundation. *See also:* stator. (PE) [9]

stator resistance starting (rotating machinery) The process of starting a motor at reduced voltage by connecting the primary winding initially in series with starting resistors that are short-circuited for the running condition. (PE) [9]

stator shell (rotating machinery) A cylinder in tight assembly around the wound stator core, all or a portion of which is machined or otherwise made to a specific outer dimension so that the stator may be mounted into an appliance, machine, or other end product. *See also:* stator. (PE) [9]

stator winding (rotating machinery) A winding on the stator of a machine. *See also:* stator. (PE) [9]

stator winding copper (rotating machinery) A term commonly used for the material or conductors of a stator winding. *See also:* stator. (PE) [9]

stator winding terminal (rotating machinery) The end of a lead cable or a stud or blade of a terminal board to which connections are normally made during installation. *See also:* stator. (PE) [9]

status (1) (supervisory control, data acquisition, and automatic control) Information describing a logical state of a point or equipment. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) A term used generally to describe data generated by the peripheral that reflects the current operating state of the peripheral. (C/MM) 1284-1994

(3) (A) The condition at a particular time of a system or system component. **(B)** Pertaining to the condition as in (A), for example a status bit containing a bit that represents the status of a system. (C) 610.10-1994

status bit A bit used to indicate a non-error condition important to S-module operation. Status bits are located in an S-module's Slave Status register and Bus Error register (the BMR bit) and may be located in the optional Module Status register or an Additional Status register Status bits in the Module Status register or in an Additional Status register are permitted to affect the value of the EVO bit of the Slave Status register. (TT/C) 1149.5-1995

status code A code used to indicate the results of a computer program operation. For example, a code indicating a carry, an overflow, or a parity error. *Synonym:* condition code. (C) 610.12-1990

status codes Information used to indicate the state or condition of system components. (SUB/PE) 999-1992w

status datatype An abstract datatype whose values may be bound to "control" values as well as "data" values. (C/PA) 1328-1993w, 1327-1993w, 1224.1-1993w, 1224-1993w, 1351-1994w

status flag (radix-independent floating-point arithmetic) (binary floating-point arithmetic) A variable that may take two states, set and clear. A user may clear a flag, copy it, or restore it to a previous state. When set, a status flag may contain additional system-dependent information, possibly inaccessible to some users. The operations of IEEE Std 754-1985 and IEEE Std 854-1987 may as a side effect set some of the following flags: inexact result, underflow, overflow, divide by zero, and invalid operation. (C/MM) 854-1987r, 754-1985r

status lines Unidirectional signals from the peripheral to the host, defined in Compatibility Mode to handshake data and to report error conditions. In other IEEE 1284 interface modes defined in this standard, these lines are used for control, data, and/or status. (C/MM) 1284-1994

status memory (sequential events recording systems) The memory that contains the most recently scanned status of all inputs. (PE/EDPG) [5], [1]

status point, supervisory control *See:* status.

status register A register in an S-module by means of which current operating conditions of the S-module (e.g., interrupt enabled, module pass/fail status, multicast address of the S-module, etc.) and event occurrence (e.g., detection of an error condition during transmission of a message) can be recorded either for later interrogation by the M-module or to record the necessity of particular S-module activity at a later time. (TT/C) 1149.5-1995

status transfer The passing of information over the system control signal group, between the bus owner and the replying agent, during the reply phase of a transfer operation. *See also:* agent status. (C/MM) 1296-1987s

status word Together with the contents of the processor's registers, this defines the state or condition of the processor at any given moment. *Note:* If the processor is interrupted, it must save the status word so it can return to its former task. (C) 610.10-1994w

STC *See:* sensitivity time control.

S/TD *See:* signal-to-total-distortion ratio.

STD *See:* subscriber trunk dialing.

STE *See:* spanning tree explorer.

steady current A current that does not change with time. (Std100) 270-1966w

steady state (1) The condition of a specified variable at a time when no transients are present. *Note:* For the purpose of this definition, drift is not considered to be a transient. *See also:* feedback control system. (IA/ICTL/IAC) [60]

(2) (cable insulation materials) Conditions of current in the material attained when the difference between the maximum and minimum current observed during four consecutive hourly readings is less than 5% of the minimum current. (PE) 402-1974w

(3) (excitation systems) That in which some specified characteristic of a condition, such as value, rate, periodicity, or amplitude, exhibits only negligible change over an arbitrarily long interval of time. *Note:* It may describe a condition in which some characteristics are static, others dynamic. (PE/EDPG) 421A-1978s, 421-1972s

(4) (data management) A situation in which a model, process, or device exhibits stable behavior independent of time. *Synonym:* equilibrium. (C) 610.3-1989w

(5) The operating condition of a system wherein the observed variable has reached an equilibrium condition in response to an input or other stimulus in accordance with the definition of the system transfer function. This may involve a system output being at some constant voltage or current values in the case of power supplies. Referring to a subsystem operating parameter such as a thermal base-plate, it may be refer to a temperature that has reached stability as a function of the system operating inputs, load, and ambient environment. (PEL) 1515-2000

steady-state condition *See:* equilibrium mode distribution.

steady-state current perception threshold The current at which stimulation is perceptible for 50% of the subject population. *Note:* The threshold is a function of the frequency and voltage and varies considerably for various contact areas and pressures. Individual responses vary greatly from the mean threshold, and different levels are obtained for men, women, and children. (T&D/PE) 539-1990

steady-state deviation (control) The system deviation after transients have expired. *Note:* For the purpose of this definition, drift is not considered to be a transient. *See also:* deviation. (IM/IA/IAC) [120], [60]

steady-state governing load band (hydraulic turbines) The magnitude of the envelope of cyclic load variations caused by the governing system, expressed as a percent of rated power output, when the generating unit is operating in parallel with other generators and under steady-state load demand. (PE/EDPG) 125-1977s

steady-state governing speed band (hydraulic turbines) The magnitude of the envelope of the cyclic speed variations caused by the governing system, expressed as a percent of rated speed when the generating unit is operating independently and under steady-state load demand. (PE/EDPG) 125-1977s

steady-state incremental speed regulation (gas turbines) (excluding the effects of deadband) At a given steady-state speed and power, the rate of change of the steady-state speed with respect to the power output. It is the slope of the tangent to the steady-state speed versus power curve at the point of power output under consideration. It is the difference in steady-state speed, expressed in percent of rated speed, for any two points on the tangent, divided by the corresponding difference in power output, expressed as a fraction of the rated power output. For the basis of comparison, the several points of power output at which the values of steady-state incremental speed regulation are derived are based upon rated speed being obtained at each point of power output. (PE/PSE/EDPG) 94-1970w, 282-1968w, [5]

steady-state induced current The rms power-frequency current in any circuit, as a result of induction. (PE/T&D) 539-1990

steady-state oscillation A condition in which some aspect of the oscillation is a continuing periodic function. (SP) [32]

steady-state response (system or element) The part of the time response remaining after transients have expired. *Note:* The term steady-state may also be applied to any of the forced-response terms: for example steady-state sinusoidal response. *See also:* feedback control system; sinusoidal response. (IM) [120]

steady-state short-circuit current (synchronous machines) The steady-state current in the armature winding when short-circuited. (PE) [9]

steady-state speed regulation (A) (straight condensing and noncondensing steam turbines, nonautomatic extraction turbines, hydro turbines, and gas turbines) The percent change in rated speed as the power output is gradually reduced from rated power to zero while all speed-governing system settings remain unchanged. **(B) (straight condensing and noncondensing steam turbines, nonautomatic extraction turbines, hydro-turbines, and gas turbines)** The change in steady-state speed, expressed in percent of rated speed, when the power output of the turbine operating isolated is gradually reduced from rated power output to zero power output with unchanged settings of all adjustments of the speed-governing system. *Note:* Speed regulation is considered positive when the speed increases with a decrease in power output. *See also:* asynchronous machine; speed-governing system. (PE/PE/PSE/PSE/EDPG) 94-1991, 94-1970, 282-1968, [5]

steady-state stability A condition that exists in a power system if it operates with stability when not subjected to an aperiodic disturbance. *Note:* In practical systems, a variety of relatively small aperiodic disturbances may be present without any appreciable effect upon the stability, as long as the resultant rate of change in load is relatively slow in comparison with the natural frequency of oscillation of the major parts of the system or with the rate of change in field flux of the rotating machines. (PE/T&D) [10]

steady-state stability factor (system or part of a system) The ratio of the steady-state stability limit to the nominal power flow at the point of the system to which the stability limit is referred. *See also:* stability factor. (T&D/PE) [10]

steady-state stability limit (steady-state power limit) The maximum power flow possible through some particular point in the system when the entire system or the part of the system to which the stability limit refers is operating with steady-state stability. (T&D/PE) [10]

steady-state temperature rise (grounding device) The maximum temperature rise above ambient which will be attained by the winding of a device as the result of the flow of rated continuous current under standard operating conditions. It may be expressed as an average or a hot-spot winding rise. (PE/SPD) 32-1972r

steady state thermal rating The constant electrical current that would yield the maximum allowable conductor temperature for specified weather conditions and conductor characteristics under the assumption that the conductor is in thermal equilibrium (steady state). (T&D/PE) 738-1993

steady-state value The value of a current or voltage after all transients have decayed to a negligible value. For an alternating quantity, the root-mean-square value in the steady state does not vary with time. *See also:* asynchronous machine. (PE) [9]

steady voltage *See:* steady current.

steam capability (power operations) The maximum net capability of steam generating units which can be obtained under normal operating practices for a given period of time as calculated based on design or test data or as demonstrated by total plant tests. The limitation on steam capability may be electrical or mechanical in nature. (PE/PSE) 858-1987s

steam-electric station (power operations) An electric generating station utilizing steam for the motive force of its prime movers. (PE/PSE) 858-1987s, 346-1973w

steam turbine-electric drive A self-contained system of power generation and application in which the power generated by a steam turbine is transmitted electrically by means of a generator and a motor (or multiples of these) for propulsion purposes. *Note:* The prefix steam turbine-electric is applied to ships, locomotives, cars, buses, etc., that are equipped with this drive. *See also:* electric propulsion system; electric locomotive. (EEC/PE) [119]

steel container (storage cell) The container for the element and electrolyte of a nickel-alkaline storage cell. This steel container is sometimes called a can. *See also:* battery. (PE/EEC) [119]

steel supported aluminum conductor (SSAC) ACSR with the aluminum wires annealed. (T&D/PE) 524-1992r

steerable-beam antenna system An antenna with a non-moving aperture for which the direction of the major lobe can be changed by electronically altering the aperture excitation or by mechanically moving a feed of the antenna. (AP/ANT) 145-1993

steering compass A compass located within view of a steering stand, by reference to which the helmsman holds a ship on the set course.

Stefan-Boltzmann law (illuminating engineering) The statement that the radiant exitance of a blackbody is proportional to the fourth power of its absolute temperature; that is,

$$M = \sigma T^4$$

Note: The currently recommended value of the Stefan-Boltzmann constant s is $5.67032 \times 10^{-8}\ W \times m^{-2} \times K^{-4}$. (EEC/IE) [126]

stellar guidance (navigation aids) Guidance by means of celestial bodies, particularly the stars. (AES/GCS) 172-1983w

stellar-inertial navigation equipment *See:* celestial-inertial navigation equipment.

step (1) (pulse techniques) A waveform that, from the observer's frame of reference, approximates a Heaviside (unit step) function. *See also:* unit-step signal. (IM/HFIM) [40]
(2) (A) (computers) One operation in a computer routine. **(B) (computers)** To cause a computer to execute one operation. *See also:* single step. (C/C) [20], [85]
(3) (pulse terminology) (single transition) A transition waveform that has a transition duration that is negligible relative to the duration of the waveform epoch or to the duration of its adjacent first and second nominal states. (IM/WM&A) 194-1977w

step-back relay A relay that operates to limit the current peaks of a motor when the armature or line current increases. A step-back relay may, in addition, operate to remove such limitations when the cause of the high current has been removed. (IA/MT) 45-1998

step-by-step operation *See:* single-step operation.

step-by-step switch (1) A bank-and-wiper switch in which the wipers are moved by electromagnet ratchet mechanisms individual to each switch. *Note:* This type of switch may have either one or two types of motion. (EEC/PE) [119]
(2) A switch that moves in synchronism with a pulse device such as a rotary telephone dial. *Synonym:* line switch. *See also:* crossbar switch. (C) 610.7-1995

step-by-step system (1) An automatic telephone switching system that is generally characterized by the following features:

a) The selecting mechanisms are step-by-step switches;
b) The switching pulses may either actuate the successive selecting mechanisms directly or may be received and stored by controlling mechanisms that, in turn, actuate the selecting mechanisms.

(EEC/PE) [119]
(2) A type of line-switching system which uses step-by-step switches. *Synonym:* line switching system. *See also:* crossbar system; electronic switching system. (C) 610.7-1995

step change (control) (step function) An essentially instantaneous change of an input variable from one value to another. *See also:* feedback control system. (IA/ICTL/IAC) [60]

step compensation (correction) The effect of a control function or a device that will cause a step change in an other function when a predetermined operating condition is reached. (IA/ICTL/IAC) [60]

step control system (automatic control) A system in which the manipulated variable assumes discrete predetermined values. *Note:* The condition for change from one predetermined value to another is often a function of the value of the actuating signal. When the number of values of the manipulated variable is two, it is called a two-step control system; when more than two, a multi-step control system. (PE/EDPG) [3]

step distance A non-pilot distance relay scheme using multiple zones with time delay to differentiate between the zones. (PE/PSR) C37.113-1999

step-down transformer (power and distribution transformers) A transformer in which the power transfer is from a higher voltage source circuit to a lower voltage circuit. (PE/TR) C57.12.80-1978r

step-forced response (automatic control) The total (transient plus steady-state) time response resulting from a sudden change from one constant level of input to another. (PE/EDPG) [3]

step index optical waveguide (fiber optics) An optical waveguide having a step index profile. *See also:* step index profile. (Std100) 812-1984w

step index profile (fiber optics) A refractive index profile characterized by a uniform refractive index within the core and a sharp decrease in refractive index at the core-cladding interface. *Note:* This corresponds to a power-law profile with profile parameter, g, approaching infinity. *See also:* total internal reflection; multimode optical waveguide; normalized frequency; graded index profile; critical angle; dispersion; refractive index; mode volume; optical waveguide. (Std100) 812-1984w

stepless (electrical heating applications to melting furnaces and forehearths in the glass industry) Power modulation by means of a device, such as a saturable reactor or thyristor that provides essentially infinite resolution in output voltage, current, or power. (IA) 668-1987w

step line-voltage change (power supplies) An instantaneous change in line voltage (for example, 105−125 volts alternating current): for measuring line regulation and recovery time. (AES) [41]

step load change (power supplies) An instantaneous change in load current (for example, zero to full load) for measuring the load regulation and recovery time. (AES) [41]

stepped (electrical heating applications to melting furnaces and forehearths in the glass industry) Power modulation by means of discrete voltage steps, such as with a tapped transformer. (IA) 668-1987w

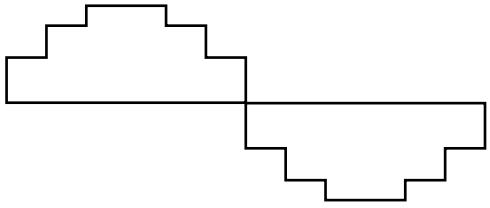
stepped antenna *See:* zoned antenna.

stepped-gate structure (metal-nitride-oxide field-effect transistor) Also source-drain protected structure: a variant of the metal-nitride-oxide semiconductor (MNOS) transistor whose gate dielectric along the channel is divided into two or three parts. One portion has the standard MNOS layer sequence of the memory device. On one or either side of the memory portion, particularly covering the lines where source and drain junction emerge at the silicon surface, is a gate dielectric that is used for the threshold insulated-gate field-effect transistor (IGFET) in a given technology. (ED) 581-1978w

stepped leader (1) (lightning) A series of discharges emanating from a region of charge concentration at short time intervals. Each discharge proceeds with a luminescent tip over a greater distance than the previous one. *See also:* direct-stroke protection. (T&D/PE) [10]
(2) Static discharge that propagates from a cloud into the air. Current magnitudes that are associated with stepped leaders

are small (on the order of 100 A) in comparison with the final stroke current. The stepped leaders progress in a random direction in discrete steps from 10 to 80 m in length. Their most frequent velocity of propagation is about 0.05% of the speed of light, or approximately 500 000 ft/s (150 000 m/s). It is not until the stepped leader is within the striking distance of the point to be struck that the stepped leader is positively directed toward this point. (SUB/PE) 998-1996

stepped wave (converter characteristics) (self-commutated converters) The waveform obtained from the summation of any number of square waves of the same frequency, each displaced in time from the others. The square waves are often uniformly displaced in time, but are not necessarily of equal amplitudes. An example is shown below.



stepped wave

(IA/SPC) 936-1987w

stepping life (for attenuator variable in fixed steps) Number of times to switch from any selected position to any other selected positions, after which the residual and incremental characteristic insertion loss remain within the specified repeatability. (IM/HFIM) 474-1973w

stepping relay (1) A multiposition relay in which moving wiper contacts mate with successive sets of fixed contacts in a series of steps, moving from one step to the next in successive operations of the relay. *See also:* relay. (EEC/REE) [87]

(2) (rotary type) A relay having many rotary positions, ratchet actuated, moving from one step to the next in successive operations, and usually operating its contacts by means of cams. There are two forms:

a) directly driven, where the forward motion occurs on energization; and
b) indirectly (spring) driven, where a spring produces the forward motion on pulse cessation.

Note: The term is also incorrectly used for stepping switch. (PE/EM) 43-1974s

stepping relay, spring-actuated *See:* spring-actuated stepping relay.

step potential (1) The potential difference between two points on the earth's surface separated by a distance of one pace (assumed to be one meter) in the direction of maximum potential gradient. This potential difference could be dangerous when current flows through the earth or material upon which a worker is standing, particularly under fault conditions. *Synonym:* step voltage. (T&D/PE) 1048-1990

(2) *See also:* step voltage. (T&D/PE) 524-1992r

step response (1) The recorded output response for an ideal input step with designated baseline and topline. (IM/WM&A) 1057-1994w

(2) (high voltage testing) $g(t)$ The normalized output as a function of time t when the input is a voltage or current step. (PE/PSIM) 4-1995

step-response time The time required for the end device to come to rest in its new position after an abrupt change to a new constant value has occurred in the measured signal. *See also:* accuracy rating. (EEC/EMI) [112]

step restoration The restoration of service to blocks of customers in an area until the entire area or feeder is restored. (PE/T&D) 1366-1998

step speed adjustment The speed drive can be adjusted in rather large and definite steps between minimum and maximum speed. *See also:* electric drive. (IA/ICTL/IAC) [60]

step-stress test A test consisting of several stress levels applied sequentially, for periods of equal duration, to a (one) sample. During each period a stated stress-level is applied and the stress level is increased from one step to the next. *See also:* reliability. (R) [29]

step twist, waveguide *See:* waveguide step twist.

step-up transformer (power and distribution transformers) A transformer in which the power transfer is from a lower voltage source circuit to a higher voltage circuit. (PE/TR) C57.12.80-1978r

step voltage (1) (conductor stringing equipment) The potential difference between two points on the earth's surface separated by a distance of one pace (assumed to be 1 m) in the direction of maximum potential gradient. This potential difference could be dangerous when current flows through the earth or material upon which a worker is standing, particularly under fault conditions. *Synonym:* step potential. (T&D/PE/PSIM) 524a-1993r, 81-1983, 524-1992r

(2) The difference in surface potential experienced by a person not in contact with any grounded object and whose feet are spaced 1 m apart. (PE/SUB) 1268-1997

(3) The difference in surface potential experienced by a person bridging a distance of 1m with the feet without contacting any grounded object. (PE/SUB) 80-2000

step-voltage regulator (1) (power and distribution transformers) A regulating transformer in which the voltage of the regulated circuit is controlled in steps by means of taps and without interrupting the load. *Note:* Such units are generally 833 kVA (output) and below, single-phase; or 2500 kVA (output) and below, three-phase. (PE/TR) C57.12.80-1978r

(2) (transformer type) An induction device having one or more windings in shunt with, and excited from, the primary circuit, and having one or more windings in series between the primary circuit and the regulated circuit, all suitably adapted and arranged for the control of the voltage, or of the phase angle, or of both, of the regulated circuit in steps by means of taps without interrupting the load. (PE/TR) C57.15-1999

step-voltage test (rotating machinery) A controlled overvoltage test in which designated voltage increments are applied at designated times. Time increments may be constant or graded. *See also:* asynchronous machine; graded-time step-voltage test. (PE) [9]

step wedge* *See:* gray scale.

* Deprecated.

stepwise refinement A software development technique in which data and processing steps are defined broadly at first and then further defined with increasing detail. *See also:* transaction analysis; data structure-centered design; transform analysis; structured design; object-oriented design; modular decomposition; input-process-output. (C) 610.12-1990

steradian (1) (metric practice) The solid angle which, having its vertex in the center of a sphere, cuts off an area of the surface of the sphere equal to that of a square with sides of length equal to the radius of the sphere. (QUL) 268-1982s

(2) (laser maser) The unit of measure for a solid angle. There are 4π sr in a sphere. (LEO) 586-1980w

stereophonic (frequency modulation) (adjective) Pertains to audio information carried by a plurality of channels arranged to afford the listener a sense of the spatial distribution of the sound sources. *Note:* A stereophonic receiver responds to both the L + R main channel and the L − R subcarrier channel of a composite stereophonic signal, so that the one output contains substantially only L information, and the other only R. In addition to the main channel, stereophonic program modulation requires transmission of a 19 kHz pilot signal and the sidebands of a suppressed 38 kHz subcarrier carrying L − R information. This combination is called the composite signal, and it may be used alone or with other subcarrier (SCA) signals to frequency modulate the RF carrier. After pre-emphasis, the left and right channels are added for main

channel information. The right-channel program material is subtracted from the left to derive a difference signal that then amplitude modulates a 38 kHz subcarrier. The subcarrier is suppressed, divided by two, and transmitted as a 19 kHz pilot signal to facilitate demodulation of the suppressed carrier information at the receiver. (BT) 185-1975w

stereopsis The three-dimensional effect achieved by simultaneously viewing two two-dimensional images of the same object projected from slightly different viewpoints. *See also:* stereoscopic projection. (C) 610.6-1991w

stereoscopic projection The projection of two two-dimensional images onto a two-dimensional display by use of stereopsis. (C) 610.6-1991w

ST-506 interface A data-transfer interface used in many early personal computers with hard disk capacities less than 40MB; characterized by a 34-pin control cable, a 20-pin data cable and an modest data-transfer rate. (C) 610.10-1994w

stick A type of insulating tool used in various operations of live-line work *Synonyms:* work stick; hot stick; pole; work pole; live-line tool. (T&D/PE) 516-1995

stick circuit A circuit used to maintain a relay or similar unit energized through its own contact. (EEC/PE) [119]

stickiness The condition caused by physical interference with the rotation of the moving element. *See also:* moving element. (EEC/AII) [102]

sticking voltage (luminescent screen) The voltage applied to the electron beam below which the rate of secondary emission from the screen is less than unity. The screen then has a negative charge that repels the primary electrons. *See also:* cathode-ray tube. (ED) [45], [84]

stick operation Manual operation of a switching device by means of a switch stick. *Synonym:* hook operation. (SWG/PE) C37.100-1992

stick printer An element printer in which a stick moves from left to right, printing one character at a time. (C) 610.10-1994w

stiction (1) The force in excess of the coulomb friction required to start relative motion between two surfaces in contact. (IM) [120]

(2) (static friction) The total friction that opposes the start of relative motion between elements in contact. *See also:* feedback control system. (IA/ICTL/IAC) [60]

stiffness The ability of a system or element to resist deviations resulting from loading at the output. *See also:* feedback control system. (PE/IA/ICTL/EDPG/IAC) [3], [60]

stiffness coefficient The factor K (also called spring constant) in the differential equation for oscillatory motion $M\ddot{x} + B\dot{x} + Kx = 0$. (PE/EDPG) [3]

stilb (illuminating engineering) A centimeter-gram-second (CGS) unit of luminance. One stilb equals one candela per square centimeter. The use of this term is deprecated. (EEC/IE) [126]

Stiles-Crawford effect (illuminating engineering) The reduced luminous efficiency of rays entering the peripheral portion of the pupil of the eye. This effect applies only to cones and not to rod visual cells. Hence, there is no Stiles-Crawford effect in scotopic vision. (EEC/IE) [126]

stimulate To provide input to a system in order to observe or evaluate the system's response. (C) 610.3-1989w

stimulated emission (1) (fiber optics) Radiation emitted when the internal energy of a quantum mechanical system drops from an excited level to a lower level when induced by the presence of radiant energy at the same frequency. An example is the radiation from an injection laser diode above lasing threshold. *See also:* spontaneous emission. (Std100) 812-1984w

(2) (laser maser) The emission of radiation at a given frequency caused by an applied external radiation field of the same frequency. (LEO) 586-1980w

stimulus (1) Any change in signal that affects the controlled variable: for example, a disturbance or a change in reference input. (MIL/IA/ICTL/APP/IAC) [2], [69], [60]

(2) The logic states within a pattern that drives a circuit model in simulation, or a unit under test (UUT) on an automatic test equipment (ATE). (SCC20) 1445-1998

stimulus data The information associated with stimuli. (SCC20) 1226-1998

stipple To change the appearance of an object by covering it with a pattern or regularly spaced small dots, spaced sufficiently so that the underlying image or text is still recognizable to the user. Stippling is frequently used to denote an inaccessible, or busy, object. (C) 1295-1993w

stirring effect (induction heater usage) The circulation in a molten charge due to the combined forces of motor and pinch effects. *See also:* pinch effect; induction heating. (IA) 54-1955w, 169-1955w

stochastic (1) (computer modeling and simulation) Pertaining to a process, model, or variable whose outcome, result, or value depends on chance. *Contrast:* deterministic. (C) 610.3-1989w

(2) (mathematics of computing) Pertaining to variables that are probabilistic in nature. (C) 1084-1986w

stochastic model A model in which the results are determined by using one or more random variables to represent uncertainty about a process or in which a given input will produce an output according to some statistical distribution; for example, a model that estimates the total dollars spent at each of the checkout stations in a supermarket, based on probable number of customers and probable purchase amount of each customer. *Synonym:* probabilistic model. *Contrast:* deterministic model. *See also:* Markov chain model. (C) 610.3-1989w

stochastic routing A routing strategy in which the results of individual decisions vary according to the conditions in the network at decision time. (C) 610.7-1995

Stokes matrix *See:* Mueller matrix.

Stokes parameters Elements of the Stokes vector. *See also:* Stokes vector. (AP/PROP) 211-1997

Stokes vector A 4×1 vector of real numbers called the Stokes parameters, representing the polarization state of a propagating wave:

$$I = \begin{bmatrix} I_0 \\ Q \\ U \\ V \end{bmatrix} = \frac{1}{2\eta} \begin{bmatrix} |E_v|^2 + |E_h|^2 \\ |E_v|^2 - |E_h|^2 \\ 2\mathrm{Re}\{E_v E^*_h\} \\ 2\mathrm{Im}\{E_v E^*_h\} \end{bmatrix}$$

where

E_v is the vertical electric field component of the wave
E_h is the horizontal electric field component of the wave
η is the intrinsic impedance of the medium
* indicates the complex conjugate

(AP/PROP) 211-1997

stop (1) (limit stop) A mechanical or electric device used to limit the excursion of electromechanical equipment. *See also:* limiter circuits. (C) 165-1977w

(2) (software) To terminate the execution of a computer program. *Synonym:* halt. *Contrast:* pause. (C) 610.12-1990

stop band A band of frequencies that pass through a filter with a substantial amount of loss (relative to other frequency bands such as a pass band). (CAS) [13]

stop-band ripple The difference between maxima and minima of loss in a filter stop band. (CAS) [13]

stop bit (1) In asynchronous transmission, a bit that signals the end of a character. *Contrast:* start bit. (C) 610.7-1995

(2) For the low-speed version of the Physical layer, a bit that is encoded identically to a logic "1" that is used to delineate the end of each individual octet transmission. (EMB/MIB) 1073.4.1-2000

stop character A word processing control character that interrupts the sequence of output processing to provide the ability to make changes in the text formatting parameters, the text itself, the character font on the output device, or other items. *Synonym:* stop code. (C) 610.2-1987

stop code *See:* stop character.

stop dowel (rotating machinery) A pin fitted into a hole to limit motion of a second part. (PE) [9]

stop element (1) (data transmission) In a character transmitted in a start-stop system, the last element in each character, to which is assigned a minimum duration, during which the receiving equipment is returned to its rest condition in preparation for the reception of the next character. The stop element is a marking signal. (PE) 599-1985w
(2) *See also:* stop signal. (C) 610.7-1995

stop-go pulsing (telephone switching systems) A method of pulsing control wherein the pulsing operation may take place in stages, and the sending end is arranged to pulse the digits continuously unless or until the stop-pulsing signal is received. *Note:* When this occurs, the pulsing of the remaining digits is suspended until the sending end receives a start-pulsing signal. (COM) 312-1977w

stop instruction A computer instruction that specifies the termination of the execution of a computer program. *See also:* pause instruction. (C) 610.10-1994w

stop joint (power cable joints) A joint that is designed to prevent any transfer of dielectric fluid between the cables being joined. (PE/IC) 404-1986s

stop lamp (illuminating engineering) A lighting device giving a steady warning light to the rear of a vehicle or train of vehicles, to indicate the intention of the operator to diminish speed or to stop. (EEC/IE) [126]

stop list In automatic indexing, a list of terms, words, or roots of words that are considered insignificant for purposes of information retrieval, and are excluded from being keywords in an index. *Synonym:* stopword list. *Contrast:* go list. (C) 610.2-1987

stop-motion switch *See:* machine final-terminal stopping device.

stopping off The application of a resist to any part of a cathode or plating rack. *See also:* electroplating. (EEC/PE) [119]

stop-pulsing signal (telephone switching systems) A signal transmitted from the receiving end to the sending end of a trunk to indicate that the receiving end is not in a condition to receive pulsing. (COM) 312-1977w

stop-record signal (facsimile) A signal used for stopping the process of converting the electrical signal to an image on the record sheet. *See also:* facsimile signal. (COM) 168-1956w

stop signal (1) (facsimile) A signal that initiates the transfer of a facsimile equipment condition from active to standby. *See also:* facsimile signal. (COM) 168-1956w
(2) (data management) A signal at the end of a start-stop character that prepares the receiving device for the reception of a subsequent character. *Note:* A stop signal is usually limited to one signal element having any duration equal to or greater than a specified minimum value. (C) 610.5-1990w
(3) In asynchronous transmission, a signal following a character that prepares the receiving device for the reception of a subsequent character or block. *Synonym:* stop element. *Contrast:* start signal. (C) 610.7-1995

stop time *See:* deceleration time.

stop valve (1) (control systems for steam turbine-generator units) [throttle valve(s)] Those valve(s) that normally provide fast interruption of the main energy input to the turbine. Throttle valves are sometimes used for turbine control during start-up. *Note:* The term stop valve is defined as an open or closed valve. A throttle valve has some portion of its opening through which it can modulate flow. (PE/EDPG) 122-1985s
(2) (power system device function numbers) A control device used primarily to shut down an equipment and hold it out of operation. This device may be manually or electrically actuated, but excludes the function of electrical lockout on abnormal conditions. *See also:* lockout relay. (SUB/PE) C37.2-1979s

stopword list *See:* stop list.

storable swimming or wading pool A pool with a maximum dimension of 15 ft and a maximum wall height of 3 ft and is so constructed that it may be readily disassembled for storage and reassembled to its original integrity. (NESC/NEC) [86]

storage (1) (A) (electronic computation) The act of storing information. **(B) (electronic computation)** Any device in which information can be stored, sometimes called a memory device. **(C) (electronic computation)** In a computer, a section used primarily for storing information. Such a section is sometimes called a memory or store (British). *Notes:* 1. The physical means of storing information may be electrostatic, ferroelectric, magnetic, acoustic, optical, chemical, electronic, electric, mechanical, etc., in nature. 2. Pertaining to a device in which data can be entered, in which it can be held, and from which it can be retrieved at a later time. *See also:* store. (MIL/C) [2], [85], [20]
(2) (data management) In a computer, one or more bytes that are used to store data. (C) 610.5-1990w
(3) (A) The retention of data in a storage device. **(B)** The action of placing data into a storage device. **(C)** A storage device. **(D)** Any medium in which data can be retained. (C) 610.10-1994

storage access *See:* access.

storage allocation (1) (computers) The assignment of sequences of data or instructions to specified blocks of storage. (C) [20], [85]
(2) (software) An element of computer resource allocation, consisting of assigning storage areas to specific jobs and performing related procedures, such as transfer of data between main and auxiliary storage, to support the assignments made. *See also:* paging; buffer; contiguous allocation; cyclic search; virtual storage; overlay; memory compaction. (C) 610.12-1990

storage assembly (storage tubes) An assembly of electrodes (including meshes) that contains the target together with electrodes used for control of the storage process, those that receive an output signal, and other members used for structural support. *See also:* storage tube. (ED) 158-1962w

storage battery A battery comprised of one or more rechargeable cells of the lead-acid, nickel-cadmium, or other rechargeable electrochemical types. (NESC/NEC) [86]

storage breakpoint *See:* data breakpoint.

storage capacitor A low leakage capacitor on which a data value can be stored. (C) 610.10-1994w

storage capacity (1) The amount of data that can be contained in a storage device. *Notes:* 1. The units of capacity are bits, characters, words, etc. For example, capacity might be "32 bits," "10 000 decimal digits," "16 384 words with 10 alphanumeric characters each." 2. When comparisons are made among devices using different character sets and word lengths, it may be convenient to express the capacity in equivalent bits, which is the number obtained by taking the logarithm to the base 2 of the number of usable distinguishable states in which the storage can exist. 3. The storage (or memory) capacity of a computer usually refers only to the internal storage section. (C) 162-1963w
(2) (software) The maximum number of items that can be held in a given storage device; usually measured in words or bytes. (C) 610.12-1990
(3) The amount of data that can be contained in a storage device measured in binary characters, bytes, words, or other units of data. (C) 610.10-1994w
(4) The amount of data that can be contained in a storage device. (ED) 1005-1998

storage cell (1) (electric energy) (secondary cell or accumulator) A galvanic cell for the generation of electric energy in which the cell, after being discharged, may be restored to a fully charged condition by an electric current flowing in a direction opposite to the flow of current when the cell discharges. (EEC/PE) [119]

(2) **(A)** One or more storage elements considered as a unit. **(B)** The smallest subdivision of storage into which a unit of data can be placed, retained, and with which the unit can be retrieved. *Synonym:* data cell. *See also:* binary cell; magnetic cell. (C) 610.10-1994

(3) An elementary unit of storage (e.g., a binary cell or a decimal cell). (ED/C) 1005-1998, [85], [20]

storage channel A channel that can be used to access a storage device. (C) 610.10-1994w

storage device (1) A device in which data can be stored and from which it can be copied at a later time. The means of storing data may be chemical, electrical, mechanical, etc. *See also:* storage. (C) 162-1963w

(2) A device into which data can be placed, in which they can be retained, and from which they can be retrieved. *See also:* store. (C) 610.10-1994w

storage display *See:* storage tube display device.

storage efficiency The degree to which a system or component performs its designated functions with minimum consumption of available storage. *See also:* execution efficiency. (C) 610.12-1990

storage element (1) (storage tubes) An area of a storage surface that retains information distinguishable from that of adjacent areas. *Note:* The storage element may be a portion of a continuous storage surface or a discrete area such as a dielectric island. *See also:* storage tube. (ED) 158-1962w, 161-1971w

(2) The basic unit of a storage device, such as a sector, or a track. (C) 610.10-1994w

storage-element equilibrium voltage (storage tubes) A limiting voltage toward which a storage element charges under the action of primary electron bombardment and secondary emission. At equilibrium voltage the escape ratio is unity. *Note:* Cathode equilibrium voltage, second-crossover equilibrium voltage, and gradient-established equilibrium voltage are typical examples. *See also:* charge-storage tube. (ED) 158-1962w

storage-element equilibrium voltage, cathode (storage tubes) The storage element equilibrium voltage near cathode voltage and below first-crossover voltage. *See also:* charge-storage tube. (ED) 158-1962w

storage-element equilibrium voltage, collector *See:* charge-storage tube.

storage-element equilibrium voltage, gradient established (storage tubes) The storage-element equilibrium voltage, between first- and second-crossover voltages, at which the escape ratio is unity. *See also:* charge-storage tube. (ED) 158-1962w

storage-element equilibrium voltage, second-crossover (storage tubes) The storage-element equilibrium voltage at the second-crossover voltage. *See also:* charge-storage tube. (ED) 158-1962w

storage error An error in which the data retrieved from storage is different from that which was originally stored in that location. *See also:* soft error; hard error; transient error. (C) 610.10-1994w

storageid (microprocessor operating systems parameter types) An identifier for a block of data. The identifier is not guaranteed to be valid outside the allocating process and should not be passed between processes. (C/MM) 855-1985s

storage integrator In an analog computer, a device used to store a voltage in the hold condition for future use. *See also:* electronic analog computer. (C) 610.10-1994w, 165-1977w

storage life (accelerometer) (gyros) (inertial sensors) The nonoperating time interval under specified conditions, after which a device will still exhibit a specified operating life and performance. *See also:* operating life. (AES/GYAC) 528-1994

storage light A light found on a storage device indicating that a parity check error has occurred on a character as it was read into storage. (C) 610.10-1994w

storage light-amplifier *See:* image-storage panel.

storage location (1) An area in a storage device that can be explicitly and uniquely specified by means of an address. (C) 610.5-1990w

(2) A location in a storage device that is uniquely specified by means of an address. (C) 610.10-1994w

storage medium Any device or recording medium into which data can be stored and held until some later time, and from which the entire original data can be obtained. (IA) [61]

storage protection (computers) An arrangement for preventing access to storage for either reading or writing, or both. (C) [20]

storage rate The frequency with which sampled signals are recorded in crashworthy nonvolatile memory. The event recorder may store any signal less often than it samples. (VT) 1482.1-1999

storage, reservoir *See:* reservoir storage.

storage schema In a CODASYL database, statements expressed in data storage definition language that describe storage areas, stored records, and any associated indices and access paths supporting the records and sets defined by a given schema. *See also:* CODASYL database. (C) 610.5-1990w

storage stack *See:* stack.

storage station (power operations) A hydroelectric generating station associated with a water storage reservoir. (PE/PSE) 858-1987s, 346-1973w

storage structure (A) The manner in which data structures are represented in storage. **(B)** The configuration of a database resident on computer storage devices after mapping the data elements of the logical structure of the database onto their respective physical counterparts. *Note:* The relationships and associations that provide the physical means for accessing the information stored in the database are preserved. (C) 610.5-1990

storage surface (storage tubes) The surface upon which information is stored. *See also:* storage tube. (ED) 158-1962w

storage temperature (1) (power supply) The range of environmental temperatures in which a power supply can be safely stored (for example, −40°C to +85°C). (AES/IA) [41], [12]

(2) (light-emitting diodes) The temperature at which the device, without any power applied, is stored. (ED) [127]

storage temperature range The range of temperatures over which the Hall generators may be stored without any voltage applied, or without exceeding a specified change in performance. (MAG) 296-1969w

storage time *See:* decay time; maximum retention time.

storage tube An electron tube into which information can be introduced and read at a later time. *Note:* The output may be an electric signal and.or a visible image corresponding to the stored information. (ED) 161-1971w, 158-1962w

storage tube display device A type of cathode ray tube display device that retains a display image on its surface in the form of a pattern of electric charges. *Synonyms:* storage display; display storage tube; direct-view storage tube. *Contrast:* refresh display device. (C) 610.10-1994w

storage unit The length of an addressable element of storage in the machine, measured in bits. (Every storage element has the same size.). *Note:* The storage unit is very likely to be one byte, but this is not a requirement. For example, it might be 32 or 64 bits. (C) 1003.5-1999

store (A) A device into which data can be placed, in which they can be retained, and from which they can be retrieved. *Note:* This term is the equivalent of the term storage in British (U.K.) usage. **(B)** To place data into a device as in definition (A). **(C)** To retain data in a device as in definition (A). (C) 162-1963, 610.10-1994

(2) **(A)** To place or retain data in a storage device. **(B) (software) (data management)** To copy computer instructions or data from a register to internal storage or from internal storage to external storage. *Contrast:* retrieve; load. *See also:* move; fetch. (C) 610.12-1990, 610.5-1990

store-and-forward Pertaining to communications where a message is received completely before beginning transmission onto the next node. (C) 610.7-1995

store-and-forward buffer (local area networks) A first-in-first-out (FIFO) buffer in the network repeater that can provide temporary storage for an entire message packet prior to retransmission. The buffer acts as a shift register and must hold an entire, full-length packet. *See also:* elasticity buffer. (C) 8802-12-1998

store-and-forward switched network A switched network in which the store-and-forward principle is used to handle transmissions between the sender and the recipient. (C) 610.7-1995

store-and-forward switching A method of switching whereby messages are transferred directly or with interim storage, each in accordance with its own address. *See also:* packet switching. (LM/COM) 168-1956w

store-and-forward switching system (telephone switching systems) A switching system for the transfer of messages, each with its own address or addresses, in which the message can be stored for subsequent transmission. (COM) 312-1977w

stored-energy indicator An indicator that visibly shows that the stored-energy mechanism is in the charged or discharged position. (SWG/PE) C37.100-1992

stored-energy operation Operation by means of energy stored in the mechanism itself prior to the completion of the operation and sufficient to complete it under predetermined conditions. *Note:* This kind of operation may be subdivided according to: (1) how the energy is stored (spring, weight, etc.), (2) how the energy originates (manual, electric, etc.), and (3) how the energy is released (manual, electric, etc.). (SWG/PE/IA/PSP) C37.100-1992, 1015-1997

stored logic (telephone switching systems) Instructions in memory arranged to direct the performance of predetermined functions in response to readout. (COM) 312-1977w

stored paragraph *See:* boilerplate text.

stored program (telephone switching systems) A program in memory that a processor can execute. (COM) 312-1977w

stored-program computer (1) A digital computer that, under control of internally stored instructions, can synthesize, alter, and store instructions as though they were data and can subsequently execute these new instructions. (C) [20], [85]
(2) A computer that is controlled by internally stored instructions that are treated as though they were data, and that can subsequently be executed. (C) 610.10-1994w

stored program control (telephone switching systems) A system control using stored logic. (COM) 312-1977w

stored record *See:* internal record.

stored-program switching system (telephone switching systems) An automatic switching system having stored program control. (COM) 312-1977w

storm guys Anchor guys, usually placed at right angles to direction of line, to provide strength to withstand transverse loading due to wind. *See also:* tower. (T&D/PE) [10]

storm loading The mechanical loading imposed upon the components of a pole line by the elements, that is, wind and/or ice, combined with the weight of the components of the line. *Note:* The United States has been divided into three loading districts, light, medium, and heavy, for which the amounts of wind and.or ice have been arbitrarily defined. *See also:* cable. (EEC/PE) [119]

STP (local area networks) A 150 Ω shielded balanced cable meeting the specifications in ISO/IEC 11801:1995. (C) 8802-12-1998

STR *See:* spanning tree route.

straggling, energy *See:* energy straggling.

straight air brake An arrangement of brakes whereby air is admitted from the main reservoir through a brake valve to the straight air pipe to the brake cylinders in the operating unit. *Note:* In most rail transit vehicle applications, an electropneumatic overlay is utilized to assist in the straight air brake command transmission. (VT) 1475-1999

straight air pipe A method of transmitting a pneumatic command from the active cab to the straight air brake equipment on each vehicle in the operating unit. (VT) 1475-1999

straightaway A one-way measurement requiring no path or connection in the opposite direction. (COM/TA) 743-1995

straight binary *See:* binary.

straight condensing turbine (control systems for steam turbine-generator units) All the steam enters the turbine at one pressure and all the steam leaves the turbine exhaust at a pressure below atmospheric pressure. (PE/EDPG) 122-1985s

straight-cut control system (numerically controlled machines) A system in which the controlled cutting action occurs only along a path parallel to linear, circular, or other machine ways. (IA) [61]

straightforward trunking (manual telephone switchboard system) That method of operation in which the A operator gives the order to the B operator over the trunk on which talking later takes place. (PE/EEC) [119]

straight insertion sort *See:* insertion sort.

straight joint (power cable joints) A cable joint used for connecting two lengths of cable, each of which consists of one or more conductors. (PE/IC) 404-1986s

straight-line code A sequence of computer instructions in which there are no loops. (C) 610.12-1990

straight-line coding (1) (computers) Coding in which loops are avoided by the repetition of parts of the coding when required. (C) [20], [85]
(2) (software) A programming technique in which loops are avoided by stating explicitly and in full all of the instructions that would be involved in the execution of each loop. *See also:* unwind. (C) 610.12-1990

straight line sort *See:* linear sort.

straight noncondensing turbine (control systems for steam turbine-generator units) All the steam enters the turbine at one pressure and all the steam leaves the turbine exhaust at a pressure equal to or greater than atmospheric pressure. (PE/EDPG) 122-1985s

straight radix sort A radix sort in which items are sorted repeatedly on successive digits within the numeric representation of the sort key, starting with the least significant digit. (C) 610.5-1990w

straight-seated bearing (rotating machinery) (cylindrical bearing) A journal bearing in which the bearing liner is constrained about a fixed axis determined by the supporting structure. *See also:* bearing. (PE) [9]

straight selection sort *See:* selection sort.

straight storage system (electric power supply) A system in which the electrical requirements of a car are supplied solely from a storage battery carried on the car. *See also:* axle-generator system. (PE/EEC) [119]

straight two-way merge sort A variation of the natural two-way merge sort in which the set to be sorted is repeatedly divided into two ordered subsets of length 2 to the power of k, where k is the number of passes made so far. *Contrast:* natural two-way merge sort. (C) 610.5-1990w

strain attachment *See:* dead-end.

strain-bus structure A bus structure comprised of flexible conductors supported by strain insulators. (PE/SUB) 605-1998

strain element (of a fuse) That part of the current-responsive element that is connected in parallel with the fusible element in order to relieve it of tensile strain. *Note:* The fusible element melts and severs first, and then the strain element melts

during circuit interruption. *Synonym:* strain wire. (SWG/PE/SWG-OLD) C37.40-1993, C37.100-1992

strain insulator An insulator generally of elongated shape, with two transverse holes or slots. (EEC/IEPL) [89]

strain stick An insulating support tool used primarily to relieve mechanical loading at suspension and dead-end configurations so as to replace damaged insulators or hardware. (T&D/PE) 516-1995

strain wire *See:* strain element.

STRAND A concurrent logic programming language. (C) 610.13-1993w

strand (A) One of the wires, or groups of wires, of any stranded conductor. **(B)** One of a number of paralleled uninsulated conducting elements of a conductor which is stranded to provide flexibility in assembly or in operation. **(C)** One of a number of paralleled insulated conducting elements that constitute one turn of a coil in rotating machinery. The strands are usually separated electrically through all the turns of a multi-turn coil. Various types of transposition are commonly employed to reduce the circulation of current among the strands. A strand has a solid cross section, or it may be hollow to permit the flow of cooling fluid in intimate contact with the conductor (one form of "conductor cooling"). *See also:* rotor; conductor; stator. (PE) [9]

stranded conductor A conductor composed of a group of wires or of any combination of groups of wires. *Note:* The wires in a stranded conductor are usually twisted or braided together. *See also:* conductor. (T&D/PE) [10]

stranded wire *See:* stranded conductor.

strand insulation (rotating machinery) The insulation on a strand or lamination or between adjacent strands or laminations that comprise a conductor. (PE) [9]

strand restraining clamp An adjustable circular clamp commonly used to keep the individual strands of a conductor in place and to prevent them from spreading when the conductor is cut. *Synonyms:* plier clamp; vise grip; hose clamp. (T&D/PE) 524-1992r

strand-to-strand test (rotating machinery) A test that is designed to apply a voltage of specified amplitude and waveform between the strands of a coil for the purpose of determining the integrity of the strand insulation. (PE) [9]

strap, anode *See:* anode strap.

strapdown (accelerometer) (gyros) Direct-mounting of inertial sensors (without gimbals) to a vehicle to sense the linear and angular motion of the vehicle. (AES/GYAC) 528-1994

strapdown inertial navigation equipment (navigation aid terms) Inertial navigation equipment wherein the inertial sensors, (for example, gyros and accelerometers) are directly mounted to the vehicle, (eliminating the stable platform and gimbal system) to sense the linear and angular motion of the vehicle. *Notes:* 1. In this equipment, a computer utilizes gyro information to resolve the accelerations that are sensed along the carrier axes, and to refer these accelerations to an inertial frame of reference. Navigation is then accomplished in the same manner as in systems using a stable platform. 2. Also called strapped down. (AES/GCS) 172-1983w

strap key A pushbutton circuit controller that is biased by a spring metal strip and is used for opening or closing a circuit momentarily. (EEC/PE) [119]

strapping *See:* jumper; anode strap.

stratified language A language that cannot be used as its own metalanguage. Examples include FORTRAN, COBOL. *Contrast:* unstratified language. (C) 610.12-1990, 610.13-1993w

stratopause The upper boundary of the stratosphere. (AP/PROP) 211-1997

stratosphere That part of the Earth's atmosphere located above the troposphere in which the temperature remains constant or increases slightly with increasing height. The stratosphere extends to a height of around 50 km. (AP/PROP) 211-1997

straw line *See:* pilot line.

stray An element or occurrence usually not desired in a theoretical design, but unavoidable in a practical realization. For example, the relative proximity of wires can cause stray capacitance. *See also:* parasitic element. (CAS) [13]

stray capacitance (electric circuits) Capacitance arising from proximity of component parts, wires, and ground. *Note:* It is undesirable in most circuits, although in some high-frequency applications it is used as the tuning capacitance. In bridges and other measuring equipment, its effect must be eliminated by preliminary balancing out, or known and included in the results of any measurement performed. *See also:* measurement system. (IM/HFIM) [40]

stray current Currents or components that do not constitute information desired for measurement. Examples are currents due to the stray capacitance of an object to the ground plane, walls, etc. (T&D/PE) 516-1995

stray-current corrosion Corrosion caused by current through paths other than the intended circuit or by an extraneous current in the earth. *See also:* long-line current; noble potential; sacrificial protection; cathodic corrosion. (IA) [59]

stray light (illuminating engineering) (in the eye) Light from a source which is scattered onto parts of the retina lying outside the retinal image of the source. (EEC/IE) [126]

stray load loss (synchronous machines) The losses due to eddy currents in copper and additional core losses in the iron, produced by distortion of the magnetic flux by the load current, not including that portion of the core loss associated with the resistance drop. (PE) [9], [84]

stray losses (electronic power transformer) Those occurring in the core and case structure that result from the leakage flux of a transformer when supplying rated load current. (PEL/ET) 295-1969r

strays† Electromagnetic disturbances in radio reception other than those produced by radio transmitting systems. *See also:* radio transmitter. (EEC/PE) [119]

† Obsolete.

stream (1) An ordered sequence of characters, as described by the C Standard. (C/PA) 9945-2-1993
(2) The Physical Layer (PHY) encapsulation of a Media Access Control (MAC) frame. Depending on the particular PHY, the MAC frame may be modified or have information appended or prepended to it to facilitate transfer through the Physical Medium Attachment (PMA). Any conversion from a MAC frame to a PHY stream and back to a MAC frame is transparent to the MAC. (C/LM) 802.3-1998

streamer *See:* streamer mode.

streamer mode A repetitive corona discharge characterized by luminous filaments extending into the low electric field strength region near either a positive or a negative electrode, but not completely bridging the gap. (T&D/PE) 539-1990

stream flow The quantity rate of water passing a given point. *See also:* generating station. (T&D/PE) [10]

streaming (audio and electroacoustics) Unidirectional flow currents in a fluid that are due to the presence of acoustic waves. (SP) [32]

streaming cassette A magnetic tape cassette for a streaming tape drive. (C) 610.10-1994w

streaming potential (electrobiology) The electrokinetic potential gradient resulting from unit velocity of liquid forced to flow through a porous structure or past an interface. *See also:* electrobiology. (EMB) [47]

streaming tape drive A tape drive that does not come to a stop at each interrecord gap; rather the tape moves continuously past the read/write heads. *Note:* This type of tape drive is particularly appropriate for performing nonstop dumps or for restoring magnetic disks. *Synonym:* streamer. *Contrast:* start-stop tape drive. (C) 610.10-1994w

streetlighting luminaire (illuminating engineering) A complete lighting device consisting of a light source together with its direct appurtenances such as globe, reflector, refractor, housing, and such support as is integral with the housing. The pole, post, or bracket is not considered part of the luminaire. *Note:* Modern streetlighting luminaires contain the ballasts for high intensity discharge lamps where they are used. (EEC/IE) [126]

streetlighting unit (illuminating engineering) The assembly of a pole or lamp post with a bracket and a luminaire. (EEC/IE) [126]

strength-duration curve (medical electronics) (time-intensity) A graph of the intensity curve of applied electrical stimuli as a function of the duration just needed to elicit response in an excitable tissue. (EMB) [47]

strength of a sound source (strength of a simple source) The maximum instantaneous rate of volume displacement produced by the source when emitting a wave with sinusoidal time variation. *Note:* The term is properly applicable only to sources of dimension small with respect to the wavelength. (SP) [32]

strength-reduction factor *See:* resistance-reduction factor.

strength test A test to ensure that components of the fall protection system will not fail when subjected to a 22.2 kN (5000 pound) force per worker or to the design load of an engineered system. (T&D/PE) 1307-1996

STRESS *See:* STRuctural Engineering Systems Solver.

stress The nonspecific response of an organism to any demand upon it, whether pleasant or unpleasant, that results in certain biochemical changes. In popular usage, the harmful connotation is often assumed; i.e., excessive stress or distress. (T&D/PE) 539-1990

stress-accelerated corrosion Corrosion that is accelerated by stress. (IA) [59]

stress analysis (Class 1E battery chargers and inverters) An electrical and thermal design analysis of component applications in specific circuits under the specified range of service conditions. (PE/NP) 650-1979s

stress control coating The paint or tape on the outside of the groundwall insulation which extends several centimeters beyond the semiconductive slot coating in high voltage stator bars and coils. The stress control coating often contains silicon carbide particles which tend to linearize the electric field distribution along the coil or bar endturn. The stress control coating overlaps the semiconductive slot coating to provide electrical contact between them. (DEI) 1043-1996

stress corrosion cracking Spontaneous cracking produced by the combined action of corrosion and static stress (residual or applied). (IA) [59]

stressor An agent or stimulus that stems from fabrication or preservice and service conditions and can produce immediate degradation or aging degradation of a system, structure, or component. (PE/NP) 1205-1993

stress relief A predetermined amount of slack to relieve tension in component or lead wires. (EEC/AWM) [105]

stress test (Class 1E battery chargers and inverters) A type test performed on a sample equipment which "stresses" the equipment to the specified range of service conditions. (PE/NP) 650-1979s

stress testing Testing conducted to evaluate a system or component at or beyond the limits of its specified requirements. *See also:* boundary value. (C) 610.12-1990

strike deposit (A) (electroplating) A thin film of deposited metal to be followed by other coatings. *See also:* electroplating. **(B) (electroplating)** (bath) An electrolyte used to deposit a thin initial film of metal. *See also:* electroplating. (EEC/PE) [119]

striking (1) (arc) (spark) (gas) The process of establishing an arc or a spark. *See also:* discharge. (ED) [45], [84]

(2) (electroplating) The electrode position of a thin initial film of metal, usually at a high current density. *See also:* electroplating. (EEC/PE) [119]

striking current (gas tube) The starter-gap current required to initiate conduction across the main gap for a specified anode voltage. (ED) [45], [84]

striking distance (1) The shortest distance, measured through air, between parts of different polarities. (SWG/PE) C37.100-1992, [56]

(2) The shortest unobstructed distance measured through a dielectric medium such as liquid, gas, or vacuum between parts of different electric potential. (PE/TR) C57.12.80-1978r

(3) (outdoor apparatus bushings) The shortest tight string distance measured externally over the weather casing between the metal parts which have the operating line to ground voltage between them. (PE/TR) 21-1976

(4) The length of the final jump of the stepped leader as its potential exceeds the breakdown resistance of this last gap; found to be related to the amplitude of the first return stroke. (SUB/PE) 998-1996

String The IEEE 1451.1 representation of a sequence of human readable characters. (IM/ST) 1451.1-1999

string (1) (microprocessor operating systems parameter types) A sequence of characters. (C/MM) 855-1985s

(2) (software) A linear sequence of entities such as characters or physical elements. (C/SE) 729-1983s

(3) (A) (data management) A sequence of bits, characters, or other entities; for example, the bit string 0101010 or the character string XYZ. **(B) (data management)** Pertaining to data that contains a sequence as in definition (A). *Contrast:* arithmetic. *See also:* character string; bit string. (C) 610.5-1990

(4) An ordered sequence of zero or more bits, octets, or characters, accompanied by the length of the string. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

(5) (of capacitors) Capacitors connected in series between the line terminals.power systems relaying. (PE) C37.99-2000

string device (1) A logical input device used to provide a character string to a graphics system. (C) 610.6-1991w

(2) An input device that is used to specify or detect a character string. For example, an alphanumeric keyboard. (C) 610.10-1994w

stringing (conductor stringing equipment) The pulling of pilot lines, pulling lines, and conductors over travelers supported on structures of overhead transmission lines. Quite often, the entire job of stringing conductors is referred to as stringing operations, beginning with the planning phase and terminating after the conductors have been installed in the suspension clamps. (T&D/PE) 524a-1993r, 1048-1990, 524-1992r

stringing block *See:* traveler.

stringing section *See:* sag section.

stringing sheave *See:* traveler.

stringing, slack *See:* slack stringing.

stringing traveler *See:* traveler.

stringing, tension *See:* tension stringing.

StriNg-Oriented symBOlic Language (SNOBOL) A programming language designed for use in string manipulation tasks such as language translation, program compilation and combinatorial problems. (C) 610.13-1993w

string-shadow instrument An instrument in which the indicating means is the shadow (projected or viewed through an optical system) of a filamentary conductor, the position of which in a magnetic or an electric field depends upon the measured quantity. *See also:* instrument. (EEC/PE) [119]

strip (1) (electroplating) A solution used for the removal of a metal coating from the base metal. *See also:* electroplating. (EEC/PE) [119]

(2) To replace a received nonidle symbol by an idle symbol and hence to remove it from transmission on a ringlet. For example, a send packet is stripped by the receiving port of an agent or the target and replaced by idles (most of which may be consumed in the process of emptying the bypass FIFO) and an echo. Similarly an echo is stripped by the receiving port of an agent or the source and replaced by idles. (C/MM) 1596-1992

strip-chart recorder (analog computer) (hybrid computer linkage components) A recorder in which one or more records are made simultaneously as a function of time. *See also:* electronic analog computer. (C) 165-1977w, 166-1977w

stripe-to-gap ratio The ratio of the metallized surface to the free surface within the interdigital transducer. (UFFC) 1037-1992w

stripline A class of planar transmission line characterized by one or more thin conducting strips of finite width parallel to and approximately midway between two extended conducting ground planes. The space between the strips and the ground planes is filled by a homogeneous insulating medium. (MTT) 1004-1987w

strip line (waveguide) A transmission line consisting of a strip conductor above or between extended parallel conducting surfaces. Some common examples of such transmission lines are:

a) Partially-shielded strip transmission line: a strip conductor above a single ground plane;
b) Shielded strip transmission line: a strip conductor between two ground planes.

See also: slab line. (MTT) 146-1980w

stripper tank (electrorefining) An electrolytic cell in which the cathode deposit, for the production of starting sheets, is plated on starting-sheet blanks. *See also:* electrorefining. (EEC/PE) [119]

stripping (1) (electroplating) (mechanical) The removal of a metal coating by mechanical means. (PE/EEC) [119]
(2) (chemical) The removal of a metal coating by dissolving it. (EEC/PE) [119]
(3) (electrolytic) The removal of a metal coating by dissolving it or an underlying coating anodically with the aid of a current. *See also:* electroplating. (EEC/PE) [119]
(4) The action of a station removing the frames it has transmitted from the ring. (C/LM) 8802-5-1998

stripping compound (electrometallurgy) Any suitable material for coating a cathode surface so that the metal electro deposited on the surface can be conveniently stripped off in sheets. *See also:* electrowinning. (EEC/PE) [119]

strip terminals (rotating machinery) A form of terminal in which the ends of the machine winding are brought out to terminal strips mounted integral with the machine frame or assembly. (PE) [9]

strip-type transmission line (waveguides) A transmission line consisting of a conductor above or between extended conducting surfaces. *See also:* unshielded strip transmission line; shielded strip transmission line. (AP/ANT) [35]

strobe (1) (A) A pulse used to cause a register to assume and retain the state indicated by its data inputs. **(B)** A pulse used as an input to a trigger circuit. (C) 610.10-1994
(2) To record or measure the state of a particular node at an instant in time. Strobing will have a skew associated with it. (SCC20) 1445-1998

strobing (pulse terminology) A process in which a first pulse of relatively short duration interacts with a second pulse or other event of relatively longer duration to yield a signal which is indicative (typically, proportional to) the magnitude of the second pulse during the first pulse. (IM/WM&A) 194-1977w

stroboscopic lamp (illuminating engineering) A flashtube designed for repetitive flashing. (EEC/IE) [126]

stroboscopic tube A gas tube designed for the periodic production of short light flashes. *See also:* gas tube. (ED/C) [45], [85]

stroke (1) (cable plowing) Peak to peak displacement of the plow blade tip. (T&D/PE) 590-1977w
(2) In character recognition, a straight line or arc used as a segment of a graphic character. (C) 610.2-1987
(3) A straight line or arc that is a segment of a graphic character. *See also:* keystroke. (C) 610.10-1994w, 610.6-1991w

stroke centerline In character recognition, a line midway between two stroke edges. (C) 610.2-1987

stroke character generator A character generator that creates characters composed of line segments. *Contrast:* matrix character generator. (C) 610.6-1991w

stroke device (1) A logical input device used to provide a sequence of data points as the input data to a graphics system. (C) 610.6-1991w
(2) An input device that provides a set of coordinates that record the path of the device. (C) 610.10-1994w

stroke edge In character recognition, the line of discontinuity between a side of a stroke and the background, obtained by averaging, over the length of the stroke, the irregularities resulting from the printing and detecting process. (C) 610.2-1987

stroke font *See:* vector font.

stroker display *See:* random-scan display device.

stroke speed (facsimile) (scanning or recording line frequency) The number of times per minute, unless otherwise stated, that fixed line perpendicular to the direction of scanning is crossed in one direction by a scanning or recording spot. *Note:* In most conventional mechanical systems this is equivalent to drum speed. In systems in which the picture signal is used while scanning in both directions, the stroke speed is twice the above figure. *See also:* scanning; recording. (COM) 168-1956w

stroke width (1) The thickness of the lines that make up a character, usually expressed as a proportion of the character's height. (PE/NP) 1289-1998
(2) In character recognition, the distance between two stroke edges, measured perpendicular to the stroke centerline. (VT) 1477-1998

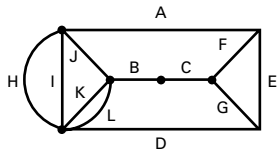
strong sequential consistency A state exhibited by a system when each participating cache in the system observes all modifications to lines within itself in the same order as all other participating caches in the system. *Note:* Futurebus+ allows modules to issue transactions that dynamically choose between following a weakly consistent behavior model (which implies greater concurrency and hence higher performance) and strongly consistent behavior models (which may be necessary to ensure correct operation of an algorithm written by a programmer not cognizant of the concurrency possible in different parts of a system). *See also:* weak sequential consistency. (C/BA) 10857-1994

strong typing (software) A feature of some programming languages that requires the type of each data item to be declared, precludes the application of operators to inappropriate data types, and prevents the interaction of data items of incompatible types. (C) 610.12-1990

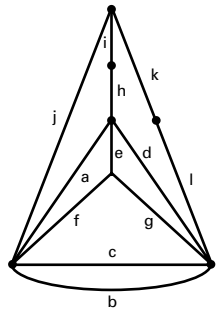
STRUctural Design language An extension of STRESS, used for analysis and design of structures. (C) 610.13-1993w

STRuctural Engineering Systems Solver (STRESS) A problem-oriented programming language used in structural engineering. *See also:* ICES. (C) 610.13-1993w

structurally dual networks A pair of networks such that their branches can be marked in one-to-one correspondence so that any mesh of one corresponds to a cut-set of the other. Each network of such a pair is said to be the dual of the other. *See also:* network analysis.



(A)



(B)

structurally dual networks

(Std100) 270-1966w

structurally symmetrical network A network that can be arranged so that a cut through the network produces two parts that are mirror images of each other. *See also:* network analysis. (Std100) 270-1966w

structural model A model of the physical or logical structure of a system; for example, a model that represents a computer network as a set of boxes connected by communication lines. *Contrast:* process model. (C) 610.3-1989w

structural pattern recognition An approach to pattern recognition in which patterns are represented in terms of primitives and relationships among those primitives in order to describe and classify pattern structure. *See also:* syntactic pattern recognition. (C) 610.4-1990w

structural resolution (color picture tubes) The resolution as limited by the size and shape of the screen elements. *See also:* television. (BT/AV) [34]

structural return loss A term used to describe the structural integrity of the coaxial cable. Structural return loss defines impedance variation due to deformed coaxial cable concentricity. (LM/C) 802.7-1989r

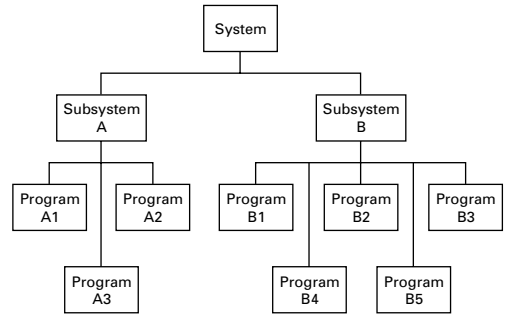
structural testing Testing that takes into account the internal mechanism of a system or component. Types include branch testing, path testing, statement testing. *Synonyms:* glass-box testing; white-box testing. *Contrast:* functional testing. (C) 610.12-1990

structural vector A pattern generated to exercise a device's structural elements (e.g., scan-based ATPG test generation). *Contrast:* functional vector. (C/TT) 1450-1999

structure Material assembled to support conductors or associated apparatus, or both, used for transmission and distribution of electricity (e.g., service pole, tower). (T&D/PE) 516-1995

structure base ground (conductor stringing equipment) A portable device designed to connect (bond) a metal structure to an electrical ground. Primarily used to provide safety for personnel during construction, reconstruction or maintenance operations. *Synonyms:* ground chain; butt ground. (PE/T&D) 524a-1993r, 524-1992r, 1048-1990

structure chart A diagram that identifies modules, activities, or other entities in a system or computer program and shows how larger or more general entities break down into smaller, more specific entities. *Note:* The result is not necessarily the same as that shown in a call graph. *Synonym:* hierarchy chart. *Contrast:* call graph.



structure chart

(C) 610.12-1990

structure clash In software design, a situation in which a module must deal with two or more data sets that have incompatible data structures. *See also:* order clash; data structure-centered design. (C) 610.12-1990

structure conflict A line so situated with respect to a second line that the overturning of the first line will result in contact between its supporting structures or conductors and the conductors of the second line, assuming that no conductors are broken in either line. (NESC/T&D) C2-1997, C2.2-1960

structure constant (C^2_n) A measure of the turbulent fluctuations of the refractive index of the atmosphere. (AP/PROP) 211-1997

structure, crossing *See:* crossing structure.

structured A postal O/R address that specifies the postal address of a user by means of several attributes. Its structure is prescribed in some detail. (C/PA) 1224.1-1993w

structured design (A) (software) Any disciplined approach to software design that adheres to specified rules based on principles such as modularity, top-down design, and stepwise refinement of data, system structures, and processing steps. *See also:* object-oriented design; input-process-output; transform analysis; modular decomposition; stepwise refinement; rapid prototyping; transaction analysis; data structure-centered design. **(B) (software)** The result of applying the approach in definition (A). (C) 610.12-1990

structure designer A party who designs the structure based on criteria given by a line designer. The structure designer could be an owner, an agent acting for the owner, or a manufacturer or fabricator. (T&D/PE) 1025-1993r, 951-1996

structured program (software) A computer program constructed of a basic set of control structures, each having one entry and one exit. The set of control structures typically includes: sequence of two or more instructions, conditional selection of one of two or more sequences of instructions, and repetition of a sequence of instructions. *See also:* structured design. (C) 610.12-1990

structured programming (software) Any software development technique that includes structured design and results in the development of structured programs. (C) 610.12-1990

structured programming language A programming language that provides structured program constructs such as single-entry-single-exit sequences, branches, and loops, and facilitates the development of structured programs. *See also:* block-structured language. (C) 610.13-1993w, 610.12-1990

Structured Query Language (SQL) A query language designed for accessing data and performing queries on relational databases, standardized by ASC ×3. (C) 610.13-1993w

structure, snub *See:* snub structure.

structures, safety class *See:* safety class structures.

stub (1) (A) (software) A skeletal or special-purpose implementation of a software module, used to develop or test a module that calls or is otherwise dependent on it. **(B) (software)** A computer program statement substituting for the body of a software module that is or will be defined elsewhere. (C) 610.12-1990

(2) The signal path on the module connecting the BTL transceiver to the Futurebus+ connector. (C/BA) 896.2-1991w

stub antenna A short, thick monopole. (AP/ANT) 145-1993

stub card A card that has a separable stub attached to a regular punch card. *Note:* May also be scored. (C) 610.10-1994w

stub feeder A feeder that connects a load to its only source of power. *Synonym:* radial feeder. (SWG/PE) C37.100-1992, [56]

stub length Stub length is measured from the point at which the connector assembly connects to the PC board to the pad where the transceiver lead is soldered to the PC board. (C/BA) 14536-1995

stub-multiple feeder A feeder that operates as either a stub or a multiple feeder. (SWG/PE) C37.100-1992

stub shaft (rotating machinery) A separate shaft not carried in its own bearings and connected to the shaft of a machine. *See also:* rotor. (PE) [9]

stub-supported coaxial A coaxial whose inner conductor is supported by means of short-circuited coaxial stubs. *See also:* waveguide. (EEC/PE) [119]

stub tuner A stub that is terminated by movable short-circuiting means and used for matching impedance in the line to which it is joined as a branch. *See also:* waveguide. (AP/ANT) [35]

stub, waveguide *See:* waveguide stub.

stuck-at fault A failure in a logic circuit that causes a signal connection to be fixed at 0 or 1 regardless of the operation of the circuitry that drives it. (TT/C) 1149.1-1990

stud (of a switching device) A rigid conductor between a terminal and a contact. (SWG/PE) C37.100-1992

stuffing bits Bits inserted into a frame to compensate for timing differences in constituent lower rate signals. (COM/TA) 1007-1991r

stuffing box (watertight gland) A device for use where a cable passes into a junction box or other piece of apparatus and is so designed as to render the joint watertight. (T&D/PE) [10]

style Set of editorial conventions covering grammar, terminology, punctuation, capitalization, etc, of a software user document. (C/SE) 1063-1987r

stylus (1) (electroacoustics) A mechanical element that provides the coupling between the recording or the reproducing transducer and the groove of a recording medium. *See also:* phonograph pickup. (SP) [32]
(2) (computer graphics) A pointing device, resembling a pencil, that is used with a data tablet to determine locations using an electrical sensing mechanism. (C) 610.6-1991w
(3) A pointing device used with a data tablet as a locator. Examples include light pens, sonic pens, and voltage pencils. *See also:* twinkle box. (C) 610.10-1994w

stylus drag (electroacoustics) An expression used to denote the force resulting from friction between the surface of the recording medium and the reproducing stylus. *See also:* phonograph pickup.

stylus force (electroacoustics) The vertical force exerted on a stationary recording medium by the stylus when in its operating position. *See also:* phonograph pickup. (SP) [32]

SU *See:* shared unmodified; system unit.

SUB *See:* substitute character.

subaction (1) A component of a transaction; a request or a response. (C/MM) 1596-1992
(2) One of the two components in a transaction; a transaction consists of request and response subactions. (C/MM) 1212-1991s
(3) A complete link layer operation: arbitration, packet transmission and acknowledgment. The arbitration may be missing when a node already controls the bus, and the acknowledge is not present for subactions with broadcast addresses or for isochronous subactions. (C/MM) 1394-1995
(4) A complete link layer operation: optional arbitration, packet transmission, and optional acknowledgment. (C/MM) 1394a-2000

subaction gap (1) The period of idle bus between subactions. There is no gap between the request and response subaction of a concatenated split transaction. (C/MM) 1394-1995
(2) For an asynchronous subaction, the period of idle bus that precedes arbitration. (C/MM) 1394a-2000

subaddress (subroutines for CAMAC) The symbol a represents an integer which is the subaddress component of a CAMAC address. (NPS) 758-1979r

subassembly (1) (A) One or more compartments that comprise the gas-insulated substation assembly. **(B) (electric and electronics parts and equipment)** Two or more basic parts which form a portion of an assembly or a unit, replaceable as a whole, but having a part or parts which are individually replaceable. *Notes:* 1. The application, size, and construction of an item may be factors in determining whether an item is regarded as a unit, an assembly, a subassembly, or a basic part. A small electric motor might be considered as a part if it is not normally subject to disassembly. 2. The distinction between an assembly and a subassembly is not always exact: an assembly in one instance may be a subassembly in another where it forms a portion of an assembly. Typical examples: filter network, terminal board with mounted parts. (SWG/SUB/PE/GSD) C37.122-1983, C37.100-1992, 200-1975
(2) An element of the physical or system architecture, specification tree, and system breakdown structure that is subordinate to a complex component, and is comprised of two or more subcomponents. (C/SE) 1220-1994s
(3) Items that have an identifiable function. Subassemblies are not completed equipment or individual components. (SPD/PE) C62.38-1994r

subcarrier (facsimile) A carrier that is applied as a modulating wave to modulate another carrier. (COM) 168-1956w

subclass (1) A class that is defined by specializing another class. The subclass typically adds features to the other class, called the superclass, or uses the facilities of the superclass to implement a more specific set of interfaces. (C) 1295-1993w
(2) One of the classes, designated as such, whose attribute types are a superset of those of another class. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w
(3) A specialization of one or more superclasses. Each instance of a subclass is an instance of each superclass. A subclass typically specifies additional, different responsibilities to those of its superclasses or overrides superclass responsibilities to provide a different realization. (C/SE) 1320.2-1998

subclass cluster (A) A set of one or more generalization structures in which the subclasses share the same superclass and in which an instance of the superclass is an instance of no more than one subclass. A cluster exists when an instance of the superclass can be an instance of only one of the subclasses in the set, and each instance of a subclass is an instance of the superclass. **(B)** A set of one or more mutually exclusive specializations of the same generic entity. (C/SE) 1320.2-1998

subclass responsibility A designation that a property of a class must be overridden in its subclasses, i.e., the designation given to a property whose implementation is not specified in this class. A property that is a subclass responsibility is a specification in the superclass of an *interface* that each of its subclasses must provide. A property that is designated as a subclass responsibility has its *realization* deferred to the subclass(es) of the class. (C/SE) 1320.2-1998

subclutter visibility The ratio by which the target echo power may be weaker than the coincident clutter echo power and still be detected with specified detection and false-alarm probabilities. *Note:* Target and clutter powers are measured on a single pulse return and all target radial velocities are assumed equally likely. (AES) 686-1997

subcomponent (1) A part or portion of a component which is relevant for quantifying exposure to outage occurrences, or failures, or both, or for identifying the cause of an outage occurrence or failure. (PE/PSE) 859-1987w

(2) An element of the physical or system architecture, specification tree, and system breakdown structure that is subordinate to a noncomplex component, or a subassembly, and is comprised of two or more parts. (C/SE) 1220-1994s

subcontractor A party having a direct contract with the constructor for performing work covered by the Contract Documents, when the constructor is not the owner. (T&D/PE) 951-1996

subdatabase A subset of the data contained in a database as used for a specific type of application or system. (C) 610.5-1990w

subdirectory entry A read-only memory (ROM) entry that specifies the address of another ROM subdirectory. (C/BA) 896.10-1997, 896.2-1991w

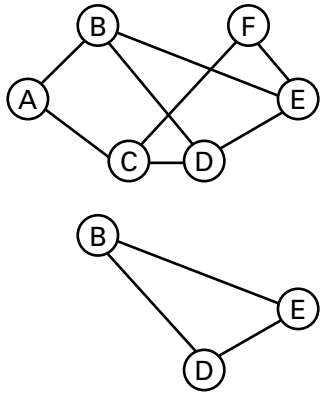
subdivided capacitor (condenser box) A capacitor in which several capacitors known as sections are so mounted that they may be used individually or in combination. (Std100) 270-1966w

subfactor *See:* quality subfactor.

subfeeder A feeder originating at a distribution center other than the main distribution center and supplying one or more branch-circuit distribution centers. *See also:* feeder. (EEC/PE) [119]

subframe overhead (OH) 12-byte SFODB Overhead structure used to transfer configuration and status information between the control fiber-optic bus interface unit (CFBIU) and fiber-optic bus interface units (FBIUs) on the network. (C/BA) 1393-1999

subgraph (data management) A graph consisting of a subset of nodes from a larger graph. See the figure below.



subgraph

(C) 610.5-1990w

Subgroup *See:* Remote Bridge Subgroup.

Subgroup Port A Virtual Port by which a Remote Bridge attaches to a Group consisting of two or more Subgroups. *Note:* Every Virtual Port is either a Virtual LAN Port or a Subgroup Port. In a Group that is not a Virtual LAN, every Bridge attaches to the Group by at least two Subgroup Ports. (C/LM) 802.1G-1996

subharmonic (data transmission) A sinusoidal quantity having a frequency which is an integral submultiple of the fundamental frequency of a periodic quantity to which it is related. For example, a wave the frequency of which is half the fundamental frequency of another wave is called the second subharmonic of that wave. (PE) 599-1985w

subharmonic detector A device that detects subharmonic current of specified frequency and duration and initiates an alarm signal or corrective action. (T&D/PE) 824-1994

subharmonic protector (series capacitor) A device to detect subharmonic current of a specified frequency and duration to initiate closing of the capacitor bypass switches. (T&D/PE) [26]

subject An active entity in a system that causes information to flow between objects or otherwise affects the system state. Typically, subjects include users, processes, and processing elements. (C/BA) 896.3-1993w

subject copy (facsimile) The material in graphic form that is to be transmitted for facsimile reproduction. *See also:* facsimile. (COM) 168-1956w

subject domain (1) The MD that contains the MTA embodied by the client and service of the MT interface. (C/PA) 1224.1-1993w

(2) An area of interest or expertise. The responsibilities of a subject domain are an aggregation of the responsibilities of a set of current or potential named classes. A subject domain may also contain other subject domains. A subject domain encapsulates the detail of a view. (C/SE) 1320.2-1998

subject domain responsibility A generalized concept that the analyst discovers by asking "in general, what do instances in this subject domain need to be able to do or to know?" The classes and subject domains in a subject domain together supply the knowledge, behavior, and rules that make up the subject. These notions are collectively referred to as the subject domain's responsibilities. Subject domain responsibilities are not distinguished as sub-domains or classes during the early stages of analysis. (C/SE) 1320.2-1998

subjective brightness (illuminating engineering) The subjective attribute of any light sensation giving rise to the percept of luminous magnitude, including the whole scale of qualities of being bright, light, brilliant, dim, or dark. *Note:* The term brightness often is used when referring to the measurable luminance. While the context usually makes it clear as to which meaning is intended, the preferable term for the photometric quality is luminance, thus reserving brightness for the subjective sensation. *See also:* luminance; saturation. (EEC/IE) [126]

subject matter expert (SME) An individual knowledgeable in the subject area being trained or tested. (DIS/C) 1278.3-1996

subject message When used in reference to a communique, the communique, if it is a message; or any of the messages denoted by the communique, if it is a probe. (C/PA) 1224.1-1993w

sublayer A subdivision of a layer in the OSI reference model. *See also:* physical layer; presentation layer; data link layer; session layer; entity layer; logical link control sublayer; application layer; client layer; network layer; transport layer; medium access control sublayer. (LM/C) 610.7-1995, 8802-6-1994

submarine cable A cable designed for service under water. *Note:* Submarine cable is usually a lead-covered cable with a steel armor applied between layers of jute. (T&D/PE) [10]

submaster *See:* master remote unit.

submaster station A station that can perform as a master station on one message transaction and as a remote station on another message transaction. *Note:* Examples of station equipments include

- *Hardwired.* Station supervisory equipment that is comprised entirely of wired-logic elements.
- *Firmware.* Station supervisory equipment that uses hardware logic programmed routines in a manner similar to a computer. the routines can only be modified by physically exchanging logic memory elements.
- *Programmable.* Station supervisory equipment that uses software routines.

(SWG/PE/SUB) C37.100-1992, C37.1-1994

submerged-resistor induction furnace A device for melting metal comprising a melting hearth, a depending melting channel closed through the hearth, a primary induction winding, and a magnetic core which links the melting channel and the primary winding. *See also:* induction heating. (IA) 54-1955w

submersible (rotating machinery) So constructed as to be successfully operable when submerged in water under specified conditions of pressure and time. (SWG/IA/PE/ICTL/MT/TR) 45-1983s, [9], C37.100-1992, C57.12.80-1978r

submersible enclosure An enclosure constructed so that the equipment within it will operate successfully when submerged in water under specified conditions of submergence depth and time. (IA/MT) 45-1998

submersible entrance terminals (cable-heads) (of distribution oil cutouts) A hermetically sealable entrance terminal for the connection of cable having a submersible sheathing or jacket. (SWG/PE) C37.100-1992, C37.40-1993

submersible fuse (1) (subway oil cutout) (high-voltage switchgear) A fuse that is so constructed that it will operate successfully when submerged in water under specified conditions of pressure and time. (SWG/PE) C37.40-1993
(2) *See also:* submersible; fuse. (SWG/PE) C37.100-1992

submersible transformer (power and distribution transformers) A transformer so constructed as to be successfully operable when submerged in water under predetermined conditions of pressure and time. (PE/TR) C57.12.80-1978r

submillimeter 300 GHz to 3 THz. *See also:* radio spectrum. (AP/PROP) 211-1997

submission The process by which a client requests that a batch server create a job via a Queue Job Request to perform a specified computational task. (C/PA) 1003.2d-1994

submission queue The database that the client of the MA interface uses to convey objects to the service. (C/PA) 1224.1-1993w

submodel *See:* subschema.

subnetwork (1) A functional unit comprised of a single dual bus pair and those access units (AUs) attached to it. Subnetworks are physically formed by connecting adjacent nodes with transmission links. (LM/EMB/C/MIB) 1073.3.1-1994, 8802-6-1994
(2) A set of one or more intermediate open systems that provide relaying and through which end systems may communicate. It is a representation within the OSI model of a real network such as a carrier network, a provider network, or a LAN. It can also be defined as a collection of equipment and physical media that forms an autonomous whole and that can be used to interconnect real systems for the purpose of communication. (C/LM) 802.9a-1995w

subnetwork configuration The topological arrangement of nodes to form a subnetwork. In normal operation a DQDB subnetwork can have one of two configurations, open Dual Bus or looped Dual Bus. (LM/C) 8802-6-1994

subnetwork service The service supported by the subnetwork access protocol. (C/LM/COM) 802.9a-1995w, 8802-9-1996

subnormality (electrical depression) (electrobiology) The state of reduced electrical sensitivity after a response or succession of responses. *See also:* excitability. (EMB) [47]

subnormal number (mathematics of computing) A non-zero floating-point number whose exponent is the precision's minimum and whose leading significant digit is zero. (C) 1084-1986w

subobject An immediate subobject of an object or of one of its subobjects applied recursively. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

subordinate The converse of superior. (C/PA) 1328.2-1993w, 1224.2-1993w, 1326.2-1993w, 1327.2-1993w

subpanel (1) (photoelectric converter) Combination of photoelectric converters in parallel mounted on a flat supporting structure. *See also:* semiconductor. (AES) [41]
(2) (solar cells) A combination of solar cells in series.parallel matrix to provide current at array (bus) voltage. (AES/SS) 307-1969w

subpost car frame (elevators) A car frame all of whose members are located below the car platform. *See also:* hoistway. (PE/EEC) [119]

subproduct A software object that is a grouping of software filesets and other subproducts within a product. (C/PA) 1387.2-1995

subprogram (1) (software) A separately compilable, executable component of a computer program. *Note:* The terms "routine," "sub-program," and "subroutine" are defined and used differently in different programming languages; the preceding definition is advanced as a proposed standard. *See also:* coroutine; main program; routine; subroutine. (C) 610.12-1990
(2) (test, measurement, and diagnostic equipment) A part of a larger program which can be converted into machine language independently. (MIL) [2]

subrack (VSB) A rigid framework that provides mechanical support for boards inserted into the backplane, ensuring that the connectors mate properly and that adjacent boards do not contact each other. It also guides the cooling airflow through the system, and ensures that inserted boards are not disengaged from the backplane due to vibration. (C/MM/BA) 1096-1988w, 1014-1987

subreflector A reflector other than the main reflector of a multiple-reflector antenna. (AP/ANT) 145-1993

subrefraction Refraction for which the vertical gradient of refractivity is greater (less negative) than the standard gradient of refractivity. (AP/PROP) 211-1990s

subrefractive atmosphere *See:* refractive index gradient.

subremote unit (SRU) A physical device (for example, peripheral boards, RTUs, meters, or other intelligent electronic devices) that collects data, processes it in some way, and communicates it to an MRU. SRUs are able to respond to commands from MRUs. (PE/SUB) 1379-1997

subroutine (1) (A) (electronic computation) In a routine, a portion that causes a computer to carry out a well-defined mathematical or logic operation. **(B) (electronic computation)** A routine that is arranged so that control may be transferred to it from a master routine and so that at the conclusion of the subroutine, control reverts to the master routine. *Note:* Such a subroutine is usually called a closed subroutine. A single routine may simultaneously be both a subroutine with respect to another routine and a master routine with respect to a third. Usually control is transferred to a single subroutine from more than one place in the master routine and the reason for using the subroutine is to avoid having to repeat the same sequence of instructions in different places in the master routine. (MIL) [2], 270-1966
(2) (software) A routine that returns control to the program or subprogram that called it. *Note:* The terms "routine," "subprogram," and "subroutine" are defined and used differently in different programming languages; the preceding definition is advanced as a proposed standard. *Contrast:* coroutine. *See also:* open subroutine; closed subroutine. (C) 610.12-1990
(3) *See also:* procedure. (C/MM) 1178-1990r

subroutine, open *See:* open subroutine.

subroutine trace A record of all or selected subroutines or function calls performed during the execution of a computer program and, optionally, the values of parameters passed to and returned by each subroutine or function. *See also:* subroutine trace; retrospective trace; symbolic trace; variable trace; execution trace. (C) 610.12-1990

subschema (A) A subset of a schema that defines a view of the database that is needed by one or more application programs. *Synonym:* submodel. **(B)** A description of the logical structure of a record in a database. (C) 610.5-1990

subscriber carrier (telephone loop performance) A system that multiplexes customer signals to achieve pair gain in the loop plant. Usually, it consists of (1) An end office terminal (EOT); it interfaces with the end office (EO) through analog line appearances, one per each integrated loop. If the carrier is a digital system integrated in a digital end office, this ter-

minal and its interfaces are replaced by much simpler all-digital equipment that may be integrated into the switching system. (2) A remote terminal (RT); it interfaces with the cable pairs to the customers' premises through analog interfaces, one per each implemented loop. (3) A transmission medium between the EOT (or EO in a digital integrated system) and the RT; it provides a control channel for internal EOT/EO-to-RT communication and communciation channels for customer traffic. A nonconcentrated system has as many customer channels as implemented loops, with fixed loop-channel assignments. A concentrated system has fewer channels than implemented loops, and changes loop-channel assignments to accomodate changing traffic patterns. (COM/TA) 820-1984r

subscriber equipment (protective signaling) That portion of a system installed in the protected premises or otherwise supervised. *See also:* protective signaling. (EEC/PE) [119]

subscriber line (data transmission) A telephone line between a central office and a telephone station, private branch exchange, or other end equipment. (PE) 599-1985w

subscriber loop *See:* subscriber's line.

subscriber multiple A bank of jacks in a manual switchboard providing outgoing access to subscriber lines, and usually having more than one appearance across the face of the switchboard. (EEC/PE) [119]

Subscriber object Any object that receives publications from the network via an Object of class `IEEE1451_SubscriberPort`. (IM/ST) 1451.1-1999

Subscriber Port An instance of the class `IEEE1451_SubscriberPort` or of a subclass thereof. (IM/ST) 1451.1-1999

subscriber's drop A wire that runs from a cable terminal or distribution point to the subscriber's premises. (C) 610.7-1995

subscriber set (customer set) An assembly of apparatus for use in originating or receiving calls on the premises of a subscriber to a communication or signaling service. *See also:* voice-frequency telephony. (EEC/PE) [119]

subscriber's line (telephony) A link between a local exchange and a telephone set, a private telephone system, or another terminal using signals compatible with the telephone network. According to evolving practice in North America, the subscriber loop may be referred to as a local exchange access line. *Note:* Most subscriber loops are physical pairs. Subscriber loops may also be provided by means of a radio link, associated "go" and "return" channels in a multiplex system, or line sections allocated by a line concentrator. For purposes of this standard, only that part of the line connecting the telephone set and the feeding bridge is considered to be part of the local sending or local receiving system. (COM/TA) 823-1989w

subscriber's loop *See:* local loop.

subscriber's telephone line *See:* subscriber's line.

subscriber trunk dialing *See:* direct distance dialing.

subscript A symbol that is associated with the name of a set to identify a particular subset or element of the set. (C) 610.5-1990w

Subscription Domain A Domain identified by a subscriber for a specific publication. *See also:* Domain. (IM/ST) 1451.1-1999

Subscription Qualifier A configurable identifier used to help define the selection of received publications on the basis of publication's Publication Topic in a publish-subscribe communication. Specifically, a value having datatype `SubscriptionQualifier`. For a Subscriber Port, the operation `GetSubscriptionQualifier` returns a value, `subscription_qualifier`, that has the same value as Port's Subscription Qualifier. (IM/ST) 1451.1-1999

subset A dialect of a particular language that varies from its referenced standard language such that its capabilities include some, but not all, the capabilities of the referenced language. For example, TINT is a subset of JOVIAL. *Contrast:* extension. (C) 610.13-1993w

subset entity Entities that are related to and dependent on other primary entity sets called parent entity sets. (PE/EDPG) 1150-1991w

subshell A shell execution environment, distinguished from the main or current shell execution environment by the attributes described in 3.12. (C/PA) 9945-2-1993

subsidence *See:* attenuation; damping.

subsidence ratio (automatic control) A measure of the damping of a second-order linear oscillation, resulting from step or ramp forcing, expressed as the greater divided by the lesser of two successive excursions in the same direction from an ultimate steady-state value. *Note:* The term is also used loosely to describe the ratio of the first two consecutive peaks of any damped oscillation. (PE/EDPG) [3]

subsidiary communications authorization subcarrier modulation The FCC permits broadcasters to transmit privileged information and control signals on subcarriers as specified under the SCA but only when transmitted in conjunction with broadcast programming. *Notes:* 1. With monophonic broadcasting, the SCA service may use from 20 to 75 kHz with no restriction on the number of subcarriers, but the total SCA modulation of the RF (radio frequency) carrier must not exceed 30 percent and the crosstalk into the main channel must be at least 60 dB down. 2. With stereophonic broadcasting, the SCA service is limited to 53−75 kHz, 10 percent modulation of the carrier, and must still comply with the 60 dB crosstalk ratio. A 67 kHz subcarrier with ±6 kHz modulation is often used. (BT) 185-1975w

subsidiary conduit (lateral) A terminating branch of an underground conduit run, extending from a manhole or handhole to a nearby building, handhole, or pole. *See also:* cable. (EEC/PE) [119]

subsplit A frequency division scheme that allows two-way traffic on a single cable. Inbound path signals come to the headend from 5 to 30 MHz. Outbound path signals go from the headend from 54 to the upper frequency limit. The guardband is located from 30 to 54 MHz. (LM/C) 802.7-1989r

substantial So constructed and arranged as to be of adequate strength and durability for the service to be performed under the prevailing conditions. (T&D) C2.2-1960

substation (1) (generating stations electric power system) An area or group of equipment containing switches, circuit breakers, buses, and transformers for switching power circuits and to transform power from one voltage to another or from one system to another. (PE/EDPG) 505-1977r

(2) An assemblage of equipment for purposes other than generation or utilization, through which electric energy in bulk is passed for the purpose of switching or modifying its characteristics. Service equipment, distribution transformer installations, or other minor distribution or transmission equipment are not classified as substations. *Note:* A substation is of such size or complexity that it incorporates one or more buses, a multiplicity of circuit breakers, and usually is either the sole receiving point of commonly more than one supply circuit, or it sectionalizes the transmission circuits passing through it by means of circuit breakers. *See also:* alternating-current distribution; direct-current distribution. (T&D/PE) [10]

(3) An enclosed assemblage of equipment (e.g., switches, circuit breakers, buses, and transformers) under the control of qualified persons, through which electric energy is passed for the purposes of switching or modifying its characteristics. (PE/EDPG) 665-1995

(4) An enclosed assemblage of equipment, e.g., switches, circuit breakers, buses, and transformers, under the control of qualified persons, through which electric energy is passed for the purpose of switching or modifying its characteristics. (NESC) C2-1997

substitutability A principle stating that, since each instance of a subclass is an instance of the superclass, an instance of the

subclass should be acceptable in any context where an instance of the superclass is acceptable. Any request sent to an instance receives an acceptable response, regardless of whether the receiver is an instance of the subclass or the superclass. (C/SE) 1320.2-1998

substitute character (SUB) A control character used in the place of a character that is recognized to be invalid or in error, or that cannot be represented on a given device. (C) 610.5-1990w

substitution The introduction unauthorized, potentially malicious components to intercept communications, generate incorrect or misleading information, masquerade as a legitimate component, or perform other undesirable functions. Substitution may be perpetrated throughout a system (e.g., hardware and software components), and could result in unauthorized disclosure or modification of information, unauthorized receipt of services, or denial of service to legitimate users or critical functions. (C/BA) 896.3-1993w

substitution error, direct-current-radio-frequency (bolometers) The error arising in the bolometric measurement technique when a quantity of direct-current or audio-frequency power is replaced by a quantity of radio-frequency power with the result that the different current distributions generate different temperature fields that give the bolometer element different values of resistance for the same amonts of power. This error is expressed as where e is the effective efficiency of the bolometer units and h is the efficiency of the bolometer unit. *See also:* bolometric power meter. (IM/HFIM) [40]

substitution error, dual-element A substitution error peculiar to dual-element bolometer units that results from a different division of direct-current (or audio-frequency) and radio-frequency powers between the two elements. (IM/HFIM) [40]

substitution power (bolometers) The difference in bias power required to maintain the resistance of a bolometer at the same value before and after radio-frequency power is applied. Commonly, a bolometer is placed in one arm of a Wheatstone bridge that is balanced when the bias current (direct current and.or audio frequency) holds the bolometer at its nominal operating resistance. Following the application of the radio-frequency signal, the reduction in bias power is taken as a measure of the radio-frequency power. This reduction in the bias power is the substitution power and is given by

$$P = I_1^2R - I_2^2R$$

where I_1 and I_2 are the bias currents before and after radio-frequency power is applied and R is the nominal operating resistance of the bolometer. *See also:* bolometric power meter. (IM) 470-1972w

substrate (1) (integrated circuit) The supporting material upon or within which an integrated circuit is fabricated or to which an integrated circuit is attached. (ED) 274-1966w
(2) (photovoltaic power system) Supporting material or structure for solar cells in a panel assembly. Solar cells are attached to the substrate. (AES) [41]
(3) (planar transmission lines) The supporting material upon or within which a planar transmission line is fabricated or to which it is attached. A substrate can be composed of one or more nonconducting layers. (MTT) 1004-1987w
(4) The base material upon which or in which a transistor or integrated circuit is fabricated; for example, materials such as glass-ceramic or silicon oxide. (C) 610.10-1994w

subsurface corrosion Formation of isolated particles of corrosion product(s) beneath the metal surface. This results from the preferential reaction of certain alloy constituents by inward diffusion of oxygen, nitrogen, sulfur, etc. (internal oxidation). (IA) [59]

subsurface switch A submersible switching assembly suitable for application in a below-grade enclosure that does not allow space for personnel access. (SWG/PE) C37.71-1984r, C37.100-1992

subsurface transformer (power and distribution transformers) A transformer utilized as part of an underground distribution system, connected below ground to high-voltage and low-voltage cables, and located below the surface of the ground. (PE/TR) C57.12.80-1978r

subsynchronous reluctance motor A form of reluctance motor that has the number of salient poles greater than the number of electrical poles of the primary winding, thus causing the motor to operate at a constant average speed that is a submultiple of its apparent synchronous speed. *See also:* asynchronous machine. (PE) [9]

subsynchronous satellite (communication satellite) A satellite, for which the sidereal period of rotation of the primary body about its own axis is an integral multiple of the mean sidereal period of revolution of the satellite about the primary body. (COM) [19]

subsystem (1) (unique identification in power plants) A portion of a system containing two or more integrated components which, while not completely performing the specific function of a system, may be isolated for design, test, or maintenance. (PE/EDPG) 804-1983r, 803-1983r
(2) (nuclear power generating station protective systems) That part of the system which effects a particular protective function. These subsystems may include, but are not limited to those actuating: reactor shutdown: safety injection: containment isolation: emergency core cooling: containment pressure and temperature reduction: containment air cleaning. (PE/NP) 380-1975w
(3) (software) A secondary or subordinate system with a larger system. (C) 610.12-1990
(4) An element of the physical or system architecture, specification tree, or system breakdown structure that is a subordinate element to a product and is comprised of one or more assemblies and their associated life-cycle processes. (C/SE) 1220-1994s
(5) An interconnected, interrelated group of equipment intended to serve a single basic purpose within a larger installation or facility. (SUB/PE) 1303-1994
(6) An element in a hierarchical division of an open system that interacts directly only with elements in the next higher division or the next lower division of that open system (ISO 7498). (LM/C) 8802-6-1994

subsystem identification An eight-character label further describing the system. Leading spaces are not interpreted as leading zeros. This is used with the system identification to uniquely describe the data. (NPS/NID) 1214-1992r

subsystem verification Testing to verify that all of the systems required for a main generating unit startup have been tested and are operational. (PE/EDPG) 1248-1998

subtracter A device whose output data is the arithmetic difference of the two or more quantities presented as input data. *Contrast:* adder. *See also:* half subtracter; full subtracter; adder-subtracter. (C) 610.10-1994w

subtract time The elapsed time required to perform one subtraction operation, not including the time required to obtain the operands or to return the result to storage. *Contrast:* multiply time; add time. (C) 610.10-1994w

subtrahend A number to be subtracted from another number (the minuend) to produce a result (the difference). (C) 1084-1986w

subtransient current (rotating machinery) The initial alternating component of armature current following a sudden short circuit. *See also:* armature. (PE) [9]

subtransient internal voltage (synchronous machines) (specified operating condition) The fundamental-frequency component of the voltage of each armature phase that would appear at the terminals immediately following the sudden removal of the load. *Note:* The subtransient internal voltage, as shown in the phasor diagram, is related to the terminal-voltage and phase-current phasors by the equation:

$$E''_1 = E_a + RI_a + jX''_dI_{ad} + jX''_qI_{aq}$$

For a machine subject to saturation, the reactances should be determined for the degree of saturation applicable to the specified operating conditions. (PE) [9]

subtransient reactance (1) (electrical power systems in commercial buildings) The apparent reactance of the stator winding at the instant the short circuit occurs. (IA/PSE) 241-1990r

(2) Reactance of a generator at the initiation of a fault. This reactance is used in calculations of the initial symmetrical fault current. The current continuously decreases, but it is assumed to be steady at this value as a first step, lasting approximately 0.05 s after an applied fault. (PE/SUB/PSC) 80-2000, 367-1996

subtrate (metal-nitride-oxide field-effect transistor) This insulated-gate field-effect transistor (IGFET) region separates source from drain and is of opposite conductivity type. The potential on the substrate terminal can only be equally, or less attractive to the carriers in the channel than the source terminal. (ED) 581-1978w

subtree A tree whose root node is part of a larger tree. *Note:* A subtree is made up of a node and all of its hierarchical descendants. *Synonym:* branch. (C) 610.5-1990w

subtype (1) A subset of a data type, obtained by constraining the set of possible values of the data type. *Note:* The operations applicable to the subtype are the same as those of the original data type. *See also:* derived type. (C) 610.12-1990

(2) *See also:* subclass. (C/SE) 1320.2-1998

subunit A logical subcomponent of a unit that is accessed by a largely independent subcomponent of I/O driver software. For example, a terminal multiplexer unit could have multiple subunits (two for each full-duplex connection). (C/MM) 1212-1991s

subvoice-band channel A channel with a bandwidth narrower than that of a voice-band channel. *Note:* It is generally used in telegraphy. (C) 610.7-1995

subway transformer (power and distribution transformers) A submersible-type distribution transformer suitable for installation in an underground vault. (PE/TR) C57.12.80-1978r

successfully transferred For a write operation to a regular file, when the system ensures that all data written is readable on any subsequent open of the file (even one that follows a system or power failure) in the absence of a failure of the physical storage medium. For a read operation, when an image of the data on the physical storage medium is available to the requesting process. (C/PA) 9945-1-1996, 1003.5-1999

successful test A completed test that is invoked by a write to the TEST_START register, in which no errors are detected. (C/MM) 1212-1991s

sudden failure *See:* failure.

sudden ionospheric disturbance (SID) An ionospheric disturbance with a duration of from a few minutes to a few hours, characterized by the sudden increase in the ionization of the D region in the daylight hemisphere as a result of electromagnetic radiation from a solar flare. *Note:* This effect is sometimes called the Mägel-Delinger effect. (AP/PROP) 211-1997

sudden-pressure relay A relay that operates by the rate of rise in pressure of a liquid or gas. (SWG/PE) C37.100-1992

sudden short-circuit test (synchronous machines) A test in which a short-circuit is suddenly applied to the armature winding of the machine under specified operating conditions. (PE) [9]

Suez Canal searchlight A searchlight constructed to the specifications of the Canal Administration that by regulation of the Administration, must be carried by every ship traversing the canal, so located as to illuminate the banks. (EEC/PE) [119]

suffix notation *See:* postfix notation.

suicide control (adjustable-speed drive) A control function that reduces and automatically maintains the generator voltage at approximately zero by negative feedback. *See also:* feedback control system. (IA/IAC) [60]

suitable test (faulted circuit indicators) Where a condition or a set of conditions are so variable from one utility to another or even within the utility itself that no test can be properly specified for all conditions, it is left to the user to determine their individual test needs. A suitable test and anticipated service life are mutually agreed to between manufacturer and user. (T&D/PE) 495-1986w

suitcase *See:* conductor grip.

sulfur hexafluoride (SF_6) A gaseous dielectric for high-voltage power applications having characteristics as specified in ASTM D2472-92. (SWG/SUB/PE) C37.122-1983s, C37.122.1-1993, C37.100-1992

sum (mathematics of computing) The result of an addition operation. (C) 1084-1986w

sum check *See:* summation check.

sum frequency (parametric device) The sum of a harmonic (nf_p) of the pump frequency (f_p) and the signal frequency (f_s), where n is a positive integer. *Note:* Usually n is equal to one. *See also:* parametric device. (ED) [46]

sum-frequency parametric amplifier *See:* parametric device; noninverting parametric device.

summary punch (1) (test, measurement, and diagnostic equipment) A tape or card punch operating in conjunction with another machine to punch data which have been summarized or calculated by the other machine. (MIL) [2]

(2) A card punch used to record data that were calculated or summarized by another device. (C) 610.10-1994w

summation check (1) (computers) A check based on the formation of the sum of the digits of a numeral. The sum of the individual digits is usually compared with a previously computed value. (C) [20], [85]

(2) (mathematics of computing) A check in which a group of digits is summed, usually without regard to overflow, and that sum is checked against a previously computed value to verify that no digits have been changed. *Synonym:* sum check. (C) 1084-1986w

summer *See:* summing amplifier.

summer outage rate The number of outage occurrences per unit of service time during the summer. Summer outage rate = number of outages during the summer/service time during summer. *See also:* outage rate. (PE/PSE) 859-1987w

summing amplifier An operational amplifier whose output analog variable is the integral of a weighted sum of the input analog variables with respect to time or with respect to another input analog variable. (C) 610.10-1994w, 165-1977w

summing junction In an analog computer, the junction common to the input and feedback impedances used with an operational amplifier. (C) 610.10-1994w, 165-1977w

summing point (1) Any point at which signals are added algebraically. *Note:* For example the null junction of a power supply is a summing point because, as the input to a high-gain direct-current amplifier, operational summing can be performed at this point. As a virtual ground, the summing point decouples all inputs so that they add linearly in the output, without other interaction. *See also:* operational programming; null junction. (PE/EDPG) [3]

(2) The point in a feedback control system at which the algebraic sum of two or more signals is obtained. *See also:* feedback control system. (IA/ICTL/IAC) [60]

sum pattern A radiation pattern characterized by a single main lobe whose cross section is essentially elliptical, and a family of side lobes, the latter usually at a relatively low level. *Note:* Antennas that produce sum patterns are often designed to produce a difference pattern and have application in acquisition and tracking radar systems. *Contrast:* difference pattern. (AP/ANT) 145-1993

sun bearing (illuminating engineering) The angle measured in the plane of the horizon between a vertical plane at a right

angle to the window wall and the position of this plane after it has been rotated to contain the sun. (EEC/IE) [126]

sun light (illuminating engineering) Direct visible radiation from the sun. (EEC/IE) [126]

superclass (1) A class that is the ancestor of another class in the class hierarchy. (C) 1295-1993w

(2) One of the classes, designated as such, whose attribute types are a subset of those of another class. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

(3) A class whose instances are specialized into one or more subclasses. *See also:* partial cluster; total cluster. (C/SE) 1320.2-1998

supercomputer Any of the group of computers that have the fastest processing speeds available at a given time. (C) 610.10-1994w

superconducting The state of a superconductor in which it exhibits superconductivity. Example: Lead is superconducting below a critical temperature and at sufficiently low operating frequencies. *See also:* normal; superconductivity. (ED) [46]

superconductive Pertaining to a material or device that is capable of exhibiting superconductivity. Example: Lead is a superconductive metal regardless of temperature. The cryotron is a superconductive computer component. *See also:* superconductivity. (ED) [46]

superconductivity A property of a material that is characterized by zero electric resistivity and, ideally, zero permeability. (ED) [46]

superconductor Any material that is capable of exhibiting superconductivity. Example: Lead is a superconductor. *See also:* superconductivity. (ED) [46]

superdirectivity The condition that occurs when the antenna illumination efficiency significantly exceeds 100%. *Note:* Superdirectivity is only obtained at a cost of a large increase in the ratio of average stored energy to energy radiated per cycle. (AP/ANT) 145-1993

superframe A structure that consists of 12 DS1 frames (2316 bits). The DS1 frame comprises 193 bit positions, the first of which is the frame overhead bit position. Frame overhead bit positions are used for terminal frame (F_t) and signaling frame (F_s) alignment only. (COM/TA) 1007-1991r

supergroup *See:* channel supergroup.

superheterodyne reception A method of receiving radio waves in which the process of heterodyne reception is used to convert the voltage of the received wave into a voltage of an intermediate, but usually superaudible, frequency, that is then detected. *See also:* radio receiver. (EEC/PE) [119]

super high frequency (SHF) 3–30 GHz. *See also:* radio spectrum. (AP/PROP) 211-1997

superimposed ringing (telephone switching systems) Selective ringing that utilizes direct current polarity to obtain selectivity. (COM) 312-1977w

superior (applying to entry or directory object) Immediately superior, or superior to one that is immediately superior (recursively). (C/PA) 1326.2-1993w, 1224.2-1993w, 1327.2-1993w, 1328.2-1993w

super-large scale integration *See:* ultra-large scale integration; very large scale integration.

superluminescent LED *See:* superluminescent light-emitting diode.

superluminescent light-emitting diode (SLED, SLD) (1) (fiber optics) An emitter based on stimulated emission with amplification but insufficient feedback for oscillation to build up. *Synonym:* superluminescent LED. *See also:* spontaneous emission; stimulated emission. (Std100) 812-1984w

(2) A p-n junction semiconductor emitter based on stimulated emission with amplification, but insufficient for feedback oscillation to build up. (AES/GYAC) 528-1994

superobject The immediate superobject of an object, or one of its superobjects applied recursively. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

superposed circuit An additional channel obtained from one or more circuits, normally provided for other channels, in such a manner that all the channels can be used simultaneously without mutual interference. *See also:* transmission line. (EEC/PE) [119]

superposition theorem States that the current that flows in a linear network, or the potential difference that exists between any two points in such a network, resulting from the simultaneous application of a number of voltages distributed in any manner whatsoever throughout the network is the sum of the component currents at the first point, or the component potential differences between the two points, that would be caused by the individual voltages acting separately. (EEC/PE) [119]

superradiance (fiber optics) Amplification of spontaneously emitted radiation in a gain medium, characterized by moderate line narrowing and moderate directionality. *Note:* This process is generally distinguished from lasing action by the absence of positive feedback and hence the absence of well-defined modes of oscillation. *See also:* stimulated emission; spontaneous emission; laser. (Std100) 812-1984w

super-refraction (1) Refraction for which the vertical gradient of refractivity is less (more negative) than the standard gradient of refractivity. (AP/PROP) 211-1990s

(2) *See also:* ducting. (AES) 686-1997

super-refractive atmosphere *See:* refractive index gradient.

superregeneration A form of regenerative amplification, frequently used in radio receiver detecting circuits, in which oscillations are alternately allowed to build up and are quenched at a superaudible rate. *See also:* radio receiver. (EEC/PE) [119]

supersonic frequency *See:* ultrasonic frequency.

supersynchronous satellite (communication satellite) A satellite with mean sidereal period of revolution about the primary body which is an integral multiple of the sidereal period of rotation of the primary body about its axis. (COM) [19]

supertype *See:* superclass.

supervised circuit (protective signaling) A closed circuit having a current-responsive device to indicate a break in the circuit, and, in some cases, to indicate an accidental ground. *See also:* protective signaling. (EEC/PE) [119]

supervision (telephone switching systems) The function of indicating and controlling the status of a call. (COM) 312-1977w

supervisor *See:* supervisory program.

supervisor mode A processor state that is active when the S bit of the PSR is set (PSR.S = 1). *See also:* privileged. (C/MM) 1754-1994

supervisor software Software that executes when the processor is in **supervisor mode.** (C/MM) 1754-1994

supervisor state In the operation of a computer system, a state in which the supervisory program is executing. This state usually has higher priority than, and precludes the execution of, application programs. *Synonyms:* executive state; master state; privileged state. *Contrast:* problem state. (C) 610.12-1990

supervisory control (1) (supervisory control, data acquisition, and automatic control) An arrangement for operator control and supervision of remotely located apparatus using multiplexing techniques over a relatively small number of interconnecting channels. (PE/SUB) 999-1992w, C37.1-1994

(2) A form of remote control comprising an arrangement for the selective control of remotely located units by electrical means over one or more common interconnecting channels. (SWG/PE) C37.100-1992

supervisory control data acquisition system (supervisory control, data acquisition, and automatic control) A system

operating with coded signals over communication channels so as to provide control of remote equipment (using typically one communication channel per remote station). The supervisory system may be combined with a data acquisition system, by adding the use of coded signals over communication channels to acquire information about the status of the remote equipment for display or for recording functions.
(SWG/PE/SUB) C37.100-1992, C37.1-1994

supervisory control functions Equipment governed by this standard that comprises one or more of the following functions:

1) **alarm function.** The capability of a supervisory system to accomplish a predefined action in response to an alarm condition.
2) **analog function.** The capability of a supervisory system to accept, record, or display, or do all of these, an analog quantity as presented by a transducer or external device. The transducer may or may not be a part of the supervisory control system.
3) **control function.** The capability of a supervisory system to selectively perform manual operation, automatic operation, or both (singularly or in selected groups), of external devices. Control may be either analog (magnitude or duration) or digital.
4) **indication (status) function.** The capability of a supervisory system to accept, record, or display, or do all of these, the status of a device. The status of a device may be derived from one or more inputs giving two or more states of indication.
   a) **two-state indication.** Only one of the two possible positions of the supervised device is displayed at a time. Such display may be derived from a single set of contacts.
   b) **three-station indication.** Indication in which the transitional state or security indication as well as the terminal positions of the supervised device is displayed. Such a display is derived from at least two sets of initiating contacts.
   c) **multistate indication.** Only one of the predefined states (transitional or discrete, or both) is indicated at a time. Such a display is derived from multiple inputs.
   d) **indication with memory.** An indication function with the additional capability of storing single or multiple changes of status that occur between scans.
   e) **accumulator function.** The capability of a supervisory system to accept and totalize digital pulses and make them available for display or recording or both.
5) **sequence of events function.** The capability of a supervisory system to recognize each predefined event, associate a time of occurrence with each event, and present the event data in order of occurrence of the events.

See also: alarm condition.
(SWG/PE/SUB) C37.100-1992, C37.1-1987s

supervisory format The format used to perform data link supervisory control such as acknowledging I frames, requesting retransmission of I frames, and requesting a temporary suspension of transmission of I frames.
(EMB/MIB) 1073.3.1-1994

supervisory indication A form of remote indication comprising an arrangement for the automatic indication of the position or condition of remotely located units by electrical means over one or more common interconnecting channels.
(SWG/PE) C37.100-1992

supervisory program (software) A computer program, usually part of an operating system, that controls the execution of other computer programs and regulates the flow of work in a computer system. *Synonyms:* executive; control program; executive program; supervisor. *See also:* supervisor state.
(C) 610.12-1990

supervisory relay A relay that, during a call, is generally controlled by the transmitter current supplied to a subscriber line in order to receive, from the associated station, directing signals that control the actions of operators or switching mechanisms with regard to the connection. (EEC/PE) [119]

supervisory routine *See:* executive routine.

supervisory scanning cycle (station control and data acquisition) The time interval to start and complete a supervisory scan. (SUB/PE) C37.1-1979s

supervisory sequence In data communications, a sequence of communication control characters, and possibly other characters, that define control function. (C) 610.7-1995

supervisory signal (telephone switching systems) Any signal used to indicate or control the states of the circuits involved in a particular connection. (COM) 312-1977w

supervisory station check The automatic selection in a definite order, by means of a single initiation of the master station, of all of the supervisory points associated with one remote station of a system; and the transmission to the master station of indications of positions or conditions of the individual equipment or device associated with each point.
(SWG/PE) C37.100-1992

supervisory system (supervisory control, data acquisition, and automatic control) All control indicating and associated with telemetering equipment at the master station and all of the complementary devices at the remote station, or stations. *See also:* scanning supervisory system; continuous update supervisory system; quiescent supervisory system; polling supervisory system.
(SWG/PE/SUB) C37.100-1992, C37.1-1994

supervisory system check The automatic selection in a definite order, by means of a single initiation at the master station, of all supervisory points associated with all of the remote stations in a system; and the transmission to the master station of indications of positions or conditions of the individual equipment or device associated with each point.
(SWG/PE) C37.100-1992

supervisory telemeter selection A form of remote telemeter selection comprising an arrangement for the selective connection of telemeter transmitting equipment to an appropriate telemeter receiving equipment over one or more common interconnecting channels. (SWG/PE) C37.100-1992

supervisory tone (telephone switching systems) A tone that indicates to equipment, an operator or a customer that a particular state in the call has been reached, and which may signify the need for action to be taken. The terms used for the various supervisory tones are usually self-explanatory.
(COM) 312-1977w

supplementary control Any control action that is superimposed upon normal governor action. (PE/PSE) 94-1991w

supplementary equipment ground (generating station grounding) A grounding conductor used to connect the equipment frame to local grounding system to minimize potential difference. (PE/EDPG) 665-1987s

supplementary group ID (1) An attribute of a process used in determining file access permissions. A process has up to {NGROUPS_MAX} supplementary group IDs in addition to the effective group ID. The supplementary group IDs of a process are set to the supplementary group IDs of the parent process when the process is created. Whether the effective group ID of the process is included in or omitted from its list of supplementary group IDs is unspecified.
(C/PA) 9945-1-1996, 1003.2-1992s

(2) An attribute of a process, used in determining file access permissions. A process has group IDs in addition to the effective group ID. The size of this list of supplementary group IDs is specified at compile time by `Groups_Maxima` in package `POSIX_Limits`, or at run time by the value of the function `Groups_Maximum` in package `POSIX_Configurable_System_Limits`. The supplementary group IDs of a process are set to the supplementary group IDs of the parent process when the process is created. Whether the effective group ID of a process is included in or omitted from its list of supplementary group IDs is unspecified. (C) 1003.5-1999

supplementary insulation Independent insulation applied in addition to basic insulation to protect against electric shock if the basic insulation fails. (EMB/MIB) 1073.4.1-2000

supplementary lighting (illuminating engineering) Lighting used to provide an additional quantity and quality of illuminance which cannot readily be obtained by a general lighting system and which supplements the general lighting level, usually for specific work requirements. (EEC/IE) [126]

supplementary standard illuminant D_{55} (illuminating engineering) A representation of a phase of daylight at a correlated color temperature of approximately 5500 K. (EEC/IE) [126]

supplementary standard illuminant D_{75} (illuminating engineering) A representation of a phase of daylight at a correlated color temperature of approximately 7500 K. (EEC/IE) [126]

supplier (1) (nuclear power quality assurance) Any individual or organization who furnishes items or services to a procurement document. An all inclusive term used in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant, and subtier levels. (PE/NP) [124]
(2) An organization that develops some or all of the project deliverables for an acquirer. Suppliers may include organizations that have primary responsibility for project deliverables and subcontractors that deliver some part of the project deliverables to a primary supplier. In the latter case, the primary supplier is also an acquirer. (C/SE) 1058-1998
(3) The person, or persons, who produce a product for a customer. In the context of this recommended practice, the customer and the supplier may be members of the same organization. (C/SE) 830-1998
(4) The entity that contractually acts as the source of a product. *Note:* The supplier may or may not be the actual builder. (VT) 1475-1999, 1476-2000
(5) A person or organization that enters into a contract with the acquirer for the supply of a software product (which may be part of a system) under the terms of the contract. (C/SE) 1062-1998
(6) *See also:* developer. (C/SE) 1362-1998

suppliers Those who build and/or sell the CASE tools, or intermediate distributors of the CASE tools. (C/SE) 1209-1992w

supply circuit (household electric ranges) The circuit that is the immediate source of the electric energy used by the range. *See also:* appliance outlet. (IA/APP) [90]

supply equipment *See:* electric-supply equipment.

supply impedance (1) (converters having dc input) (self-commutated converters) The impedance appearing in the input lines to the converter. (IA/SPC) 936-1987w
(2) (inverters) The impedance appearing across the input lines to the power inverter with the power inverter disconnected. *See also:* self-commutated inverters. (IA) [62]

supply line, motor *See:* motor supply line.

supply lines *See:* electric supply lines.

supply short-circuit current (self-commutated converters) (converters having dc input) The steady-state current that the dc (direct current) supply system can deliver into a short-circuit across the terminals to which the converter is to be connected. (IA/SPC) 936-1987w

supply station *See:* electric supply station.

supply transient energy (converters having dc input) (self-commutated converters) The energy that the dc (direct current) supply system, due to a transient, is capable of delivering at the terminals to which the terminal is to be connected. (IA/SPC) 936-1987w

supply transient overvoltage (self-commutated converters) (converters having dc input) The peak instantaneous voltage that may appear between the input lines to the converter with the converter disconnected. (IA/SPC) 936-1987w

supply transient voltage (inverters) The peak instantaneous voltage appearing across the input lines to the power inverter with the inverter disconnected. *See also:* self-commutated inverters. (IA) [62]

supply voltage (electron tube) (electrode) The voltage, usually direct, applied by an external source to the circuit of an electrode. *See also:* electrode voltage. (ED) [45], [84]

support (1) (raceway systems for Class 1E circuits for nuclear power generating stations) (raceway) An assembly of structural members whose function is to restrain and provide structural stability for raceways. (PE/NP) 628-1987r
(2) (software) The set of activities necessary to ensure that an operational system or component fulfills its original requirements and any subsequent modifications to those requirements. For example, software or hardware maintenance, user training. *See also:* system life cycle; software life cycle. (C) 610.12-1990

support components The components that give additional strength and rigidity or both to the bus enclosure and are basic subassemblies of the enclosure. (SWG/PE) C37.100-1992, C37.23-1987r

supported A condition regarding optional functionality. (C/PA) 1326.2-1993w, 1003.1-1988s, 1003.5-1999

supported transaction A transaction whose returned data value and side effects are defined by the hardware architecture that is addressed. For example, a write 4 transactions to the 4-byte STATE_CLEAR register is supported. (C/MM) 1212-1991s

support equipment (test, measurement, and diagnostic equipment) Equipment required to make an item, system or facility operational in its environment. This includes all equipment required to maintain and operate the item, system or facility and the computer programs related thereto. (MIL) [2]

supporting data item Data used to describe an anomaly and the environment in which it was encountered. (C/SE) 1044-1993, 1044.1-1995

supporting operations area(s) (nuclear power generating station) Functional area(s) allocated for controls and displays that support plant operation. (PE/NP) 566-1977w

supporting structure The main supporting unit (usually a pole or tower). (NESC/T&D) C2-1997, C2.2-1960

supporting process A collection of work activities that span the entire duration of a software project. Examples of supporting processes include software documentation, quality assurance, configuration management, software reviews, audit processes, and problem resolution activities. (C/SE) 1058-1998

support manual A document that provides the information necessary to service and maintain an operational system or component throughout its life cycle. Typically described are the hardware and software that make up the system or component and procedures for servicing, repairing, or reprogramming it. *Synonym:* maintenance manual. *See also:* installation manual; operator manual; programmer manual; user manual; diagnostic manual. (C) 610.12-1990

support package A package, residing in the `/packages` node, that provides a service to assist in the implementation of a particular device type. (C/BA) 1275-1994

support ring (rotating machinery) A structure for the support of a winding overhang: either constructed of insulating material, carrying support-ring insulation, or separately insulated before assembly. *See also:* stator. (PE) [9]

support-ring insulation (rotating machinery) Insulation between the winding overhang or end winding and the winding support rings. *See also:* rotor; stator. (PE) [9]

support software Software that aids in the development or maintenance of other software, for example, compilers, loaders, and other utilities. *Contrast:* application software. *See also:* system software. (C) 610.12-1990

support staff-hour An hour of effort expended by a member of the staff who does not directly define or create the software

product, but acts to assist those who do. (C/SE) 1045-1992

support test system (test, measurement, and diagnostic equipment) A measurement system used to assess the quality of operational equipments and may include: test equipment; ancillary equipment; supporting documentation; operating personnel. (MIL) [2]

suppressed-carrier modulation Modulation in which the carrier is suppressed. *Note:* By carrier is meant that part of the modulated wave that corresponds in a specified manner to the unmodulated wave. (Std100) 270-1964w

suppressed-carrier operation (data transmission) That form of amplitude-modulation carrier transmission in which the carrier wave is suppressed. (PE) 599-1985w

suppressed carrier transmission A method of transmission in which the carrier frequency is suppressed partially or fully. (C) 610.7-1995

suppressed time delay (navigation aids) A deliberate displacement of the zero of the time scale with respect to the time of emission of a pulse. (AES/GCS) 172-1983w

suppressed-zero instrument An indicating or recording instrument in which the zero position is below the end of the scale markings. *See also:* instrument. (EEC/PE) [119]

suppressed-zero range A range where the zero value of the measured variable, measured signal, etc., is less than the lower range value. Zero does not appear on the scale. *Note:* For example: 20 to 100. (EEC/EMI) [112]

suppression *See:* zero suppression.

suppression characteristic (thyristor) Predicated on a device's ability to block voltage at higher than rated junction temperatures (Ts) when either the voltage or the rate of application of the principal blocking voltage, or both, are below the rated voltage of the silicon controlled rectifier (SCR). (IA/IPC) 428-1981w

suppression corrugation Grooves or surface roughness intentionally placed in the nonactive side of the substrate for reflected bulk-wave signals. (UFFC) 1037-1992w

suppression distributor rotor Rotor of an ignition distributor with a built-in suppressor. *See also:* electromagnetic compatibility. (INT) [53], [70]

suppression rating (thyristor) Repetitive surge ON-state current. A specified ON-state current of short time duration resulting in a specified junction temperature, above rated, immediately prior to supporting a specified principal voltage without turning on (gate signal removed, gate impedance specified). *Note:* Proper coordination with this rating permits a thyristor power controller to limit fault currents without fuse blowing or circuit breaker action. For a given silicon controlled rectifier (SCR) its suppression characteristic may be defined in one of two ways: (1) T_L and I_f together with shape of fault I waveform may be specified together with time $t_2 - t_1$. This then determines maximum V_{line} and shape of reapplied V at time t_2, that is, dv/dt. Alternately, ac frequency and peak V may be given for sinusoidal waveforms. (2) T_s may be specified together with shape and magnitude of reapplied voltage at time t_2. Criteria (2) serves as well as (1) since the magnitude and shape of the fault current determine T_2 together with the time $(t_2 - t_1)$. (IA/IPC) 428-1981w

suppression ratio (suppressed-zero range) The ratio of the lower range-value to the span. *Note:* For example: Range 20 to 100

$$\text{suppression ratio} = \frac{20}{80} = 0.25$$

(EEC/EMI) [112]

suppressive wiring techniques (coupling in control systems) Those wiring techniques which result in the reduction of electric or magnetic fields in the vicinity of the wires which carry current without altering the value of the current. Wires which are candidates for suppressive techniques are generally connected to a noise source, may couple noise into a susceptible circuit by induction. Example: twisting or transposing of alternating-current power lines to reduce the intensity of magnetic field produced by current in these lines. *See also:* compensatory wiring techniques; barrier wiring techniques. (IA/ICTL) 518-1982r

suppressor grid A grid that is interposed between two positive electrodes (usually the screen grid and the plate), primarily to reduce the flow of secondary electrons from one electrode to the other. *See also:* grid; electrode. (ED) 161-1971w

suppressor spark plug A spark plug with a built-in interference suppressor. *See also:* electromagnetic compatibility. [53]

supra-aural receiver A receiver that rests upon the pinna of the ear. (For example, conventional telephone handsets use receivers of the supra-aural type.) (COM/TA) 1206-1994

supra-concha receiver A receiver that rests upon the ridges of the concha cavity. (COM/TA) 1206-1994

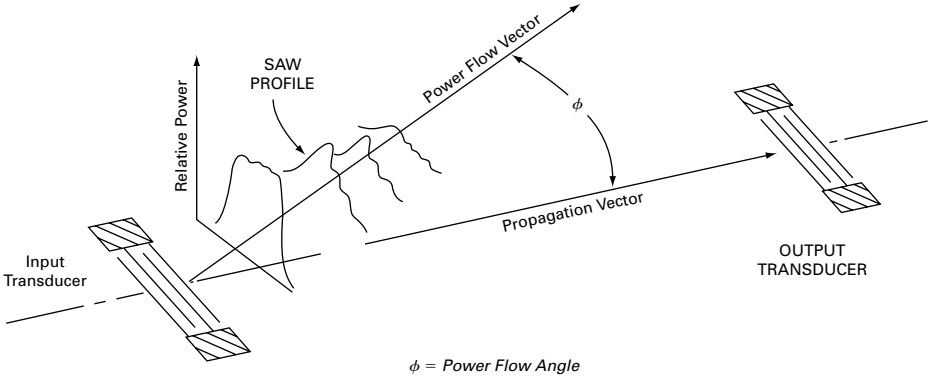
surface acoustic wave (SAW) An acoustic or Rayleigh wave, propagating along a surface of an elastic substrate whose amplitude decays exponentially with substrate depth. See the corresponding figure. (UFFC) 1037-1992w

surface acoustic wave diffraction A phenomenon (analogous to optical diffraction due to the finite aperture of the source) that causes surface acoustic wave beam spreading and wavefront distortion. (UFFC) 1037-1992w

surface active agent *See:* wetting agent.

surface-barrier contact (1) (x-ray energy spectrometers) (semiconductor radiation detectors) A rectifying contact that is characterized by a potential barrier associated with an inversion or accumulation layer; said inversion or accumulation layer being caused by surface charge resulting from the presence of surface states and work function differences, or both. (NPS/NID) 759-1984r, 301-1976s

(2) (charged-particle detectors) A metal-insulator-semiconductor contact structure in which the rectification properties are dominated or heavily influenced by charge trapped at the



ϕ = Power Flow Angle

illustration of wave-related term

interfaces and in the insulator.
(NPS) 300-1988r, 325-1996

surface barrier detector A radiation detector in which the principal rectifying junction is a surface barrier contact.
(NPS) 325-1996

surface barrier radiation detector (1) (charged-particle detectors) A radiation detector for which the blocking contact is a surface barrier contact. (NPS) 300-1988r
(2) (germanium gamma-ray detectors) (x-ray energy spectrometers) (semiconductor radiation detectors) A radiation detector for which the principal rectifying junction is a surface barrier contact.
(NPS/NID) 325-1986s, 759-1984r, 301-1976s

surface channel (semiconductor radiation detectors) A thin region at a semiconductor surface of *p* or *n*-type conductivity created by the action of an electric field; for example, that due to trapped surface charge.
(NPS) 300-1988r, 325-1996

surface connecting cable (electric submersible pump cable) Power cable connecting the ESP (electric submersible pump) cable to surface equipment. (IA/PC) 1017-1985s

surface contamination (plutonium monitoring) Radioactive material deposited on the surface of facilities (floor surfaces, workbench tops, machines, etc.), equipment, or personnel.
(NI) N317-1980r

surface density *See:* recording density.

surface duct An atmospheric radio duct for which the lower boundary is the Earth's surface. (AP/PROP) 211-1997

surface flame spread The propagation of a flame away from the source of ignition across the surface of a liquid or a solid.
(DEI) 1221-1993w

surface heating device A heater comprising series or parallel connected elements having sufficient flexibility to conform to the shape of the surface to be heated. (IA) 515-1997

surface impedance For a monochromatic electromagnetic wave incident on a locally planar boundary, the complex ratio of the total orthogonal electric to magnetic field components tangent to the surface. The surface impedance is taken as having a positive real part. (AP/PROP) 211-1997

surface leakage The passage of current over the surface of a material rather than through its volume.
(Std100) 270-1966w

surface leakage current (I_L) A current that is constant with time, and which usually exists over the surface of the end-turns of the stator winding or between exposed conductors and the rotor body in insulated rotor windings. The magnitude of the surface leakage current is dependent upon temperature and the amount of conductive material, i.e., moisture or contamination on the surface of the insulation.
(PE/EM) 43-2000

surface material A material installed over the soil consisting of, but not limited to, rock or crushed stone, asphalt, or man-made materials. The surfacing material, depending on the resistivity of the material, may significantly impact the body current for touch and step voltages involving the person's feet. (PE/SUB) 80-2000

surface metal raceway (metal molding) A raceway consisting of an assembly of backing and capping. *See also:* raceway.
(EEC/PE) [119]

surface-mounted (illuminating engineering) A luminaire that is mounted directly on the ceiling. (EEC/IE) [126]

surface-mounted device A device, the entire body of which projects in front of the mounting surface.
(SWG/PE) C37.100-1992

surface navigation (navigation aids) Navigation of a vehicle on the surface of the earth. (AES/GCS) 172-1983w

surface noise (mechanical recording) The noise component in the electric output of a pickup due to irregularities in the contact surface of the groove. *See also:* phonograph pickup.
(SP) [32]

surface of position (navigation aids) Any surface defined by a constant value of some navigation quantity.
(AES/GCS) 172-1983w

surface operable (1) A term indicating that the switch and its accessories are operable from above grade.
(SWG/PE) C37.71-1984r
(2) A term indicating that an underground switch and its accessories are operable from above grade.
(SWG/PE) C37.100-1992

surface-potential gradient The slope of a potential profile, the path of which intersects equipotential lines at right angles.
(PE/PSIM) 81-1983

surface, prescribed *See:* prescribed surface.

surface search radar *See:* navigational radar.

surface-skimming (shallow-bulk) acoustic wave A predominantly horizontally polarized bulk shear wave that propagates in a direction almost parallel to and at a depth just below the substrate surface. (UFFC) 1037-1992w

surface, specular *See:* specular surface.

surface state coefficient (m) (overhead-power-line corona and radio noise) A coefficient ($0 < m < 1$) by which the nominal corona inception gradient must be multiplied to obtain the actual corona inception gradient on overhead power lines. *Note:* Examples of conditions that affect the surface state are given in the definition of corona, overhead power lines. *See also:* corona, overhead power lines.
(T&D/PE) 539-1990

surface wave (1) (planar transmission lines) A mode of propagation where the energy is concentrated near the interface of two media having different electric or magnetic properties, or both, and whose field amplitude decays in a direction normal to the interface. (MTT) 1004-1987w
(2) (fiber optics) A wave that is guided by the interface between two different media or by a refractive index gradient in the medium. The field components of the wave may exist (in principle) throughout space (even to infinity) but become negligibly small within a finite distance from the interface. *Note:* All guided modes, but not radiation modes, in an optical waveguide belong to a class known in electromagnetic theory as surface waves. (Std100) 812-1984w
(3) A wave guided by a boundary with a surface impedance whose reactive part exceeds the resistive part. A surface wave is generally characterized as a slow wave having a magnitude that exponentially decreases with distance from the interface but may be modified by curvature. (AP/PROP) 211-1997

surface wave antenna An antenna that radiates power from discontinuities in the structure that interrupt a bound wave on the antenna surface. (AP/ANT) 145-1993

surface-wave transmission line (waveguide) A transmission line in which propagation in other than a TEM mode is constrained to follow the external face of a guiding structure.
(MTT) 146-1980w

surge (1) A transient voltage or current, which usually rises rapidly to a peak value and then falls more slowly to zero, occurring in electrical equipment or networks in service.
(PE/PSIM) 4-1995
(2) A transient wave of voltage or current. (The duration of a surge is not tightly specified, but it is usually less than a few milliseconds.)
(T&D/PE/SPD) 1250-1995, C62.34-1996, C62.48-1995
(3) A transient wave of current, potential, or power in an electric circuit.
(SPD/PE) C62.22-1997, C62.11-1999, C62.62-2000
(4) *See also:* transient. (IA/PSE) 1100-1999

surge arrester (1) (electrical heating applications to melting furnaces and forehearths in the glass industry) A protective device for limiting surge voltages on equipment by discharging or bypassing surge current. It prevents continued flow of current to ground and is capable of repeating these functions, as specified. As surge protective devices, arresters are connected from sensitive circuit points to ground, thus

limiting dangerous surge voltage below damaging levels. (IA) 668-1987w

(2) (ac power circuits) A protective device for limiting surge voltages on equipment by discharging or bypassing surge current; it prevents continued flow of follow current to ground, and is capable of repeating these functions as specified. *Notes:* 1. The term "arrester" as used in IEEE Stds 28-1974 and C62.1-1981 shall be understood to mean "surge arrester." 2. Use of the term "lightning arrester" is deprecated. (SPD/PE) 28-1974, C62.1-1981s

(3) (broadband local area networks) A device that protects electronic equipment against surge voltage and transient signals on trunk and distribution lines. (LM/C) 802.7-1989r

(4) A device that guards against dielectric failure of protection apparatus due to lightning or surge voltages in excess of their dielectric capabilities and serves to interrupt power follow current. (PE/PSC) 487-1992

(5) A protective device for limiting surge voltages on equipment by discharging or bypassing surge current; it limits the flow of power follow current to ground, and is capable of repeating these functions as specified. (SPD/PE) C62.22-1997

(6) A protective device for limiting surge voltages on equipment by diverting surge current and returning the device to its original status. It is capable of repeating these functions as specified. (SPD/PE) C62.11-1999

surge breakdown voltage *See:* impulse sparkover voltage.

surge capacitor (electrical heating applications to melting furnaces and forehearths in the glass industry) Capacitors used to decrease the slope of the surge voltage wave fronts. They help to reduce the voltage stresses on protected apparatus by spreading the impressed voltage over a greater time span. (IA) 668-1987w

surge-crest ammeter A special form of magnetometer intended to be used with magnetizable links to measure the crest value of transient electric currents. *See also:* instrument. (EEC/PE) [119]

surge diverter *See:* surge arrester.

surge electrode current *See:* fault electrode current.

surge energy The energy (in joules) contained in a surge. It can be calculated if the current and voltage wave shape are known:

$$E = \int_{dt} V I \, dt$$

where
E is the energy
t is the time
I is the instantaneous current
V is the instantaneous voltage
T is the time duration of the pulse
$\int_{dt}$ is the time integral

(RL) C136.10-1996

surge generator (impulse generator) An electric apparatus suitable for the production of surges. *Notes:* 1. Surge generator types common in the art are: transformer-capacitor; transformer-rectifier; transformer-rectifier-capacitor; parallel charging; series discharging. 2. Use of the term lightning generator is deprecated. (T&D/PE) [10], [8]

surge ground The point of external connection to the relay system reference or common bus for surge protection. (PE/PSR) C37.90.1-1989r

surge impedance (1) (self-surge impedance) The ratio between voltage and current of a wave that travels on a line of infinite length and of the same characteristics as the relevant line. *See also:* characteristic impedance. (PE) [8], [84]

(2) The impedance of an electrical circuit under surge conditions (which may differ significantly from the impedance of a circuit under steady state conditions). (PE/IC) 1143-1994r

(3) The ratio between voltage and current of a wave that travels on a conductor. (SUB/PE) 998-1996

surge let-through That part of the surge that passes by a surge-protective device with little or no alteration. *See also:* surge remnant. (SPD/PE) C62.45-1992r, C62.62-2000

surge life The number of surges of specified voltage and current amplitudes and waveshapes that may be applied to a device without causing degradation beyond specified limits. The pulse life applies to a device connected to an ac line of specified characteristics and to surges sufficiently spaced in time to preclude the effects of cumulative heating. (SPD/PE) C62.62-2000

surge protection *See:* rate-of-change protection.

surge-protective device (1) The generic term used to describe a device by its protective function, regardless of technology used, ratings, packaging, point of application, etc. (SPD/PE) C62.45-1992r

(2) A device intended to limit transient overvoltages, divert surge currents, or both. It contains at least one nonlinear component. (T&D/PE/IA/PSE) 1250-1995, C62.34-1996, 1100-1999

(3) An assembly of one or more components intended to limit or divert surges. The device contains at least one nonlinear component. (SPD/PE) C62.48-1995

(4) The generic term used to describe a device by its protective function, regardless of technology used, ratings, packaging, point of application, etc. It contains at least one nonlinear component. (SPD/PE) C62.62-2000

surge protective level (surge arresters) The highest value of surge voltage that may appear across the terminals under the prescribed conditions. (PE) [8]

surge protector (1) (gas-tube surge protective devices) A protective device, consisting of one or more surge arresters, a mounting assembly, optional fuses and short-circuiting devices, etc, which is used for limiting surge voltages on low-voltage ($\leq$1000 V rms or 1200 V dc) electrical and electronic equipment or circuits. (SPD/PE) C62.31-1987r

(2) An assembly of protective devices consisting of one or more series, parallel, or any combination of elements used to limit surge voltages, currents, or both to a specified level. (SPD/PE) C62.36-1994

(3) The term used to refer to a specific complete device [generally the equipment under test (EUT) in the context of the present guide], as opposed to a component of the surge protector or a generic surge-protective device. (SPD/PE) C62.45-1992r

surge rating (thyristor) Rated values for surge forward current is given for two time regions:

a) For times smaller than one-half cycle (at 50 hertz (Hz) or 60 Hz) down to approximately one millisecond (ms), the value is given in terms of maximum rated $\int dt_i^2$. They may be given by means of a curve or by single values. No immediate subsequent application of reverse blocking voltage is assumed.

b) Maximum values of surge forward current versus time up to at least 10 cycles. The frequency, the conducting period length, the current waveshape and the reverse blocking voltage capability including the rate-of-rise of voltage for the intervals after and between the surges are specified. In either case, a previous application of rate maximum junction temperature is assumed if not otherwise specifically mentioned.

(IA/IPC) 428-1981w

surge reference equalizer A surge protective device used for connecting equipment to external systems whereby all conductors connected to the protected load are routed, physically and electrically, through a single enclosure with a shared reference point between the input and output ports of each system. (IA/PSE) 1100-1999

surge remnant (surge testing for equipment connected to low-voltage ac power circuits) That part of an applied surge that remains downstream of one or several protective devices. *See also:* surge let-through. (SPD/PE) C62.45-1992r, C62.62-2000

surge-response current The current flowing in a surge-protective device during its diverting function upon occurrence of an impinging surge. (SPD/PE) C62.62-2000

surge-response voltage (1) The voltage profile appearing at the output terminals of a surge-protective device and applied to downstream loads, during and after a specified impinging surge, until normal, stable conditions are reached. (SPD/PE) C62.48-1995, C62.45-1992r

(2) The voltage that appears at the output terminals of a surge-protective device during and after a specified impinging surge, until normal stable conditions are reached. (SPD/PE) C62.62-2000

surge suppressor A device operative in conformance with the rate of change of current, voltage, power, etc., to prevent the rise of such quantity above a predetermined value. (IA/ICTL/IAC) [60]

surge, switching *See:* switching surge.

surge voltage recorder *See:* Lichtenberg figure camera.

surveillance (1) (diesel-generator unit) The determination of the state or condition of a system or subsystem. (PE/NP) 387-1995, 338-1987r

(2) (nuclear power quality assurance) The act of monitoring or observing to verify whether an item or activity conforms to specified requirements. (PE/NP) [124]

(3) The act of monitoring or observing whether an item or activity conforms to specific requirements. A surveillance is less extensive than an audit and concentrates on a single activity or item. It is usually conducted more frequently than an audit. Reports are issued to cognizant personnel or groups with a request for corrective action if required. (NI) N42.23-1995

surveillance radar (1) (navigation aid terms) A search radar used to maintain cognizance of selected traffic within a selected area, such as an airport terminal area or air route. (AES/GCS) 172-1983w

(2) A radar used to detect, locate, and track targets over a large volume of space. (AES) 686-1997

surveillance test The test that can determine the state or condition of a system or subsystem. (PE/NP) 933-1999

surveillance testing Periodic testing to verify that safety systems continue to function or are in a state of readiness to perform their safety function. (PE/NP) 338-1987r

survey (plutonium monitoring) The examination of an area for the purpose of detecting the presence of radioactive materials and determining the quantity of that radioactivity. (NI) N317-1980r

survey contamination control (plutonium monitoring) A survey conducted to determine the presence of unwanted contaminants, normally conducted with alpha or gamma, or both, sensitive instruments. (NI) N317-1980r

survey dose rate (plutonium monitoring) A survey conducted to determine the dose rate at some specified location or area and usually conducted with gamma exposure rate survey instruments. Neutron surveys may also be required frequently. (NI) N317-1980r

survey meter A lightweight battery operated meter that can be held conveniently by hand in order to conduct survey type measurements. (T&D/PE) 1308-1994

susceptance The imaginary part of admittance. (IM/HFIM) 270-1966w, [40]

susceptance relay A mho type of distance relay for which the center of the operating characteristic on the *R-X* diagram is on the *X* axis. *Note:* The equation that describes such a characteristic is $Z = K\sin\theta$, where K is a constant and θ is the phase angle by which the input voltage leads the input current. (SWG/PE) C37.100-1992

susceptibility (1) (grounding in generating stations) The property of an equipment that describes its capability to function acceptably when subjected to unwanted electromagnetic energy. (PE/EDPG) 1050-1996

(2) The inability of a device, equipment, or system to resist an electromagnetic disturbance. *Note:* Susceptibility is the lack of immunity. (SPD/PE) C62.45-1992r

(3) The property of equipment that describes its capability to function acceptably when subjected to unwanted interfering energy. (PE/PSC) 367-1996

(4) (electromagnetic) The characteristic of any equipment that results in an undesired response to an electromagnetic field. (SWG/PE) C37.100-1992

susceptiveness The characteristics of a communication circuit, including its connected apparatus, that determine the extent to which it is adversely affected by inductive fields. (NESC/T&D) C2-1997, C2.2-1960

susceptor Energy absorbing device generally used to transfer heat to another load. (IA) 54-1955w

suspended (illuminating engineering) (pendant) A luminaire which is hung from a ceiling by supports. (EEC/IE) [126]

suspended domain One or more suspended nodes linked by suspended connection(s). Two nodes are part of the same suspended domain if there is a physical connection between them and all ports on the path are suspended. A boundary node is adjacent to one or more suspended domain(s) but not part of the suspended domain(s). (C/MM) 1394a-2000

suspend initiator An active port that transmits the TX_SUSPEND signal and engages in a protocol with its connected peer physical layer (PHY) to suspend the connection. (C/MM) 1394a-2000

suspended job A job that has received a SIGSTOP, SIGTSTP, SIGTTIN, or SIGTTOU signal that caused the process group to stop. A suspended job is a background job, but a background job is not necessarily a suspended job. (C/PA) 9945-2-1993

suspended node An isolated node with at least one port that is suspended. (C/MM) 1394a-2000

suspended port A connected port not operational for normal Serial Bus arbitration, but otherwise capable of detecting both a physical cable disconnection and received bias. (C/MM) 1394a-2000

suspended stripline A type of stripline in which the major dielectric is empty space. The strip conductor is located on a thin dielectric substrate supported between two ground planes. The conductor can be either a single strip or two strips in double registration acting electrically as a single conductor. (MTT) 1004-1987w

suspended substrate microstrip A compound planar transmission line consisting of one or more thin conducting strips of finite width affixed to an insulating substrate of finite thickness and suspended above a single extended conducting ground plane with the strips facing the ground plane and separated from it by free space. The semi-infinite space above the substrate is also free space. (MTT) 1004-1987w

suspended-type handset telephone *See:* hang-up hand telephone set.

suspend target An active port that observes the RX_SUSPEND signal. A suspend target requests all of the physical layer's (PHY's) other active ports to become suspend initiators while the suspend target engages in a protocol with its connected peer PHY to suspend the connection. (C/MM) 1394a-2000

suspension (accelerometer) (inertial sensors) (gyros) A means of supporting and positioning a float (floated gyro), rotor (dynamically tuned gyro, electrically suspended gyro), or proof mass (accelerometer) with respect to the case. (AES/GYAC) 528-1994

suspension insulator (1) One or a string of suspension-type insulators assembled with the necessary attaching members and designed to support in a generally vertical direction the weight of the conductor and to afford adequate insulation from tower or other structure. *See also:* tower; insulator. (T&D/PE) [10]

(2) (composite insulators) As used in IEEE Std 987-1985, any insulator intended primarily to carry tension loads. It includes tangent, deadend, and vee-string installations. (T&D/PE) 987-1985w

suspension-insulator unit An assembly of a shell and hardware, having means for nonrigid coupling to other units or terminal hardware. (EEC/IEPL) [89]

suspension-insulator weights Devices, usually cast iron, hung below the conductor on a special spindle supported by the conductor clamp. *Note:* Suspension insulator weights will limit the swing of the insulator string, thus maintaining adequate clearances. In practice, weights of several hundreds of pounds are sometimes used. *See also:* tower. (T&D/PE) [10]

suspension of reclosing To make inoperative automatic reclosing equipment *Synonyms:* live-line permit; hold order; hold out; hold off. (T&D/PE) 516-1995

suspension strand (messenger) A stranded group of wires supported above the ground at intervals by poles or other structures and employed to furnish within these intervals frequent points of support for conductors or cables. *See also:* cable. (EEC/PE) [119]

sustained When used to quantify the duration of a voltage interruption, refers to the time frame associated with a long duration variation (i.e., greater than 1 min). (SCC22) 1346-1998

sustained bypass current detection (series capacitor) A means to detect prolonged current flow through the protective device and to initiate closing of the bypass device. (T&D/PE) 824-1985s

sustained gap-arc protection (series capacitor) A means to detect prolonged arcing of the protective power gap or arcing of the backup gap if included to initiate closing of the capacitor bypass switch. (T&D/PE) [26]

sustained interruption (1) (electric power system) Any interruption not classified as a momentary interruption. *See also:* outage. (PE/PSE) [54], 346-1973w

(2) Any interruption not classified as a momentary event. Any interruption longer than 5 min. (PE/T&D) 1366-1998

(3) A type of long duration variation. The complete loss of voltage ($<$0.1 pu) on one or more phase conductors for a time greater than 1 min. (SCC22) 1346-1998

(4) (power quality monitoring) The complete loss of voltage for a time period greater than 1 min. (IA/PSE) 1100-1999

sustained-operation influence The change in the recorded value, including zero shift, caused solely by energizing the instrument over extended periods of time, as compared to the indication obtained at the end of the first 15 min of the application of energy. It is to be expressed as a percentage of the full-scale value. *Note:* The coil used in the standard method shall be approximately 80 in in diameter, not over 5 in long, and shall carry sufficient current to produce the required field. The current to produce a field to an accuracy of $\pm$1% in air shall be calculated without the instrument in terms of specific dimensions and turns of the coil. In this coil, 800 ampere-turns will produce a field of approximately 5 oersteds. The instrument under test shall be placed in the center of the coil. (EEC/ERI) [111]

sustained oscillation (1) (system) (sustained vibration) The oscillation when forces controlled by the system maintain a periodic oscillation of the system. Example: Pendulum actuated by a clock mechanism. (Std100) 270-1966w

(2) (gas turbines) Those oscillations in which the amplitude does not decrease to zero, or to a negligibly small, final value. (PE/EDPG) 282-1968w, [5]

sustained overvoltage detection device (series capacitor) A device that detects capacitor voltage above rating but below the operation level of the protective device and initiates an alarm signal or corrective action. (T&D/PE) 824-1985s

sustained overvoltage protection device (series capacitor) A device to detect capacitor voltage that is above rating or predetermined value but is below the sparkover of the protective power gaps, and to initiate the closing of the capacitor bypass switch according to a predetermined voltage-time characteristic. (T&D/PE) [26]

sustained short-circuit test (synchronous machines) A test in which the machine is run as a generator with its terminals short-circuited. (PE) [9]

SVC *See:* switched virtual circuit.

SVV *See:* Segment Variability Value.

swamp buggy *See:* off-road vehicle.

swap (A) An exchange of the contents of two storage areas, usually an area of main storage with an area of auxiliary storage. *See also:* roll in; roll out. **(B)** To perform an exchange as in definition (A). (C) 610.12-1990

sweep A traversing of a range of values of a quantity for the purpose of delineating, sampling, or controlling another quantity. *Notes:* 1. Examples of swept quantities are: the displacement of a scanning spot on the screen of a cathode-ray tube; and the frequency of a wave. 2. Unless otherwise specified, a linear time function is implies; but the sweep may also vary in some other controlled and desirable manner. (BT/IM/AV/HFIM) [34], [40]

sweep accuracy (oscilloscopes) Accuracy of the horizontal (vertical) displacement of the trace compared with the reference independent variable, usually expressed in terms of average rate error as a percent of full scale. *See also:* oscillograph. (IM) 311-1970w

sweep-delay accuracy (oscilloscopes) Accuracy of indicated sweep delay, usually specified in error terms. (IM) 311-1970w

sweep, delayed *See:* delayed sweep.

sweep duration (sawtooth sweep) The time required for the sweep ramp. *See also:* oscillograph. (IM/HFIM) [40]

sweep duty factor For repetitive sweeps, the ratio of the sweep duration to the interval between the start of one sweep and the start of the next. *See also:* oscillograph. (IM/HFIM) [40]

sweep, expanded *See:* magnified sweep.

sweep, external (oscilloscopes) A sweep generated external to the instrument. (IM) 311-1970w

sweep, free-running *See:* free-running sweep.

sweep frequency (oscilloscopes) The sweep repetition rate. *See also:* oscillograph. (IM/HFIM) [40]

sweep gate (oscilloscopes) Rectangular waveform used to control the duration of the sweep; usually also used to unblank the cathode-ray tube for the duration of the sweep. *See also:* oscillograph. (IM/HFIM) [40]

sweep, gated *See:* gated sweep.

sweep generator (oscilloscopes) A circuit that generates a signal used as an independent variable; the signal is usually a ramp, changing value at a constant rate. (IM) 311-1970w

sweep holdoff interval (oscilloscopes) The interval between sweeps during which the sweep and/or trigger circuits are inhibited. (IM) 311-1970w

sweep linearity (oscilloscopes) Maximum displacement error of the independent variable between specified points on the display area. (IM) 311-1970w

sweep mode control (oscilloscopes) The control used on some oscilloscopes to set the sweep for triggered, free-running, or synchronized operation. (IM) 311-1970w

sweep oscillator An oscillator in which the output frequency varies continuously and periodically between two frequency limits. *See also:* telephone station. (COM) [50]

sweep-out time, charge *See:* charge collection time.

sweep range (oscilloscopes) The set of sweep-time/division settings provided. *See also:* oscillograph. (IM/HFIM) [40]

sweep recovery time (oscilloscopes) The minimum possible time between the completion of one sweep and the initiation of the next, usually the sweep holdoff interval. *See also:* oscillograph. (IM/HFIM) [40]

sweep, recurrent *See:* recurrent sweep.

sweep reset (oscilloscopes) In oscilloscopes with single-sweep operation, the arming of the sweep generator to allow it to cycle once. *See also:* oscillograph. (IM/HFIM) [40]

sweep, sine-wave *See:* sine-wave sweep.

sweep, stairstep *See:* stairstep sweep.

sweep switching (automatic) Alternate display of two or more time bases or other sweeps using a single-beam cathode-ray tube: comparable to dual- or multiple-trace operation of the deflection amplifier. (IM) 311-1970w

sweep time (acoustically tunable optical filter) The time to continuously tune the filter over its spectral range. (UFFC) [17]

sweep time division (spectrum analyzer) The nominal time required for the spot in the reference coordinate to move from one graticule division to the next. Also the name of the control used to select this time. (IM) 748-1979w

swell (1) A momentary increase in the power frequency voltage delivered by the mains, outside of the normal tolerances, with a duration of more than one cycle and less than a few seconds. *See also:* surge. (SPD/PE) C62.48-1995, C62.41-1991r

(2) An rms increase in the ac voltage, at the power frequency, for durations from a half-cycle to a few seconds. *See also:* overvoltage; surge. (PE/T&D) 1250-1995

(3) An increase in rms voltage or current at the power frequency for durations from 0.5 cycles to 1 min. Typical values are 1.1 to 1.8 pu. See the figure below. (SCC22/IA/PSE) 1346-1998, 1100-1999

swellable powder A powder that swells upon contact with moisture. A jelly like material is formed to block the longitudinal transmission of moisture. (PE/IC) 1142-1995

swim The visual misrepresentation that occurs when images on a display surface appear to move about their normal positions. (C) 610.6-1991w

swing A transient power flow due to change in relative angles of generation on the system caused by a change in transmission or generation configuration. (PE/PSR) C37.113-1999

swinging compass (navigation aid terms) An accurate, portable magnetic compass used to indicate magnetic headings during aircraft magnetic compass calibration. (AES/GCS) 172-1983w

swingout panel (packaging machinery) A panel that is hinge-mounted in such a manner that the back of the panel may be made accessible from the front of the enclosure. (IA/PKG) 333-1980w

swing rack cabinet An assembly enclosed at the top, side, and rear with front hinged door for front access having a swing open frame for equipment mounting (e. g., nominal 19-inch wide chassis and subpanel assemblies). (SWG/PE) C37.100-1992, C37.21-1985r

switch (1) (telephone loop performance) (switching system) A system that establishes communication channels among two or more of its interfaces at customers' demand. (COM/TA) 820-1984r

(2) (high-voltage switchgear) A device designed to close or open, or both, one or more electric circuits. *See also:* switching device. (SWG/PE) C37.40-1993

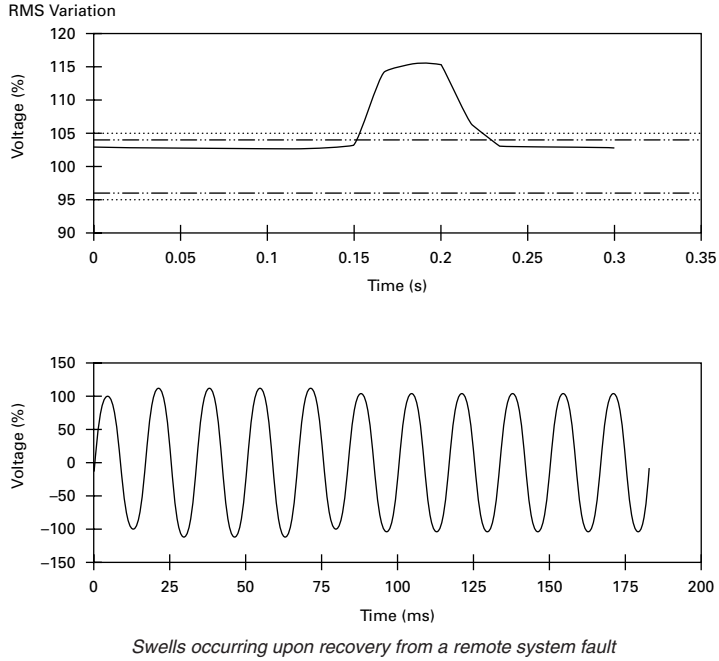
(3) (computers) A device or programming technique for making a selection, for example, a toggle, a conditional jump. (C) [20], [85]

(4) (electric and electronics parts and equipment) A device for making, breaking, or changing the connections in an electric circuit. *Note:* a switch may be operated by manual, mechanical, hydraulic, thermal, barometric, or gravitational means, or by electromechanical means not falling within the definition of "relay." (GSD) 200-1975w

(5) A device that connects ringlets and has queues. It can behave as a consumer (when accepting remote subactions) and as a producer (when forwarding the subaction to another ringlet). It may be visible as a node, with a nodeId, or be transparent, with no nodeId. A switch differs from a bridge in that a switch may connect more than two ringlets, but a bridge connects only two. A switch is generally assumed to connect multiple instances of the same bus standard, while a bridge may connect different bus standards. (C/MM) 1596-1992

(6) A routing device (for example, a box or board) providing a set of numbered node interfaces, constructed from one or more switch chips (or by other methods). *See also:* switch chip; fabric; node interface. (C/BA) 1355-1995

(7) (A) An electrical or mechanical device used for opening, closing, or changing the connection of a circuit. *Synonym:*



Swells occurring upon recovery from a remote system fault

swell

switchpoint. *See also:* DIP switch; display switch; sense switch; function switch; relay. **(B)** To open, close, or change the connection of a circuit as in definition (A). **(C)** A device used for making a selection, as in a toggle.

(C) 610.10-1994

(8) A device for opening and closing or for changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

(NESC/T&D) C2-1997, C2.2-1960

(9) In a propulsion system, the historic name for the lowest level of positive tractive effort and power; so called because it is typically utilized for slow-speed switching movements, such as yard moves, train makeup, etc. (VT) 1475-1999

(10) A layer 2 interconnection device that conforms to the ISO/IEC 10038 [ANSI/IEEE 802.1D-1990] International Standard. *Synonym:* bridge. (C/LM) 802.3-1998

(11) An electronic device connected between two data lines. A switch can exist in one of two states, referred to as "open" and "closed." The state at any time depends on a digital control variable. When the switch is open, the pathway between the two data lines has a very high impedance (ideally infinite) so that signals appearing on the data lines should be completely independent. When the switch is closed, the pathway between the two data lines has a very low impedance (ideally zero) so that signals on the two data lines should be identical. *Notes:* 1. Practical electronic switches implemented in silicon depart from the ideal in at least three ways.

a) In the "on" state, the pathway between the two data lines may have significant impedance, or the relationship between voltage and current may be nonlinear (e.g., a voltage-dependent "impedance").
b) In the "off" state, there may be significant interaction between the signals on the two data lines due to, for example, stray capacitance.
c) In either state there may be significant leakage pathways through which current can pass from the data lines to the surrounding circuitry or vice versa.

The effects of all these characteristics will need to be considered as part of the detailed implementation, especially in a system containing multiple-switch networks. 2. A switching action effectively in series with the function signal pathway can sometimes be obtained without a physically separate device by incorporating a high-Z or enable facility into the functional circuitry. 3. Data transmission through a switch is normally assumed to be bidirectional (as with electromechanical devices such as relays or semiconductor switches such as transmission gates). Some forms of switch can implement only unidirectional voltage or current dependence. *See also:* conceptual switch; high-Z. (C/TT) 1149.4-1999

switch base The main members to which the insulator units are attached. (SWG/PE) C37.30-1992s

switchboard (1) (electric power system) A large single panel, frame, or assembly of panels, on which are mounted, on the face or back or both, switches, overcurrent and other protective devices, buses, and usually instruments. *Note:* Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets. *See also:* panelboard; center of distribution; distribution center.

(NESC) [86]

(2) A type of switchgear assembly that consists of one or more panels with electric devices mounted thereon, and associated framework. *Note:* Switchboards may be classified by function, that is, power switchboards or control switchboards. Both power and control switchboards may be further classified by construction as defined.

(SWG/PE/NESC) C37.100-1992, C2-1997

(3) When referred to in connection with supply of electricity, a large single panel, frame, or assembly of panels, on which are mounted (on the face, or back, or both) switches, fuses, buses, and usually instruments. (T&D) C2.2-1960

switchboard cord A cord that is used in conjunction with switchboard apparatus to complete or build up a telephone connection. (EEC/PE) [119]

switchboard lamp (switchboard) A small electric lamp associated with the wiring in such a way as to give a visual indication of the status of a call or to give information concerning the condition of trunks, subscriber lines, and apparatus. (EEC/PE) [119]

switchboard position (telephone switching systems) That portion of a manual switchboard normally provided for the use of one operator. (COM) 312-1977w

switchboards and panels (electric installations on shipboard) A generator and distribution switchboard receives energy from the generating plant and distributes directly or indirectly to all equipment supplied by the generating plant. A subdistribution switchboard is essentially a section of the generator and distribution switchboard (connected thereto by a bus-feeder and remotely located for reasons of convenience or economy) that distributes energy for lighting, heating, and power circuits in a certain section of the vessel. A distribution panel receives energy from a distribution or subdistribution switchboard and distributes energy to energy-consuming devices or other distribution panels or panelboards. A panelboard is a distribution panel enclosed in a metal cabinet.

(IA/MT) 45-1983s

switchboard section (telephone switching systems) A structural unit providing for one or more operator positions. A complete switchboard may consist of one or more sections.

(COM) 312-1977w

switchboard supervisory lamp (cord circuit or trunk circuit) A lamp that is controlled by one or other of the users to attract the attention of the operator. (EEC/PE) [119]

switchboard supervisory relay A relay that controls a switchboard supervisory lamp. (EEC/PE) [119]

switch chip A VLSI integrated circuit with two or more link interfaces, between which it provides packet routing. *See also:* link; switch. (C/BA) 1355-1995

switch compartment (metal-enclosed interrupter switchgear) That portion of the switchgear assembly that contains one switching device, such as an interrupter switch, power fuse interrupter switch combination, etc., and the associated primary conductors. (SWG/PE) C37.20.3-1996

switch core A magnetic core in which the core material generally has a high residual flux density and a high ratio of residual to saturated flux density; Switching does not occur when the magnetic force imposed on the core is below a threshold value. (C) 610.10-1994w

switched bank A capacitor bank designed for controlled operation.power systems relaying.

(T&D/PE) 1036-1992, C37.99-2000

switched current The prospective current to be broken during a switching operation by each set of main switching or transition contacts (resistance-type LTC) or transfer contacts (reactance-type LTC) incorporated in the arcing switch or arcing tap switch. (PE/TR) C57.131-1995

switched network (1) A computer interconnect that uses switches to allow intermodule communications.

(C/BA) 14536-1995

(2) A network, using a switching technique, to direct messages from the sender to the ultimate recipient. *See also:* circuit-switched network; store-and-forward switched network.

(C) 610.7-1995

switched-service network (telephone switching systems) An arrangement of dedicated switching facilities to provide telecommunications services for a specific customer.

(COM) 312-1977w

switched virtual circuit A virtual circuit that is established on an as-needed basis to interconnect any two end users attached to a network. *Note:* SVC service requires the definition of some call control procedures for the establishment, maintenance, and termination of the virtual circuit. An SVC may not be available when the user wants if too many SVCs are open at once. *See also:* permanent virtual circuit.

(C) 610.7-1995

switched way (1) A way connected to the bus through a three-pole, group operated switch. (SWG/PE) C37.71-1984r

(2) A way connected to the bus through a switch. (SWG/PE) C37.100-1992

(3) A way connected to the bus through a three-phase group-operated switch or single-phase switch. (SWG/PE) C37.73-1998

switchgear (1) A general term covering switching and interrupting devices and their combination with associated control, instrumentation, metering, protective and regulating devices, also assemblies of these devices with associated interconnections, accessories and supporting structures used primarily in connection with the generation, transmission, distribution, and conversion of electric power. (SWG/PE/IA/PSP) C37.20.3-1996, 1015-1997, C37.20.2-1993, C37.20.1-1993r, C37.100-1992

(2) (hydroelectric power plants) An assembly of equipment used to switch and control electrical power. (PE/EDPG) 1020-1988r

switchgear assembly An assembled equipment (indoor or outdoor) including, but not limited to, one or more of the following categories: switching, interrupting, control, instrumentation, metering, protective, and regulating devices; together with their supporting structures, enclosures, conductors, electrical interconnections, and accessories. (SWG/PE) C37.20.1-1993r, C37.20.2-1993, C37.20.3-1996, C37.100-1992

switchgear pothead A pothead intended for use in a switchgear where the inside ambient air temperature may exceed 40°C. It may be an indoor or outdoor pothead that has been suitably modified by silver surfacing (or the equivalent) the current-carrying parts and incorporates sealing materials suitable for the higher operating temperatures. *See also:* pothead. (PE) 48-1975s

switchgear, protective *See:* protective switchgear.

switch hook (hookswitch) A switch on a telephone set, associated with the structure supporting the receiver or handset. It is operated by the removal or replacement of the receiver or handset on the support. *See also:* telephone station; switch stick. (EEC/PE) [119]

switch indicator (1) A device used at a noninterlocked switch to indicate the presence of a train in a block. (EEC/PE) [119]

(2) An indicator that shows the setting of a switch. *See also:* flag. (C) 610.10-1994w

switching (1) The process by which the remanent polarization is reversed (or reoriented) to a new value of P_r (generally equal and opposite). Switching can be produced by electric fields or mechanical stresses. (UFFC) 180-1986w

(2) (single-phase motor) The point in the starting operation at which the stator-winding circuits are switched from one connection arrangement to another. *See also:* asynchronous machine. (PE) [9]

(3) (test, measurement, and diagnostic equipment) The act of manually, mechanically or electrically actuating a device for opening or closing an electrical circuit. (MIL) [2]

(4) In networking, pertaining to a connection that is established by closing switches. *See also:* packet switching; message switching; digital switching; circuit switching. (C) 610.7-1995

(5) The process of using a switch. (C) 610.10-1994w

switching amplifier An amplifier that is designed to be applied so that its output is sustained at one of two specified states dependent upon the presence of specified inputs. *See also:* feedback control system. (IA/ICTL/IAC) [60]

switching array (telephone switching systems) An assemblage of multipled crosspoints. (COM) 312-1977w

switching branch (synchronous motor drives) A part of the circuit, including at least one switching element, bounded by two principal terminals. *Note:* A switching branch may include one or more simultaneously conducting converter switching elements connected together, commutating reactor windings, and other devices intended to protect the semiconductor devices or to ensure their proper function, such as voltage and current dividers, and snubbers. In the simplest case, a switching branch may consist of only the switching element, which may be a single semiconductor device. The adjective "switching" may be omitted when the context of converter circuits is clear. (IA/ID/SPC) 995-1987w, 936-1987w

switching card (test, measurement, and diagnostic equipment) A plug-in device that provides the necessary interconnection to the unit under test. (MIL) [2]

switching circuit (data transmission) Term applied to the method of handling traffic through a switching center, either from a local user or from other switching centers, whereby additional electrical connection is established between the calling and the called station. (PE) 599-1985w

switching coefficient The derivative of applied magnetizing force with respect to the reciprocal of the resultant switching time. It is usually determined as the reciprocal of the slope of a curve of reciprocals of switching times versus values of applied magnetizing forces. The magnetizing forces are applied as step functions. (C) [20]

switching computer A communications computer designed to handle switching messages or packets in a network. *See also:* gate. (C) 610.7-1995, 610.10-1994w

switching control center (telephone switching systems) A place where maintenance analysis and control activities are centralized for switching entities situated in different locations. (COM) 312-1977w

switching current The value of current expressed in rms symmetrical amperes that the power circuit breaker element of the circuit protector interrupts at the rated maximum voltage and rated frequency under the prescribed test conditions. (SWG/PE) C37.100-1992, C37.29-1981r

switching current rating The designated rms current that a load-break connector can connect and disconnect for a specified number of times under specified conditions. (T&D/PE) 386-1995

switching device (switch) A device designed to close or open, or both, one or more electric circuits. *Note:* The term *switch* in international (IEC) practice refers to a mechanical switching device capable of opening and closing rated continuous load current. *See also:* nonmechanical switching device; mechanical switching device. (SWG/PE) C37.100-1992

switching entity (telephone switching systems) A switching network and its control. (COM) 312-1977w

switching function A function that has only a finite number of possible values and whose independent variables each have only a finite number of possible values. (C) 1084-1986w

switching impulse (1) Ideally, an aperiodic transient impulse voltage that rises rapidly to a maximum value and falls, usually less rapidly, to zero. Switching impulses generally have front times of the order of tens to thousands of microseconds, in contrast to lightning impulses, which have front times from fractions of a microsecond to tens of microseconds. 332-1972w

(2) An impulse with a front duration of some tens to thousands of microseconds. (PE/PSIM) 4-1995

switching impulse insulation level (power and distribution transformers) An insulation level expressed in kilovolts of the crest value of a switching impulse withstand voltage. (PE/TR) C57.12.80-1978r

switching impulse protective level (of a surge protective device) The maximum switching impulse expected at the terminals of a surge protective device under specified conditions of operation. *Note:* The switching impulse protective levels given by the higher of either: a) the switching impulse discharge voltage for a specified current magnitude and wave shape, or b) the switching impulse sparkover voltage for a specified voltage wave shape. (C/PE/TR) 1313.1-1996, C57.12.80-1978r

switching-impulse sparkover voltage (arresters) The impulse sparkover voltage with an impulse having a virtual duration of wavefront greater than 30 μs. (PE) [8]

switching impulse test (power and distribution transformers) Application of the "standard switching impulse," a full wave having a front time of 250 μ and a time to half value of 2500 μ, described as a 250/2500 impulse. *Note:* It is recognized that some apparatus standards may have to use a modified wave shape where practical test considerations or particular dielectric strength characteristics make some modification imperative. Transformers, for example, use a modified switching impulse wave with the following characteristics:

— Time to crest greater than 100 μ.
— Exceeds 90% of crest value for at least 200 μ.
— Time to first voltage zero on tail not less than 1000 μ, except where core saturation causes the tail to become shorter.

(PE/TR) C57.12.80-1978r

switching impulse withstand voltage The crest value of a voltage impulse with a front duration from tens to thousands of microseconds that, under specified conditions, can be applied without causing flashover or puncture.

(SWG/PE) C37.34-1994

switching network (telephone switching systems) Switching stages and their interconnections. Within a switching system there may be more than one switching network.

(COM) 312-1977w

switching-network plan (telephone switching systems) The switching stages and their interconnections within a specific switching system. (COM) 312-1977w

switching node The intelligent interface point where the customer's equipment is connected to a public packet switching network. (C) 610.7-1995

switching overvoltage (1) A transient overvoltage in which a slow front, short duration, unidirectional or oscillatory, highly damped voltage is generated (usually by switching or faults).

(PE/C) 1313.1-1996

(2) Any combination of switching surge(s) and temporary overvoltage(s) associated with a single switching episode.

(SPD/PE) C62.22-1997

switching plan (telephone switching systems) A plan for the interconnection of switching entities. (COM) 312-1977w

switching, slave-sweep *See:* slave-sweep switching.

switching stage (telephone switching systems) An assemblage of switching arrays within each inlet that can be connected through a single crosspoint to its associated outlet.

(COM) 312-1977w

switching station (power operations) A station where transmission lines are connected without power transformers.

(PE/PSE) 858-1987s

switching structure An open framework supporting the main switching and associated equipment, such as instrument transformers, buses, fuses, and connections. It may be designed for indoor or outdoor use and may be assembled with or without switchboard panels carrying the control equipment.

(SWG/PE) C37.100-1992

switching surge (1) (conductor stringing equipment) A transient wave of overvoltage in an electrical circuit caused by a switching operation. When this occurs, a momentary voltage surge could be induced in a circuit adjacent and parallel to the switched circuit in excess of the voltage induced normally during steady-state conditions. If the adjacent circuit is under construction, switching operations should be minimized to reduce the possibility of hazards to the workers.

(T&D/PE) 524a-1993r, 524-1992r, 1048-1990

(2) A heavily damped transient electrical disturbance associated with switching. System insulation flashover may precede or follow the switching in some cases but not all.

(SPD/PE) C62.22-1997

switching-surge protective level (arresters) The highest value of switching-surge voltage that may appear across the terminals under the prescribed conditions. *Note:* The switching-surge protective levels are given numerically by the maximums of the following quantities: (1) discharge voltage at a given discharge current, and (2) switching-impulse sparkover voltage. (PE) [8]

switching system (telephone switching systems) A system in which connections are established between inlets and outlets either directly or with intermediate storage.

(COM) 312-1977w

switching-system processor (telephone switching systems) Circuitry to perform a series of switching system operations under control of a program. (COM) 312-1977w

switching time (T_S) (1) (A) (magnetic storage cells) T_s, the time interval between the reference time and the last instant at which the instantaneous voltage response of a magnetic cell reaches a stated fraction of its peak value. **(B) (magnetic storage cells)** T_x, the time interval between the reference time and the first instant at which the instantaneous integrated voltage response reaches a stated fraction of its peak value.

(C) [20]

(2) (hybrid computer linkage components) (settling time) That time required from the time at which a channel is addressed until the selected analog signal is available at the output within a given accuracy. (C) 166-1977w

(3) The time required for a device to change from one state to another. (C) 610.10-1994w

(4) (reliable industrial and commercial power systems planning and design) The period from the time a switching operation is required due to a component failure until that switching operation is completed. Switching operations include such operations as throwover to an alternate circuit, opening or closing a sectionalizing switch or circuit breaker, reclosing a circuit breaker following a trip-out due to a temporary fault, etc. (PE/IA/PSE) [54], 493-1997, 399-1997

(5) Time taken to switch from one transmission direction to the other in alternating single talk conversation on a handsfree telephone (HFT). (COM/TA) 1329-1999

switching torque (1) (motor having an automatic connection change during the starting period). The minimum external torque developed by the motor as it accelerates through switch operating speed. *Note:* It should be noted that if the torque on the starting connection is never less than the switching torque, the pull-up torque is identical with the switching torque; however, if the torque on the starting connection falls below the switching torque at some speed below switch operating speed, the pull-up and switching torques are not identical. *See also:* asynchronous machine. (EEC/PE) [119]

(2) (single-phase motor) The minimum torque which a motor will provide at switching at normal operating temperature, with rated voltage applied at rated frequency. *See also:* asynchronous machine. (PE) [9]

switching transients (radiation survey instruments) Sudden excursions of the meter which occur when the range switch is changed from one position to the next.

(NI) N13.4-1971w

switching variable A variable that may take only a finite number of possible values or states. *Synonym:* logical variable.

(C) 1084-1986w

switch inrush current capability for single capacitance (as applied to interrupter switches) This capability is a function of the rated switching current, for single capacitance, the rated differential capacitance voltage (minimum) and the maximum design voltage of the switch. *Note:* This can be calculated from the equation:

$$\text{Capability, in Peak Amperes} = \sqrt{2} I_C \sqrt{1 + \frac{0.816 E_m}{\Delta V_{min}}}$$

where

I_C = Rated switching current for single capacitance
ΔV_{min} = Rated differential capacitance voltage, minimum
E_m = Switch rated maximum voltage, in volts, rms

(SWG/PE) C37.100-1992

switch, load matching *See:* load-matching switch.

switch, load transfer *See:* load transfer switch.

switch machine A quick-acting mechanism, electrically controlled, for positioning track switch points, and so arranged that the accidental trailing of the switch points does not cause damage. A switch machine may be electrically or pneumatically operated. *See also:* car retarder. (EEC/PE) [119]

switch machine lever lights A group of lights indicating the position of the switch machine. (EEC/PE) [119]

switch-machine point detector *See:* point detector.

switch mode (thyristor) The starting instant of the controller ON-state interval is nonperiodic. This instant may be random (analogous to contactor operation), or it may be selected, for example, at voltage zero. (IA/IPC) 428-1981w

switch onto fault protection This provides tripping in the event that the breaker is closed into a zero voltage bolted fault, such as occurs if the grounding chains were left on the line following maintenance. (PE/PSR) C37.113-1999

switch, optical *See:* optical switch.

switch or contactor, load *See:* load switch or contactor.

switch part class designation A code which identifies the curve that relates the loadability factor (LF) of a switch part material and function to the ambient temperature θ_A. (SWG/PE) C37.30-1992s, C37.37-1996

switch point (watthour meters) The transition from one time-of-use period to another. (ELM) C12.13-1985s

switchpoint *See:* switch.

switch register A register made up of a number of manual switches, typically equal to the number of bits in the computer, and generally located on the computer control panel. *Note:* Used to manually enter addresses and data into main storage and to manually intervene in program execution. (C) 610.10-1994w

switchroom (telephone switching systems) That part of a building that houses an assemblage of switching equipment. (COM) 312-1977w

switch signal A low two-indication horizontal color light signal with electric lamps for indicating position of switch or derail. (EEC/PE) [119]

switch sleeve A component of the linkage between the centrifugal mechanism and the starting-switch assembly. *See also:* starting-switch assembly. (EEC/PE) [119]

switch starting *See:* preheat-starting.

switch stick A device with an insulated handle and a hook or other means for performing stick operation of a switching device. *Synonym:* switch hook. (SWG/PE) C37.100-1992

switch train A series of switches in tandem. (EEC/PE) [119]

switch-type function generator A function generator using a multitap switch rotated in accordance with the input and having its taps connected to suitable voltage sources. *See also:* electronic analog computer. (C) 165-1977w

swivel link (conductor stringing equipment) A swivel device designed to connect pulling lines and conductors together in series or connect one pulling line to the drawbar of a pulling vehicle. The device will spin and help relieve the torsional forces which build up in the line or conductor under tension. (T&D/PE) 524-1992r

SWR *See:* residual standing-wave ratio; standing-wave-ratio indicator.

syllabic companding (modulation systems) Companding in which the gain variations occur at a rate comparable to the syllabic rate of speech; but do not respond to individual cycles of the audio-frequency signal wave. (IT) [7]

syllable articulation (percent syllable articulation) The percent articulation obtained when the speech units considered are syllables (usually meaningless and usually of the consonant-vowel-consonant type). *See also:* volume equivalent; articulation (percent articulation) and intelligibility (percent intelligibility). (EEC/PE) [119]

syllable hyphen *See:* discretionary hyphen.

symbol (1) A representation of something by reason of relationship, association, or convention. *See also:* logic symbol. (C) [20], [85]

(2) (packaging machinery) A sign, mark, or drawing agreed upon to represent an electrical device of component part thereof. (IA/PKG) 333-1980w

(3) (computer graphics) A conventional representation of an object, composed of one or more display elements that is expressed as a unit. (C) 610.6-1991w

(4) A 16 bit unit of data accompanied by flag information. The flag information may be explicitly present as a 17th bit, or implied by the context. Symbols are transmitted one after another to form SCI packets or idles. The particular physical layer used to transmit these symbols is not visible to the logical layer. (C/MM) 1596-1992

(5) Refers to data within an SCI packet. A 16-bit unit of data accompanied by flag information. The flag information may be explicitly present as a 17th bit, or implied by the context. Symbols are transmitted one after another to form SCI packets or idles. The particular physical layer used to transmit these symbols is not visible to the logical layer. (C/MM) 1596.3-1996

(6) A 10-bit, 8B/10B encoded byte. (C/BA) 1393-1999

(7) Two signal elements. Four symbols are defined: data_zero, data_one, non-data_J, and non-data_K. (C/LM) 8802-5-1998

(8) The smallest unit of data transmission on the medium. Symbols are unique to the coding system employed. 100BASE-T4 uses ternary symbols; 10BASE-T and 100BASE-X use binary symbols or code bits; 100BASE-T2 uses quinary symbols. (C/LM) 802.3-1998

(9) The radio-frequency (RF) energy and/or the RF current advisory symbols. (NIR/SCC28) C95.2-1999

(10) (data management) *See also:* code. (C) 610.5-1990w

symbol for a quantity (abbreviation) (quantity symbol) A letter (which may have letters or numbers, or both, as subscripts or superscripts, or both), used to represent a physical quantity or a relationship between quantities. *Compare with:* abbreviation; functional designation; mathematical symbol; reference designation; symbol for a unit. *See also:* abbreviation. (GSD) 267-1966

symbol for a unit (unit symbol) (abbreviation) A letter, a character, or combinations thereof, that may be used in place of the name of the unit. With few exceptions, the letter is taken from the name of the unit. *Compare with:* abbreviation; mathematical symbol; symbol for a quantity. *See also:* abbreviation. (GSD) 267-1966

symbolic address (1) (computers) An address expressed in symbols convenient to the programmer. (C) [20], [85]

(2) (software) An address expressed as a name or label that must be translated to the absolute address of the device or storage location to be accessed. *Contrast:* absolute address. (C) 610.12-1990

(3) An address, expressed in symbols convenient to the computer programmer, that will be translated to an absolute or virtual address before it can be interpreted by the computer. (C) 610.10-1994w

symbolic addressing An addressing mode in which the address field of an instruction contains a symbolic address. (C) 610.10-1994w

symbolic coding (computers) Coding that uses machine instructions with symbolic addresses. (C) [20], [85]

symbolic execution (software) A software analysis technique in which program execution is simulated using symbols, such as variable names, rather than actual values for input data, and program outputs are expressed as logical or mathematical expressions involving these symbols. (C) 610.12-1990

symbolic image A digital image in which the value associated with each pixel is a symbol, rather than a gray level. (C) 610.4-1990w

symbolic language A programming language that expresses operations and addresses in symbols convenient to humans rather than in machine language. Examples are assembly language, high-order language. *Contrast:* machine language. *See also:* list processing language. (C) 610.12-1990, 610.13-1993w

symbolic link A type of file that contains a pathname. Rather than containing data itself, this type of file will resolve to another, as defined by the contained pathname. The way in which this type of file is handled by implementations of this standard is undefined. (C/PA) 1387.2-1995

symbolic logic The discipline that treats formal logic by means of a formalized artificial language or symbolic calculus whose purpose is to avoid the ambiguities and logical inadequacies of natural languages. (C) [20], [85]

symbolic model A model whose properties are expressed in symbols. Examples include graphical models, mathematical models, narrative models, software models, and tabular models. *Contrast:* physical model. (C) 610.3-1989w

symbolic processor (A) A computer which manipulates data at the algorithm level, typically not reducing computed equation values to a numerical resultant value. **(B)** A processor optimized to manipulate character strings and other symbolic data. *Note:* This is often done in the LISP or Prolog programming languages. (C) 610.10-1994

Symbolic Programming Systems (SPS) A programming language in which terms may represent quantities and locations. (C) 610.13-1993w

symbolic quantity *See:* mathematico-physical quantity.

symbolic trace A record of the source statements and branch outcomes that are encountered when a computer program is executed using symbolic, rather than actual, values for input data. *See also:* subroutine trace; variable trace; retrospective trace; execution trace. (C) 610.12-1990

symbol manipulation language *See:* list processing language.

symbol rank *See:* digit place.

symbol rate (1) The total number of symbols per second transferred to or from the Medium Dependent Interface (MDI) on a single wire pair. For 100BASE-T4, the symbol rate is 25 MBd; for 100BASE-X, the symbol rate is 125 MBd; for 100BASE-T2, the symbol rate is 25 MBd. (C/LM) 802.3-1998

(2) (local area networks) The number of symbols transmitted per second and expressed in baud (e.g., 1 Mbd = 1 000 000 symbols per second). (C) 8802-12-1998

symbol table A table that presents program symbols and their corresponding addresses, values, and other attributes. (C) 610.12-1990

symbol time (ST) The duration of one symbol as transferred to and from the Medium Dependent Interface (MDI) via a single wire pair. The symbol time is the reciprocal of the symbol rate. (C/LM) 802.3-1998

symmetrical The shape of the ac current waves about the zero axis (when both sides have equal value and configuration). (IA/PSE) 241-1990r

symmetrical alternating current A periodic alternating current in which points one-half a period apart are equal and have opposite signs. *See also:* network analysis; alternating function. (Std100) 270-1966w

symmetrical channel One of a pair of channels in which the transmit and receive directions of transmission have the same data signaling rate. (C) 610.10-1994w

symmetrical component (ac component) (of a total current) That portion of the total current that constitutes the symmetry. (SWG/PE) C37.100-1992

symmetrical components (A) (set of polyphase alternating voltages) The symmetrical components of an unsymmetrical set of sinusoidal polyphase alternating voltages of m phases are the m symmetrical sets of polyphase voltages into which the unsymmetrical set can be uniquely resolved, each component set having an angular phase lag between successive members of the set that is a different integral multiple of the characteristic angular phase difference for the number of phases. The successive component sets will have phase differences that increase from zero for the first set to $(m - 1)$ times the characteristic angular phase difference for the last set. The phase sequence of each component set is identified by the integer that denotes the number of times the angle of lag between successive members of the component set contains the characteristic angular phase difference. If the members of an unsymmetrical set of alternating polyphase voltages are not sinusoidal, each voltage is first resolved into its harmonic components, then the harmonic components of the same period are grouped to form unsymmetrical sets of sinusoidal voltages, and finally each harmonic set of sinusoidal voltages is uniquely resolved into its symmetrical components. Because the resolution of a set of polyphase voltages into its harmonic components is also unique, it follows that the resolution of an unsymmetrical set of polyphase voltages into its symmetrical components is unique. There may be a symmetrical-component set of voltages for each of the possible phase sequences from zero to $(m - 1)$ and for each of the harmonics present from 1 to r, where r may approach infinity in particular cases. Each member of a set of symmetrical component voltages of kth phase sequence and rth harmonic may be denoted by

$$e_{ski} = (2)^{1/2} E_{akr} \cos\left(r\omega t + \alpha_{akr} - (s - 1)\, K \frac{2\pi}{m}\right)$$

where e_{skr} is the instantaneous voltage component of phase sequence k and harmonic r in phase s. E_{akr} is the root-mean-square amplitude of the voltage component of phase sequence k and harmonic r, using phase a as reference, a_{akr} is the phase angle of the first member of the set, selected as phase a, with respect to a common reference. The letter s as the first subscript denotes the phase identification of the individual member, a, b, c, etc., for successive members, and a denotes that the first phase, a, has been used as a reference from which other members are specified. The second subscript, k, denotes the phase sequence of the component, and may run from 0 to $m - 1$. The third subscript denotes the order of the harmonic, and may run from 1 to ∞. The letter s as an algebraic quantity denotes the member of the set and runs from 1 for phase a to m for the last phase. Of the m symmetrical component sets for each harmonic, one will be of zero phase sequence, one of positive phase sequence, and one of negative phase sequence. If the number of phases m ($m > 2$) is even, one of the symmetrical component sets for $k = m/2$ will be a single-phase symmetrical set (polyphase voltages). The zero-phase-sequence component set will constitute a zero-phase symmetrical set (polyphase voltages), and the remaining sequence components will constitute polyphase symmetrical sets (polyphase voltages). *See also:* network analysis. **(B) (set of polyphase alternating currents)** Obtained from the corresponding definition for symmetrical components (set of polyphase alternating voltages) by substituting the word current for voltage wherever it appears. *See also:* network analysis. (Std100/OLD TERMS) 270-1966

symmetrical fractional-slot winding (rotating machinery) A distributed winding in which the average number of slots per pole per phase is not integral, but in which the winding pattern repeats after every pair of poles, for example, $3\frac{1}{2}$ slots per pole per phase. *See also:* rotor; stator. (PE) [9]

symmetrical grid current That portion of the symmetrical ground fault current that flows between the grounding grid and surrounding earth. It may be expressed as

$$I_g = S_f \times I_f$$

where
I_g = the rms symmetrical grid current in A
I_f = the rms symmetrical ground fault current in A
S_f = the fault current division factor

(PE/SUB) 80-2000

symmetrical ground fault current The maximum rms value of symmetrical fault current after the instant of a ground fault initiation. As such, it represents the rms value of the symmetrical component in the first half-cycle of a current wave that develops after the instant of fault at time zero. For phase-to-ground faults

$$I_{f(0+)} = 3I''_0$$

where

$I_{f(0+)}$ = the initial rms symmetrical ground fault current

I''_0 = the rms value of zero-sequence symmetrical current that develops immediately after the instant of fault initiation, reflecting the subtransient reactances of rotating machines contributing to the fault

This rms symmetrical fault current is shown in an abbreviated notation as I_f, or is referred to only as $3I_0$. The underlying reason for the latter notation is that, for purposes of this guide, the initial symmetrical fault current is assumed to remain constant for the entire duration of the fault. (PE/SUB) 80-2000

symmetrically cyclically magnetized condition A condition of a magnetic material when it is in a cyclically magnetized condition and the limits of the applied magnetizing forces are equal and of opposite sign, so that the limits of flux density are equal and of opposite sign. (Std100) 270-1966w

symmetrical network *See:* structurally symmetrical network.

symmetrical periodic function A function having the period 2π is symmetrical if it satisfies one or more of the following identities.

(1) $f(x) = -f(-x)$

(2) $f(x) = -f(\pi + x)$

(3) $f(x) = -f(\pi - x)$

(4) $f(x) = f(-x)$

(5) $f(x) = f(\pi + x)$

(6) $f(x) = f(\pi - x)$

See also: network analysis. (Std100) 270-1966w

symmetrical set (A) (polyphase voltages) A symmetrical set of polyphase voltages of m phases is a set of polyphase voltages in which each voltage is sinusoidal and has the same amplitude, and the set is arranged in such a sequence that the angular phase difference between each member of the set and the one following it, and between the last member and the first, can be expressed as the same multiple of the characteristic angular phase difference $2\pi/m$ radians. A symmetrical set of polyphase voltages may be expressed by the equations

$$e_a = (2)^{1/2}E_{ar}\cos(r\omega t + \alpha_{ar})$$

$$e_b = (2)^{1/2}E_{ar}\cos\left(r\omega t + \alpha_{ar} - k\frac{2\pi}{m}\right)$$

$$e_c = (2)^{1/2}E_{ar}\cos\left(r\omega t + \alpha_{ar} - 2k\frac{2\pi}{m}\right)$$

$$e_m = (2)^{1/2}E_{ar}\cos\left(r\omega t + \alpha_{ar} - (m-1)\,k\frac{2\pi}{m}\right)$$

where E_{ar} is the root-mean-square amplitude of each member of the set, r is the order of the harmonic of each member, with respect to a specified period. a_{ar} is the phase angle of the first member of the set with respect to a selected reference. k is an integer that denotes the phase sequence. *Notes:* 1. Although sets of polyphase voltages that have the same amplitude and waveform but that are not sinusoidal possess some of the characteristics of a symmetrical set, only in special cases do the several harmonics have the same phase sequence. Since phase sequence is an important feature in the use of symmetrical sets, the definition is limited to sinusoidal quantities. This represents a change from the corresponding definition in the 1941 edition of the American Standard Definitions of Electrical Terms. 2. This definition may be applied to a two-phase four-wire or five-wire circuit if m is considered to be 4 instead of 2. The concept of symmetrical sets is not directly applicable to a two-phase three-wire circuit. **(B) (polyphase currents)** This definition is obtained from the corresponding definitions for voltage by substituting the word current for voltage, and the symbol I for E and b for a wherever they appear. The subscripts are unaltered. *See also:* network analysis. (Std100) 270-1966

symmetrical terminal voltage Terminal voltage measured in a delta network across the mains lead. *See also:* electromagnetic compatibility. (EMC) [53]

symmetrical transducer (specified terminations in general) A transducer in which all possible pairs of specified terminations may be interchanged without affecting transmission. *See also:* transducer. (Std100) 270-1966w

symmetric channel *See:* binary symmetric channel; symmetrical channel.

Symmetric List Processing Language (SLIP) A high-order list processing language using a structure reader, a parser that can traverse a data structure. (C) 610.13-1993w

symmetric multiprocessor A multiprocessor system in which each processor is equal to all others. *Contrast:* asymmetric multiprocessor. (C) 610.10-1994w

symmetric system Tunnel lighting system or luminaires having a symmetric light distribution with respect to the direction of travel. (RL) C136.27-1996

symmetric traversal *See:* inorder traversal.

synapse The junction between two neural elements, which has the property of one-way propagation. (EMB) [47]

sync (1) (television) Abbreviation for synchronizing signal extensively used in speech and writing. *Note:* This abbreviation is so commonly used that it has achieved the status of a word. (BT/AV) 201-1979w

(2) A function in which a bedside communications controller (BCC) may precisely synchronize a common fiduciary (now) maintained by multiple device communications controllers (DCCs) to the value of its own real-time clock, to an accuracy of approximately 1 ms. The BCC implements this function by transmitting a 3 μs pulse to one or more DCCs. A sync pulse may also be transmitted by a BCC or a DCC for reasons other than time synchronization. (EMB/MIB) 1073.4.1-2000

synchro control transformer (synchro or selsyn devices) A transformer with relatively rotatable primary and secondary windings. The primary inputs is a set of two or more voltages from a synchro transmitter that define an angular position relative to that of the transmitter. The secondary output voltage varies with the relative angular alignment of primary and secondary windings, of the control transformer and the position of the transmitter. The output voltage is substantially zero in value at a position known as correspondence. *See also:* synchro system. (PE) [9]

synchro differential receiver (synchro or selsyn devices) (motor) A transformer identical in construction to a synchro differential transmitter but used to develop a torque increasing with the difference in the relative angular displacement (up to about 90 electrical degrees) between the two sets of voltage input signals to its primary and secondary windings, the torque being in a direction to reduce this difference to zero. *See also:* synchro system. (PE) [9]

synchro differential transmitter (rotating machinery) (generator) A transformer with relatively rotatable primary and secondary windings. The primary input is a set of two or more voltages that define an angular position. The secondary output is a set of two or more voltages that represent the sum or difference, depending upon connections, of the position defined by the primary input and the relative angular displacement between primary and secondary windings. *See also:* synchro system. (PE) [9]

synchronism The state where connected alternating-current systems, machines, or a combination operate at the same frequency and where the phase angle displacement between voltages in them are constant, or vary about a steady and stable

average value. *See also:* asynchronous machine. (PE/PSR) 1344-1995, [9]

synchronism-check relay A verification relay whose function is to operate when two input voltage phasors are within predetermined limits. (SWG/PE) C37.100-1992

synchronization (data transmission) A means of ensuring that both transmitting and receiving stations are operating together (equal scanning line frequencies) in a fixed phase relationship. (PE) 599-1985w

synchronization bit One or more bits that are added to a string of data to allow a receiving circuit to align its clocks with the data. *See also:* clock track. (C) 610.10-1994w

synchronization error (navigation) (navigation aids) The error due to imperfect timing of two operations; this may or may not include signal transmission time. (AES/GCS) 172-1983w

synchronization internal The time period between clock synchronization cycles. (C/BA) 896.2-1991w

synchronization time (gyros) The time interval required for the gyro rotor to reach synchronous speed from standstill. (AES/GYAC) 528-1994

synchronized I/O completion The state of an I/O operation that has either been successfully transferred or diagnosed as unsuccessful. (C/PA) 1003.5-1999, 9945-1-1996

synchronized I/O data integrity completion A degree of completion for an I/O operation that occurs when:

1) For read, the operation has been completed or diagnosed as unsuccessful. The read is complete only when an image of the data has been successfully transferred to the requesting task. If there were any pending write requests affecting the data to be read at the time that the synchronized read operation was requested, these write requests shall be successfully transferred prior to reading the data.
2) For write, the operation has been completed or diagnosed as unsuccessful. The write is complete only when the data specified in the write request is successfully transferred, and all file system information required to retrieve the data is successfully transferred.

File attributes that are not necessary for data retrieval (***Last Access Time***, ***Last Modification Time***, ***Last Status Change Time***) need not be successfully transferred prior to returning to the calling task. (C/PA) 1003.5-1999, 9945-1-1996

synchronized I/O file integrity completion (1) Identical to a synchronized I/O data integrity completion with the addition that all file attributes relative to the I/O operation (including ***Last Access Time***, ***Last Modification Time***, ***Last Status Change Time***) shall be successfully transferred prior to returning to the calling task. (C) 1003.5-1999
(2) Identical to a synchronized I/O data integrity completion with the addition that all file attributes relative to the I/O operation (including access time, modification time, status change time) shall be successfully transferred prior to returning to the calling process. (C/PA) 9945-1-1996

synchronized I/O operation An I/O operation performed on a file that provides the application assurance of the integrity of its data and files. *See also:* synchronized I/O file integrity completion; synchronized I/O data integrity completion. (C/PA) 1003.5-1999, 9945-1-1996

synchronous I/O operation (1) An I/O operation that causes the task requesting the I/O to be blocked from further use of the processor until that I/O operation completes. *Note:* A synchronous I/O operation does not imply synchronized I/O data integrity completion or synchronized I/O file integrity completion. (C) 1003.5-1999
(2) An I/O operation that causes the process requesting the I/O to be blocked from further use of the processor until that I/O operation completes. *Note:* A synchronous I/O operation does not perforce imply synchronized I/O data integrity completion or synchronized I/O file integrity completion. (C/PA) 9945-1-1996

synchronized operation (1) An operating mode where system facilities are connected and controlled to operate at the same frequency. (PE/PSE) 858-1993w
(2) (power operations) An operation wherein power facilities are electrically connected and controlled to operate at the same frequency. (PE/PSE) 346-1973w

synchronized phasor A phasor calculated from data samples using a standard time signal as the reference for the sampling process. In this case, the phasors from remote sites have a defined common phase relationship. (PE/PSR) 1344-1995

synchronized sweep (spectrum analyzer) (non-real time spectrum analyzer) (oscilloscopes) A sweep that would free run in the absence of an applied signal but in the presence of the signal is synchronized by it. *See also:* oscillograph. (IM) 748-1979w

synchronizing (1) (rotating machinery) The process whereby a synchronous machine, with its voltage and phase suitably adjusted, is paralleled with another synchronous machine or system. *See also:* asynchronous machine. (PE) [9]
(2) (facsimile) The maintenance of predetermined speed relations between the scanning spot and the recording spot within each scanning line. *See also:* facsimile. (COM) 168-1956w
(3) (television) Maintaining two or more scanning processes in phase. (BT/AV) [34]
(4) (pulse terminology) The process of rendering a first pulse train or other sequence of events synchronous with a second pulse train. (IM/WM&A) 194-1977w
(5) (hydroelectric power plants) Process of paralleling and connecting a synchronous generator to another source. (PE/EDPG) 1020-1988r

synchronizing coefficient (rotating machinery) The quotient of the shaft power and the angular displacement of the rotor. *Note:* It is expressed in kilowatts per electrical radian. Unless otherwise stated, the value will be for rated voltage, load, power-factor, and frequency. *See also:* asynchronous machine. (PE) [9]

synchronizing or synchronism-check device (power system device function numbers) A device that operates when two ac circuits are within the desired limits of frequency, phase angle, and voltage, to permit or to cause the paralleling of these two circuits. (PE/SUB) C37.2-1979s

synchronizing reactor (power and distribution transformers) A current-limiting reactor for connecting momentarily across the open contacts of a circuit-interrupting device for synchronizing purposes. *See also:* reactor. (PE/TR) C57.12.80-1978r, [57]

synchronizing relay A programming relay whose function is to initiate the closing of a circuit breaker between two ac sources when the voltages of these two sources have a predetermined relationship of magnitude, phase angle, and frequency. (SWG/PE) C37.100-1992

synchronizing signal (1) (television) The signal employed for the synchronizing of scanning. *Note:* In television, this signal is composed of pulses at rates related to the line and field frequencies. The signal usually originates in a central synchronizing generator and is added to the combination of picture signal and blanking signal, comprising the output signal from the pickup equipment, to form the composite picture signal. In a television receiver, this signal is normally separated from the picture signal and is used to synchronize the deflection generators. (BT/AV) [34]
(2) (facsimile) A signal used for maintenance of predetermined speed relations between the scanning spot and recording spot within each scanning line. *See also:* facsimile signal. (COM) 168-1956w
(3) (oscillograph) A signal used to synchronize repetitive functions. *See also:* oscillograph. (IM/HFIM) [40]
(4) (telecommunications) A special signal which may be sent to establish or maintain a fixed relationship in synchronous systems. (COM) [49]

synchronizing signal compression (television) The reduction in gain applied to the synchronizing signal over any part of its amplitude range with respect to the gain at a specified reference level. *Notes:* 1. The gain referred to in the definition is for a signal amplitude small in comparison with the total peak-to-peak composite picture signal involved. A quantitative evaluation of this effect can be obtained by a measurement of differential gain. 2. Frequently the gain at the level of the peaks of synchronizing pulses is reduced with respect to the gain at the levels near the bases of the synchronizing pulses. Under some conditions, the gain over the entire synchronizing signal region of the composite picture signal may be reduced with respect to the gain in the region of the picture signal. *See also:* television. (BT/AV) [34]

synchronizing signal level (television) The level of the peaks of the synchronizing signal. *See also:* television. (BT/AV) [34]

synchronizing torque (synchronous machines) The torque produced, primarily through interaction between the armature currents and the flux produced by the field winding, tending to pull the machine into synchronism with a connected power system or with another synchronous machine. (PE) [9]

synchronous (1) A mode of transmission in which the sending and receiving terminal equipment are operating continuously at the same rate and are maintained in a desired phase relationship by an appropriate means. (COM/TA) 1007-1991r

(2) Protocol operation in which only one exchange between a given pair of entities can be handled at any moment in time. The current exchange must complete before the next can be initiated. (LM/C) 15802-2-1995

(3) Describes an activity specified by a function that is expected to be complete when the function returns. (C/MM) 855-1990

synchronous assignment An assignment that takes place when a signal or variable value is updated as a direct result of a clock edge expression evaluating as true. (C/DA) 1076.6-1999

synchronous booster converter A synchronous converter having a mechanically connected alternating-current reversible booster connected in series with the alternating-current supply circuit for the purpose of adjusting the output voltage. *See also:* converter. (EEC/PE) [119]

synchronous booster inverter An inverter having a mechanically connected reversible synchronous booster connected in series for the purpose of adjusting the output voltage. *See also:* converter. (EEC/PE) [119]

synchronous capacitor (rotating machinery) A synchronous machine running without mechanical load and supplying or absorbing reactive power to or from a power system. *See also:* converter; synchronous condenser. (PE) [9]

synchronous circuit A circuit in which clock pulses synchronize the operations of the elements. *Contrast:* asynchronous circuit. (C) 610.10-1994w

synchronous communication In the IEEE 1451.1 client-server model, refers to a stateless communication in which the client blocks until the return is received from the server. That is, the client can perform no activities until unblocked by the return of the result. (IM/ST) 1451.1-1999

synchronous computer (1) A computer in which each event, or the performance of each operation, starts as a result of a signal generated by a clock. *Contrast:* asynchronous computer. (C) [20], [85], 610.10-1994w

(2) A computer in which each event or operation is performed upon receipt of a signal generated by the completion of a previous event or operation, or upon availability of the system resources required by the event or operation. (C) 610.10-1994w

synchronous condenser* **(1) (electric installations on shipboard)** A synchronous phase modifier running without mechanical load, the field excitation of which may be varied so as to modify the power factor of the system: or through such modification, to influence the load voltage. (IA/MT) 45-1983s

(2) A synchronous machine running without mechanical load and supplying or absorbing reactive power. *See also:* synchronous capacitor. (PE) [9]

* Deprecated.

synchronous converter A converter that combines both motor and generator action in one armature winding and is excited by one magnetic field. It is normally used to change ac power to dc power, or to create an isolated ac power source. (IA/MT) 45-1998

synchronous coupling (1) (electric coupling) An electric coupling in which torque is transmitted by attraction between magnetic poles on both rotating members which revolve at the same speed. The magnetic poles may be produced by direct current excitation, permanent magnet excitation, or alternating current excitation, and those on one rotating member may be salient reluctance poles. (EM/PE) 290-1980w

(2) (rotating machinery) A type of electric coupling in which torque is transmitted at zero slip, either between two electromagnetic members or like number of poles, or between one electromagnetic member and a reluctance member containing a number of saliencies equal to the number of poles. *Note:* Synchronous couplings may have induction members or other means for providing torque during nonsynchronous operation such as starting. *See also:* electric coupling. (PE) [9]

synchronous detector A device whose output is proportional to the amplitude of a vector component of an input radio frequency (RF) or intermediate frequency (IF) signal measured with respect to an externally supplied reference signal. (AES) 686-1997

synchronous device (data transmission) A device whose speed of operation is related to the rest of the system to which the device is connected. (PE) 599-1985w

synchronous errored second A one-second interval during which one or more errors are received, which is measured by triggering the one-second time period on a detected error. (COM/TA) 1007-1991r

synchronous gate A time gate wherein the output intervals are synchronized with an incoming signal. (AP/ANT) 145-1983s

synchronous generator (1) (hydroelectric power plants) A generator that produces power with rotor speed exactly proportional to the frequency of the system. The generator has field poles excited by direct current. (PE/EDPG) 1020-1988r

(2) A synchronous ac machine that transforms mechanical power into electric power. (A synchronous machine is one in which the average speed of normal operation is exactly proportional to the frequency of the system to which it is connected.) (IA/MT) 45-1998

synchronous impedance (1) (per unit direct-axis) The ratio of the field current at rated armature current on sustained symmetrical short-circuit to the field current at normal open-circuit voltage on the air-gap line. *Note:* This definition of synchronous impedance is used to a great extent in electrical literature and corresponds to the definition of direct-axis synchronous reactance as determined from open-circuit and sustained short-circuit tests. *See also:* positive-phase-sequence reactance. (EEC/PE) [119]

(2) (rotating machinery) The ratio of the value of the phasor difference between the synchronous internal voltage and the terminal voltage of a synchronous machine to the armature current under a balanced steady-state condition. *Note:* This definition is of rigorous application to turbine type machines only, but it gives a good degree of approximation for salient pole machines. *See also:* synchronous reactance. (PE) [9]

synchronous induction motor (rotating machinery) A cylindrical rotor synchronous motor having a secondary coil winding similar to that of a wound rotor induction motor. *Note:* This winding is used for both starting and excitation purposes. (PE) [9]

synchronous (interdigital) transducer An interdigital transducer that has uniform electrode center-to-center spacing. (UFFC) 1037-1992w

synchronous internal voltage (synchronous machine for any specified operating conditions) The fundamental-frequency component of the voltage of each armature phase that would be produced by the steady (or very slowly varying) component of the current in the main field winding (or field windings) acting alone provided the permeance of all parts of the magnetic circuit remained the same as for the specified operating condition. *Note:* The synchronous internal voltage, as shown in the phasor diagram, is related to the terminal-voltage and phase-current phasors by the equation. For a machine subject to saturation, the reactances should be determined for the degree of saturation applicable to the specified operating condition. (PE) [9]

synchronous inverter An inverter that combines both motor and generator action in one armature winding. It is excited by one magnetic field and changes direct-current power to alternating-current power. *Note:* Usually it has no amortisseur winding. *See also:* converter. (EEC/PE) [119]

synchronously generated signal A signal that is attributable to a specific thread. For example, a thread executing an illegal instruction or touching invalid memory causes a synchronously generated signal. Being synchronous is a property of how the signal was generated and not a property of the signal number. (C/PA) 9945-1-1996

synchronous machine A machine in which the average speed of normal operation is exactly proportional to the frequency of the system to which it is connected. (IA/MT) 45-1998

synchronous-machine regulating-system stability The property of a synchronous-machine-regulating system in which a change in the controlled variable, resulting from a stimulus, decays with time if the stimulus is removed. (PE) [9]

synchronous machine, ideal *See:* ideal synchronous machine.

synchronous-machine regulating system An electric-machine regulating system consisting of one or more principal synchronous electric machines and the associated excitation system. (PE) [9]

synchronous machine regulator (1) (excitation systems for synchronous machines) A regulator that couples the output variables of the synchronous machine to the output of the exciter through feedback and forward controlling elements for the purpose of regulating the synchronous machine output variables. (PE/EDPG) 421.4-1990, 421.1-1986r

(2) (excitation systems) One that couples the output variables of the synchronous machine to the input of the exciter through feedback and forward controlling elements for the purpose of regulating the synchronous machine output variables. *Note:* In general, the regulator is assumed to consist of an error detector, preamplifier, power amplifier, stabilizers, auxiliary inputs, and limiters. (PE/EDPG) 421-1972s

(3) (rotating machinery) An electric-machine regulator that controls the excitation of a synchronous machine. (PE) [9]

synchronous motor A polyphase ac motor with separately supplied dc field and an auxiliary (amortisseur) winding for starting purposes. The operating speed is fixed by the frequency (f) of the system and the number of poles (p) of the motor. (Synchronous speed (r/min) = $120\,f/p$). Thus the speed of the motor can be varied by varying the frequency of the power source. The synchronous motor generally operates at unity power factor and can be used to improve the system power factor. It is generally the motor of choice for ac propulsion systems. (IA/MT) 45-1998

synchronous operation (1) An operation that causes the process requesting the operation to be blocked until it is complete. (C/PA) 1327.2-1993w, 1224.2-1993w

(2) (opening or closing) Operation of a switching device in such a manner that the contacts are closed or opened at a predetermined point on a reference voltage or current wave. *Note:* Synchronous operation applied on multiphase circuits may require that closing or opening of the contacts of each pole be responsive to a different reference. (SWG/PE) C37.100-1992

synchronous reactance (1) (rotating machinery) (effective) An assumed value of synchronous reactance used to represent a machine in a system study calculation for a particular operating condition. *Note:* The synchronous internal voltage, as shown in the phasor diagram, is related to the terminal-voltage and phase-current phasors by the equation

$$E'_i = E_a + RI_a + \mathrm{j}X_{\mathrm{eff}}I_a$$

See also: synchronous internal voltage; synchronous impedance. (PE) [9]

(2) (power fault effects) The steady-state reactance of a generator during fault conditions used to calculate the steady-state fault current. The current so calculated excludes the effect of the automatic voltage regulator or governor. (PE/PSC) 367-1996

(3) (electric power systems in commercial buildings) The reactance that determines the current flow when a steady-state condition is reached. (IA/PSE) 241-1990r

synchronous satellite (navigation aids) An equatorial satellite orbiting the earth in a west-to-east direction at an altitude of approximately 35 900 km. At this altitude the satellite makes one revolution in 24 h, synchronous with the earth's rotation. (AES/GCS) 172-1983w

synchronous speed (rotating machinery) The speed of rotation of the magnetic flux, produced by or linking the primary winding. (PE) [9]

synchronous-speed device (power system device function numbers) A device such as a centrifugal-speed switch, a slip-frequency relay, a voltage relay, an undercurrent relay, or any type of device that operates at approximately the synchronous speed of a machine. (SUB/PE) C37.2-1979s

synchronous system (data transmission) A system in which the sending and receiving instruments are operating continuously at substantially the same rate and are maintained by means of correction if necessary, in a fixed relationship. (PE) 599-1985w

synchronous time division multiplexing A method of time division multiplexing in which time slots on a shared communication channel are assigned to devices on a fixed, predetermined basis. (C) 610.7-1995

synchronous transmission (1) (data transmission) A mode of data transmission in which the sending and receiving data processing terminal equipments are operating continuously at substantially the same frequency and are maintained in a desired phase relationship by an appropriate means. (PE) 599-1985w

(2) A transmission in which information and control characters are sent at regular clocked intervals so that sending and receiving stations are operating continuously in step with each other. *Synonym:* synchronous communication. *Contrast:* asynchronous transmission. (C) 610.7-1995

synchronous-vibration sensitivity (dynamically tuned gyro) The functions that relate drift rates to linear or angular vibrations that are phase coherent with spin frequency or its harmonics. *See also:* two-N (2N) translational sensitivity; one-N (1N) translational sensitivity; two-N (2N) angular sensitivity. (AES/GYAC) 528-1994

synchronous voltage (traveling-wave tubes) The voltage required to accelerate electrons from rest to a velocity equal to the phase velocity of a wave in the absence of electron flow. *See also:* magnetron. (ED) [45]

synchro receiver (rotating machinery) (or motor) A transformer electrically similar to a synchro transmitter and that, when the secondary windings of the two devices are interconnected, develops a torque increasing with the difference in angular alignment of the transmitter and receiver rotors and in a direction to reduce the difference toward zero. *See also:* synchro system. (PE) [9]

synchroscope An instrument for indicating whether two periodic quantities are synchronous. It usually embodies a continuously rotatable element the position of which at any time

is a measure of the instantaneous phase difference between the quantities: while its speed of rotation indicates the frequency difference between the quantities: and its direction of rotation indicates which of the quantities is of higher frequency. *Note:* This term is also used to designate a cathode-ray oscilloscope providing either: 1) a rotating pattern giving indications similar to that of the conventional synchroscope; or 2) a triggered sweep, giving an indication of synchronism. *See also:* instrument. (EEC/PE) [119]

synchro system (alternating current) An electric system for transmitting angular position or motion. It consists of one or more synchro transmitters, one or more synchro receivers or synchro control transformers and may include differential synchro machines. (PE) [9]

synchro transmitter (rotating machinery) (or generator) A transformer with relatively rotatable primary and secondary windings, the output of the secondary winding being two or more voltages that vary with and completely define the relative angular position of the primary and secondary windings. *See also:* synchro system. (PE) [9]

synchrotron A device for accelerating charged particles (for example, electrons) to high energies in a vacuum. The particles are guided by a changing magnetic field while they are accelerated many times in a closed path by a radio-frequency electric field. (ED) [45]

SyncLink A physical interconnect model, consisting of shared input and output links, that supports the RamLink logical protocols. SyncLink is optimized for short-distance single-board communications using a bused connection. The signal-levels for this interconnect model have been left for a future extension to this standard. (C/MM) 1596.4-1996

sync packet (1) A special packet that is used heavily during initialization and occasionally during normal operation for the purpose of checking and adjusting receiver circuit timing. (C/MM) 1596.3-1996, 1596-1992

(2) A packet consisting of four high and four low flags, as well as four data bytes whose bits are the complement of the flag values, typically generated when leaving shutdown (to synchronize the device and controller receiver circuits). (C/MM) 1596.4-1996

sync signal *See:* synchronizing signal.

sync slip An error condition in serial communication channels in which the receiving terminal incorrectly recognizes the start of a new message. (SUB/PE) 999-1992w

syndrome A particular group of symptoms that occur together and that define a particular disease or abnormality. (T&D/PE) 539-1990

synergism The presence of a performance or aging effect, produced by a combination of aging factors, that is different from the effect predicted by the simple summations of the effects of these factors acting separately. (DEI/RE) 775-1993w

synonym In hashing, an item whose hash value is identical to that of another item. *See also:* collision resolution. (C) 610.5-1990w

syntactic error A violation of the structural or grammatical rules defined for a language; for example, using the statement $B + C = A$ in Fortran, rather than the correct $A = B + C$. *Synonym:* syntax error. *Contrast:* semantic error. (C) 610.12-1990

syntactic pattern recognition A type of structural pattern recognition that identifies primitives and relationships in natural or artificial language patterns. (C) 610.4-1990w

syntax (1) (A) (computers) The structure of expressions in a language. **(B) (computers)** The rules governing the structure of a language. (C/C) [20], [85]

(2) (software) The structural or grammatical rules that define how the symbols in a language are to be combined to form words, phrases, expressions, and other allowable constructs. (C) 610.12-1990

(3) A category into which an attribute value is placed on the basis of its form. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

(4) The structural components or features of a language and rules that define the ways in which the language constructs may be assembled together to form sentences. (C/SE) 1320.2-1998

(5) The grammatical rules pertaining to the structure of an ATLAS statement. (SCC20) 771-1998

(6) The structure of expressions in a language and the rules governing the structure of a language. (SCC32) 1489-1999

(7) *See also:* attribute syntax. (C/PA) 1328.2-1993w

syntax error *See:* syntactic error.

syntax template A lexical construct containing an asterisk from which several attribute syntaxes can be derived by substituting text for the asterisk. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

synthetic address *See:* generated address.

synthetic-aperture radar (SAR) (1) A radar system that generates the effect of a long antenna by signal processing means rather than by the actual use of a long physical antenna. (AES/GCS) 172-1983w

(2) A coherent radar system that generates a narrow cross range impulse response by signal processing (integrating) the amplitude and phase of the received signal over an angular rotation of the radar line of sight with respect to the object (target) illuminated. *Note:* Due to the change in line-of-sight direction, a synthetic aperture is produced by the signal processing that has the effect of an antenna with a much larger aperture (and hence a much greater angular resolution). (AES) 686-1997

synthetic-aperture radar-moving-target indication (SAR-MTI) A synthetic-aperture imaging radar that also detects moving targets (especially slow-moving ground vehicles) and displays them on the SAR image. (AES) 686-1997

synthetic benchmark program A benchmark program that consists of a small program constructed especially for benchmarking purposes, but does not necessarily perform any useful function. (C) 610.10-1994w

synthetic environment The integrated set of data elements that define the environment within which a given simulation application operates. The data elements include information about the initial and subsequent states of the terrain including cultural features, and atmospheric and oceanographic environments throughout a DIS exercise. The data elements include databases of externally observable information about instantiable DIS entities, and are adequately correlated for the type of exercise to be performed. (DIS/C) 1278.1-1995, 1278.2-1995

synthetic test (1) A test in which the major part of, or the total current, is obtained from one source (current circuit), and the major part of, or all of the transient recovery voltage from a separate source or sources (voltage circuit). (SWG/PE) C37.100-1992, C37.081-1981r

(2) A test in which the major part of, or the total current, is obtained from a source or sources (current circuit), and the major part of, or all of the transient recovery voltage from a separate source or sources (voltage circuit). (SWG/PE) C37.083-1999

synthesis tool Any system, process, or tool that interprets RTL VHDL source code as a description of an electronic circuit and derives a netlist description of that circuit. (C/DA) 1076.6-1999, 1076.3-1997

SyRS *See:* System Requirements Specification.

sysgen *See:* system generation.

system (1) (microcomputer system bus) (general system) A set of interconnected elements that achieve a given objective through the performance of a specified function. (C/MM/IM/AIN) 796-1983r, 488.1-1987r, 696-1983w

(2) (monitoring radioactivity in effluents) The entire assembled equipment excluding only the sample collecting pipe. (NI) N42.18-1980r

(3) (reliability data for pumps and drivers, valve actuators, and valves) A collection of components arranged to provide a desired function (for example, containment spray system, residual heat removal system, high pressure coolant injection system). (PE/NP) 500-1984w

(4) (seismic design of substations) A group of components operating together to perform a function (for example, disconnect switch, support structure and foundation, relay protection system, and telemetering system). (PE/SUB) 693-1984s

(5) (unique identification in power plants and related facilities) A combination of two or more interrelated components that perform a specific function related to plant operation and safety. A system may peform a function such as control, monitoring, electrical, mechanical, or structural. (PE/EDPG) 804-1983r

(6) An integrated whole even though composed of diverse, interacting, specialized structures and subjunctions. *Notes:* 1. Any system has a number of objectives and the weights placed on them may differ widely from system to system. 2. A system performs a function not possible with any of the individual parts. Complexity of the combination is implied. (SMC) [63]

(7) (computers) A collection of components organized to accomplish a specific function or set of functions. (C) 610.3-1989w, 610.5-1990w, 610.12-1990

(8) (electric and electronics parts and equipment) A combination of two or more sets, generally physically separated when in operation, and such other units, assemblies, and basic parts necessary to perform an operational function or functions. Typical examples: telephone carrier system, ground-controlled approach (GCA) electronic system, telemetering system, facsimile transmission system. (GSD) 200-1975w

(9) (test access port and boundary-scan architecture) Pertaining to the nontest function of the circuit. (TT/C) 1149.1-1990

(10) (measurement of radio-noise emissions) An arrangement of interconnected devices and their cables designed to perform a particular function or functions. (EMC) C63.4-1991

(11) A group of devices and a controller interconnected with a system interface. (IM/AIN) 488.2-1992r

(12) Hardware and software collectively organized to achieve an operational objective. (SUB/PE) 999-1992w

(13) A set of interconnected boards that achieve a specified objective by performing designated functions. (C/BA/MM) 896.9-1994w, 1000-1987r

(14) One or more mainframes that are connected, having a common resource manager. Each device in a system has a unique logical address. (C/MM) 1155-1992

(15) (A) A collection of entities to be processed by applying a top-down, hierarchical approach. **(B)** A collection of interacting, interrelated, or interdependent elements forming a collective, functioning entity. **(C)** A set of objects or phenomena grouped together for classification or analysis. **(D)** A collection of hardware or software components necessary for performing a high-level function. (ATLAS) 1232-1995

(16) (power operations) A group of components connected or associated in a fixed configuration to perform a specified function of distributing power. (PE/IA/PSE) 858-1987s, 493-1997, 399-1997

(17) An integration of parts or constituents, their relationships, their mutual behavior or possible states, and the laws or rules that determine their behavior. (PE/NP) 1082-1997

(18) A set or arrangement of elements [people, products (hardware and software) and processes (facilities, equipment, material, and procedures)] that are related and whose behavior satisfies customer/operational needs, and provides for the life cycle sustainment of the products. (C/SE) 1220-1998

(19) (A) A collection of interacting components organized to accomplish a specific function or set of functions within a specific environment. **(B)** A group of people, objects, and procedures constituted to achieve defined objectives of some operational role by performing specified functions. A complete system includes all of the associated equipment, facilities, material, computer programs, firmware, technical documentation, services, and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment. (C/SE) 1362-1998

(20) A set of interlinked units organized to accomplish one or several specific functions. (C/SE) 1219-1998

(21) An interdependent group of people, objects, and procedures constituted to achieve defined objectives or some operational role by performing specified functions. A complete system includes all of the associated equipment, facilities, material, computer programs, firmware, technical documentation, services, and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment. (C/SE) 1233-1998

(22) An integrated composite that consists of one or more of the processes, hardware, software, facilities, and people, that provides a capability to satisfy a stated need or objective. (C/SE) 1517-1999

(23) (controlling) *See also:* controlling system. (SPD/PE) 32-1972r

(24) *See also:* batch system.

(25) *See also:* insulation system. (PE/TR) 1276-1997

system acceptance The formal approval of system operation parameters. (LM/C) 802.7-1989r

system access Attacks on computer system resources (e.g., files, directories, devices) from an intruder having access to the application software or operating system. This threat area assumes that anintruder has access to some form of man-machine interface in the system (e.g., terminal, operator console, workstation). (C/BA) 896.3-1993w

system architecture (1) (software) The structure and relationship among the components of a system. The system architecture may also include the system's interface with its operational environment. (C/SE) 729-1983s

(2) The composite of the design architectures for products and their life cycle processes. (C/SE) 1220-1998

system assured capability (power operations) The dependable capability of all power sources available to a system under short range conditions, including firm power contracts, less that reserve assigned to provide for planned outages, equipment and operating limitations, and unplanned outages of power sources. (PE/PSE) 858-1987s

systematic drift rate (gyros) That component of drift rate that is correlated with specific operating conditions. It is composed of acceleration-sensitive drift rate and acceleration-insensitive drift rate. It is expressed as angular displacement per unit time. (AES/GYAC) 528-1994

systematic error (1) (electrothermic power meters) The inherent bias (off-set) of a measurement process or of one of its components. (IM/HFIM) 544-1975w, 314-1971w

(2) (electronic navigation) Error capable of identification due to its orderly character. *See also:* navigation. (AES/RS) 686-1982s, [42]

(3) Errors where the magnitudes and directions are constant throughout the calibration process. (PE/PSIM) 4-1995

systematic reuse The practice of reuse according to a well-defined, repeatable process. (C/SE) 1517-1999

system breakdown structure (SBS) A hierarchy of elements, related life cycle processes, and personnel used to assign development teams, conduct technical reviews, and to partition out the assigned work and associated resource allocations to each of the tasks necessary to accomplish the objectives of the project. It also provides the basis for cost tracking and control. (C/SE) 1220-1998

system bus The IEEE 488.1 bus and protocols that interconnect the **devices** and **controllers** in a **system.** The content of this standard applies to device-dependent traffic over this bus. (IM/AIN) 488.2-1992r

system bus bridge The interface between a Profile B Futurebus+ and the system CPU/main memory which uses Fu-

turebus+ to communicate to I/O subsystems. Typically, the bridge couples the Profile B I/O bus to an internal system bus, which links CPU and main memory. A distinction should be made between the two types of bus bridges defined in this clause: the *bus bridge* must comply with Profile B requirements in all respects, while the *system bus bridge* may be exempt from certain Profile requirements, such as accessibility of its CSRs from the Futurebus+, and mechanical requirements. Where different or reduced constraints apply to system bus bridges, they are called out in the appropriate section of the profile. (C/BA) 896.2-1991w

system clock driver A functional module that provides a 16 MHz timing signal on the utility bus. (C/BA) 1014-1987

system configuration process The software that intializes the system. The monarch processor executes the system configuration process. (C/BA) 896.2-1991w, 896.10-1997

system control (telephone switching systems) The means for collecting and processing pulsing and supervisory signals in a switching system. (COM) 312-1977w

system controller board A board that resides in slot I of the backplane and has a system clock driver, an arbiter, an lack daisy-chain driver, and a bus timer. Some also have a serial clock driver, a power monitor, or both. (C/BA) 1014-1987

system control signal group A set of ten (10) signals, including two parity bits, which supply command and status information between the bus owner and the replying agent. (C/MM) 1296-1987s

system crash (1) An interval initiated by an unspecified circumstance that causes all processes (possibly other than special system processes) to be terminated in an undefined manner, after which any changes to the state and contents of files created or written to by a Conforming POSIX.1 Application prior to the interval are undefined, except as required elsewhere in this standard. (C/PA) 9945-1-1996

(2) An event initiated by an unspecified circumstance that causes all processes (possibly other than special system processes) to be terminated in an undefined manner, after which any changes to the state and contents of files created or written to by a conforming POSIX.5 application prior to the interval are undefined. (C) 1003.5-1999

system delay time (mobile communication) The time required for the transmitter associated with the system to provide rated radio-frequency output after activation of the local control (push to talk) plus the time required for the system receiver to provide useful output. *See also:* mobile communication system. (VT) [37]

system demand factor *See:* demand factor.

system design (A) (software) The process of defining the hardware and software architectures, components, modules, interfaces, and data for a system to satisfy specified system requirements. **(B) (software)** The result of the system design process. *See also:* system; data; component; software; hardware; requirement; module. (C/SE) 729-1983

system design review A review conducted to evaluate the manner in which the requirements for a system have been allocated to configuration items, the system engineering process that produced the allocation, the engineering planning for the next phase of the effort, manufacturing considerations, and the planning for production engineering. *See also:* critical design review; preliminary design review. (C) 610.12-1990

system development cycle (1) The period of time that begins with the decision to develop a system and ends when the system is delivered to its end user. *Note:* This term is sometimes used to mean a longer period of time, either the period that ends when the system is no longer being enhanced, or the entire system life cycle. *Contrast:* system life cycle. *See also:* software development cycle. (C) 610.12-1990

(2) The life cycle through which a system is developed, which consists of the following:

a) Concept development
b) Design
c) Test and construction
d) Operation
e) Maintenance

(PE/NP) 845-1999

system, directly controlled *See:* directly controlled system.

system, discrete *See:* discrete system.

system, discrete-state *See:* discrete-state system.

system diversity factor *See:* diversity factor.

system documentation (1) (software) Documentation conveying the requirements, design philosophy, design details, capabilities, limitations, and other characteristics of a system. *See also:* documentation; user documentation; requirement; system; design. (C/SE) 729-1983s

(2) All documentation provided with an implementation, except the conformance document. Electronically distributed documents for an implementation are considered part of the system documentation. (C/PA) 1326.2-1993w, 2003.2-1996, 1003.5-1999

system effectiveness A measurement of the ability of a system to satisfy its intended operational uses as a function of how the system performs under anticipated environmental conditions, and the ability to produce, test, distribute, operate, support, train, and dispose of the system throughout its life cycle. (C/SE) 1220-1998

system element (1) One or more basic elements with other components and necessary parts to form all or a significant part of one of the general functional groups into which a measurement system can be classified. While a system element must be functionally distinct from other such elements it is not necessarily a separate measurement device. Typical examples of system elements are: a thermocouple, a measurement amplifier, a millivoltmeter. *See also:* measurement system. (EEC/PE) [119]

(2) A product, subsystem, assembly, component, subcomponent, subassembly, or part of the system breakdown structure that includes the specifications, configuration baseline, budget, schedule, and work tasks. (C/SE) 1220-1994s

(3) One or more software, hardware, or firmware components that perform a specified task. *Note:* A system element may be a composed of a combination of system elements. A system element may be a system. (C/PA) 2000.1-1999

system failure Malfunctions in the hardware and software that could compromise the security of the system (for example, non-security-related failures and design flaws are not considered). The malfunctions include both intentional and inadvertent design or implementation flaws (including malicious hardware and software) and component failures. For intentional attacks, this threat area assumes that an intruder has access to the design or implementation processes of the system or to the operational system in such a way as to be able to cause a failure in a component. For inadvertent attacks, there may not be a specific intruder. (C/BA) 896.9-1994w, 896.3-1993w

system, finite-state *See:* discrete-state system.

system flowchart *See:* flowchart.

system frequency (electric power system) The prevailing frequency in hertz (Hz) of the alternating current and voltage throughout a power system. (PE/PSE) 94-1991w

system frequency stability (mobile communication) (radio system) The measure of the ability of all stations, including all transmitters and receivers, to remain on an assigned frequency-channel as determined on both a short-term and long-term basis. *See also:* mobile communication system. (VT) [37]

system generation The process of using an operating system to assemble and link together all the parts that constitute another operating system. (C) 610.10-1994w

system ground (surge arresters) The connection between a grounding system and a point of an electric circuit (for example, a neutral point). (PE/EDPG) 665-1995, [84], [8]

system grounding conductor An auxiliary solidly grounded conductor that connects together the individual grounding

conductors in a given area. *Note:* This conductor is not normally a part of any current-carrying circuit including the system neutral. *See also:* ground. (T&D/PE) [10]

system handshake A handshake in a broadcast operation where the handshake signal is from the last segment of the addressed system rather than from individual devices. (NID) 960-1993

system hazard A system condition that is a prerequisite to an accident. (C/SE) 1228-1994

system high The highest security level supported by a system. (C/BA) 896.3-1993w

system, idealized *See:* idealized system.

system identification An eight-character label describing the system. Leading spaces are not interpreted as leading zeros. This is intended to be used to identify the laboratory or experimental apparatus where the data were collected. This, along with the subsystem identification, can be used to uniquely describe the source of the data. (NPS/NID) 1214-1992r

system incremental cost The additional cost of delivering another megawatt of power to the load center. This cost is commonly called lambda (λ). (PE/PSE) 94-1991w

system interconnection The connecting together of two or more power systems. *See also:* direct-current distribution; alternating-current distribution. (T&D/PE) [10]

system interface An interface that connects a **device** or **controller** to the **system bus.** A "non-IEEE 488.2 system interface" is any interface other than **the system interface** that may happen to be connected to a **device** or **controller.** (IM/AIN) 488.2-1992r

system integrator A person who combines software and hardware into a working ATE. (SCC20) 993-1997

system library (software) A software library containing system-resident software that can be accessed for use or incorporated into other programs by reference; for example, a macro library. *Contrast:* master library; production library; software repository; software development library. (C) 610.12-1990

system life cycle The period of time that begins when a system is conceived and ends when the system is no longer available for use. *See also:* software life cycle; system development cycle. (C) 610.12-1990

system load (1) (power operations) Equal to internal load plus pumping load plus firm sales for resale. (PE/PSE) 858-1987s

(2) (electric power system) Total loads within the system including transmission and distribution losses. (PE/PSE) 346-1973w

system logic (1) (test access port and boundary-scan architecture) Any item of logic that is dedicated to realizing the nontest function of the component or is at the time of interest configured to achieve some aspect of the nontest function. (TT/C) 1149.1-1990

(2) That equipment that monitors the output of two or more channels and supplies output signals in accordance with a prescribed combination rule (for example, two of three, two of four, etc.). (PE/NP) 379-1994, 308-1980s

system loss (L_s) (of a radio system) The ratio of the input power to the terminals of the transmitting antenna to the available output power at the terminals of the receiving antenna. Usually expressed in decibels as a positive number. (AP/PROP) 211-1997

system low The lowest security level supported by a system. (C/BA) 896.3-1993w

system management stack The protocols residing above SDE that request services via an SDE SAP that is supported by the use of a bootstrap SAID with either of the two values reserved for system management. (C/LM) 802.10-1998

system margin capability (power operations) The difference between system capability and system load. (PE/PSE) 858-1987s

system matrix A matrix of transfer functions that relate the Laplace transforms of the system outputs and of the system inputs. *See also:* control system. (CS/IM/PE/EDPG) [120], [3]

system maximum hourly load (power operations) (electric power system) The maximum hourly integrated system load. This is an energy quantity usually expressed in kilowatt-hours per hour (kWh/h). (PE/PSE) 858-1987s, 346-1973w

system memory Read/write memory accessible by both the Processor and I/O Unit in the system address space. It is usually thought of as being in one or more third-party nodes, but it could alternatively be wholly or partially located in the communicating Processor or I/O nodes. (C/MM) 1212.1-1993

system model In computer performance evaluation, a representation of a system depicting the relationships between workloads and performance measures in the system. *See also:* workload model. (C) 610.12-1990

system monitor and control subsystem (terrestrial photovoltaic power systems) Logic and control circuitry that supervises the overall operation of the system by controlling the interaction between all subsystems. *See also:* array control. (PV) 928-1986r

system, multidimensional *See:* multidimensional system.

system, multivariable *See:* multivariable system.

system noise (sound recording and reproducing system) The noise output that arises within or is generated by the system or any of its components, including the medium. *See also:* noise.

system nominal response The rate of increase of the excitation system output voltage determined from the excitation system voltage response curve, divided by the rated field voltage. This rate, if maintained constant, would develop the same voltage-time area as obtained from the actual curve over the first half-second interval (unless a different time interval is specified). (PE/EDPG) 421.2-1990

system of units A set of interrelated units for expressing the magnitudes of a number of different quantities. (Std100) 270-1966w

system operator (1) A person designated to operate the system or parts thereof. (NESC) C2-1977s

(2) Electric utility personnel in charge of system-wide coordination of generation, interchange, and transmission security. (PE/PSE) 858-1993w

system overshoot (control) The largest value of system deviation following the first dynamic crossing of the ideal value in the direction of correction, after the application of a specified stimulus. *See also:* feedback control system. (IA/ICTL/IAC) [60]

system performance testing (nuclear power generating station) Tests performed on completed systems, including all their electric, instrumentation, controls, fluid, and mechanical subsystems under normal or simulated normal process conditions of temperature, flow, level, pressure, etc. 336-1980s

system pin A component pin that feeds, or is fed from, the on-chip system logic. (TT/C) 1149.1-1990

system process (1) An object, other than a process executing an application, that is defined by the system and has a process ID. (C/PA) 9945-1-1996

(2) An object, other than a process executing an application, that is defined by the system and has a process ID. An implementation shall reserve at least one process ID for system processes. (C) 1003.5-1999

system production time The part of operating time that is actually used by a user. *Contrast:* system test time. (C) 610.10-1994w

system profile A set of measurements used in computer performance evaluation, describing the proportion of time each of the major resources in a computer system is busy, divided by the time that resource is available. (C) 610.12-1990

system, quantized *See:* quantized system.

system reboot An implementation defined sequence of events that may result in the loss of transitory data, i.e., data that is not saved in permanent storage. This includes message queues, shared memory, semaphores, and processes. (C/PA) 9945-1-1996, 1003.5-1999

system recovery time (mobile communication) The elapsed time from deactivation of the local transmitter control until the local receiver is capable of producing useful output. *See also:* mobile communication system. (VT) [37]

system-related outage A forced outage that results from system effects or conditions and is not caused by an event directly associated with the component or unit being reported. *Note:* line outage occurrences due to cascading, out-of-step conditions, and so forth, are all examples of system-related outages. (PE/PSE) 859-1987w

system reliability (software) The probability that a system, including all hardware and software subsystems, will perform a required task or mission for a specified time in a specified environment. *See also:* system; operational reliability; software reliability; hardware. (C/SE) 729-1983s

system reliability service (SRS) A United Kingdom reliability information and database service. (PE/NP) 933-1999

system requirements review A review conducted to evaluate the completeness and adequacy of the requirements defined for a system; to evaluate the system engineering process that produced those requirements; to assess the results of system engineering studies; and to evaluate system engineering plans. *See also:* software requirements review. (C) 610.12-1990

System Requirements Specification (SyRS) A structured collection of information that embodies the requirements of the system. (C/SE) 1233-1998

system reserve The capacity, in equipment and conductors, installed on the system in excess of that required to carry the peak load. *See also:* generating station. (T&D/PE) [10]

system reset An initialization event intiated when any module asserts the re* signal for 100 to 200 ms. (C/BA) 896.2-1991w, 896.10-1997

system resources chart *See:* block diagram.

system routing code (telephone switching systems) In World Zone 1, a three-digit code consisting of a country code and two additional numerals that uniquely identifies an international switching center. *See also:* world-zone number. (COM) 312-1977w

system safety (1) Freedom from system hazards. (C/SE) 1228-1994

(2) The application of engineering and management principles, criteria, and techniques to optimize all aspects of safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system life cycle. (VT/RT) 1474.1-1999, 1483-2000

system safety goals—quantitative A quantitative limit of the probability and/or frequency with which any vital function fails to be implemented safely. (VT/RT) 1483-2000

system safety program The combined tasks and activities of system safety management and system safety engineering that enhance operational effectiveness by satisfying the system safety requirements in a timely, cost-effective manner throughout the system life cycle. (VT/RT) 1483-2000, 1474.1-1999

system safety program plan A formal document that fully describes the planned safety tasks required to meet the system requirements, including organizational responsibilities, methods of accomplishment, milestones, depth of effort, and integration with other program engineering and management functions. (VT/RT) 1483-2000

system, sampled-data *See:* sampled-data system.

system scheduling priority A number used as advice to the system to alter process scheduling priorities. Raising the value of the system scheduling priority should give a process additional preference when scheduling a process to run. Lowering the value should reduce the preference and make a process less likely to run. Typically, a process with higher system scheduling priority will run to completion more quickly than an equivalent process with lower system scheduling priority. A scheduling priority of zero specifies the default policy of the system. (C/PA) 9945-2-1993

system science The branch of organized knowledge dealing with systems and their properties, the systematized knowledge of systems. *See also:* system; cybernetics; learning system; systems engineering; adaptive system; tradeoff. (SMC) [63]

systems engineering (1) The application of the mathematical and physical sciences to develop systems that utilize economically the materials and forces of nature for the benefit of mankind. *See also:* system science. (SMC) [63]

(2) An interdisciplinary collaborative approach to derive, evolve, and verify a life-cycle balanced system solution that satisfies customer expectations and meets public acceptability. (C/SE) 1220-1994s

systems management In networking, functions in the application layer related to the management of various OSI resources and their status across all layers of the OSI architecture. (LM/C) 610.7-1995, 8802-6-1994, 802.10-1992

systems management entity An entity that carries out communications to perform systems management functions such as monitoring, controlling and coordination in the OSI environment. (C) 610.7-1995

systems network architecture A network architecture used widely by IBM and its compatible products for transmitting information units through and controlling the configuration and operation of a network. (C) 610.10-1994w

system software (software) Software designed to facilitate the operation and maintenance of a computer system and its associated programs; for example, operating systems, assemblers, utilities. *Contrast:* application software. *See also:* support software. (C) 610.12-1990

system-source short-circuit current The short-circuit current when the source of the short-circuit current is from the power system through at least one transformation. (SWG/PE) C37.013-1997

system specification Agreed description of the requirements of the system. (C/BA) 896.9-1994w

system state (modeling and simulation) (software) The values assumed at a given instant by the variables that define the characteristics of a system, component, or simulation. *Synonym:* system state. *See also:* steady state; final state. (C/BA) 896.9-1994w

system structure (unique identification in power plants) A combination of two or more integrated components, generally physically remote or occupying a large area, interacting to perform a specific function important to plant operation or safety, or both. A system may be civil/structural, that is, a building or structure, mechanical/fluid, or electrical/control. A system, for the purpose of IEEE Std 803-1983, will not be considered a subsystem of another system. (PE/EDPG) 803-1983r

systemtag (microprocessor operating systems parameter types) A "tag" returned by one function for use by another. Its contents may not be examined or changed. Its form is system dependent. A systemtag is valid system-wide (that is, global) and may be passed between processes. (C/MM) 855-1985s

system test A test, or collection of tests, that may use an external memory buffer and may require cooperation of other nodes. For example, identical unit architectures may collaborate to test cache coherence or to generate background "noise" traffic for other nodes being tested. A system test is invoked by writing to the TEST_START register. (C/MM) 1212-1991s

system testing (1) (software) Testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. *See also:* interface testing; integra-

tion testing; component testing; unit testing. (C/PE/NP) 610.12-1990, 7-4.3.2-1993

(2) The activities of testing an integrated hardware and software system to verify and validate whether the system meets its original objectives. (C/SE) 1012-1998

(3) Preoperational testing to verify components of the system, and operational testing to verify the coordination of the system components for proper design operation of the system functions. (PE/EDPG) 1248-1998

system test time The part of operating time during which the computer is tested for proper system operation. *Contrast:* system production time. (C) 610.10-1994w

system time (1) (supervisory control, data acquisition, and automatic control) A coordinated value of time maintained at stations throughout the power system. (SWG/PE) C37.100-1992

(2) A coordinated value of time maintained throughout the control and data acquisition equipment. (SUB/PE) C37.1-1994

(3) The state of any system element that is used to synchronize system events with real-world events based on a date, time, or combination of the two. (C/PA) 2000.2-1999, 2000.1-1999

system transaction A complete operation, such as a memory read or write, as viewed from the initiating unit. A system transaction can be translated into one or more bus transactions by the Futurebus+ interface to complete the operation. (C/BA) 10857-1994

system-transfer function (automatic control) The transfer function obtained by taking the ratio of the Laplace transform of the signal corresponding to the ultimately controlled variable to the Laplace transform of the signal corresponding to the command. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

system under test (SUT) The computer system hardware and software on which the implementation under test operates. (C/PA) 2003-1997

system unit (SU) (1) The equipment reference increment mounting pitch equal to 25 mm. (C/BA) 1101.3-1993

(2) The equipment reference increment mounting pitch, 1 SU = 25.0 mm, for height, width, and depth. (C/MM) 1301.3-1992r, 1301.1-1991

(3) The equipment reference increment or mounting pitch (mp_1), used for length and width (1 SU = 25 mm = mp_1). (C/BA) 1301.4-1996

system utilization factor *See:* utilization factor.

system validation *See:* validation.

system verification *See:* verification.

system voltage (1) (electric power systems in commercial buildings) The root-mean square phase-to-phase voltage of a portion of an ac electric system. Each system voltage pertains to a portion of the system that is bounded by transformers or utilization equipment. (IA/PSE) 241-1990r

(2) Phase-to-phase voltage of the circuit(s). When phase-to-ground voltage is the intention, it should be so noted. (PE/T&D) 957-1995

(3) (power and distribution transformers) The root-mean-square (rms) phase-to-phase power frequency voltage on a three-phase alternating-current electric system. (PE/SPD/TR) C57.12.80-1978r, C62.22-1997

(4) The rms power-frequency voltage from line-to-line, as distinguished from the voltage from line-to-neutral. (SPD/PE) C62.11-1999, C62.62-2000