O

OA *See:* output axis; oil-immersed transformer.

OBC *See:* bar code; optical bar code.

OBE *See:* operating basis earthquake.

OBI *See:* omnibearing indicator.

Object An instance of the class `IEEE1451_Entity` or of a subclass thereof. (IM/ST) 1451.1-1999

object (1) **(A)** Pertaining to the outcome of an assembly or compilation process. *See also:* object program; object module; object code. **(B)** A program constant or variable. **(C)** An encapsulation of data and services that manipulate that data. *See also:* object-oriented design. (C) 610.12-1990

(2) A passive entity in a system that contains or receives information. Typically, objects include files, directories, registers, buffers, cache, memories, bus lines, displays, and other input/output devices. (C/BA) 896.3-1993w

(3) A piece of data that can be defined by the operations performed on it. The Intrinsics represent an object internally as a pointer to a dynamically allocated data structure. (C) 1295-1993w

(4) A representation of a real-world entity. An object is an instance of a class and has values for the attributes and relationships defined for that class. (C/SE) 1420.1-1995

(5) An abstraction of a physical or logical resource. (C) 610.7-1995

(6) An instance in the software hierarchy that can be operated on using the software administration utilities. (C/PA) 1387.2-1995

(7) Any of the complex information objects created, examined, modified, or destroyed by means of the [OM] interface. (C/PA) 1238.1-1994w, 1328-1993w, 1224-1993w, 1327-1993w, 1224.1-1993w

(8) A member of an object set and an instance of an object type. An object represents something in the observable world that may be distinguished from other instances of its object type and may be uniquely identified. (C/SE) 1320.1-1998

(9) A data object that has an identifier (name) and a value. (C/LM) 802.10-1998

(10) A collection of data and operations. (IM/ST) 1451.1-1999

(11) *See also:* directory object; OM object. (C/PA) 1328.2-1993w, 1224.2-1993w

(12) *See also:* instance. (C/SE) 1320.2-1998

object class An identified family of objects (or conceivable objects) that share certain characteristics. *Synonym:* directory class. (C/PA) 1328.2-1993w, 1224.2-1993w, 1326.2-1993w, 1327.2-1993w

object code Computer instructions and data definitions in a form output by an assembler or compiler. An object program is made up of object code. *Contrast:* source code. (C) 610.12-1990

object color The color of the light reflected or transmitted by the object when illuminated by a standard light source, such as source A, B, or C of the Commission Internationale de l'Eclairage (CIE). *See also:* standard source; color. (EEC/IE) [126]

Object Dispatch Address A network-specific identifier for an endpoint of a client-server communication. Specifically, a value having datatype `ObjectDispatchAddress`. (IM/ST) 1451.1-1999

object entry *See:* entry.

object extraction *See:* image segmentation.

object file A regular file containing the output of a compiler, formatted as input to a linkage editor for linking with other object files into an executable form. The methods of linking are unspecified and may involve the dynamic linking of objects at run time. The internal format of an object file is unspecified, but a conforming application shall not assume an object file is a text file. (C/PA) 9945-2-1993

object identifier (1) A value (distinguishable from all other such values) that is associated with an information object. (C/PA) 1328.2-1993w, 1224.2-1993w, 1326.2-1993w, 1327.2-1993w

(2) In general, a unique representation (name) of a manageable object defined in a management information base (MIB). (C/MM) 1284.1-1997

(3) Some concrete representation for the identity of an object (instance). The object identifier (oid) is used to show examples of instances with identity, to formalize the notion of identity, and to support the notion in programming languages or database systems. (C/SE) 1320.2-1998

Objective C An object-oriented version of C. (C) 610.13-1993w

object configuration In an object, the configuration is the specification of its allowed communications and of the internal state or organization of the object. To configure an object means to make the necessary changes to the object to make real these specifications. (IM/ST) 1451.1-1999

objective evidence (nuclear power quality assurance) Any documented statement of fact, other information, or record, either quantitative or qualitative, pertaining to the quality of an item or activity, based on observations, measurements, or tests which can be verified. (PE/NP) [124]

objective loudness rating (loudness ratings of telephone connections) The rating of a connection or its components when measured according to this standard. (COM/TA) 661-1979r

objectives The desired goals and results of the evaluation/selection process in terms relevant to the organization(s) involved. (C/SE) 1209-1992w

object language *See:* target language.

Object Management Group (OMG) Organization of computer manufacturers, software developers, communications organizations, and computer users established to promote open object-oriented computer architectures and standards. (SCC20) 1226-1998

object model (1) An integrated abstraction that treats all activities as performed by collaborating objects and encompassing both the data and the operations that can be performed against that data. An object model captures both the meanings of the knowledge and actions of objects behind the abstraction of responsibility. (C/SE) 1320.2-1998

(2) A definition of data structures and operations organized in a formal specification. An object model provides applications with a common view and a common way of interfacing to an element of functionality. (IM/ST) 1451.1-1999

object module A computer program or subprogram that is the output of an assembler or compiler. *See also:* load module; object program. (C) 610.12-1990

Object Name A nonconfigurable name for an instance of an Object used to convey the purpose or function of the Object instance. For any Object, the operation `GetObjectName` returns a value, `object_name`, that has the same value as Object Name. (IM/ST) 1451.1-1999

object-oriented design A software development technique in which a system or component is expressed in terms of objects and connections between those objects. *See also:* transform analysis; rapid prototyping; stepwise refinement; structured design; data structure-centered design; transaction analysis; modular decomposition; input-process-output. (C) 610.12-1990

object-oriented language (1) A programming language that allows the user to express a program in terms of objects and messages between those objects. Examples include Smalltalk and LOGO. (C) 610.12-1990

(2) A computer language that allows the user to express a program in terms of objects and messages between those objects. Examples include SMALLTALK and LOGO. *See also:* LOOPS; FLAVORS; C++; EIFFEL. (C) 610.13-1993w

object program (software) A computer program that is the output of an assembler or compiler. *Synonym:* target program. *Contrast:* source program. *See also:* object module. (C) 610.12-1990

object repository An area for the storage of objects, like a library. (SCC20) 1226-1998

object set A subset of instantiations from the set of all possible instantiations of all object types within an object type set. An object set is a subset of the union of the members of an object type set; the set of object sets includes the empty set and the set of the union of the members of the object type set itself. An object set is modeled by an arrow segment. (C/SE) 1320.1-1998

Object Tag A configurable identifier for the endpoints of client-server communications. Specifically a value having datatype `ObjectTag`. For any Object, the operation `GetObjectTag` returns a value, `object_tag`, that has the same value as Object Tag. (IM/ST) 1451.1-1999

object type The set of all possible instantiations of a singular concept, either physical or data, within an IDEF0 model. An IDEF0 object type is generally analogous to an IDEF1X entity or an IDEF1 entity class. (C/SE) 1320.1-1998

object type set A named set of one or more object types. An object type set may include object types that are themselves grouped as object type sets. An object type set is designated by an arrow label. (C/SE) 1320.1-1998

oblique-incidence ionospheric sounding *See:* active sounding.

observable A property of a component of a state whereby its value at a given time can be computed from measurements on the output over a finite past interval. *See also:* control system. (CS/IM) [120]

observable, completely The property of a plant whereby all components of the state are observable. *See also:* control system; plant; observable. (CS/IM) [120]

observable insulation temperature (electric equipment) (thermal classification of electric equipment and electrical insulation) The temperature of the insulation in electric equipment, which is measured in a specified way; for example, with a thermometer, embedded thermocouple, resistance detector, or by winding resistance or other suitable procedure. (EI) 1-1986r

observable temperature (equipment) The temperature of equipment obtained on test or in operation. (EI) 1-1969s

observable temperature rise (thermal classification of electric equipment and electrical insulation) (electric equipment) The difference between the observable insulation temperature and the ambient temperature. (EI) 1-1986r

observation The raw data acquired by executing a test procedure. It represents the observed characteristics of a specific signal (e.g., the voltage peak of a sinusoid wave form), the observed characteristics of the environment (e.g., the ambient temperature), or the derived value of product characteristics (e.g., the measured value of gain). (SCC20) 1226-1998

observation time The time interval over which a radar echo signal may be integrated for detection or measurement. (AES) 686-1997

observed attribute An attribute of a managed object whose value is being observed by an EWMA metric managed object. (LM/C) 802.1F-1993r

observed failure rate For a stated period in the life of an item, the ratio of the total number of failures in a sample to the cumulative observed time on that sample. The observed failure rate is to be associated with particular, and stated time intervals (or summation of intervals) in the life of the items, and with stated conditions. *Notes:* 1. The criteria for what constitutes a failure shall be stated. 2. Cumulative time is the sum of the times during which each individual item has been performing its required function under stated conditions. (R) [29]

observed instantaneous availability At a stated instant of time the proportion of occasions when an item can perform a required function. *Notes:* 1. Occasions can refer to either a number of items at a single instant of time or to one or more items at instants repeated in time. 2. The run-up time is counted in down-time after repair and is counted in the up-time when the equipment is brought into use for the first time. 3. The observed instantaneous availability is to be associated with a period of time and with stated conditions of use and maintenance. (R) [29]

observed managed object A managed object with one or more observed attributes. (LM/C) 802.1F-1993r

observed mean active maintenance time The ratio of the sum of the active maintenance times to the total number of maintenance actions. *Note:* The maintenance conditions applied shall be stated. (R) [29]

observed mean availability The ratio of the cumulative time for which an item can perform a required function to the cumulative time under observation, or at instants of time (chosen by a sampling technique), the mean of the proportion of a number of nominally identical items which can perform their required function. *Notes:* 1. When one limiting value is given, this is usually the lower limit. 2. The observed mean availability is to be associated with a stated period of time and with stated conditions of use and maintenance. (R) [29]

observed mean life (non-repaired items) The mean value of the lengths of observed times to failure of all items in a sample under stated conditions. *Note:* The criteria for what constitutes a failure shall be stated. (R) [29]

observed reliability (A) (non-repaired items) For a stated period of time, the ratio of the number of items which performed their functions satisfactorily at the end of the period to the total number of items in the sample at the beginning of the period. **(B) (repaired item or items)** The ratio of the number of occasions on which an item or items performed their functions satisfactorily for a stated period of time to the total number of occasions the item or items were required to perform for the same period. *Note:* The criteria for what constitutes satisfactory function shall be stated. (R) [29]

obsolescent An indication that a certain feature may be considered for withdrawal in future revisions of a standard. (C/PA) 2003.2-1996, 1003.5-1999

obstacle gain The ratio, usually expressed in dB, of the electromagnetic field at a point in the vicinity of the geometrical shadow of an obstacle to the field which would occur in the absence of the obstacle. (AP/PROP) 211-1997

obstruction beacon *See:* hazard beacon.

obstruction lights (illuminating engineering) Aeronautical ground lights provided to indicate obstructions. (EEC/IE) [126]

Occam A general-purpose programming language designed in the early 1980's for use in parallel computer systems. (C) 610.13-1993w

occluded ear simulator Ear simulator that simulates the inner part of the ear canal, from the tip of an ear insert to the eardrum. (COM/TA) 1206-1994

occulting light (illuminating engineering) A rhythmic light in which the periods of light are clearly longer than the periods of darkness. (EEC/IE) [126]

occupational title standard A standard that describes the characteristics of the general areas of work or profession. (C) 610.12-1990

occupied bandwidth (radio-noise emissions) The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission. In some cases, for example multichannel frequency division systems, the percentage of 0.5% may lead to certain difficul-

ties in the practical application of the definition of occupied bandwidth; in such cases a different percentage may be useful. (EMC) C63.4-1988s

occurrence An individual instance of an entity, record, or item, containing a specific set of values for its constituent parts. (C) 610.5-1990w

OCR *See:* optical character reader; optical character recognition.

OCR-A *See:* optical character recognition-A.

OCR-B *See:* optical character recognition-B.

octad (mathematics of computing) (octade) A group of three bits used to represent one octal digit. (C) 1084-1986w

octal (A) (mathematics of computing) Pertaining to a selection in which there are eight possible outcomes. **(B) (mathematics of computing)** Pertaining to the numeration system with a radix of eight. (C) 1084-1986

octal character string A sequence of characters from the set of octal digits the first of which shall be the digit zero. Octal character strings shall consist only of the following characters:

0 1 2 3 4 5 6 7

Within software definition files of exported catalogs, all such strings shall be encoded using IRV. (C/PA) 1387.2-1995

octal digit A numeral used to represent one of the eight digits in the octal numeration system; 0, 1, 2, 3, 4, 5, 6, or 7. (C) 1084-1986w

octal notation Any notation that uses the octal digits and the radix 8. (C) 1084-1986w

octal number (A) A quantity that is expressed using the octal numeration system. **(B)** Loosely, an octal numeral. (C) 1084-1986

octal number system* *See:* octal numeration system.

* Deprecated.

octal numeral A numeral in the octal numeration system. For example, the octal numeral 14 is equivalent to the decimal numeral 12. (C) 1084-1986w

octal numeration system The numeration system that uses the octal digits and the radix 8. *Synonym:* octal system. (C) 1084-1986w

octal point The radix point in the octal numeration system. (C) 1084-1986w

octal system *See:* octal numeration system.

octal-to-binary conversion The process of converting an octal numeral to an equivalent binary numeral. For example, octal 213.2 is converted to binary 10001011.01. (C) 1084-1986w

octal-to-decimal conversion The process of converting an octal numeral to an equivalent decimal numeral. For example, octal 213.2 is converted to decimal 139.25. (C) 1084-1986w

octant *See:* sextant.

octantal error (navigation) (navigation aid terms) An error in measured bearing caused by the finite spacing of the antenna elements in systems using spaced antennas to provide bearing information (such as VOR [very high-frequency omnidirectional range]): this error varies in a sinusoidal manner throughout the 360° and has four positive and four negative maximums. (AES/GCS) 172-1983w

octary tree A tree of order 8. *Note:* Such a tree is typically used to store three-dimensional data. *Synonyms:* octonary tree; octtree. (C) 610.5-1990w

octave (1) (data transmission) In electric communication, the interval between two frequencies having a ratio of 2 to 1. (PE) 599-1985w

(2) The interval between two frequencies that have a frequency ratio of 2 (e.g., 1 to 2 Hz, 2 to 4 Hz, 4 to 8 Hz, etc.). (SWG/PE/T&D/PSR) C37.98-1977s, 539-1990, C37.100-1992, C37.81-1989r

(3) (overhead power lines) The interval between two sounds having a fundamental frequency ratio of two. (T&D/PE) 539-1990

octave band, one-third octave band The integrated sound pressure level of all components in a frequency band corresponding to a specified octave. *Note:* The location of an octave band pressure level on a frequency scale, f_0, is usually specified as the geometric mean of the upper and lower frequencies of the octave. The lower frequency of the octave band is $f_0/\sqrt{2}$ and the upper frequency is $(/\sqrt{2})f_0$. A third-octave band extends from a lower frequency $f_0/{}^6/\sqrt{2}$ to an upper frequency of $({}^6/\sqrt{2})f_0$. (T&D/PE) 656-1992

octave-band pressure level (1) (octave pressure level) (sound) The band pressure level for a frequency band corresponding to a specified octave. *Note:* The location of an octave-band pressure level on a frequency scale is usually specified as the geometric mean of the upper and lower frequencies of the octave. (SP/ACO) [32]

(2) (overhead power lines) The integrated sound pressure level of all components in a frequency band corresponding to a specified octave. *Note:* The location of an octave band pressure level on a frequency scale, f_0, is usually specified as the geometric mean of the upper and lower frequencies of the octave. The lower frequency of the octave band is $f_0/{}^6/\sqrt{2}$ and the upper frequency is $({}^6/\sqrt{2})f_0$. A third-octave band extends from a lower frequency $f_0/{}^6/\sqrt{2}$ to an upper frequency of $({}^6/\sqrt{2})f_0$. (T&D/PE) 539-1990

octet (1) A group of eight adjacent binary digits operated on as a unit. (SUB/PE/C) 999-1992w, 610.5-1990w, 1084-1986w

(2) A sequence of eight bits, usually operated upon as a unit. (DIS/C) 1278.1-1995

(3) A data unit composed of eight ordered binary bits. An octet is encoded as a pair of code symbols. (C/LM) 802.9a-1995w

(4) A byte composed of eight bits. (LM/C) 802.3u-1995s, 610.10-1994w

(5) An ordered sequence of 8 b. *Note:* Octets can be stored in larger objects if appropriate to a particular architecture. (C/PA) 1224-1993w, 1327-1993w

(6) An eight-bit data entity (byte). (C/MM) 1284.1-1997

(7) 8 b data object. *See also:* byte. (PE/SUB) 1379-1997

(8) A group of 8 bits, also known as a byte. (IM/ST) 1451.2-1997

(9) A sequence of eight bits. (AMR/SCC31) 1377-1997

(10) A bit-oriented element that consists of eight contiguous binary bits. (C/LM/CC) 8802-2-1998

(11) Unit of data representation that consists of eight contiguous bits. (C) 1003.5-1999

(12) A group of eight adjacent bits. (EMB/MIB) 1073.4.1-2000, 1073.3.2-2000

Octet Array A value of type `OctetArray`. (IM/ST) 1451.1-1999

octet string (1) A value of ASN.1 type octetstring. (C/PA) 1238.1-1994w

(2) A string composed of octets. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

octetstring type A simple type whose distinguished values are an ordered sequence of zero, one or more octets, each octet being an ordered sequence of 8 bits. (C/PA) 1238.1-1994w

octlet (1) A set of eight adjacent bytes. (C/BA) 10857-1994, 896.3-1993w, 896.4-1993w

(2) Eight bytes of data. (MM/C) 1394-1995, 1596-1992

(3) Eight bytes (64 bits) of data. Not to be confused with an "octet," which has been used to describe 8 bits of data. In this document, the term **byte,** rather than "octet," is used to describe 8 bits of data. (C/MM) 1754-1994

(4) An ordered set of eight adjacent bytes. (C/BA) 1014.1-1994w

(5) An 8-byte data format or data type. Not to be confused with an octet, which has been commonly used to describe 8 bits of data. In this document, the term byte, rather than octet, is used to describe 8 bits of data. (C/MM) 1596.5-1993

(6) Eight bytes of data. Not to be confused with an octet, which has been commonly used to describe eight bits of data.

In this document, the term byte, rather than octet, is used to describe eight bits of data. (C/MM) 1596.4-1996

(7) Eight bytes, or 64 bits, of data. (C/MM) 1394a-2000

octode An eight-electrode electron tube containing an anode, a cathode, a control electrode, and five additional electrodes that are ordinarily grids. (ED) 161-1971w

octodenary (A) Pertaining to a selection in which there are 18 possible outcomes. **(B)** Pertaining to the numeration system with a radix of 18. (C) 1084-1986

octonary* *See:* octal.

* Deprecated.

octonary tree *See:* octary tree.

octtree *See:* octary tree.

odd-even check *See:* parity check.

odd-even sort *See:* Batcher's parallel sort.

odd parity (1) An error detection method in which the number of ones in a binary word, byte, character, or message is maintained as an odd number. (C) 1084-1986w

(2) The property possessed by a binary word, byte, character, or message that has an odd number of ones. (C) 1084-1986w

O-display (1) (navigation aid terms) A type of radar display format. (AES/GCS) 172-1983w

(2) An A-display modified by the inclusion of an adjustable notch for measuring range. (AES) 686-1997

odolite (navigation aid terms) An optical instrument for accurately measuring horizontal and vertical angles. (AES/GCS) 172-1983w

odometer (navigation aid terms) A device attached to a vehicle for counting the number of revolutions of a drive shaft or wheel. (AES/GCS) 172-1983w

OEM *See:* original equipment manufacturer.

oersted The unit of magnetic field strength in the unrationalized centimeter-gram-second (cgs) electromagnetic system. The oersted is the magnetic field strength in the interior of an elongated uniformly wound solenoid that is excited with a linear current density in its winding of one abampere per 4π centimeters of axial length. (Std100) 270-1966w

off-axis mode (laser maser) An off-axis mode will incorporate one or more of the maxima which lie off the axis of a beam. *See also:* higher-order mode of propagation. (LEO) 586-1980w

off-center display A plan-position-indicator display, the center of which does not correspond to the position of the radar antenna. *See also:* radar. (EEC/PE) [119]

off-center PPI A plan-position indicator (PPI) that has the zero position of the time base at a point other than the center of the display, thus providing the equivalent of a larger display for a selected portion of the service area. (AES/RS) 686-1990

offered traffic (telephone switching systems) A measure of the calls requesting service during a given period of time. (COM) 312-1977w

off-hook (1) (telephone switching systems) A closed station line or any supervisory or pulsing condition is indicative of this state. (COM) 312-1977w

(2) In regard to a telephone set, activated—ashthat is, a telephone set is in use. The off-hook condition indicates a (busy) condition to incoming calls. *Contrast:* on-hook. (C) 610.7-1995

office automation The automation of information traffic through the use of any or all of the following: voice processing; word and data processing; reprographics; records processing and micrographics; telecommunications. *See also:* paperless office; automatic calendar; electronic office; electronic mail. (C) 610.2-1987

office class (telephone switching systems) A designation (Class 1, 2, 3, 4, 5) given to each office in World Zone 1 involved in the completion of toll calls. The class is determined according to the office's switching function, its interrelation with other switching offices, and its transmission requirements. The class designation given to the switching points in the network determines the routing pattern for all calls. Class 1 is higher in rank than Class 2; Class 2 is higher than Class 3; and so on. *See also:* world-zone number. (COM) 312-1977w

office code (telephone switching systems) The digits that designate a block of main-station codes within a numbering-plan area. (COM) 312-1977w

office failure rate The expected frequency of entire outages because of malfunctions in the switching system. (COM/TA) 973-1990w

office of the future *See:* electronic office.

office test (meter) A test made at the request or suggestion of some department of the company to determine the cause of seemingly abnormal registration. *See also:* service test. (EEC/PE) [119]

Official Production System (OPS5) A nonprocedural programming language that uses precise rules, in the form of a rule-and-fact set model, to reach solutions to problem descriptions. *Note:* Used in artificial intelligence applications for building expert systems. (C) 610.13-1993w

OFF-impedance (thyristor) The differential impedance between the terminals through which the principal current flows, when the thyristor is in the OFF state at a stated operating point. *See also:* principal voltage-current characteristic. (IA/ED) 223-1966w, [12], [46]

offline (1) (monitoring radioactivity in effluents) A system where an aliquot is withdrawn from the effluent stream and conveyed to the detector assembly. (NI) N42.18-1980r

(2) (A) (test, measurement, and diagnostic equipment) Operation of input/output and other devices not under direct control of a device. **(B) (test, measurement, and diagnostic equipment)** Peripheral equipment operated outside of, and not under control of the system; for example, the off-line printer. (MIL) [2]

(3) (software) Pertaining to a device or process that is not under the direct control of the central processing unit of a computer. *Contrast:* online. *See also:* vary off-line. (C) 610.12-1990, 610.10-1994w

(4) Used to describe an MTM-Bus module when it is in a mode such that it will not respond to state transitions on MTM-Bus signals whether or not the module is connected to the bus. Also used to describe such a mode. (TT/C) 1149.5-1995

(5) In 1000BASE-X, a DTE in its nonfunctional state. (C/LM) 802.3-1998

offline operation (A) (emergency and standby power) Pertaining to computer systems not under direct control of the central processing unit. **(B) (emergency and standby power)** Pertaining to uninterruptible power supply systems whereby an inverter is off during normal operating conditions. (IA/PSE) 446-1987

offline storage Storage that is not under the control of a processing unit. *Contrast:* online storage. (C) 610.10-1994w

offline system A system that is dormant until it is called upon to operate, such as a diesel generator that is started up when a power failure occurs. (IA/PSE) 493-1997

off-line testing (test, measurement, and diagnostic equipment) Testing of the unit under test removed from its operational environment or its operational equipment. Shop testing. (MIL) [2]

off-net call (telephone switching systems) A call from a switched-service network to a station outside that network. (COM) 312-1977w

off-normal relay contacts Contacts on a multiple switch that are in one condition when the relay is in its normal position and in the reverse condition for any other position of the relay. (EEC/REE) [87]

off-peak energy (power operations) Energy supplied during designated periods of relatively low system demands. (T&D/PE/PSE) 858-1987s, 346-1973w

off-peak period (watthour meters) The period of time during which the specified off-peak rate applies. (ELM) C12.13-1985s

off-peak power Power supplied during designated periods of relatively low system demands. *See also:* generating station. (T&D/PE) [10]

OFF period (1) (electron tube) The time during an operating cycle in which the electronic tube is nonconducting. *See also:* ON period. (Std100) [84]

(2) (circuit switching element) (inverters) The part of an operating cycle during which essentially no current flows in the circuit switching element. *See also:* self-commutated inverters. (IA) [62]

off-road vehicle A vehicle specifically designed and equipped to traverse sand, swamps, muddy tundra, or rough mountainous terrain. Vehicles falling into this category are usually all wheel drive or tracked units. In some cases, units equipped with special air bag rollers having a soft footprint are utilized. *Synonyms:* all terrain vehicle; swamp buggy. (T&D/PE) 524-1992r

offset (1) (transducer) The component of error that is constant and independent of the inputs, often used to denote bias. (C) 166-1977w, 165-1977w

(2) (course computer) (electronic navigation) An automatic computer that translates reference navigational coordinates into those required for a predetermined course. *See also:* navigation. (AES/RS) 686-1982s, [42]

(3) (pulse terminology) The algebraic difference between two specified magnitude reference lines. Unless otherwise specified, the two magnitude reference lines are the waveform baseline and the magnitude origin line. *See also:* waveform epoch. (IM/WM&A) 194-1977w

(4) (A) (software) The difference between the loaded origin and the assembled origin of a computer program. *Synonym:* relocation factor. **(B) (software)** A number that must be added to a relative address to determine the address of the storage location to be accessed. This number may be the difference defined in (A) or another number defined in the program. *See also:* self-relative address; relative address; base address; indexed address. (C) 610.12-1990

(5) The *octet* position relative to the start of a *Pre-Arbitrated (PA) segment* used to carry an *isochronous service octet* for a particular *Isochronous Service User (ISU)*. (LM/C) 8802-6-1994

(6) (A) The measure of unbalance between halves of a symmetrical circuit. **(B)** The change in input voltage needed to cause the output voltage of a linear amplifier to be zero. **(C)** The difference between the value or condition desired and that actually attained. **(D)** The difference between the address in a base register and the memory location of a datum. *See also:* relative address. (C) 610.10-1994

(7) (as used in data acquisition) A predetermined value modifying the actual value so as to improve the integrity of the system, for example, the use of a 4 mA signal to represent zero in a 4 mA to 20 mA system. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(8) (as applied to a distance relay) The displacement of the operating characteristic on an *R-X* diagram from the position inherent to the basic performance class of the relay. *Note:* A relay with this characteristic is called an offset relay. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

(9) *See also:* gain and offset. (IM/WM&A) 1057-1994w

offset angle (lateral disk reproduction) (electroacoustics) The offset angle is the smaller of the two angles between the projections into the plane of the disk of the vibration axis of the pickup stylus and the line connecting the vertical pivot (assuming a horizontal disk) of the pickup arm with the stylus point. *See also:* phonograph pickup. (SP) [32]

offset (outboard) bearing (air switch) A component of a switch-operating mechanism designed to provide support for a torsional operating member and a crank that provides reciprocating motion for switch operation. (SWG/PE) C37.100-1992

offset, clipping *See:* clipping offset.

offset course computer (navigation aid terms) An automatic computer which translates reference navigational coordinates into those required for a predetermined course. (AES/GCS) 172-1983w

offset entry A read-only memory (ROM) entry that provides a 24-bit offset value. The offset values specifies the location of a Control and Status Register (CSR) that provides a 32-bit parameter. (C/BA/MM) 896.10-1997, 896.2-1991w, 1212-1991s

offset marker pole *See:* plumb marker pole.

offset paraboloidal reflector *See:* paraboloidal reflector.

offset paraboloidal reflector antenna A reflector antenna whose main reflector is a portion of a paraboloid that is not symmetrical with respect to its focal axis, and does not include the vertex so that aperture blockage by the feed is reduced or eliminated. (AP/ANT) 145-1993

offset plan-position indicator (PPI) A PPI that has the zero position of the time base at a point other than the center of the display, thus providing the equivalent of a larger display for a selected portion of the coverage area. *Synonym:* off-center PPI. (AES) 686-1997

offset voltage (1) (power supplies) A direct-current potential remaining across the comparison amplifier's input terminals (from the null junction to the common terminal) when the output voltage is zero. The polarity of the offset voltage is such as to allow the output to pass through zero and the polarity to be reversed. It is often deliberately introduced into the design of power supplies to reach and even pass zero-output volts. (AES) [41]

(2) The driver offset voltage is the average dc voltage generated by the differential driver;

$$V_{os} = (V_{oa} + V_{ob})/2.$$

(C/MM) 1596.3-1996

offset waveform (pulse terminology) A waveform whose baseline is offset from, unless otherwise specified, the magnitude origin line. (IM/WM&A) 194-1977w

OFF state (thyristor) The condition of the thyristor corresponding to the high-resistance low-current portion of the principal voltage-current characteristic between the origin and the breakover point(s) in the switching quadrant(s). *See also:* principal voltage-current characteristic. (IA) [12]

OFF-state current (thyristor) The principal current when the thyristor is in the OFF state. *See also:* principal current. (IA) [12]

OFF-state power dissipation (thyristor) The power dissipation resulting from OFF-state current. (IA) [12]

OFF-state voltage (thyristor) The principal voltage when the thyristor is in the OFF state. *See also:* principal voltage-current characteristic. (IA) [12]

ohm (1) (general) The unit of resistance (and of impedance) in the International System of Units (SI). The ohm is the resistance of a conductor such that a constant current of one ampere in it produces a voltage of one volt between its ends. (Std100) 270-1966w

(2) (metric practice) The electric resistance between two points of a conductor when a constant difference of potential of one volt, applied between these two points, produces in this conductor a current of one ampere, this conductor not being the source of any electromotive force. (QUL) 268-1982s

ohmic contact (1) (semiconductor) A contact between two materials, possessing the property that the potential difference across it is proportional to the current passing through. *See also:* semiconductor. (AES) [41]

(2) (charged-particle detectors) (x-ray energy spectrometers) A purely resistive contact*f*one that has a linear voltage-current characteristic throughout its entire operating range. (NPS/ED/NID) 759-1984r, 325-1996, 216-1960w, 301-1976s, 300-1988r

ohmic resistance test (rotating machinery) A test to measure the ohmic resistance of a winding, using direct current. *See also:* asynchronous machine. (PE) [9]

ohmmeter A direct-reading instrument for measuring electric resistance. It is provided with a scale, usually graduated in either ohms, megohms, or both. If the scale is graduated in megohms, the instrument is usually called a megohmmeter. *See also:* instrument. (EEC/PE) [119]

Ohm's law The current in an electric circuit is inversely proportional to the resistance of the circuit and is directly proportional to the electromotive force in the circuit. *Note:* Ohm's law applies strictly only to linear constant-current circuits. (Std100) 270-1966w

OHR *See:* over-the-horizon radar.

oid *See:* object identifier.

oil (1) (packaging machinery) Used as a prefix and applied to a device that interrupts an electric circuit; indicates that the interruption occurs in oil. (IA/PKG) 333-1980w

(2) (power and distribution transformers) The term "oil" includes the following insulating and cooling liquids: Type I Mineral Oil (uninhibited oil), Type II Mineral Oil (inhibited oil), and Askarel. (PE/TR) C57.12.80-1978r

(3) (outdoor apparatus bushings) Mineral transformer oil. (PE/TR) 21-1976

oil buffer (elevators) A buffer using oil as a medium that absorbs and dissipates the kinetic energy of the descending car or counterweight. *See also:* elevator. (PE/EEC) [119]

oil-buffer stroke (elevators) (oil buffer) The oil-displacing movement of the buffer plunger or piston, excluding the travel of the buffer-plunger accelerating device. *See also:* elevator. (PE/EEC) [119]

oil catcher (rotating machinery) A recess to carry off oil. *See also:* oil cup. (PE) [9]

oil-containment system A system designed to collect and retain oil in order to prevent 1) its migration beyond the boundaries of the system and 2) the contamination of navigable waters. (SUB/PE) 980-1994

oil cup (rotating machinery) An attachment to the oil reservoir for adding oil and controlling its upper level. (PE) [9]

oil cutout (oil-filled cutout) (oil-filled cutout) A cutout in which all or part of the fuse support and its fuse link or disconnecting blade are mounted in oil with complete immersion of the contacts and the fusible portion of the conducting element (fuse link), so that arc interruption by severing of the fuse link or by opening of contacts will occur under oil. (SWG/PE) C37.40-1993, C37.100-1992

oil discharge Any leak or spillage of oil, regardless of volume and including those that do not reach navigable waters. A discharge includes but is not limited to any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil. (SUB/PE) 980-1994

oil-electric drive *See:* diesel-electric drive.

oil feeding reservoirs Oil storage tanks situated at intervals along the route of an oil-filled cable or at oil-filled joints of solid cable for the purpose of keeping the cable constantly filled with oil under pressure. (T&D/PE) [10]

oil-filled (designated liquid-filled) (prefix) The prefix oil-filled or designated liquid-filled as applied to equipment indicates that oil or the designated liquid is the surrounding medium. (EEC/PE) [119]

oil-filled bushing (outdoor electric apparatus) A bushing in which the space between the inside surface of the weather casing and the major insulation (or conductor where no major insulation is used) is filled with oil. (PE/TR) 21-1976

oil-filled cable A self-contained pressure cable in which the pressure medium is low-viscosity oil having access to the insulation. *See also:* pressure cable; self-contained pressure cable. (T&D/PE) [10]

oil-filled pipe cable A pipe cable in which the pressure medium is oil having access to the insulation. *See also:* pressure cable; pipe cable. (T&D/PE) [10]

oil-fill stand pipe *See:* oil-overflow plug.

oil groove (rotating machinery) A groove cut in the surface of the bearing lining or sometimes in the journal to help to distribute the oil over the bearing surface. *See also:* oil cup. (PE) [9]

oil-immersed (1) Having the coils immersed in an insulating liquid. *Note:* The insulating liquid is usually (though not necessarily) oil. *See also:* oil-immersed transformer. (TRR/PE/TR) C57.15-1968s

(2) (grounding device) Means that the windings are immersed in an insulating oil. (SPD/PE) 32-1972r

oil-immersed forced-air-cooled shunt reactor (shunt reactors over 500 kVA) (class OFA) An oil-immersed shunt reactor which is cooled by forced circulation of the cooling air over the cooling surface. (PE/TR) C57.21-1981s

oil-immersed forced-oil-cooled transformer with forced-water cooler (class FOW) A transformer having its core and coils immersed in oil and cooled by the forced circulation of this oil through external oil-to-water heat-exchanger equipment utilizing forced circulation of water over its cooling surface. (PE/TR) C57.12.80-1978r

oil-immersed forced-oil-cooled with forced-air cooler shunt reactor (shunt reactors over 500 kVA) (class FOA) An oil-immersed shunt reactor cooled by the forced circulation of oil through external oil-to-air heat-exchanger equipment utilizing forced circulation of air over its cooling surface. (PE/TR) C57.21-1981s

oil-immersed forced-oil-cooled with forced-water cooler shunt reactor (class FOW) (shunt reactors over 500 kVA) An oil-immersed shunt reactor cooled by the forced circulation of the oil through external oil-to-water heat-exchanger equipment utilizing forced circulation od water over its cooling surface. (PE/TR) C57.21-1981s

oil-immersed self-cooled/forced-air-cooled/forced-air-cooled transformer (power and distribution transformers) (class OA/FA/FA) A transformer having its core and coils immersed in oil and having a self-cooled rating obtained by the natural circulation of air over the cooling surface, a forced-air-cooled rating obtained by the forced circulation of air over a portion of the cooling surface, and an increased forced-air-cooled rating obtained by the increased forced circulation of air over a portion of the cooling surface. (PE/TR) C57.12.80-1978r

oil-immersed self-cooled/forced-air-cooled/forced-oil-cooled transformer (power and distribution transformers) (class OA/FA/FOA) A transformer having its core and coils immersed in oil and having a self-cooled rating with cooling obtained by the natural circulation of air over the cooling surface, a forced-air-cooled rating with cooling obtained by the forced circulation of air over this same cooling surface, and a forced-oil-cooled rating with cooling surface, and a forced-oil-cooled rating with cooling obtained by the forced circulation of oil over the core and coils and adjacent to this same cooling surface over which the air is being forced circulated. (PE/TR) C57.12.80-1978r

oil-immersed self-cooled/forced-air-cooled transformer (power and distribution transformers) (Class OA/FA) A transformer having a self-cooled rating with cooling obtained by the natural circulation of air over the cooling surface, and a forced-air-cooled rating with cooling obtained by the forced circulation of air over this same cooling surface. (PE/TR) C57.12.80-1978r

oil-immersed self-cooled/forced-air, forced-oil-cooled/forced-air, forced-oil-cooled transformer (power and distribution transformers) (class OA/FOA/FOA) A transformer similar to class OA/FA/FOA transformer except that its auxiliary cooling controls are arranged to start a portion of the oil pumps and a portion of the fans for the first auxiliary rating and the remainder of the pumps and fans for the second auxiliary rating. (PE/TR) C57.12.80-1978r

oil-immersed self-cooled shunt reactor (class OA) (shunt reactors over 500 kVA) An oil-immersed shunt reactor which is cooled by natural circulation of the cooling air over the cooling surface. (PE/TR) C57.21-1981s

oil-immersed self-cooled transformer (power and distribution transformers) (class OA) A transformer having its core and coils immersed in oil, the cooling being effected by the natural circulation of air over the cooling surface. (PE/TR) C57.12.80-1978r

oil-immersed shunt reactor (shunt reactors over 500 kVA) One in which the coils and magnetic current are immersed in an insulating oil. (PE/TR) C57.21-1981s

oil-immersed transformer A transformer in which the core and coils are immersed in an insulating oil. (PE/TR) C57.12.80-1978r

oil-immersed water-cooled/self-cooled transformer (class OW/A) A transformer having its core and coils immersed in oil and having a water-cooled rating with cooling obtained by the natural circulation of oil over the water-cooled surface, and a self-cooled rating with cooling obtained by the natural circulation of air over the cooling surface. (PE/TR) C57.12.80-1978r

oil-immersed water-cooled shunt reactor (Class OW) (shunt reactors over 500 kVA) An oil-immersed shunt reactor which is cooled by the natural circulation of the cooling oil over the water-cooled surface. (PE/TR) C57.21-1981s

oil-immersed water-cooled transformer (power and distribution transformers) (Class OW) A transformer having its core and coils immersed in oil, the cooling being effected by the natural circulation of oil over the water-cooled surface. (PE/TR) C57.12.80-1978r

oil-immersible current-limiting fuse *See:* oil-immersible current-limiting fuse unit.

oil-immersible current-limiting fuse unit A current-limiting fuse unit suitable for application requiring total or partial immersion directly in oil or other dielectric liquid of a transformer or switchgear. *Synonym:* oil-immersible current-limiting fuse. (SWG/PE/SWG-OLD) C37.40-1993, C37.100-1992

oil-impregnated paper-insulated bushing (1) A bushing in which the major insulation is provided by paper impregnated with oil. (PE/TR) 21-1976
(2) A bushing in which the internal insulation consists of a condenser wound from paper and subsequently impregnated with oil. The condenser is contained in an insulating envelope, the space between the condenser and the insulating envelope being filled with oil. (PE/TR) C57.19.03-1996

oil leakage load The load applied to the top of the bushings at which oil leakage begins. (PE/SUB) 693-1997

oilless circuit breaker *See:* circuit breaker.

oil-level gauge (rotating machinery) An indicating device showing oil level in the oil reservoir. (PE) [9]

oil-lift bearing (rotating machinery) A journal bearing in which high-pressure oil is forced under the shaft journal or thrust runner to establish a lubricating film. *See also:* bearing. (PE) [9]

oil-lift system (rotating machinery) A system that lubricates a bearing before starting by forcing oil between the journal or thrust runner and bearing surfaces. *See also:* oil cup. (PE) [9]

oil-overflow plug (rotating machinery) (oil-fill stand-pipe) An attachment to the oil reservoir that can be opened to allow excess oil to escape, to inspect the oil level, or to add oil. (PE) [9]

oil pot (rotating machinery) (oil reservoir) A bearing reservoir for a vertical-shaft bearing. *See also:* oil cup. (PE) [9]

oil-pressure electric gauge A device that measures the pressure of oil in the line between the oil pump and the bearings of an aircraft engine. The gauge is provided with a scale, usually graduated in pounds per square inch. It provides remote indication by means of self-synchronous generator and motor. (EEC/PE) [119]

oil-proof enclosure An enclosure constructed so that oil vapors, or free oil not under pressure, that may accumulate within the enclosure will not prevent successful operation of, or cause damage to, the enclosed equipment. (IA/MT) 45-1998

oil reservoir *See:* oil pot.

oil-resistant gaskets (power and distribution transformers) Those made of material which is resistant to oil or oil fumes. (PE/TR) C57.12.80-1978r

oil ring (rotating machinery) A ring encircling the shaft in such a manner as to bring oil from the oil reservoir to the sleeve bearing and shaft. *See also:* bearing. (PE) [9]

oil-ring guide (rotating machinery) A part whose main purpose is the restriction of the motion of the oil ring. *See also:* oil cup. (PE) [9]

oil-ring lubricated bearing A bearing in which a ring, encircling the journal, and rotated by it, raises oil to lubricate the bearing from a reservoir into which the ring dips. (PE) [9]

oil-ring retainer (rotating machinery) A guard to keep the oil ring in position on the shaft. (PE) [9]

oil seal (rotating machinery) A part or combination of parts in a bearing assembly intended to prevent leakage of oil from the bearing. *Synonyms:* bearing seal; bearing oil seal. (PE) [9]

oil spill (spill event) A discharge of oil into or upon navigable waters or shorelines in harmful quantities. (SUB/PE) 980-1994

oil switch (high-voltage switchgear) A switch with contacts that separate in oil. (SWG/PE) C37.40-1993

oil thrower (rotating machinery) (oil slinger) A peripheral ring or ridge on a shaft adjacent to the journal and which is intended to prevent any flow of oil along the shaft. *See also:* oil pot. (PE) [9]

oiltight (power and distribution transformers) So constructed as to exclude oils, coolants, and similar liquids under specified test conditions. (PE/TR) C57.12.80-1978r

oil-tight enclosure An enclosure constructed so that oil vapors or free oil not under pressure, which may be present in the surrounding atmosphere, cannot enter the enclosure. (IA/MT) 45-1998

oiltight pilot devices Devices such as push-button switches, pilot lights, and selector switches that are so designed that, when properly installed, they will prevent oil and coolant from entering around the operating or mounting means. *See also:* switch. (IA/ICTL/IAC) [60]

oil, uninhibited *See:* uninhibited oil.

oil-well cover (rotating machinery) A cover for an oil reservoir. *See also:* oil cup. (PE) [9]

oil wick (rotating machinery) Wool, cotton, or similar material used to bring oil to the journal surface by capillary action. *See also:* oil cup. (PE) [9]

OL/2 A programming language designed to allow statement of mathematical problems, with emphasis on arrays and structures that exhibit the parallelism inherent in many algorithms. (C) 610.13-1993w

O/M *See:* engineering units.

OM attribute A component of an OM object, comprised of an integer denoting the type of the attribute and an ordered sequence of one or more attribute values, each accompanied by an integer denoting the syntax of the value. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

OM attribute type A category into which OM attribute values are placed on the basis of their purpose. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

OM attribute value An arbitrarily complex information item that can be viewed as a characteristic or property of an OM object. (C/PA) 1328.2-1993w, 1327.2-1993w, 1326.2-1993w, 1224.2-1993w

OM class A category into which OM objects are placed on the basis of both their purpose and their internal structure. (C/PA) 1328.2-1993w, 1326.2-1993w, 1224.2-1993w, 1327.2-1993w

omega (navigation aid terms) A very long distance navigation system operating at approximately 10 kHz (kilohertz), in which hyperbolic lines of position are determined by measurement of the difference in travel time of continuous wave signals from two transmitters separated by 5000 nmi (nautical miles) to 6000 nmi (9000 km [kilometers] to 11 000 km) or in which changes in distances from the transmitters are measured by counting rf (radio frequency) wavelengths in space of lanes as the vehicle moves from a known position, the lanes being counted by phase comparison with a stable oscillator aboard the vehicle. (AES/GCS) 172-1983w

OM interface The API to OSI Object Management. (C/PA) 1224.1-1993w

omnibearing (navigation aid terms) A magnetic bearing indicated by a navigational receiver on transmisssion from an omnirange. (AES/GCS) 172-1983w

omnibearing converter (navigation aid terms) A device which combines the omnibearing signal with vehicle heading information to furnish electrical signals for the operation of the pointer of a radio magnetic indicator. (AES/GCS) 172-1983w

omnibearing-distance facility (navigation aid terms) A combination of an omnirange and a distance measuring facility, so that both bearing and distance information may be obtained; tacan and VOR/DME are omnibearing distance facilities. (AES/GCS) 172-1983w

omnibearing-distance navigation (navigation aid terms) Radio navigation utilizing a polar coordinate system as a reference, making use of omnibearing-distance facilities. (AES/GCS) 172-1983w

omnibearing indicator (OBI) (navigation aid terms) An instrument that presents an automatic and continuous indication of an omnibearing. (AES/RS/GCS) 686-1982s, 172-1983w

omnibearing line *See:* radial.

omnibearing selector (navigation aid terms) A control used with an omnirange receiver so that any desired omnibearing may be selected; deviation from on-course for any selected bearing is displayed on the course line deviation indicator. (AES/GCS) 172-1983w

omnidirectional antenna An antenna having an essentially non-directional pattern in a given plane of the antenna and a directional pattern in any orthogonal plane. *Note:* For ground-based antennas, the omnidirectional plane is usually horizontal. (AP/ANT) 145-1993

omnidirectional microphone (nondirectional microphone) A microphone the response of which is essentially independent of the direction of sound incidence. *See also:* microphone. (EEC/PE) [119]

omnidirectional pattern A pattern with the same response in all azimuthal directions. *Note:* This radiation pattern results when only one tower is used to create the radiation pattern. (T&D/PE) 1260-1996

omnidirectional range (omnirange) (navigation aid terms) A radio facility providing bearing information at or from such facilities at all azimuths within its service area and providing direct indication of the magnetic bearing (omnibearing) of that station from any direction. (AES/GCS) 172-1983w

omni-font character recognition Character recognition of many or all character fonts. *Contrast:* single-font character recognition. (C) 610.2-1987

omnirange *See:* omnidirectional range.

OMNITAB II A programming language designed for nonprogrammers, to provide data, numerical, and statistical analysis; provides capability for performing calculations and statistical procedures such as regression and matrix inversion. (C) 610.13-1993w

OM object Any of the complex information objects created, examined, modified, or destroyed by means of the interface. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

OMR *See:* optical mark reading.

OM syntax A category into which an OM attribute value is placed on the basis of its form. *Synonym:* attribute value syntax. (C/PA) 1328.2-1993w, 1327.2-1993w, 1224.2-1993w, 1326.2-1993w

onboard equipment (OBE) Equipment located within a vehicle that supports the information exchange with roadside equipment (RSE). (SCC32) 1455-1999

on-chip interface An interface through which the computer communicates with outside devices and circuits. (C) 610.10-1994w

on-core type A moisture barrier applied directly over the cable core. (PE/IC) 1142-1995

on-course curvature (navigation) (navigation aid terms) The rate of change of the indicated course with respect to distance along the course line or path. (AES/GCS) 172-1983w

one A true logic state or a true condition of a variable. (C/BA) 1496-1993w

one-address Pertaining to an instruction code in which each instruction has one address part. Also called single address. In a typical one-address instruction the address may specify either the location of an operand to be taken from storage, the destination of a previously prepared result, or the location of the next instruction to be interpreted. In a one-address machine, the arithmetic unit usually contains at least two storage locations, one of which is an accumulator. For example, operations requiring two operands may obtain one operand from the main storage and the other from the storage location in the arithmetic unit that is specified by the operation part. *See also:* single-address. (C) 162-1963w

one-address instruction (1) A computer instruction that contains one address field. For example, an instruction to load the contents of location A. *Synonyms:* single-operand instruction; single-address instruction. *Contrast:* multiaddress instruction; zero-address instruction; two-address instruction; four-address instruction; three-address instruction. (C) 610.12-1990

(2) An instruction containing one address. *Synonyms:* single-operand instruction; single-address instruction. *See also:* address format. (C) 610.10-1994w

one-ahead addressing A method of implied addressing in which the operands for a computer instruction are understood to be in the storage locations following the locations of the operands used for the last instruction executed. *Contrast:* repetitive addressing. (C) 610.12-1990

1BASE5 IEEE 802.3 Physical Layer specification for a 1 Mb/s CSMA/CD local area network over two pairs of twisted-pair telephone wire. (C/LM) 802.3-1998

one-core-per-bit storage A type of storage in which each storage cell uses one magnetic core per binary character. (C) 610.10-1994w

one-family dwelling A building consisting solely of one dwelling unit. (NESC/NEC) [86]

one-fluid cell A cell having the same electrolyte in contact with both electrodes. *See also:* electrochemistry. (EEC/PE) [119]

1GL *See:* machine language.

one-hour rating (rotating electric machinery) The output that the machine can sustain for 1 hour starting cold 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

100BASE-T2 IEEE 802.3 specification for a 100 Mb/s CSMA/CD local area network over two pairs of Category 3 or better balanced cabling. (C/LM) 802.3-1998

100BASE-FX IEEE 802.3 Physical Layer specification for a 100 Mb/s CSMA/CD local area network over two optical fibers. (C/LM) 802.3-1998

100BASE-T IEEE 802.3 Physical Layer specification for a 100 Mb/s CSMA/CD local area network. (C/LM) 802.3-1998

100BASE-T4 IEEE 802.3 Physical Layer specification for a 100 Mb/s CSMA/CD local area net-work over four pairs of Category 3, 4, and 5 unshielded twisted-pair (UTP) wire. (C/LM) 802.3-1998

100BASE-TX IEEE 802.3 Physical Layer specification for a 100 Mb/s CSMA/CD local area net-work over two pairs of Category 5 unshielded twisted-pair (UTP) or shielded twisted-pair (STP) wire. (C/LM) 802.3-1998

100BASE-X IEEE 802.3 Physical Layer specification for a 100 Mb/s CSMA/CD local area network that uses the Physical Medium Dependent (PMD) sublayer and Medium Dependent Interface (MDI) of the ISO/IEC 9314 group of standards developed by ASC X3T12 (FDDI). (C/LM) 802.3-1998

100 percent disruptive-discharge voltage (dielectric tests) A specified minimum voltage that is to be applied to a test object in a 100 percent disruptive-discharge test under specified conditions. The term applies mostly to impulse tests and has significance only in cases where the loss of dielectric strength resulting from a disruptive discharge is temporary. (PE/PSIM) 4-1978s

100 percent insulation level Cables in this category shall be permitted to be applied where the system is provided with relay protection such that ground faults will be cleared as rapidly as possible, but in any case within one minute. While these cables are applicable to the great majority of cable installations that are on grounded systems, they shall be permitted to be used also on other systems for which the application of cables is acceptable provided the above clearing requirements are met in completely de-energizing the faulted section. (NESC/NEC) [86]

133 percent insulation level This insulation level corresponds to that formerly designated for ungrounded systems. Cables in this category shall be permitted to be applied in situations where the clearing time requirements of the 100 percent level category cannot be met, and yet there is adequate assurance that the faulted section will be de-energized in a time not exceeding one hour. Also, they shall be permitted to be used when additional insulation strength over the 100 percent level category is desirable. (NESC/NEC) [86]

1 kHz envelope delay The envelope delay at a carrier frequency of 1020 Hz. (COM/TA) 743-1995

one-level address *See:* direct address; n-level address.

one-line diagram (single-line) A diagram which shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein. (GSD/ICTL) 315-1975r

one minus cosine (high voltage circuit breakers) The 1−cosine curve starting at zero and reaching a peak of E_2 at time T_2. The crest is denoted by *P*. *Note:* The 1-cosine curve is the standard envelope for rating circuit breaker transient recovery voltage performance for circuit breakers rated 72.5 kV and below. (SWG) 327-1972w

one minus cosine envelope (of a transient recovery voltage) A voltage-versus-time curve of the general form $e_2E_2\ (1 - \cos Kt)$ in which e_2 represents the transient voltage across a switching device pole unit, reaching its crest E_2 at a time T_2. (SWG/PE) C37.100-1992

one-N (1N) modulation (dynamically tuned gyro) The modulation of the pickoff output at spin frequency. (AES/GYAC) 528-1994

one-N (1N) translational sensitivity *See:* radial-unbalance torque.

ONE output (A) (magnetic cell) The voltage response obtained from a magnetic cell in a ONE state by a reading or resetting process. **(B) (magnetic cell)** The integrated voltage response obtained from a magnetic cell in a ONE state by a reading or resetting process. *See also:* ONE state. (Std100) 163-1959

one-plus call (telephone switching systems) A type of station-to-station call in which the digit one is dialed as an access code. (COM) 312-1977w

one-plus-one address Pertaining to an instruction that contains one operand address and a control address. (C) [20], [85]

one-plus-one address format *See:* address format.

one-plus-one address instruction A computer instruction that contains two address fields, the second containing the address of the instruction to be executed next. For example, an instruction to load the contents of location A, then execute the instruction at location B. *Contrast:* four-plus-one address instruction; three-plus-one address instruction; two-plus-one address instruction. (C) 610.12-1990

one-port surge protective device A surge protective device (SPD) with protective components connected in shunt with the circuit to be protected. A one-port SPD may have separate input and output terminals without a specified series impedance between these terminals. (PE) C62.34-1996

one-quadrant multiplier (1) A multiplier in which the multiplication operation is restricted to input variables of the same sign. *Contrast:* four-quadrant multiplier; two-quadrant multiplier. (C) 610.10-1994w
(2) A multiplier in which operation is restricted to a single sign of both input variables. *See also:* electronic analog computer. (C) 165-1977w

1RTT *See:* round trip time.

ones complement (mathematics of computing) The diminished-radix complement of a binary numeral, which is formed by subtracting each digit from 1. For example, the ones complement of 1101 is 0010. *Synonyms:* complement on one; inverse binary state. (C) 1084-1986w

one-shot *See:* monostable.

one-sided switching array (telephone switching systems) A switching array where each crosspoint interconnects multiples within one group. (COM) 312-1977w

1-state (logic) The logic state represented by the binary number 1 and usually standing for an active or true logic condition. (GSD) 91-1973s

ONE state A state of a magnetic cell wherein the magnetic flux through a specified cross-sectional area has a positive value, when determined from an arbitrarily specified direction of positive normal to that area. A state wherein the magnetic flux has a negative value, when similarly determined, is a ZERO state. A ONE output is (1) the voltage response obtained from a magnetic cell in a ONE state by a reading or resetting process, or (2) the integrated voltage response obtained from a magnetic cell in a ONE state by a reading or resetting process. A ZERO output is (1) the voltage response obtained from a magnetic cell in a ZERO state by a reading or resetting process, or (2) the integrated voltage response obtained from a magnetic cell in a ZERO state by a reading or resetting process. A ratio of a ONE output to a ZERO output is a ONE-to-ZERO ratio. A pulse, for example a drive pulse, is a write pulse if it causes information to be introduced into a magnetic cell or cells, or is a read pulse if it causes information to be acquired from a magnetic cell or cells. (Std100) 163-1959w

1T (linear waveform distortion) (video signal transmission measurement) Letter symbol for the duration of a half-period of the nominal upper cut-off frequency of a transmission system. Therefore

$$T = \frac{1}{2f_c}$$

Note: for the TV system M

$$T = \frac{1}{2 \times 4\ (\text{MHz})} = 125''\ (\text{ns})$$

The duration T is commonly referred to as the Nyquist interval. The concept of T is employed not only when the frequency cut-off is a physical property of a given system but also when the system is flat and there is no interest in the

performance of the system beyond a given frequency. (BT) 511-1979w

one-third octave (1) (seismic testing of relays) The interval between two frequencies which have a frequency ratio of 2 1/3. For example, 1 to 1.26, 1.26 to 1.59, 159 to 2.0 Hz, etc. (PE/PSR) C37.98-1977s

(2) The interval between two frequencies that have a frequency ratio of the cube root of two. For example, 1 to 1.26, 1.26 to 1.59, 1.59 to 2.0 Hz, etc. (SWG/PE) C37.100-1992

1000BASE-CX 1000BASE-X over specialty shielded balanced copper jumper cable assemblies. (C/LM) 802.3-1998

1000BASE-LX 1000BASE-X using long wavelength laser devices over multimode and single-mode fiber. (C/LM) 802.3-1998

1000BASE-SX 1000BASE-X using short wavelength laser devices over multimode fiber. (C/LM) 802.3-1998

1000BASE-T IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN using four pairs of Category 5 balanced copper cabling. (C/LM) 802.3-1998

1000BASE-X IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN that uses a Physical Layer derived from ANSI X3.230-1994 (FC-PH). (C/LM) 802.3-1998

one-time fuse (1) (protection and coordination of industrial and commercial power systems) Strictly speaking, any nonrenewable fuse, but generally accepted and used to describe any Class H nonrenewable cartridge fuse, with a single (as opposed to dual) fusing element and intended to interrupt not over 10 000 amperes (A). (IA/PSP) 242-1986r

(2) (protection and coordination of industrial and commercial power systems)

O net loss (circuit equivalent) The net loss is the sum of all the transmission losses occurring between the two ends of the circuit, minus the sum of all the transmission gains. *See also:* transmission loss. (EEC/PE) [119]

one-sided z transform (data processing) Let T be a fixed positive number, and let $f(t)$ be defined for $t \geq 0$. The z transform of $f(t)$ is the function

$$[f(t)] = F(z) = \sum_{n=0}^{\infty} f(nT)z^{-n}$$

for

$$|z| > R = 1/\rho$$

where ρ is the radius of convergence of the series and z is a complex variable. If $f(t)$ is discontinuous at some instant $t = kT$, k an integer, the value used for $f(kT)$ in the z transform is $f(kT^{+})$. The z transform for the sequence $\{f_n\}$ is:

$$[\{f_n\}] = F(z) = \sum_{n=0}^{\infty} f_n z^{-n}$$

(IM) [52]

one-to-many relationship A kind of relationship between two state classes in which each instance of one class, referred to as the *child class*, is specifically constrained to relate to no more than one instance of a second class, referred to as the *parent* class. (C/SE) 1320.2-1998

ONE-to-partial-select ratio The ratio of a ONE output to a partial-select output. *See also:* coincident-current selection. (Std100) 163-1959w

ONE-to-ZERO ratio A ratio of a ONE output to a ZERO output. *See also:* ONE state. (Std100) 163-1959w

one-transistor cell A memory cell that is accessed within the physical confines of a single source and drain. (ED) 1005-1998

O network A network composed of four impedance branches connected in series to form a closed circuit, two adjacent junction points serving as input terminals while the remaining two junction points serve as output terminals. *See also:* network analysis. (EEC/PE) [119]

one-unit call (telephone switching systems) A call for which there is a single-unit charge for an initial minimum interval. (COM) 312-1977w

one-way *See:* linked list.

one-way automatic leveling device A device that corrects the car level only in case of under-run of the car, but will not maintain the level during loading and unloading. *See also:* elevator car-leveling device. (EEC/PE) [119]

one-way correction A method of register control that effects a correction in register in one direction only. (IA/ICTL/IAC) [60]

one-way-only operation A mode of operation of a data link in which data may be transmitted in a preassigned direction over one channel. *Synonym:* simplex operation. *See also:* two-way simultaneous operation; two-way alternate operation. (C) 610.7-1995

one-way trunk (telephone switching systems) A trunk between two switching entities accessible by calls from one end only. At the originating end, the one-way trunk is known as an outgoing trunk; at the terminating end, it is known as an incoming trunk. (COM) 312-1977w

one-wire circuit *See:* direct-wire circuit.

one-wire line *See:* open-wire pole line.

on-hook (1) (telephone switching systems) An open station line or any supervisory or pulsing condition is indicative of this state. (COM) 312-1977w

(2) In regard to a telephone set, deactivated—that is, a telephone set is not in use. *Contrast:* off-hook. (C) 610.7-1995

on-hook/off-hook Signaling conditions on a line in the form of dc impedance presented to the local loop by the telemetry interface unit (TIU). Off-hook implies that the TIU is in a low resistance state and is allowing significant current to flow. On-hook implies that the TIU is in a high resistance state and is not allowing significant current to flow. (SCC31/AMR) 1390.2-1999, 1390.3-1999, 1390-1995

ONI *See:* operator number identification.

ON impedance (thyristor) The differential impedance between the terminals through which the principal current flows, when the thyristor is in the ON state at a stated operating point. *See also:* principal voltage-current characteristic. (IA) [12]

online (A) Pertaining to a system or mode of operation in which input data enter the computer directly from the point of origin or output data are transmitted directly to the point where they are used. For example, an airline reservation system. *Contrast:* batch. *See also:* interactive; conversational; real time. **(B)** Pertaining to a device or process that is under the direct control of the central processing unit of a computer. *Contrast:* offline. *See also:* vary on-line. **(C)** Pertaining to equipment or devices under direct control of the central processing unit. **(D)** Pertaining to a user's ability to interact with a computer. (C/MIL) 610.12-1990, 610.10-1994, [20], [2]

online compiler *See:* incremental compiler.

online dialog *See:* dialog.

online font A font that may be reviewed and accessed automatically by a printer. *Contrast:* downloadable font. *See also:* internal font; printer font. (C) 610.10-1994w

online operation (A) (emergency and standby power) Pertaining to equipment or devices under direct control of the central processing unit. **(B) (emergency and standby power)** Pertaining to uninterruptible power supply systems whereby an inverter is on during normal operation conditions. (IA/PSE) 446-1987

online ordering *See:* teleordering.

online storage Storage under control of a processing unit. *Contrast:* offline storage. (C) 610.10-1994w

online system A system that is operating at all times, such as an inverter supplied by dc power via the primary power source through a battery charger. (IA/PSE) 493-1997

online testing (test, measurement, and diagnostic equipment) Testing of the unit under test in its operational environment.

See also: interference testing; noninterference testing. (MIL) [2]

on-load factor (thyristor) The ratio of the controller ON-state interval to the operating period in the ON-OFF control mode, often expressed as a percentage. (IA/IPC) 428-1981w

on-net call (telephone switching systems) A call within a switched-service network. (COM) 312-1977w

ON-OFF control (thyristor) The starting instant may be synchronous or asynchronous with respect to the line voltage. The controller ON-state interval is equal to or greater than half a line period. *See also:* operation modes. (IA/IPC) 428-1981w

on-off control system A two-step control system in which a supply of energy to the controlled system is either on or off. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

ON-OFF keying (modulation systems) A binary form of amplitude modulation in which one of the states of the modulated wave is the absence of energy in the keying interval. Note: The terms mark and space are often used to designate, respectively, the presence and absence of energy in the keying interval. *See also:* telegraphy. (Std100) 270-1964w

ON-OFF test (test, measurement, and diagnostic equipment) A test conducted by repeatedly switching on and off either the signal, power, or load connected to the unit under test while observing the reaction or performance of some parameter of that unit under test. A test frequently used to isolate offending equipment while conducting compatibility, interference, or system performance evaluations. (MIL) [2]

O noise unit An amount of noise judged to be equal in interfering effect to the one-millionth part of the current output of a particular type of standard generator of artificial noise, used under specified conditions. Note: This term was formerly used in connection with ear balance measurements, but has been largely superseded by dBa employed with indicating noise meter. Approximately seven noise units of noise on a telephone line are frequently taken as equivalent to reference noise. *See also:* signal-to-noise ratio. (EEC/PE) [119]

on-peak energy (power operations) Energy supplied during designated periods of relatively high system demands. (T&D/PE/PSE) 858-1987s, 346-1973w

on-peak period (watthour meters) The period of time during which the specified on-peak rate applies. (ELM) C12.13-1985s

on-peak power Power supplied during designated periods of relatively high system demands. *See also:* generating station. (T&D/PE) [10]

ON period (electron tube or valve) The time during an operating cycle in which the electron tube or valve is conducting. (ED) [45], [84]

on site (monitoring radioactivity in effluents) Location within a facility that is controlled with respect to access by the general public. (NI) N42.18-1980r

ON state (thyristor) The condition of the thyristor corresponding to the low-resistance low-voltage portion of the principal voltage-current characteristic in the switching quadrant(s). *Note:* In the case of reverse-conducting thyristors, this definition is applicable only for a positive anode-to-cathode voltage. *See also:* principal voltage-current characteristic. (IA) [12]

ON-state current (thyristor) The principal current when the thyristor is in the ON state. (IA) [12]

ON-state voltage (thyristor) The principal voltage when the thyristor is in the ON state. *See also:* principal voltage-current characteristic. (IA) [12]

on-the-fly printer An impact printer whose type slugs do not stop moving during the impression time. (C) 610.10-1994w

OOLR *See:* overall objective loudness rating.

op *See:* operation code.

opacity (electroacoustics) (optical path) The reciprocal of transmission. *See also:* transmission. (SP) [32]

opaque (1) The language-independent syntax for a family of datatypes with no order or other operations defined. An opaque datatype may have associated names that identify distinguished values. (C/PA) 1351-1994w
(2) A datatype with no order or other operations defined. An opaque datatype may have associated names that identify distinguished values. (C/PA) 1224.1-1993w

opcode A bit pattern that identifies a particular instruction. (C/MM) 1754-1994

open To create a package instance. (C/BA) 1275-1994

open-address hashing Hashing in which collision resolution is handled by inserting an item that has a duplicate hash value into another available position in the hash table. *Contrast:* separate chaining. *See also:* uniform probing; random probing; double hashing; linear probing. (C) 610.5-1990w

open amortisseur An amortisseur that has no connections between poles. (EEC/PE) [119]

open architecture (1) An architecture for which design parameters and specifications are made available to any and all vendors or manufacturing firms, thus encouraging development of compatible products and enhancements. *Contrast:* closed architecture. (C) 610.10-1994w
(2) An architecture from which a system can be assembled from multiple vendor-supplied interface components. The resulting system can execute applications written by arbitrary independent vendors and can be extended by users other than the original supplier. (SCC20) 1226-1998

open area *See:* test site.

open-area test site (OATS) A site that meets specified requirements for measuring radio-interference fields radiated by an equipment under test (EUT). (EMC) 1128-1998

open-center display A plan-position-indicator display on which zero range corresponds to a ring around the center of the display. *See also:* radar. (EEC/PE) [119]

open-center plan-position indicator A PPI in which the display of the initiation of the time base precedes that of the transmitted pulse. (AES) 686-1997

open-center PPI *See:* open-center plan-position indicator.

open-circuit characteristic *See:* open-circuit saturation curve.

open-circuit control A method of controlling motors employing the open-circuit method of transition from series to parallel connections of the motors. *See also:* multiple-unit control. (EEC/PE) [119]

open circuit cooling (rotating machinery) A method of cooling in which the coolant is drawn from the medium surrounding the machine, passes through the machine and then returns to the surrounding medium. (PE) [9]

open-circuit dc voltage The dc voltage on an ungrounded conductive object relative to ground, as a result of deposition of charge. (T&D/PE) 539-1990

open-circuit impedance (A) (general) An impedance of a network that has a specified pair or group of terminals open circuited. **(B) (general)** (four-terminal network or line). The input-output- or transfer-impedance parameters z_{11}, z_{22}, z_{12}, and z_{21} of a four-terminal network when the far-end is open circuited. (CAS) [13]

open-circuit induced voltage The rms power-frequency voltage on an ungrounded conductive object relative to ground or the voltage across the terminals of an open circuit loop, as a result of induction. (T&D/PE) 539-1990

open-circuit inductance The apparent inductance of a winding with all other windings open-circuited. (CHM) [51]

open-circuit potential The measured potential of a cell from which no current flows in the external circuit. 332-1972w

open-circuit saturation curve (synchronous machines) (open-circuit characteristic) The saturation curve of a machine with an open-circuited armature winding. (PE) [9]

open circuit signaling (data transmission) That type of signaling in which no current flows while the circuit is in the idle condition. (PE) 599-1985w

open-circuit test (synchronous machines) A test in which the machine is run as a generator with its terminals open-circuited. (PE) [9]

open-circuit transition (1) (multiple-unit control) A method of changing the connection of motors from series to parallel in which the circuits of all motors are open during the transfer. *See also:* multiple-unit control. (EEC/PE) [119]
(2) (reduced-voltage controllers, including star-delta controllers) A method of starting in which the power to the motor is interrupted during normal starting sequence. *See also:* electric controller. (IA/ICTL/IAC) [60]

open circuit transition auto-transformer starting (rotating machinery) The process of auto-transformer starting whereby the motor is disconnected from the supply during the transition from reduced to rated voltage. (PE) [9]

open-circuit voltage (1) (batteries) The voltage at its terminals when no appreciable current is flowing. (PE/EEC) [119]
(2) (arc-welding apparatus) The voltage between the output terminals of the welding power supply when no current is flowing in the welding circuit. (EEC/AWM) [91]
(3) (overhead power lines) A voltage on a conductive object or in an electric circuit as a result of induction or deposition of charge. (T&D/PE) 539-1990

open-collector A type of bus driver (only drives low or not at all). (C/MM) 1196-1987w

open conductor A type of electric supply or communication line construction in which the conductors are bare, covered, or insulated and without grounded shielding, individually supported at the structure either directly or with insulators. *Synonym:* open wire. (NESC) C2-1997

open contact *See:* normally open contact.

open cutout A cutout in which the fuse clips and fuseholder, fuse unit, or disconnecting blade are exposed. (SWG/PE) C37.40-1993, C37.100-1992

open-delta connection (power and distribution transformers) A connection similar to a delta-delta connection utilizing three single-phase transformer, but with one single-phase transformer removed. Note: The two remaining transformers of an open-delta bank will carry 57.7 percent of the load carried by the bank using three identical transformers connected delta-delta. (PE/TR) C57.12.80-1978r

open dual bus A DQDB *subnetwork* with the *Head of Bus function* for Bus A and the Head of Bus function for Bus B at different *nodes*. (LM/C) 8802-6-1994

open-ended Pertaining to a process or system that can be augmented. (C) [20], [85]

open-ended coil (rotating machinery) A partly preformed coil the turns of which are left open at one end to facilitate their winding into the machine. *See also:* asynchronous machine. (PE) [9]

open file A file that is currently associated with a file descriptor. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

open file description A record of how a process or group of processes is accessing a file. Each file descriptor shall refer to exactly one open file description, but an open file description may be referred to by more than one file descriptor. A file offset, file status, and file access modes are attributes of an open file description. (C/PA) 1003.5-1999, 9945-1-1996

Open Firmware The firmware architecture defined by IEEE Std 1275-1994 and its applicable supplements or, when used as an adjective, a software component compliant with such an architecture. (C/BA) 1275.1-1994w, 1275.2-1994w, 1275.4-1995, 1275-1994

open-fuse trip device (1) (low-voltage ac power circuit protectors) (ac power circuit breakers) A device that operates to open (trip) all poles of a circuit breaker (protector) in response to the opening, or absence, of one or more fuses integral to the circuit protector on which the device is mounted. After operating, the device shall prevent closing of the circuit breaker (protector) until reset operation is performed. *Note:* Since some open-fuse trip devices may operate by sensing the voltage across the fuses, they may not prevent closing of the circuit breaker (protector) with an open or missing fuse, but in most cases will cause an immediate trip if such an operation is performed. There is a practical limit of load impedance above which the device (sensing voltage across an open or missing fuse) will not function as described. (SWG/PE) C37.29-1981r, C37.13-1990r
(2) A device that operates to open (trip) all poles of a switching device in response to the opening, or absence, of one or more fuses integral to the switching device on which the device is mounted. After operating, the device prevents closing of the switching device until a reset operation is performed. (SWG/PE) C37.100-1992

opening eye (of a fuse holder, fuse unit, or disconnecting blade) An eye provided for receiving a fuse hook or switch hook for opening and closing the fuse. (SWG/PE) C37.100-1992, C37.40-1993

opening operating time (of a switch) The interval of time it takes during switch operation to move from the fully closed to the fully open position. (SWG/PE) C37.100-1992

opening operation *See:* open operation.

opening time (of a mechanical switching device) The interval of time between the time when the actuating quantity of the release circuit reaches the operating value, and the instant when the primary arcing contacts have parted. Any time delay device forming an integral part of the switching device is adjusted to its minimum setting or, if possible, is cut out entirely for the determination of opening time. *Note:* The opening time includes the operating time of an auxiliary relay in the release circuit when such a relay is required and supplied as part of the switching device. *See also:* isolating time. (SWG/PE) C37.100-1992

open line wire charging current Current supplied to an unloaded open-wire line. *Note:* Current is expressed in rms amperes. (SWG/PE) C37.100-1992

open-link cutout A cutout that does not employ a fuseholder and in which the fuse support directly receives an open-link fuse link or a disconnecting blade. (SWG/PE) C37.40-1993, C37.100-1992

open-link fuse link A replaceable part or assembly comprised of the conducting element and fuse tube, together with the parts necessary to confine and aid in extinguishing the arc and to connect it directly into the fuse clips of the open-link fuse support. (SWG/PE) C37.40-1993, C37.100-1992

open-link fuse support An assembly of base or mounting support, insulators or insulator unit, and fuse clips for directly mounting an open-link fuse link and for connecting it into the circuit. (SWG/PE) C37.40-1993, C37.100-1992, C37.100B-1986w

open-line test A test that energizes a converter dc yard up to full voltage without energizing the remote station. The test can be configured to also test energize the transmission line. (PE/SUB) 1378-1997

open listening A mode of telephone communication in which a telephone handset is used in the normal position for send. The incoming signal is received simultaneously by the handset and loudspeaker. (COM/TA) 1329-1999

open loop (automatic control) A signal path without feedback. *See also:* control system; feedback. (PE/EDPG) [3]

open-loop control (1) (station control and data acquisition) A form of control without feedback. (SWG/PE/SUB) C37.100-1992, C37.1-1994
(2) Pertaining to a control system in which the output is permitted to vary in accordance with the inherent characteristics of the system, and no function of the output is used as feedback to the system. (C) 610.2-1987

open-loop control system (1) (general) A system in which the controlled quantity is permitted to vary in accordance with the inherent characteristics of the control system and the controlled power apparatus for any given adjustment of the con-

troller. *Note:* No function of the controlled variable is used for automatic control of the system. It is not a feedback control system. *See also:* network analysis; control; control system. (MAG/PEL/ET) 264-1977w, 111-1984w

(2) (hydraulic turbines) A control system that has no means for comparing the output with the input for control purposes. (PE/EDPG) 125-1977s

open-loop gain (power supplies) The gain, measured without feedback, is the ratio of the voltage appearing across the output terminal pair to the causative voltage required at the (input) null junction. The open-loop gain is denoted by the symbol A in diagrams and equations. *See also:* closed loop; loop gain. (AES/PE) [41], [78]

open loop measurement (data transmission) A measurement made in which a circuit has at least one of two hybrid sets disconnected and thereby opening the loop. (PE) 599-1985w

open-loop series street-lighting system A street-lighting system in which the circuits each consist of a single line wire that is connected from lamp to lamp and returned by a separate route to the source of supply. *See also:* direct-current distribution; alternating-current distribution. (T&D/PE) [10]

open-loop system A control system that has no means for comparing the output with input for control purposes. (EEC) [74]

open machine (1) (rotating machinery) A machine in which no mechanical protection as such is embodied and there is no restriction to ventilation other than that necessitated by good mechanical construction. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

(2) A machine that has ventilating openings that permit passage of external cooling air over and around the windings. (IA/MT) 45-1998

open network A network that can be accessed from computers or terminals external to the network, using dial-up or dedicated lines, or other means. *Contrast:* closed network. (C) 610.7-1995

open-numbering plan (telephone switching systems) A numbering plan in which the number of digits dialed varies according to the requirements of the telecommunications message network. (COM) 312-1977w

open operation (of a switching device) The movement of the contacts from the normally closed to the normally open position. *Note:* The letter O signifies this operation: Open. (SWG/PE) C37.100-1992

open path (network analysis) A path along which no node appears more than once. (CAS) 155-1960w

open-phase protection A form of protection that operates to disconnect the protected equipment on the loss of current in one phase conductor of a polyphase circuit, or to prevent the application of power to the protected equipment on the absence of one or more phase voltages of a polyphase system. (SWG/PE) C37.100-1992

open-phase relay A polyphase relay designed to operate when one or more input phases of a polyphase circuit are open. (SWG/PE) C37.100-1992

open pipe-ventilated machine An open machine except that openings for the admission of the ventilating air are so arranged that inlet ducts or pipes can be connected to them. This air may be circulated by means integral with the machine or by means external to and not a part of the machine. In the latter case, this machine is sometimes known as a separately ventilated machine or a forced-ventilated machine. Mechanical protection may be defined as under dripproof machine, splashproof machine, guarded machine, or semiguarded machine. *See also:* direct-current commutating machine; asynchronous machine. (EEC/PE) [119]

open region (A) (three-dimensional space) A volume that satisfies the following conditions:

a) any point of the region has a neighborhood that lies within the region;

b) any two points of the region may be connected by a continuous space curve that lies entirely in the region.

(B) (two-dimensional space) An area that satisfies the conditions of definition (A). (Std100) 270-1966

open relay An unenclosed relay. *See also:* relay. (EEC/REE) [87]

open resonator (laser maser) An open resonator and a beam resonator are identical. (LEO) 586-1980w

open specifications Specifications that are maintained by an organization that uses an open, public consensus process to accommodate new technologies and user requirements over time. (C/PA) 14252-1996

open subroutine (1) (computers) A subroutine that must be relocated and inserted into a routine at each place it is used. *See also:* closed subroutine; subroutine; closed subroutine. (C/MIL) [20], [2], [85]

(2) (software) A subroutine that is copied into a computer program at each place that it is called. *Synonym:* direct insert subroutine. *Contrast:* closed subroutine. *See also:* macro; inline code. (C) 610.12-1990

open switchgear assembly An assembly that does not have enclosures as part of the structure. (SWG/PE) C37.100-1992

open system A system that implements sufficient open specifications or standards for interfaces, services, and supporting formats to enable properly engineered application software

— To be ported with minimal changes across a wide range of systems from one or more suppliers
— To interoperate with other applications on local and remote systems
— To interact with people in a style that facilitates user portability

(C/PA) 14252-1996, 1003.23-1998

open system API A combination of standards-based interfaces specifying a complete interface between an application program and the underlying application platform. (C/PA) 14252-1996

open system environment (OSE) A comprehensive set of interfaces, services, and supporting formats, plus user aspects for interoperability or for portability of applications, data, or people, as specified by information technology standards and profiles. (C/PA) 14252-1996

open system hardware architecture An electronic system design that allows components, which are developed or built by multiple parties, to work together. (C/BA) 14536-1995

open systems interconnection (OSI) A model that provides a common basis for the coordination of standards development for the purpose of systems interconnection, while allowing existing standards to be placed into perspective within the overall reference model. The OSI model defines a seven-layer functional model, including descriptions of the functions defined for each layer. Refers to ISO 7498:84. (EMB/MIB) 1073.3.1-1994, 1073.4.1-2000

open systems interconnection model A computer network architecture model proposed as a standard model by the International Organization for Standardization. The model consists of seven layers, each consisting of entities, or sets of functions performed on bits, frames, packets, or messages. *Note:* Enables any OSI-compatible computer or device to communicate with any other OSI-compliant computer or device for a meaningful exchange of information. *Synonym:* OSI reference model. (C) 610.7-1995

open systems interconnection (OSI) (N)-service A capability of the (N)-layer, and the layers beneath it, that is provided to the (N)-entities at the boundary between the (N)-layer and the (N+1)-layer. (LM/C) 802.10-1992

open systems interconnection reference model (OSIRM) A model that organizes the data communication concept into seven layers and defines the services that each layer provides. (DIS/C) 1278.2-1995

open systems interconnect model A seven-layer network communications model developed by an International Organization for Standardization (ISO) subcommittee that governs communications interchange between systems. The model is an internationally accepted framework of standards for intersystem communications. (C/MM) 1284.4-2000

open terminal box (rotating machinery) A terminal box that is, normally, open only to the interior of the machine. (PE) [9]

open wire *See:* open conductor.

open-wire circuit A circuit made up of conductors separately supported on insulators. *Note:* The conductors are usually bare wire, but they may be insulated by some form of continuous insulation. The insulators are usually supported by crossarms or brackets on poles. (EEC/PE) [119]

open-wire lead *See:* open-wire pole line.

open-wire line charging current (high voltage circuit breakers) Current supplied to an unloaded open wire line. *Note:* Current is expressed in root-mean-square amperes. (SWG) 341-1972w

open-wire pole line (open-wire lead) (open-wire line) A pole line whose conductors are principally in the form of open wire. (PE/EEC) [119]

open-wire 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 of induced voltage. *Synonym:* hot-line protectors. (PE/PSC) 487-1992

open wiring (on insulators) An exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings, and not concealed by the building structure. (NESC/NEC) [86]

operable equipment (test, measurement, and diagnostic equipment) An equipment which, from its most recent performance history and a cursory electrical and mechanical examination, displays an indication of operational performance for all required functions. (MIL) [2]

operand (1) (software) (mathematics of computing) A variable, constant, or function upon which an operation is to be performed. For example, in the expression A = B + 3, B and 3 are the operands. (C) 610.12-1990, 1084-1986w

(2) (microprocessor assembly language) Data which is to be operated on; also, an address denoting data which is to be operated on. (C/MM) 695-1985s

(3) An argument to a command that is generally used as an object supplying information to a utility necessary to complete its processing. Operands generally follow the options in a command line. (C/PA) 9945-2-1993

(4) An entity on which an operation is performed. (C) 610.10-1994w

operand field A field within a computer instruction that specifies an operand needed by the instruction. *See also:* operation field; address field. (C) 610.10-1994w

operand handler In a pipelined machine, the portion of the computer that fetches data from memory and stores results in memory. *Note:* It receives its instructions from the instruction decoder, and passes operands to or from the execution unit. (C) 610.10-1994w

operate (analog computer) In an analog computer, the computer-control state in which input signals are connected to all appropriate computing elements, including integrators, for the generation of the solution. (C) 165-1977w, 610.10-1994w

operated unit A switch, signal, lock, or other device that is operated by a lever or other operating means. (EEC/PE) [119]

operating basis earthquake (OBE) (1) (seismic qualification of Class 1E equipment for nuclear power generating stations) An earthquake that could reasonably be expected to occur at the plant site during the operating life of the plant considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake that produces the vibratory ground motion for which those features of the nuclear power plant, necessary for continued operation without undue risk to the health and safety of the public, are designed to remain functional. (PE/NP) 344-1987r

(2) (Class 1E battery chargers and inverters) (seismic testing of relays) (seismic qualification of Class 1E equipment) (nuclear power generating station) That earthquake which could reasonably be expected to affect the plant site during the operating life of the plant. It is that earthquake which produces the vibratory ground motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public are designed to remain functional. (SWG/PE/NP/PSR) 649-1980s, C37.81-1989r, 650-1979s, C37.98-1977s, C37.100-1992, 382-1985

operating bypass (1) (nuclear power generating station) Normal and permissive removal of the capability to accomplish a protective function that could otherwise occur in response to a particular set of generating station conditions. *Note:* Typically, operating bypasses are used to permit a change to a different mode of generating station operation (for example, prevention of initiation of safety injection during cold shutdown conditions). (PE/NP) 279-1971w

(2) Inhibition of the capability to accomplish a safety function that could otherwise occur in response to a particular set of generating conditions. *Note:* An operating bypass is not the same as a maintenance bypass. Different modes of plant operation may necessitate an automatic or manual bypass of a safety function. Operating bypasses are used to permit mode changes (e.g., prevention of initiation of emergency core cooling during the cold shutdown mode). (PE/NP) 603-1998

operating characteristic (of a relay) The response of the relay to the input quantities that result in relay operation. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

operating conditions (1) (reliability data for pumps and drivers, valve actuators, and valves) (reliability data) The loading or demand cyclic operation, or both, of an item between zero and 100% of its related capability(ies). (PE/NP) 500-1984w

(2) (general) The whole of the electrical and mechanical quantities that characterize the work of a machine, apparatus, or supply network, at a given time. (EI) 96-1969w

operating cycle (nuclear power generating station) The complete sequence of operations that occur during a response to a demand function. (PE/NP) 380-1975w, 382-1980s

operating device (elevators) The car switch, pushbutton, lever, or other manual device used to actuate the control. *See also:* control. (EEC/PE) [119]

operating duty (of a switching device) A specified number and kind of operations at stated intervals. (SWG/PE) C37.100-1992

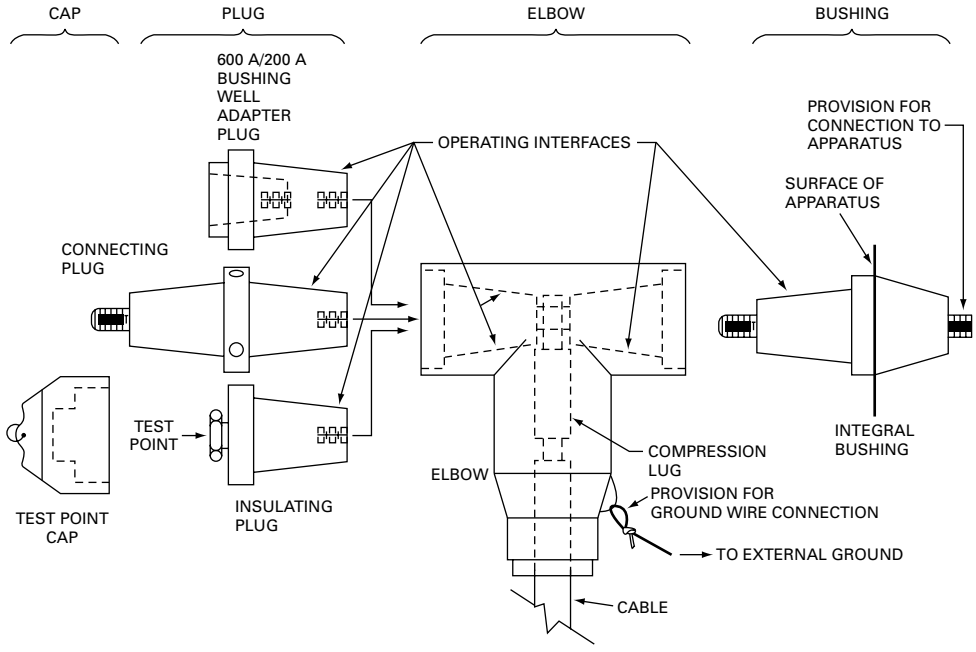
operating duty cycle One or more unit operations, as specified. (SPD/PE) C62.11-1999, C62.62-2000

operating-duty test (surge arresters) A test in which working conditions are simulated by the application to the arrester of a specified number of impulses while it is connected to a power supply of rated frequency and specified voltage. (PE) [8], [84]

operating experience (1) (safety systems equipment in nuclear power generating stations) Verifiable service data for equipment. (PE/NP) 627-1980r

(2) (Class 1E battery chargers and inverters) Accumulation of verifiable service data for conditions equivalent to those for which particular equipment is to be qualified. (PE/NP) 650-1979s, 323-1974s

operating failure rate (reliability data for pumps and drivers, valve actuators, and valves) The probability (per hour) of failure for those operating components required to operate or function for a period of time. (PE/NP) 500-1984w



Typical components of 600 A separable insulated connector system

operating interface

operating floor (packaging machinery) A floor or platform used by the operator under normal operating conditions. (IA/PKG) 333-1980w

operating frequency (thyristor) The operating frequency is the reciprocal value of the operating period. (IA/IPC) 428-1981w

operating frequency line current (thyristor) The root-mean-square (rms) value of the fundamental component of the line current, whose frequency is the operating frequency. (IA/IPC) 428-1981w

operating frequency load voltage (thyristor) The root-mean-square (rms) value of the fundamental component of the load voltage, whose frequency is the operating frequency. (IA/IPC) 428-1981w

operating influence The change in a designated performance characteristic caused solely by a prescribed change in a specified operating variable from its reference operating condition to its extreme operating condition, all other operating variables being held within the limits of reference operating conditions. *Notes:* 1. It is usually expressed as a percentage of span. 2. If the magnitude of the influence is affected by direction, polarity, or phase, the greater value shall be taken. (EEC/EMI) [112]

operating interface (connector) The surfaces at which a connector is normally separated. (See the corresponding figure.) (PE/T&D) 386-1995

operating life (accelerometer) (gyros) The accumulated time of operation throughout which a gyro or accelerometer exhibits specified performance when maintained and calibrated in accordance with a specified schedule. (AES/GYAC) 528-1994

operating life expectancy (1) (of a fault-initiating switch) The number of closing operations at rated making current that a switch is capable of performing when it is new and tested at its rated making current. (SWG/PE) C37.30-1992s
(2) (of a load interrupter switch) The number of operations that a switch is capable of successfully performing when it is new and tested at its rated interrupting current. (SWG/PE) C37.30-1992s

operating line; operating curve The locus of all simultaneous values of total instantaneous electrode voltage and current for given external circuit conditions. (ED) [45]

operating mechanism (1) (power system device function numbers) The complete electrical mechanism or servomechanism, including the operating motor, solenoids, position switches, etc. for a tap changer, induction regulator, or any similar piece of apparatus that otherwise has no device function number. (SUB/PE) C37.2-1979s
(2) (of a switching device) The part of the mechanism that actuates all the main-circuit contacts of the switching device either directly or by the use of pole-unit mechanisms. (SWG/PE) C37.100-1992

operating modes (nuclear power generating station) The nuclear power plant modes as defined by the technical specifications for the plant. (PE/NP) 566-1977w

operating noise temperature The temperature in kelvins given by

$$T_{\text{op}} = \frac{N_0}{kG_s}$$

where N_0 is the output noise power per unit bandwidth at a specified output frequency flowing into the output circuit (under operating conditions), k is Boltzmann's constant, and G_s is the ratio of the signal power delivered at the specified output frequency into the output circuit (under operating conditions) to the signal power available at the corresponding input frequency or frequencies to the system (under operating conditions) at its accessible input terminations. *Notes:* 1. In a nonlinear system T_{op} may be a function of the signal level. 2. In a linear two-port transducer with a single input and a single output frequency, if the noise power originating in the output termination and reflected at the output port can be neglected, T_{op} is related to the noise temperature of the input termination T_i and the effective input noise temperature T_e by the equation

$$T_{\text{op}} = T_i + T_e$$

See also: transducer. (ED) 161-1971w

operating overload (packaging machinery) The overcurrent to which electric apparatus is subjected in the course of the

normal operating conditions that it may encounter. *Notes:* 1. The maximum operating overload is to be considered six times normal full-load current for alternating-current industrial motors and control apparatus; four times normal full-load current for direct-current industrial motors and control apparatus used for reduced-voltage starting; and ten times normal full-load current for direct-current industrial motors and control apparatus used for full-voltage starting. 2. It should be understood that these overloads are currents that may persist for a very short time only, usually a matter of seconds. (IA/PKG) 333-1980w

operating period (thyristor) The time between starting instants of successive controller ON-state intervals in the ON-OFF control mode. (IA/IPC) 428-1981w

operating point (working point) The point on the family of characteristic curves corresponding to the average voltages or currents of the electrodes in the absence of a signal. *See also:* quiescent point. (ED) [45]

operating range (1) (navigation aid terms) The maximum distance at which reliable service is provided by an aid to navigation. (AES/GCS) 172-1983w

(2) (plutonium monitoring) The region between the limits within which a quantity is measured. (NI) N317-1980r

operating reserve (1) Generating capability above firm system demand available to provide for regulation, load forecasting error, equipment-forced and scheduled outages, and local area protection. It consists of spinning and non-spinning reserve. (PE/PSE) 858-1993w

(2) (electric power supply) That reserve above firm system load required to provide for: regulation within the hour to cover minute to minute variations; load forecasting error; loss of equipment; local area protection. The operating reserve consists of spinning or nonspinning reserve, or both. (PE/PSE) 346-1973w

operating speed range The range between the lowest and highest rated speeds at which the drive may perform at full load. *See also:* electric drive. (IA/IAC) [60]

operating system (software) A collection of software, firmware, and hardware elements that controls the execution of computer programs and provides such services as computer resource allocation, job control, input/output control, and file management in a computer system. (C) 610.12-1990

operating system device driver A device driver intended for use by a primary operating system. *Contrast:* firmware device driver. *See also:* device driver. (C/BA) 1275-1994

operating system software Application-independent software that supports the running of application software and manages the resources of the application platform. (C/PA) 14252-1996

Operating Systems Simulation Language (OSSL) A simulation language used to simulate hardware and software aspects of computer systems. (C) 610.13-1993w

operating tap voltage (capacitance potential devices) Indicates the root-mean-square voltage to ground at the point of connection (potential tap) of the device network to the coupling capacitor or bushing. This is the voltage on which certain insulation tests are based. *See also:* outdoor coupling capacitor. 31-1944w

operating temperature (T_{op}) (1) (power supplies) The range of environmental temperatures in which a power supply can be safely operated (typically, 20 to 50 degrees Celsius). (AES) [41]

(2) (accelerometer) (gyros) The temperature at one or more gyro or accelerometer elements when the device is in the specified operating environment. (AES/GYAC) 528-1994

(3) The temperature at which a unit under test operates. It is often specified over a range and can have various definitions. Definitions include ambient temperature, baseplate temperature, inlet air temperature, etc. (PEL) 1515-2000

operating temperature limits (attenuator) Maximum temperature in degrees Celsius at which attenuator will operate with full input power. *Note:* Derating function for maximum power versus temperature must be specified to show maximum temperature in degrees Celsius at which attenuator will operate 10 dB below full input power. (IM/HFIM) 474-1973w

operating temperature, maximum (electrical insulation tests) The stabilized temperature obtained from operation of the equipment at rated load and duty cycle in the maximum ambient temperature specified for the device under test. (AES/ENSY) 135-1969w

operating temperature range (Hall effect devices) The range of ambient temperature over which the Hall effect device may be operated with nominal control current and a specified maximum magnetic flux density. (MAG) 296-1969w

operating temperature, room (electrical insulation tests) The temperature of the equipment expected at rated load and duty cycle in an ambient temperature of 20°C ± 5° (68°F ± 9°). An equipment item that has been operated through its normal duty cycle or has stabilized to the approximate normal running temperature may be assumed to be at room ambient operating temperature. (AES/ENSY) 135-1969w

operating time (1) (reliability data for pumps and drivers, valve actuators, and valves) The period of time that an active item or equipment is functioning effectively. (PE/NP) 500-1984w

(2) The part of up time during which a functional unit is performing useful operations. *Contrast:* idle time. *See also:* miscellaneous time; rerun time. (C) 610.10-1994w

(3) (of a relay) The time interval from occurrence of specified input conditions to a specified operation. (SWG/PE/PSR) C37.100-1992, C37.98-1977s

operating voltage (1) The actual voltage applied to the heating cable when in service. (IA/PC) 515.1-1995, 515-1997

(2) The voltage of the system on which a device is operated. *Note:* This voltage, if alternating, is usually expressed as an rms value. (SWG/PE) C37.100-1992

operating voltage range (hybrid computer linkage components) The minimum and maximum values of the analog input voltage which can be represented by the output to within a given accuracy. (C) 166-1977w

operation (1) (FASTBUS acquisition and control) A primary address cycle followed by zero or more data cycles and a termination sequence. (NID) 960-1993

(2) (train control) The functioning of the automatic train-control or cab-signaling system that results from the movement of an equipped vehicle over a track element or elements for a block with the automatic train-control apparatus in service, or which results from the failure of some part of the apparatus. *See also:* automatic train control. (PE/EEC) [119]

(3) (elevators) The method of actuating the control. *See also:* control.

(4) (A) A defined action, namely, the act of obtaining a result from one or more operands in accordance with a rule that completely specifies the result for any permissible combination of operands. **(B)** The set of such acts specified by such a rule, or the rule itself. **(C)** The act specified by a single computer instruction. **(D)** A program step undertaken or executed by a computer, for example, addition, multiplication, extraction, comparison, shift, transfer. The operation is usually specified by the operator part of an instruction. **(E)** The event of specific action performed by a logic element. **(F)** Loosely: command. (C) 162-1963

(5) (A) (computers) The action specified by an operator on one or more operands. For example, in the expression $A = B + 3$, the process of adding B to 3 to obtain A. *Note:* Unlike the mathematical meaning, such an operation may not involve an operator or operands; for example, the operation Halt. **(B) (programming)** A defined action that can be performed by a computer system; for example, addition, comparison, branching. **(C)** The process of running a computer system in its intended environment to perform its intended functions. (C/Std100) 610.12-1990

(6) (SBX bus) The process whereby digital signals effect the transfer of data across the interface by means of a sequence of control signals. Operations may be either interlocked or full speed. (C/MM) 959-1988r

(7) The total activity associated with the exchange of data or events. (C/BA) 1014.1-1994w

(8) The language-independent syntax for a program abstraction with formal input and output parameters that are bound to objects or values in the application that invokes it. (C/PA) 1351-1994w

(9) A program step executed by a computer. *See also:* computer operation; logic operation. (C) 610.10-1994w

(10) A program abstraction with formal input and output parameters that are bound to objects or values in the application that invokes it. (C/PA) 1328.2-1993w, 1328-1993w, 1224.2-1993w, 1327.2-1993w, 1224-1993w, 1327-1993w, 1224.1-1993w

(11) A high-level file transfer or management task performed by an FTAM API function. An operation is implemented by the underlying FTAM service provider, which performs a series of low-level file actions. (C/PA) 1238.1-1994w

(12) (of a switching device) Action of the parts of the device to perform its normal function. (SWG/PE) C37.100-1992

(13) An action defined by a procedure. (SCC20) 1226-1998

(14) A kind of property that is a mapping from the (cross product of the) instances of the class and the input argument types to the (cross product of the) instances of the other (output) argument types. The operations of a class specify the behavior of its instances. While an attribute or participant property is an abstraction of what an instance *knows*, an operation is an abstraction of what an instance *does*. Operations can perform input and output, and can change attribute and participant property values. Every operation is associated with one class and is thought of as a responsibility of that class. No operations are the joint responsibility of multiple classes. (C/SE) 1320.2-1998

(15) At the specification level, an operation is a service that a class knows how to carry out. (IM/ST) 1451.1-1999

operational (A) (software) Pertaining to a system or component that is ready for use in its intended environment. **(B) (software)** Pertaining to a system or component that is installed in its intended environment. **(C) (software)** Pertaining to the environment in which a system or component is intended to be used. (C) 610.12-1990

operational amplifier (1) (analog computer)

1) An amplifier, usually a high-gain dc amplifier, designed to be used with external circuit elements to perform a specified computing operation or to provide a specified transfer function.
2) An amplifier, usually a high-gain dc amplifier, with external circuit elements, used for performing a specified computing operation.

Notes: 1. The gain and phase characteristics are generally designed to permit large variations in the feedback circuit without instability. 2. The input terminal of an operational amplifier (1) is the summing junction of an operational amplifier (2) and is generally designed to draw current that is negligibly small relative to signal currents in the feedback impedance. *See also:* integrating amplifier; inverting amplifier; summing amplifier. (C) 165-1977w

(2) A two-input amplifier designed to perform control or mathematical operations by means of an external feedback circuit connecting the output to one input, and very high gain for voltage differences of either polarity at the inputs. *Note:* Operational amplifiers are used in analog computers to provide mathematical operations such as summing and integration. *See also:* integrating amplifier; summing amplifier. (C) 610.10-1994w

operational availability (A_O) (nuclear power generating station) The measured characteristic of an item expressed by the probability that it will be operable when needed as determined by periodic test and resultant analysis. (PE/NP) 933-1999, 338-1987r

operational character *See:* control character.

operational concept description (OCD) *See:* concept of operations document.

operational conditions The factors, including weather, human operations, external system interactions, etc. that contribute to defining operational scenarios or environments. (C/SE) 1220-1994s

operational environment The natural or induced environmental conditions, anticipated system interfaces, and user interactions within which the system is expected to be operated. (C/SE) 1220-1994s

operational gain *See:* closed-loop gain.

operational impedance (rotating machinery) Defined by the equation

$$Z(s) = \frac{V(s)}{I(s)}$$

where $V(s)$ is the Laplace transform of the voltage and $I(s)$ is the Laplace transform of the current. (PE) [9]

operational inductance (rotating machinery) Defined by the equation

$$L(s) = \frac{\Lambda(s)}{I(s)}$$

where $\Lambda(s)$ is the Laplace transform of the flux linkages and $I(s)$ is the Laplace transform of the current. (PE) [9]

operational maintenance *See:* noninterference testing.

operational maintenance influence (instruments) The effect of routine operations that involve opening the case, such as to inspect or mark records, change charts, add ink, alter control settings, etc. *See also:* accuracy rating. (EEC/EMI) [112]

operational maximum usable frequency (MUF) The highest frequency that would permit acceptable performance of a radio circuit by signal propagation via the ionosphere between given terminals at a given time under specified working conditions. *Notes:* 1. Acceptable performance may, for example, be quoted in terms of the maximum allowable bit error rate or required signal-to-noise ratio. 2. Specified working conditions may include such factors as antenna type, transmitter power, class of emission, and required information rate. *See also:* maximum usable frequency. (AP/PROP) 211-1997

operational power supply A power supply whose control amplifier has been optimized for signal-processing applications rather than the supply of steady-state power to a load. A self-contained combination of operational amplifier, power amplifier, and power supplies for higher-level operations. (AES) [41]

operational programming The process of controlling the output voltage of a regulated power supply by means of signals (which may be voltage, current, resistance, or conductance) that are operated on by the power supply in a predetermined fashion. Operations may include algebraic manipulations, multiplication, summing, integration, scaling, and differentiation. (AES) [41]

operational register Any register on a device that is not required for the system configuration process. (C/MM) 1155-1992

operational relay (analog computer) A relay that may be driven from one position or state to another by an operational amplifier or a relay amplifier. *See also:* function relay. (C) 165-1977w, 610.10-1994w

operational reliability (1) (software) The reliability of a system or software subsystem in its actual use environment. Operational reliability may differ considerably from reliability in the specified or test environment. *See also:* system; reliability. (C/SE) 729-1983s

(2) The assessed reliability of an item based on field data. *See also:* reliability. (R) [29]

(3) The assessed reliability of an item based on operational data. (PE/NP) 933-1999

operational stage The time following commissioning of the facility. (PE/SUB) 1402-2000

operational testing (1) (software) Testing conducted to evaluate a system or component in its operational environment. *Contrast:* development testing. *See also:* qualification testing; acceptance testing. (C) 610.12-1990

(2) All testing required to verify system operation in accordance with design requirements after the major component is energized or operated. (PE/EDPG) 1248-1998

operational tests (nuclear power generating station) Tests conducted in a qualification program to demonstrate operational capability. (SWG/PE/NP) 649-1980s, C37.100-1992

operation and maintenance phase (software) The period of time in the software life cycle during which a software product is employed in its operational environment, monitored for satisfactory performance, and modified as necessary to correct problems or to respond to changing requirements. (C/SE) 1012-1986s, 610.12-1990

operation code (op) (1) (A) The operations that a computing system is capable of executing, each correlated with its equivalent in another language; for example, the binary or alphanumeric codes in machine language along with their English equivalents; the English description of operations along with statements in a programming language such as Cobol, Algol, or Fortran. **(B)** The code that represents or describes a specific operation. The operation code is usually the operation part of the instruction. (C) 162-1963

(2) (computers) A character or set of characters that specifies a computer operation; for example, the code BNZ to designate the operation "branch if not zero." (C) 610.12-1990

operation, coordinated *See:* coordinated operation.

operation decoder A device that selects one or more control channels according to the operation field of a machine instruction. (C) 610.10-1994w

operation exception An exception that occurs when a program encounters an invalid operation code. *See also:* underflow exception; data exception; addressing exception; overflow exception; protection exception. (C) 610.12-1990

operation factor The ratio of the duration of actual service of a machine or equipment to the total duration of the period of time considered. *See also:* generating station. (T&D/PE) [10]

operation field The field of a computer instruction that specifies the function to be performed. *Synonyms:* function field; operation part. *See also:* address field; operand field. (C) 610.10-1994w, 610.12-1990

operation indicator *See:* target.

operation influence (electrical influence) The maximum variation in the reading of an instrument from the initial reading, when continuously energized at a prescribed point on the scale under reference conditions over a stated interval of time, expressed as a percentage of full-scale value. *See also:* accuracy rating. (EEC/AII) [102]

operation modes (thyristor) In thyristor ac power controllers different operation modes are possible. These operation modes may be periodic or nonperiodic. (IA/IPC) 428-1981w

Operation Name A name given to an operation defined for an IEEE 1451.1 class. (IM/ST) 1451.1-1999

operation part (1) (instruction) (electronic computation) The part that usually specifies the kind of operation to be performed, but not the location of the operands. (C) 162-1963w, 270-1966w

(2) *See also:* operation field. (C) 610.12-1990

operation, quantizing *See:* quantizing operation.

operations analysis *See:* operations research.

operations and maintenance Plant staff organized to perform these functions. (PE/NP) 933-1999

operations application A class of administrative application that provides an interface for the staff who operate a media library. Examples of operations applications include a program that directs operations staff to obtain a cartridge and load it into a drive, and a program that allows an operator to place a drive or robot in or out of service. (C/SS) 1244.1-2000

operations by a pulse (pulse terminology) (general) Activation, blanking, clearing, deactivation, deflection, reading, resetting, selection, sequencing, setting, starting, stopping, storing, switching, and writing may occur or be performed. (IM/WM&A) 194-1977w

operations involving the interaction of pulses (pulse terminology) Addition, chopping, coding, comparison, decoding, encoding, mixing, modulation, subtraction, summation, and superposition may occur or be performed. *See also:* complex waveforms. (IM/WM&A) 194-1977w

operations on a pulse (general) (pulse terminology) Amplification, attenuation, conditioning, conversion, coupling demodulation, detection, discrimination, filtering, inversion, reception, reflection, and transmission may occur or be performed. (IM/WM&A) 194-1977w

operations related outage A scheduled outage in which the unit or component is removed from service to improve system operating conditions. (PE/PSE) 859-1987w

operations research The design of models for complex problems concerning the optimal allocation of available resources, and the application of mathematical methods for the solution of these problems. *Synonym:* operations analysis. (C) 610.2-1987

operation, synchronized *See:* synchronized operation.

operation table A table that defines an operation by listing all appropriate combinations of values of the operands and indicates the result for each combination. *See also:* truth table. (C) 610.10-1994w

operation time (electron tube) The time after simultaneous application of all electrode voltages for a current to reach a stated fraction of its final value. Conventionally the final value is taken as that reached after a specified length of time. *Note:* All electrode voltages are to remain constant during measurement. The tube elements must all be at room temperature at the start of the test. (ED) 161-1971w

operation with minimum constant (γ) Operation of an inverter at minimum commutation margin angle γ in order to ensure transmission at the maximum dc voltage (possible only at powers below MAP; i.e., in the "stable" region of the ac voltage/dc power characteristic). (PE/T&D) 1204-1997

operation with variable (γ) Margin angle γ is varied around an average value in order to stabilize the ac voltage. This can be achieved either by direct control of the ac voltage or by indirectly controlling the dc voltage. Another way of stabilizing the receiving system ac voltage is to arrange for the inverter, and not the rectifier, to be the current-controlling station. These modes of control are normally used for operation beyond MAP; that is, in the "unstable" region of the ac voltage/dc power characteristic. (PE/T&D) 1204-1997

operator (1) (telephone switching systems) A person who handles switching and signaling operations needed to establish connections between stations or who performs various auxiliary functions associated therewith. (COM) 312-1977w

(2) (nuclear power generating station) A person licensed to operate the plant. (PE/NP) 566-1977w

(3) (A) (software) A mathematical or logical symbol that represents an action to be performed in an operation. For example, in the expression $A = B + 3$, $+$ is the operator, representing addition. **(B) (software)** A person who operates a computer system. (C) 610.12-1990

(4) (A) In symbol manipulation, a symbol that represents the action to be performed in an operation. **(B)** A person who operates a machine. (C/MM) 695-1985, 610.10-1994

(5) In the shell command language, either a control operator or a redirection operator. (C/PA) 9945-2-1993

(6) *See also:* batch operator.

operator code (telephone switching systems) The digits dialed by operators to reach other operators. (COM) 312-1977w

operator console *See:* operator control panel.

operator control panel A functional unit that allows an operator to control a computer system. (C) 610.10-1994w

operator field *See:* operation field.

operator-handled call (telephone switching systems) A call in which information necessary for its completion, other than the number of the calling station, is verbally given by or to an operator. (COM) 312-1977w

operator loss A loss in effective signal-to-noise ratio manifested by reduced detection probability or increased false-alarm rate, when detection is performed by a human operator rather than an ideal thresholding device. (AES) 686-1997

operator manual A document that provides the information necessary to initiate and operate a system or component. Typically described are procedures for preparation, operation, monitoring, and recovery. *Note:* An operator manual is distinguished from a user manual when a distinction is made between those who operate a computer system (mounting tapes, etc.) and those who use the system for its intended purpose. *See also:* support manual; installation manual; user manual; diagnostic manual; programmer manual. (C) 610.12-1990

operator number identification (ONI) (telephone switching systems) An arrangement in which the operator requests the identity of the calling station and enters it into the system for automatic message accounting. (COM) 312-1977w

operator's telephone set (operator's set) A set consisting of a telephone transmitter, a head receiver, and associated cord and plug, arranged to be worn so as to leave the operator's hands free. *See also:* telephone station. (EEC/PE) [119]

OPGW *See:* composite overhead groundwire with optical fibers.

O + I Originating plus incoming. (COM/TA) 973-1990w

opposition The relation between two periodic functions when the phase difference between them is one-half of a period. (Std100) 270-1966w

OPS5 *See:* Official Production System.

optical ammeter An electrothermic instrument in which the current in the filament of a suitable incandescent lamp is measured by comparing the resulting illumination with that produced when a current of known magnitude is used in the same filament. The comparison is commonly made by using a photoelectric cell and indicating instrument. *See also:* instrument. (EEC/PE) [119]

optical axis (fiber optics) In an optical waveguide, synonymous with "fiber axis." (Std100) 812-1984w

optical bandwidth (acoustically tunable optical filter) The width at the 50 percent (−3 decibel) points of the optical intensity versus optical wavelength response curve of the device, measured under the conditions of white light input and fixed acoustic frequency. (UFFC) [17]

optical bar code (OBC) *See:* bar code.

optical blank (fiber optics) A casting consisting of an optical material molded into the desired geometry for grinding, polishing, or (in the case of optical waveguides) drawing to the final optical/mechanical specifications. *See also:* preform. (Std100) 812-1984w

optical cable (1) (fiber optics) A fiber, multiple fibers, or fiber bundle in a structure fabricated to meet optical, mechanical, and environmental specifications. *Synonyms:* optical fiber cable. *See also:* fiber bundle; optical cable assembly. (Std100) 812-1984w

(2) A cable in which one or more of the conductors is an optical fiber, multiple fibers, or a fiber bundle fabricated to meet optical, mechanical, and environmental specifications. *Synonym:* optical fiber cable; optical fiber bundle. (C) 610.7-1995

optical cable assembly (fiber optics) An optical cable that is connector terminated. Generally, an optical cable that has been terminated by a manufacturer and is ready for installation. *See also:* fiber bundle; optical cable. (Std100) 812-1984w

optical cavity (fiber optics) A region bounded by two or more reflecting surfaces, referred to as mirrors, end mirrors, or cavity mirrors, whose elements are aligned to provide multiple reflections. The resonator in a laser is an optical cavity. *Synonym:* resonant cavity. *See also:* laser; active laser medium. (Std100) 812-1984w

optical character *See:* graphic character.

optical character reader (OCR) A character reader that recognizes characters by transmitting light onto a surface and interpreting its reflections. *Contrast:* magnetic ink character reader. *See also:* page reader; optical scanner. (C) 610.10-1994w

optical character recognition (OCR) The automatic recognition of graphic characters using light-sensitive devices such as optical mark readers. *Contrast:* magnetic ink character recognition. (SWG/C/PE) 610.2-1987, C37.20.1-1987s

optical character recognition-A An international standard optical font used on documents intended to be read by optical character recognition. *Note:* This font is generally considered to present a less natural appearance to the eye than OCR-B. (C) 610.2-1987

optical character recognition-B (OCR-B) An international standard optical font used on documents intended to be read by optical character recognition. *Note:* This font is generally considered to present a more natural appearance to the eye than OCR-A. (C) 610.2-1987

optical combiner (fiber optics) A passive device in which power from several input fibers is distributed among a smaller number (one or more) of input fibers. *See also:* star coupler. (Std100) 812-1984w

optical computer A computer in which light and optics replace some or all of the traditional wires and electronic circuits. (C) 610.10-1994w

optical conductor* *See:* optical waveguide.

* Deprecated.

optical connector *See:* optical waveguide connector.

optical coupler (wire-line communication facilities) An optical coupler provides isolation using a short length, optical path. (PE/PSC) 487-1980s

optical coupling coefficient (optoelectronic device) (between two designated ports) The fraction of the radiant or luminous flux leaving one port that enters the other port. *See also:* optoelectronic device. (ED) [46]

optical data bus (fiber optics) An optical fiber network, interconnecting terminals, in which any terminal can communicate with any other terminal. *See also:* optical link. (Std100) 812-1984w

optical density, Dλ (1) (laser maser) Logarithm to the base ten of the reciprocal of the transmittance: $D\lambda = -\log_{10}\tau_\mu$, where τ is transmittance. *See also:* photographic transmission density. (LEO) 586-1980w

(2) (fiber optics) A measure of the transmittance of an optical element expressed by: $\log_{10}(1/T)$ or $-\log_{10}T$, where T is transmittance. The analogous term $\log_{10}(1/R)$ is called reflection density. *Note:* The higher the optical density, the lower the transmittance. Optical density times 10 is equal to transmission loss expressed in decibels (dB); for example, an optical density of 0.3 corresponds to a transmission loss of 3 dB. *See also:* transmission loss; transmittance. (Std100) 812-1984w

optical density of smoke A measure of the attenuation of a light beam passing through smoke, expressed as the common logarithm of the ratio of the incident flux, I_0, to the transmitted flux, I [$D = \log_{10}(I_0/I)$]. (DEI) 1221-1993w

optical depth The value of the integral of the extinction coefficient over a specified path. (AP/PROP) 211-1997

optical depolarizer (interferometric fiber optic gyro) A component placed in an optical path that results in depolarization of the input light, regardless of its state of polarization. *Notes:*

1. Depolarizers are usually composed of two or more birefringent sections (optical fiber or crystal material such as quartz), each of which introduces a relatively large and different retardation. 2. Depolarization depends on the bandwidth of the light, being more complete for wide bandwidth sources and not possible for purely monochromatic light. (AES/GYAC) 528-1994

optical detector (fiber optics) A transducer that generates an output signal when irradiated with optical power. *See also:* optoelectronic. (Std100) 812-1984w

optical directional coupler (interferometric fiber optic gyro) A device that combines or splits the optical wave(s) from one or more waveguides to produce one or more optical waves. (AES/GYAC) 528-1994

optical disk A disk on which information is stored and retrieved by optical means, using a laser. *Synonyms:* digital optical disk; numeric optical disk. *Contrast:* magnetic disk. *See also:* magneto-optical disk; laser disk; video disk; compact disc. (C) 610.10-1994w

optical fall time The time it takes for optical power to fall from 90% effective power to 10% effective power. When expressed as a percentage, the fall time is specified as a percentage of an encoded bit period. (C/BA) 1393-1999

optical fiber (1) (fiber optics) Any filament or fiber, made of dielectric materials, that guides light, whether or not it is used to transmit signals. *See also:* fiberoptics; optical waveguide; fiber bundle. (Std100) 812-1984w

(2) A filament-shaped optical waveguide made of dielectric materials. (LM/C) 11802-4-1994, 8802-3-1990s, 610.7-1995, 802.3-1998

optical fiber bundle *See:* optical cable.

optical fiber cable *See:* optical cable.

optical fiber cable interface *See:* Fiber Optic Medium Dependent Interface.

optical fiber cable link segment A length of optical fiber cable that contains two optical fibers and is comprised of one or more optical fiber cable sections and their means of interconnection, with each optical fiber terminated at each end in the optical connector plug. (C/LM) 802.3-1998

optical fiber waveguide *See:* optical waveguide.

optical field meter A meter that measures changes in the transmission of light through a fiber or crystal due to the influence of the electric field (for example, meters based on Pockel's effect). Optical field meters can be used to implement free-body or ground reference measurements. When optical fibers are used, the meter is inherently electrically isolated from ground. (T&D/PE) 539-1990

optical filter (fiber optics) An element that selectively transmits or blocks a range of wavelengths. (Std100) 812-1984w

optical font (1) A character font used in optical character recognition. For example, hand-printed character font, OCR-A, or OCR-B. (C) 610.2-1987

(2) A font that can be input by a special input device and translated into electronic form. (C) 610.10-1994w

optical frequency shifter (interferometric fiber optic gyro) A device that either increases or decreases the frequency of light passing through it by an amount equal to the frequency of an electrical control signal. *Note:* A commonly used optical frequency shifter is the acousto-optic Bragg cell. (AES/GYAC) 528-1994

optical glide path lights *See:* angle-of-approach lights.

optical idle signal The signal transmitted by the Fiber Optic Medium Attachment Unit (FOMAU) into its transmit optical fiber during the idle state of the DO circuit. (C/LM) 802.3-1998

optical image The result of projecting a scene onto a surface. For example, the image of a scene formed on film by a camera lens. (C) 610.4-1990w

optical interface The optical input and output connection interface to a 10BASE-FP Star. (C/LM) 802.3-1998

optical isolator (interferometric fiber optic gyro) A device intended to suppress return reflections along a transmission path. *Note:* The Faraday isolator uses the magneto-optic effect. (AES/GYAC) 528-1994

optical landing system (navigation aid terms) A shipboard gyro stabilized or shore-based device which indicates to the pilot his displacement from a preselected glide path. (AES/GCS) 172-1983w

optical link (fiber optics) Any optical transmission channel designed to connect two end terminals or to be connected in series with other channels. *Note:* Sometimes terminal hardware (for example, transmitter/receiver modules) is included in the definition. *See also:* optical data bus. (Std100) 812-1984w

optically active material (fiber optics) A material that can rotate the polarization of light that passes through it. *Note:* An optically active material exhibits different refractive indices for left and right circular polarizations (circular birefringence). *See also:* birefringent medium. (Std100) 812-1984w

optically assisted magnetic storage *See:* magneto-optical disk.

optically pumped laser (laser maser) A laser in which the electrons are excited into an upper energy state by the absorption of light from an auxiliary light source. (LEO) 586-1980w

optical mark reader A reader that can perform mark sensing of hand-written pencil marks, and pre-printed marks by detecting the presence or absence of reflected light. (C) 610.10-1994w

optical mark reading (OMR) The use of pattern recognition techniques to identify graphite marks by automatic means. (C) 610.2-1987

optical mouse A mouse in which motion is sensed by transmitting light onto a special surface and interpreting its reflections using an optical sensor. *Contrast:* mechanical mouse. (C) 610.10-1994w

optical path length (1) (fiber optics) In a medium of constant refractive index n, the product of the geometrical distance and the refractive index. If n is a function of position,

$$\text{optical path length} = \int n ds,$$

where ds is an element of length along the path. *Note:* Optical path length is proportional to the phase shift a light wave undergoes along a path. *See also:* optical thickness. (Std100) 812-1984w

(2) (interferometric fiber optic gyro) (laser gyro) The optical length of the path traversed in a single pass by an optical beam, taking into account the index of refraction of each medium supporting propagation. (AES/GYAC) 528-1994

optical pattern *See:* light pattern.

optical phase modulator (interferometric fiber optic gyro) A device that modulates the phase of a light wave as a function of an electrical control signal. *Note:* Commonly used phase modulators vary the optical path length by means of electro-optic or elasto-optic effects. (AES/GYAC) 528-1994

optical photons (scintillation counting) Photons with energies corresponding to wavelengths between approximately 120–1800 m. (NPS) 398-1972r

optical polarization controller (interferometric fiber optic gyro) A component, placed in the optical path, that can be adjusted to change the light from any state of polarization at the input to any desired polarization at the output. *Note:* In fiber optics, polarization controllers usually consist of two or three sections of birefringent fiber that can be rotated with respect to each other. (AES/GYAC) 528-1994

optical polarizer (interferometric fiber optic gyro) A device that selects a single, linear polarization state by suppressing the orthogonal state. (AES/GYAC) 528-1994

optical power *See:* radiant power.

optical printer *See:* electrostatic printer.

optical probe A flux density meter in which the transduction mechanism is optical. A number of physical effects (i.e., magnetostriction, change in birefringence) may be used to affect the light in a "witness crystal" or "sense fiber." (T&D/PE) 539-1990

optical pyrometer A temperature-measuring device comprising a standardized comparison source of illumination and source convenient arrangement for matching this source, either in brightness or in color, against the source whose temperature is to be measured. The comparison is usually made by the eye. *See also:* electric thermometer. (EEC/PE) [119]

optical reader *See:* optical character reader; optical mark reader; optical scanner.

optical recording A method for storing data by using optical means. (C) 610.10-1994w

optical repeater (fiber optics) In an optical waveguide communication system, an optoelectronic device or module that receives a signal, amplifies it (or, in the case of a digital signal, reshapes, retimes, or otherwise reconstructs it) and retransmits it. *See also:* modulation. (Std100) 812-1984w

optical rise time The time it takes for optical power to rise from 10% effective power to 90% effective power. When expressed as a percentage, the rise time is specified as a percentage of an encoded bit period. (C/BA) 1393-1999

optical scanner (A) (character recognition) A device that scans optically and usually generates an analog or digital signal. **(B) (character recognition)** A device that optically scans printed or written data and generates their digital representations. *See also:* electronic analog computer; visual scanner. (C) [20], [85]

(2) (A) A scanner that uses light for examining patterns. *See also:* bar code scanner; optical character reader. **(B)** A device that scans optically and generates a corresponding output signal. *See also:* digitizer. (C) 610.10-1994

optical sensor A device capable of detecting light and producing an analog or digital output signal. *See also:* optical mouse. (C) 610.10-1994w

optical sound recorder *See:* photographic sound recorder.

optical sound reproducer *See:* photographic sound reproducer.

optical spectrum (fiber optics) Generally, the electromagnetic spectrum within the wavelength region extending from the vacuum ultraviolet at 40 nanometers (nm) to the far infrared at 1 millimeter (mm). *See also:* infrared; light. (Std100) 812-1984w

optical storage Storage of information in which access to that information is obtained using optical signals. *Synonym:* photo-optic storage. *See also:* CD-ROM storage. (C) 610.10-1994w

optical switch (interferometric fiber optic gyro) A device in an optical path that can pass, stop, or redirect light, depending on control input. (AES/GYAC) 528-1994

optical thickness (fiber optics) The physical thickness of an isotropic optical element, times its refractive index. *See also:* optical path length. (Std100) 812-1984w

optical time domain reflectometry (fiber optics) A method for characterizing a fiber wherein an optical pulse is transmitted through the fiber and the resulting light scattered and reflected back to the input is measured as a function of time. Useful in estimating attenuation coefficient as a function of distance and identifying defects and other localized losses. *See also:* scattering; Rayleigh scattering. (Std100) 812-1984w

optical tracker (navigation aid terms) A device for determining the direction of a luminous body relative to a set of reference axes using visible light vice, infrared, or radio frequencies. (AES/GCS) 172-1983w

optical transfer function (diode-type camera tube) The spatial frequency response of an imaging sensor to a point source input. That is, the Fourier transform of the output image waveshape when the input image is a point, is known as the two-dimensional optical transfer function. In the one- dimensional case, the optical transfer function is the Fourier transform of the output image when the input image is a line. In the most common one-dimensional form, the OTF, designated $R_O(N)$, is written

$$R_O(N) = |R_O(N)| \exp[j\Phi(N)].$$

The OTF contains both amplitude and phase information. (ED) 503-1978w

optical wand *See:* light pen.

optical waveguide (A) (fiber optics) Any structure capable of guiding optical power. **(B) (fiber optics)** In optical communications, generally a fiber designed to transmit optical signals. *Note:* The use of "optical conductor" as a synonym for this term is deprecated. *Synonym:* optical fiber waveguide; lightguide. *See also:* optical fiber; cladding; tapered fiber waveguide; multimode optical waveguide; fiber bundle; fiberoptics; core. (Std100) 812-1984

optical waveguide connector (fiber optics) A device whose purpose is to transfer optical power between two optical waveguides or bundles, and that is designed to be connected and disconnected repeatedly. *See also:* optical waveguide coupler; multifiber joint. (Std100) 812-1984w

optical waveguide coupler (A) (fiber optics) A device whose purpose is to distribute optical power among two or more ports. *See also:* tee coupler; star coupler. **(B) (fiber optics)** A device whose purpose is to couple optical power between a waveguide and a source or detector. (Std100) 812-1984

optical waveguide preform *See:* preform.

optical waveguide splice (fiber optics) A permanent joint whose purpose is to couple optical power between two waveguides. (Std100) 812-1984w

optical waveguide termination (fiber optics) A configuration or a device mounted at the end of a fiber or cable which is intended to prevent reflection. *See also:* index matching material. (Std100) 812-1984w

optic amplifier An optoelectronic amplifier whose signal input and output ports are electric. *Note:* This is in accord with the accepted terminologies of other electric-signal input and output amplifiers such as dielectric, magnetic, and thermionic amplifiers. *See also:* optoelectronic device. (ED) [46]

optic axis (fiber optics) In an anisotropic medium, a direction of propagation in which orthogonal polarizations have the same phase velocity. Distinguished from "optical axis." *See also:* anisotropic. (Std100) 812-1984w

optic coupling device An isolation device using an optical link to provide the longitudinal isolation. Circuit arrangements on each side of the optical link convert the electrical signal into an optical signal for transmission through the optical link and back to an electrical signal. Various circuit arrangements provide one-way or two-way transmission and permit transmission to the various combinations of voice and/or dc signalling used by the power industry. The optical link may be either a quartz rod or a short length of optic fiber. Single-channel optic coupling devices may be used in conjunction with other isolation devices in protection systems. (PE/PSC) 487-1992

optic port A port where the energy is electromagnetic radiation, that is, photons. *See also:* optoelectronic device. (ED) [46]

optimal control An admissible control law that gives a performance index an extremal value. *See also:* control system. (IM) [120]

optimization The procedure used in the design of a system to maximize or minimize some performance index. May entail the selection of a component, a principle of operation, or a technique. *See also:* system. (SMC) [63]

optimum bunching (electron tube) (traveling-wave tube) The bunching condition that produces maximum power at the desired frequency in an output gap. *See also:* electron device. (ED) 161-1971w, [45]

optimum linearizing load resistance (Hall generator) The load resistance that produces the least linearity error. (MAG) 296-1969w

optimum working frequency (OWF, FOT) The frequency that is exceeded by the operational maximum usable frequency (MUF) during 90% of the specified period, usually a month. *Note:* The acronym FOT is the French abbreviation of "fréquence optimale de travail." (AP/PROP) 211-1997

option (1) An argument to a command that is generally used to specify changes in the default behavior of a utility. (C/PA) 9945-2-1993

(2) Any behavior or feature defined in the base standard that need not be present in all conforming implementations. (C/PA) 2003-1997

optional (1) The referenced item is not required to claim compliance with this standard. Implementation of an optional item shall be as defined in this standard. (C/BA) 1496-1993w

(2) A syntax keyword used to specify a partial mapping. *Contrast:* mandatory. *See also:* partial. (C/SE) 1320.2-1998

optional attribute An attribute that may have no value for an instance. (C/SE) 1320.2-1998

optional category A category that provides additional details that are not essential but may be useful in particular situations. (C/SE) 1044-1993

optional nonidentifying relationship A kind of nonidentifying relationship in which an instance of the child entity can exist without being related to an instance of the parent entity. *Contrast:* mandatory nonidentifying relationship. *See also:* nonidentifying relationship. (C/SE) 1320.2-1998

optional-pause instruction A pause instruction that allows manual suspension of a computer program. *Synonym:* optional stop instruction. (C) 610.10-1994w

optional stop (numerically controlled machines) A miscellaneous function command similar to a program stop except that the control ignores the command unless the operator has previously pushed a button to validate the command. (IA) [61]

optional stop instruction *See:* optional-pause instruction.

optional tasks Those V&V tasks that may be added to the minimum V&V tasks to address specific application requirements. (C/SE) 1012-1998

option-argument A parameter that follows certain options. In some cases an option-argument is included within the same argument string as the option; in most cases it is the next argument. (C/PA) 9945-2-1993

options file A file that can be specified with the -x option. This file contains extended option definitions that override default definitions. (C/PA) 1387.2-1995

optoelectronic (fiber optics) Pertaining to a device that responds to optical power, emits or modifies optical radiation, or utilizes optical radiation for its internal operation. Any device that functions as an electrical-to-optical or optical-to-electrical transducer. *Notes:* 1. Photodiodes, light emitting diodes (LED), injection lasers and integrated optical elements are examples of optoelectronic devices commonly used in optical waveguide communications. 2. "Electro-optical" is often erroneously used as a synonym. *See also:* optical detector; electro-optic effect. (Std100) 812-1984w

optoelectronic amplifier An optoelectronic device capable of power gain, in which the signal ports are either all electric ports or all optic ports. *See also:* optoelectronic device. (ED) [46]

optoelectronic cell The smallest portion of an optoelectronic device capable of independently performing all the specified input and output functions. Note: An optoelectronic cell may consist of one or more optoelectronic elements. *See also:* optoelectronic device. (ED) [46]

optoelectronic device An electronic device combining optic and electric ports. (ED) [46]

optoelectronic element A distinct constituent of an optoelectronic cell, such as an electroluminor, photoconductor, diode, optical filter, etc. *See also:* optoelectronic device. (ED) [46]

OR (mathematics of computing) A Boolean operator having the property that if P is a statement, Q is a statement, R is a statement, . . ., then the OR of P, Q, R, . . . is true if and only if at least one statement is true. *Note:* P OR Q is often represented by $P \vee Q$ or $P + Q$.

OR Truth Table

P	Q	$P \vee Q$
0	0	0
0	1	1
1	0	1
1	1	1

Synonyms: OR-ELSE; inclusive OR; logical add; union; disjunction; logic add; Boolean add; false add. *Contrast:* exclusive OR. (C) 1084-1986w

ORA *See:* output reference axis.

orbit (navigation aid terms) The path of a celestial body relative to another body around which it revolves. (AES/GCS) 172-1983w

orbital inclination (communication satellite) The angle between the plane of the orbit and the plane of the equator measured at the ascending node. (COM) [19]

orbital plane (communication satellite) The plane containing the radius vector and the velocity vector of a satellite, the system of reference being that specified for defining the orbital elements. In the idealized case of the unperturbed orbit, the orbital plane is fixed relative to the equatorial plane of the primary body. (COM) [19]

orbital stability (1) (closed solution curve denoted Γ) Implies that for every given $\varepsilon > 0$ there exists a $\delta > 0$ (which, in general, may depend on ε and on t_0) such that $\rho(\Gamma,x(t_0)) \leq \delta$ implies $\rho(\Gamma,\phi(x(t_0);t)) \leq \varepsilon$ for $t \leq t_0$, where $\rho(\Gamma,a)$ denotes the minimum distance between the curve Γ and the point a. Here the point $x(t_0)$ is assumed to be off the curve Γ. *Notes:* 1. Orbital stability does not imply Lyapunov stability of a closed solution curve, since a point on the closed curve may not travel at the same speed as a neighboring point off the curve. 2. Only nonlinear systems can produce the type of solutions for which the concept of orbital stability is applicable. *See also:* control system. (CS/IM) [120]

(2) *See also:* stability of a limit cycle.

OR circuit *See:* OR gate.

OR element *See:* OR gate.

order (general) To put items in a given sequence. (C) [20], [85]

(2) (A) (in electronic computation) Synonym for instruction. **(B) (in electronic computation)** Synonym for command. **(C) (in electronic computation)** Loosely, synonym for operation part. *Note:* The use of order in the computer field as a synonym for terms similar to the above is losing favor owing to the ambiguity between these meanings and the more-common meanings in mathematics and business. *See also:* instruction. (C) 162-1963

(3) (A) (data management) To place items in an arrangement in accordance with a specified set of rules. *Note:* The arrangement need not be linear. *See also:* sort. **(B) (data management)** The result of an arrangement as in (A). **(C) (data management)** In a tree, the maximum number of subtrees of any node. *Note:* The use of "sequence" as a preferred term for "order" is deprecated. (C) 610.5-1990

order-by-merging To order the items of a set by splitting the set into subsets, ordering the subsets, and merging the subsets. *See also:* sort by merging; sequence by merging. (C) 610.5-1990w

order clash In software design, a type of structure clash in which a program must deal with two or more data sets that have been sorted in different orders. *See also:* data structure-centered design. (C) 610.12-1990

ordered list A list in which the data items are arranged in some specific order, either physically or logically by some key. *Contrast:* unordered list. (C) 610.5-1990w

ordered_set As used in the 1000BASE-X PCS, a single special code-group, or a combination of special and data code-

groups, used for the delineation of a packet and synchronization between the transmitter and receiver circuits at opposite ends of a link. (C/LM) 802.3-1998

ordered tree A tree in which the left-to-right order of the subtrees of a given node is significant. *Contrast:* unordered tree. (C) 610.5-1990w

ordering bias The manner and degree by which the order of a set of items departs from the order of a randomly distributed set of items. The ordering bias of a set is inversely proportional to the effort required to sort the set. (C) 610.5-1990w, 1084-1986w

ordering relation A VHDL relational expression in which the relational operator is <, <=, >, or >=. (C/DA) 1076.3-1997

orderly release The graceful termination of a network connection with no loss of data. (C) 1003.5-1999

order parameter (primary ferroelectric terms) A parameter, or functionally related set of parameters, that can describe the reduction in symmetry occurring at a phase transition from a nonferroic phase to a ferroic phase. (UFFC) 180-1986w

order tone (telephone switching systems) A tone that indicates to an operator that verbal information can be transferred to another operator. (COM) 312-1977w

order wire (communication practice) An auxiliary circuit for use in the line-up and maintenance of communication facilities. (COM) [48]

ordinary binary *See:* binary.

ordinary wave (1) (radio-wave propagation) The magnetoionic wave component that, when viewed below the ionosphere in the direction of propagation, has counterclockwise or clockwise elliptical polarization, respectively, according as the earth's magnetic field has a positive or negative component in the same direction. *See also:* radiation. (EEC/PE) [119]

(2) That characteristic magneto-ionic wave component deviating the least, in most of its propagation characteristics, from those expected for a wave in a non-magnetized plasma of the same density. *Note:* For vertical incidence, the ordinary wave is reflected near the height at which the plasma frequency is equal to the wave frequency when the effects of collisions are negligible. *Synonym:* O wave. (AP/PROP) 211-1997

ordinary-wave component (radio-wave propagation) That magneto-ionic wave component deviating the least, in most of its propagation characteristics, relative to those expected for a wave in the absence of a fixed magnetic field. More exactly, if at fixed electron density, the direction of the fixed magnetic field were rotated until its direction was transverse to the direction of phase propagation, the wave component whose propagation would then be independent of the magnitude of the fixed magnetic field. *Synonym:* O wave. (AP) 211-1977s

OR-ELSE *See:* OR.

organic scintillator solute material (1) (liquid-scintillation counters) An organic compound that can absorb radiant energy and immediately (typically within 10^{-9} s) re-emit this energy as photons in the visible or ultraviolet range. This material is sometimes referred to as the scintillator or the fluor. (NI) N42.16-1986

(2) (liquid-scintillation counters) An organic compound that can absorb radiant energy and immediately (typically within 10^{-9} s) re-emit this energy as photons in the ultraviolet range. (NI) N42.15-1990

organizational maintenance (test, measurement, and diagnostic equipment) Maintenance which is the responsibility of and performed by using organizations on its assigned equipment. Its phases normally consist of inspecting, servicing, lubricating, adjusting and the replacing of parts, minor assemblies and subassemblies. (MIL) [2]

organizational model An OSI management model that describes the distribution of management controls in the OSI environment. (C) 610.7-1995

Organizational Process Asset (OPA) An artifact that defines some portion of an organization's software project environment. (C/SE) 1074-1997

organizational unit name attributes The Organizational-Unit-Name-1, Organizational-Unit-Name-2, Organizational-Unit-Name-3, and Organizational-Unit-Name-4 attributes specific to the class. (C/PA) 1224.1-1993w

organizing *See:* self-organizing.

Oregon State Conversational Aid to Research (OSCAR) An interactive programming system used for performing numerical calculations, string manipulations, vector and matrix operations, and complex arithmetic. (C) 610.13-1993w

OR gate (1) (electronic computation) (OR circuit) A gate whose output is energized when any one or more of the inputs is in its prescribed state. An OR gate performs the function of the logical OR. (Std100) 270-1966w

(2) A gate that performs the Boolean operation of disjunction. *Synonyms:* OR element; inclusive OR gate. *See also:* exclusive-OR gate; NOR gate. (C) 610.10-1994w

orientation (1) (illuminating engineering) The relation of a building with respect to compass directions. (EEC/IE) [126]

(2) The positioning of the dimensions of a spatial vector. For example, spatial vectors may be represented by a cartesian coordinate system oriented in space in some application-specific manner. (IM/ST) 1451.1-1999

orifice An opening or window in a side or end wall of a waveguide or cavity resonator, through which energy is transmitted. *See also:* waveguide. (EEC/PE) [119]

orifice plate (rotating machinery) A restrictive opening in a passage to limit flow. (PE) [9]

origin The address of the initial storage location assigned to a computer program in main memory. *Contrast:* starting address. *See also:* assembled origin; loaded origin. (C) 610.12-1990

originating port A transmitting port on a physical layer (PHY), which has no active receiving port. The source of the transmitted packet is either the PHY's local link or the PHY itself. (C/MM) 1394a-2000

originating traffic (telephone switching systems) Traffic received from lines. (COM) 312-1977w

origin attribute The classification of software as either developed or nondeveloped. (C/SE) 1045-1992

original equipment manufacturer The manufacturer of a component in a computer system such that the component is used in assembling a larger system or component by another manufacturer. Many peripheral devices are made by an OEM but sold as part of a complete computer system by another vendor. (C) 610.10-1994w

original master (number 1 master) (disk recording) (metal master) (metal negative) (electroacoustics) The master produced by electroforming from the face of a wax or lacquer recording. (SP) [32]

original source statements Source statements that are obtained from an external product. (C/SE) 1045-1992

original supplier (replacement parts for Class 1E equipment in nuclear power generating stations) Supplier of the original Class 1E equipment, as opposed to the original manufacturer of the part. (PE/NP) 934-1987w

originating domain The MD at which a communique or report originated. (C/PA) 1224.1-1993w

OR-parallelism Pertaining to the performance of multiple predicate operations concurrently, the successful completion of any results in a true response. *Note:* Successful termination of one predicate operation may cause the others to be immediately terminated. *Contrast:* AND-parallelism. *See also:* OR-tying. (C) 610.10-1994w

orphaned process group (1) A process group in which the parent of every member is either itself a member of the group or is not a member of the group's session. (C/PA) 9945-1-1996

(2) A process group in which the parent of every member is either itself a member of the group or is not a member of the session of the group. An orphaned process group is no longer a member of the session of the process that created it. A process group can become orphaned when all other members of the session exit. (C) 1003.5-1999

orphan prevention The ability of a text formatter to avoid placing the final one or two lines of a paragraph at the top of a page. *See also:* widow prevention. (C) 610.2-1987

orthicon A camera tube in which a beam of low-velocity electrons scans a photoemissive mosaic capable of storing an electric-charge pattern. *See also:* television. (ED) 161-1971w

ortho-axis An angle of 54.7 degrees to the edges and centerlines of each face of the DUT. This angle is the ortho-angle which is the angle that the diagonal of a cube makes to each side at the trihedral corners of the cube. (EMC) 1309-1996

orthogonality (oscilloscopes) The extent to which traces parallel to the vertical axis of a cathode-ray-tube display are at right angles to the horizontal axis. *See also:* oscillograph. (IM/HFIM) [40]

orthogonal polarization (1) (with respect to a specified polarization) In a common plane of polarization, the polarization for which the inner product of the corresponding polarization vector and that of the specified polarization is equal to zero. *Notes:* 1. The two orthogonal polarizations can be represented as two diametrical points on the Poincaré sphere. 2. Two elliptically polarized fields having the same plane of polarization have orthogonal polarizations if their polarization ellipses have the same axial ratio, major axes at right angles, and opposite senses of polarization. *See also:* polarization vector. (AP/ANT) 145-1993

(2) For a given wave, the unique polarization state containing no components of the given wave's polarization. *Note:* For linear polarization, the (linear) polarization perpendicular to the reference (linear) polarization. 2. For circular polarization, the (circular) polarization with the opposite sense of rotation. 3. For elliptical polarization, the polarization with the same axial ratio, opposite rotation sense and major axis perpendicular to that of the reference polarization. (AP/PROP) 211-1997

orthorhombic system (piezoelectricity) An orthorhombic crystal has three mutually perpendicular twofold axes or two mutually perpendicular planes of reflection symmetry, or both. The *a*, *b*, *c* axes are of unequal length. For classes 222 and 2/*m* 2/*m* 2/*m* unit distances are chosen such that $c_0 < a_0 < b_0$. For the remaining class, which is polar, *Z* will always be the polar axis regardless of whether it is *a*, *b*, or *c* in the crystallographer's notation. Axes *X* and *Y* will then be chosen so that *X* is parallel to the remaining axis that is smallest. This class therefore may be properly designated *mm*2, 2*mm*, or *m*2*m*, depending on whether *c*, *a*, or *b* is the polar axis. Axis sense is trivial except for the polar class for which $+Z$ is chosen such that *d*33 is positive. *Note:* Positive and negative may be checked using a carbon-zinc flashlight battery. The carbon anode connection will have the same effect on meter deflection as the + end of the crystal axis upon release of compression. *See also:* crystal systems. (UFFC) 176-1978s

OR-tying The process of connecting together two or more logic gate outputs such that the common output is forced to ground when any of the individual gate outputs is low. *See also:* OR-parallelism. (C) 610.10-1994w

OSAM *See:* overflow sequential access method.

O scan *See:* O-display.

OSCAR *See:* Oregon State Conversational Aid to Research.

oscillating current A current that alternately increases and decreases but is not necessarily periodic. (Std100) 270-1966w

oscillating scan head A scan head that physically moves back and forth across the original page as it scans each line. (C) 610.10-1994w

oscillating sort An external merge sort in which sorts and merges are performed alternately; that is, the first two subsets are sorted and merged, the next subset is sorted and merged with the previously merged subsets, and so on, until all subsets are sorted and merged. (C) 610.5-1990w

oscillation (1) (general) The variation, usually with time, of the magnitude of a quantity with respect to a specified reference when the magnitude is alternately greater and smaller than the reference. *See also:* vibration. (SP) [32]

(2) (vibration) A generic term referring to any type of a response that may appear in a system or in part of a system. *Note:* Vibration is sometimes used synonymously with oscillation, but it is more properly applied to the motion of a mechanical system in which the motion is in part determined by the elastic properties of the body. (Std100) 270-1966w

(3) (gas turbines) The periodic variation of a function between limits above or below a mean value, for example, the periodic increase and decrease of position, speed, power output, temperature, rate of fuel input, etc. within finite limits. (PE/EDPG) 282-1968w, [5]

oscillator (1) (general) Apparatus intended to produce or capable of maintaining electric or mechanical oscillations. (Std100) 270-1966w, [84]

(2) (electronics) A nonrotating device for producing alternating current, the output frequency of which is determined by the characteristics of the device.

(3) A circuit that continuously alternates between two or more states. (C) 610.10-1994w

oscillator mode Frequency or frequencies for which the total phase shift around the oscillator loop is an integral multiple of 2π. (UFFC) 1037-1992w

oscillator starting time, pulsed *See:* pulsed-oscillator starting time.

oscillator tube, positive grid *See:* positive-grid oscillator tube.

oscillatory circuit A circuit containing inductance and capacitance so arranged that when shock excited it will produce a current or a voltage that reverses at least once. If the losses exceed a critical value, the oscillating properties will be lost. (EEC/PE) [119]

oscillatory surge A surge that includes both positive and negative polarity values. (SPD/PE) C62.11-1999, C62.62-2000

oscillatory transient A sudden, nonpower frequency change in the steady-state condition of voltage or current that includes both positive or negative polarity value. (SCC22) 1346-1998

oscillogram A record of the display presented by an oscillograph or an oscilloscope. *See also:* oscillograph. (IM/HFIM) [40]

oscillograph An instrument primarily for producing a record of the instantaneous values of one or more rapidly varying electrical quantities as a function of time or of another electrical or mechanical quantity. *Notes:* 1. Incidental to the recording of instantaneous values of electrical quantities, these values may become visible, in which case the oscillograph performs the function of an oscilloscope. 2. An oscilloscope does not have inherently associated means for producing records. 3. The term includes mechanical recorders.

oscillograph tube (oscilloscope tube) A cathode-ray tube used to produce a visible pattern that is the graphic representation of electric signals, by variations of the position of the focused spot or spots in accordance with these signals. (ED) 161-1971w

oscillography The art and practice of utilizing the oscillograph. *See also:* oscillograph. (IM/HFIM) [40]

oscilloscope (1) An instrument primarily for making visible the instantaneous value of one or more rapidly varying electrical quantities as a function of time or of another electrical or mechanical quantity. *See also:* oscillograph; cathode-ray oscilloscope. (EEC/PE) [119]

(2) An instrument for measuring and displaying an electrical quantity (typically voltage) as a function of time. The band-

width should be at least 10 times the maximum frequency of interest and include triggering capacity. (PEL) 1515-2000

oscilloscope, dual-beam *See:* dual-beam oscilloscope.

oscilloscope, multibeam *See:* multibeam oscilloscope.

O-scope A cathode-ray oscilloscope arranged to present an O-display. (AES/RS) 686-1990

OSE *See:* open system environment.

OSI environment An environment in which information processing system or resources communicate conforming to the services and protocols of OSI. *Contrast:* local systems environment. (C) 610.7-1995

OSI model *See:* open systems interconnection model.

OSI reference model *See:* open systems interconnection model.

OSSL *See:* Operating Systems Simulation Language.

OSI *See:* open systems interconnection.

O structure *See:* snub structure.

OSIRM *See:* open systems interconnection reference model.

Ostwald color system (illuminating engineering) A system of describing colors in terms of color content, white content, and black content. It is usually exemplified by color charts in triangular form with Full Color, White, and Black at the apexes providing a gray scale of White and Black mixtures, and parallel scales of Constant White Content as these grays are mixed with varying proportions of the Full Color. Each chart represents a constant dominant wavelength (called hue), and the colors lying on a line parallel to the gray scale represent constant purity (called Shadow Series). (EEC/IE) [126]

other insulation characteristics (insulation systems of synchronous machines) It is important to recognize that other characteristics, in addition to thermal endurance, such as mechanical strength, moisture resistance, and corona endurance are required in varying degrees in different applications for the successful use of insulating materials. (REM) [115]

other peripheries Other control room areas, such as remote emergency shutdown panels or remote emergency control rooms. (PE/NP) 845-1988s

other system One system within the AI-ESTATE architectural concept. This system covers functional capabilities not defined within the other systems of the AI-ESTATE conceptual architecture. Examples of other systems are operating systems, CAD/CAE design tools, and testability analysis tools. (ATLAS) 1232-1995

other tests (power and distribution transformers) Tests so identified in individual product standards which may be specified by the purchaser in addition to routine tests. (Examples: impulse, insulation power factor, audible sound.) *Note:* Transformer "General Requirements" Standards (such as ANSI C57.12.00-1973, IEEE Std 462-1973), General Requirements for distribution, Power and Regulating Transformers classify various tests as "routine," "design," or "other" depending on the size, voltage, and type of transformer involved. (PE/TR) C57.12.80-1978r

OTH radar *See:* over-the-horizon radar.

O-type tube or valve (microwave tubes) A microwave tube in which the beam, the circuit, and the focusing field have symmetry about a common axis. The interaction between the beam and the circuit is dependent upon velocity modulation, the suitably focused beam being launched by a gun structure outside one end of the microwave circuit and principally collected outside the other end of the microwave structure. (ED) [45]

Oudin current (resonator current) (desiccating current) (medical electronics) A brush discharge produced by a high-frequency generator that has an output range of 2 to 10 kilovolts and a current sufficient to evaporate tissue water without charring. It is usually applied through a small needlelike electrode with the reference or ground electrode being relatively large and diffuse. (EMB) [47]

Oudin resonator A coil of wire often with an adjustable number of turns, designed to be connected to a source of high-frequency current, such as a spark gap and induction coil, for the purpose of applying an effluve (convective discharge) to a patient. (EMB) [47]

outage (1) (electric power system) The state of a component when it is not available to perform its intended function due to some event directly associated with that component. *Notes:* 1. An outage may or may not cause an interruption of service to consumers, depending on system configuration. 2. This definition derives from transmission and distribution applications and does not necessarily apply to generation outages. (PE/T&D/PSE) [54], 346-1973w, 1366-1998

(2) The state of a component or system when it is not available to properly perform its intended function due to some event directly associated with that component or system. (IA/PSE) 493-1997, 399-1997

(3) *See also:* interruption. (IA/PSE) 1100-1992s

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

outage duration (1) (electric power system) The period from the initiation of an outage until the affected component once again becomes available to perform its intended function. *Note:* Outage durations may be defined for specific types of outages; for example, permanent forced outage duration, transient forced outage duration, and scheduled outage duration. *See also:* outage. (PE/PSE) [54], 346-1973w

(2) (electric power plants) The period from the initiation of an outage occurrence until the component or unit is returned to the in-service state. *Notes:* 1. Outage durations are commonly summarized for specific types of outages as, for example, permanent forced outage duration, transient forced outage duration, and scheduled outage duration. 2. Outage duration is normally equal to the sum of switchingtime, repair time, and travel and material procurement time, but may be longer for reasons other than unavailability of manpower, equipment, or material. (PE/PSE) 859-1987w

outage duration, permanent forced *See:* permanent forced outage duration.

outage duration, scheduled *See:* scheduled outage duration.

outage duration, transient forced *See:* transient forced outage duration.

outage, equipment *See:* equipment outage.

outage event An event involving the outage occurrence of one or more units or components. (PE/PSE) 859-1987w

outage, forced *See:* forced outage.

outage initiation Outage occurrences are initiated either automatically or manually. (PE/PSE) 859-1987w

outage occurrence The change in the state of one component or one unit from the in-service state to the outage state. *Notes:* 1. The noun "outage" is commonly used to mean outage occurrence. When used as a predicate adjective, "outaged" is ambiguous (for example, "The unit is outaged") and more specific terminology is suggested (for example, "The unit is in an outage sence"). 2. If redundant components are used, a component outage occurrence may not imply a unit outage occurrence, depending on the failure mode or switching procedure. Examples of component outage occurrences not related to any unit outage occurrence include one circuit breaker in a ring bus configuration isolated for maintenance, and one of two line protection systems deactivated for testing. (PE/PSE) 859-1987w

outage, permanent forced *See:* permanent forced outage.

outage, power *See:* power outage.

outage rate (1) (electric power system) For a particular classification of outage and type of component, the mean number of outages per unit exposure time per component. *Note:* Outage rates may be defined for specific weather conditions and types of outages. For example, permanent forced outage rates may be separated into adverse weather permanent forced outage rate and normal weather permanent forced outage rate. (PE/PSE) 346-1973w

(2) (outage occurrences and outage states of electrical transmission facilities) The number of outage occurrences

per unit of service time = number of outage occurrences/service time. *Notes:* 1. Usually the unit of service time is one year. 2. Outage rates can be subdivided by outage types, by the weather prevailing during the service time, or by season. For example:

a) scheduled outage rate: 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).
b) normal weather forced outage rate: The number of forced outages per unit of service time in normal weather = number of forced outages during normal weather/service time during normal weather.
c) 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.

(PE/PSE) 859-1987w

outage rate, adverse weather permanent forced (electric power system) For a particular type of component, the mean number of outages per unit of adverse weather exposure time per component. (PE/PSE) 346-1973w

outage rate, normal weather permanent forced (electric power supplies) For a particular type of component, the mean number of outages per unit of normal weather exposure time per component. (PE/PSE) 346-1973w

outage, scheduled *See:* scheduled outage.

outage state The component or unit is not in the in-service state; that is, it is partially or fully isolated from the system. *Notes:* 1. A unit may be in the outage state due to a failure of a component within the unit or due to the outage occurrence of another unit or component. 2. A two-terminal transformer disconnected on one or both sides is in the outage state. 3. A three-terminal overhead transmission line disconnected from one terminal is, as a unit, in the outage stage. However, the two overhead line sections still carrying power are, as components, in the in-service state. A circuit breaker that is not energized on either side is in the outage state. Whether the circuit breaker is open or closed does not affect its in-service/outage state status. (PE/PSE) 859-1987w

outage time (1) The accumulated time one or more components or units are in the outage state during the reporting period. (PE/PSE) 859-1987w

(2) Mean time to repair plus time for logistics and approval. (PE/NP) 933-1999

outage times (reliability data for pumps and drivers, valve actuators, and valves) (reliability data) (1) Out of Service: The average time required to get the failure, analyze it, obtain spare parts, repair and return the item or equipment to service, including planned delays. (2) Restoration: The average time required to get to the failure, analyze it, obtain spare parts, repair, and return the item or equipment to service, excluding planned delays. (3) Repair: The average time required to analyze the failure, repair, and return the item or equipment to service. This excludes planned delays and waiting for spares or tools. (PE/NP) 500-1984w

outage, transient forced *See:* transient forced outage.

outage type Outage occurrences are classified by type according to the urgency with which the outage occurrence is initiated and by how the equipment is restored to service. (PE/PSE) 859-1987w

outbound The direction of RF signal flow away from the head-end and towards the user outlet ports. Referred to in the CATV industry as "downstream" or "forward." (LM/C) 802.7-1989r

outbound queue A queue carrying messages from a Processor to an I/O Unit, or from Processor to Processor. (C/MM) 1212.1-1993

outbound telemetry Communication initiated by a utility or an enhanced service provider (ESP) toward a telemetry interface unit (TIU). (SCC31/AMR) 1390.3-1999, 1390.2-1999, 1390-1995

outcome-oriented simulation A simulation in which the end result is considered more important than the process by which it is obtained; for example, a simulation of a radar system that uses methods far different from those used by the actual radar, but whose output is the same. *Contrast:* process-oriented simulation. (C) 610.3-1989w

outdoor (1) (power and distribution transformers) Suitable for installation where exposed to the weather. (PE/TR) C57.12.80-1978r

(2) Designed for use outside buildings. (SWG/PE) C37.100-1992

(3) (prefix) Designed for use outside buildings and to withstand exposure to the weather. (T&D/PE) 18-1992

(4) Designed for use outside buildings or enclosures. (SWG/PE) C37.40-1993

outdoor arrester An arrester that is designed for outdoor use. (SPD/PE) C62.11-1999

outdoor bushing A bushing in which both ends are in ambient air and exposed to external atmospheric conditions. (PE/TR) C57.19.03-1996

outdoor coupling capacitor A capacitor designed for outdoor service that provides, as its primary function, capacitance coupling to a high-voltage line. *Note:* It is used in this manner to provide a circuit for carrier-frequency energy to and from a high-voltage line and to provide a circuit for power-frequency energy from a high-voltage line to a capacitance potential device or other voltage-responsive device. 31-1944w

outdoor current (or voltage) transformer One of weather-resistant construction, suitable for service without additional protection from the weather. (PE/TR) C57.13-1993

outdoor enclosure (1) (power system communication equipment) An enclosure constructed to protect equipment therein from the weather and accidental contact that would interfere with the successful operation. (PE/PSC) 281-1984w

(2) An enclosure for outdoor application designed to protect against weather hazards such as rain, snow, or sleet. *Note:* Condensation is minimized by use of space heaters. (SWG/PE) C37.100-1992

outdoor-immersed bushing A bushing in which one end is in ambient air and exposed to external atmospheric condition and the other end is immersed in an insulating medium such as oil or gas. (PE/TR) C57.19.03-1996

outdoor-indoor bushing A bushing in which both ends are in ambient air but one end is intended to be exposed to external atmospheric conditions and the other end is intended not to be so exposed. (PE/TR) C57.19.03-1996

outdoor reactor A reactor of weatherproof construction. (PE/TR) C57.16-1996

outdoor regulator A regulator designed for use outside of buildings. (PE/TR) C57.15-1999

outdoor shunt reactor (shunt reactors over 500 kVA) One of weather-resistant construction. (PE/TR) C57.21-1981s

outdoor surge-protective device A surge-protective device that is designed for outdoor use. (SPD/PE) C62.62-2000

outdoor termination A termination intended for use where it is not protected from direct exposure to either solar radiation or precipitation. These are Class 1A, 1B, or 1C terminations. Class 2 terminations may also qualify. (PE/IC) 48-1996

outdoor termination—polluted A termination intended for use where it is not protected from direct exposure to either solar radiation or precipitation, and is exposed to nonstandard (unusual) service conditions such as extreme seacoast salt deposits, solid precipitates, etc. Often requires extra maintenance such as washing or extra creepage length. (PE/IC) 48-1996

outdoor transformer (power and distribution transformers) A transformer of weather-resistant construction suitable for

service without additional protection from the weather. (PE/TR) C57.12.80-1978r

outdoor wall bushing A wall bushing on which one or both ends (as specified) are suitable for operating continuously outdoors. *See also:* bushing. 49-1948w

outdoor weatherproof enclosure (series capacitor) An enclosure so constructed or protected that exposure to the weather will not interfere with the successful operation of the equipment contained therein. (T&D/PE) [26]

outer frame (rotating machinery) The portion of a frame into which the inner frame with its assembled core and winding is installed. (PE) [9]

outer jacket A jacket that is extruded over the cable shield. It also may be extruded over both the shield and a supporting messenger cable. *See also:* cable jacket. (PE/PSC) 789-1988w

outer marker (navigation aid terms) A marker facility in an ILS (instrument landing system) which is installed at approximately 5 nmi (nautical miles) (9 km [kilometers]) from the approach end of the runway on the localizer course line to provide height, distance, and equipment functioning checks to aircraft on intermediate and final approach. (AES/GCS) 172-1983w

outfeed A current out of a terminal on a faulted line. Outfeed only occurs on multiterminal or series compensated lines. (PE/PSR) C37.113-1999

outgoing blocking The matching loss on line-to-trunk connections. Line-to-trunk connections include outgoing talking paths, line-to-service circuit connections, and the originating half of an intra-office call when such a connection is directly analogous to an outgoing connection. *See also:* matching loss. (COM/TA) 973-1990w

outgoing traffic (telephone switching systems) Traffic delivered directly to trunks from a switching entity. (COM) 312-1977w

outlet A point on the wiring system at which current is taken to supply utilization equipment. (IA/MT) 45-1998

outlet box A box used on a wiring system at an outlet. *See also:* cabinet. (EEC/PE) [119]

outline font A font defined in terms of mathematical curves that specify the visual representation of each character. *Note:* An outline font has no predetermined size, but rather is scaled to the desired size as needed. *Contrast:* vector font; bit map font. (C) 610.10-1994w

outline lighting An arrangement of incandescent lamps or electric discharge tubing to outline or call attention to certain features such as the shape of a building or the decoration of a window. (NESC/NEC) [86]

out-of-band packet A packet of exceptional data in the data stream. This type of packet may contain special information relating to the data at this position in the data stream, for example, "end of job." (C/MM) 1284.4-2000

out-of-band signaling (1) The transmission of a signal using a frequency that is within the pass band of the transmission facility but outside a frequency range normally used for data transmission. *Contrast:* in-band signaling. (LM/C) 610.7-1995, 802.3-1998

(2) Signaling applications in which the signaling information is outside of the user information channel, whether or not transmitted in a different physical or logical channel from the associated user data, e.g., over different physical paths, in different time-slots in a time division multiplex (TDM) stream. (C/LM/COM) 802.9a-1995w, 8802-9-1996

(3) Signaling which utilizes frequencies within the guard band between channels. This term is also used to indicate the use of a portion of a channel bandwidth provided by the medium such as a carrier channel, but denied to the speech or intelligence path by filters. It results in a reduction of the effective available bandwidth. (PE) 599-1985w

(4) Analog generated signaling that uses the same path as a message and in which the signaling frequencies are lower or higher than those used for the message. (COM) 312-1977w

out-of-frame condition A state that occurs when the receive frame alignment is not consistent with the transmit system frame alignment (for the same direction of transmission). *See also:* change-of-frame alignment. (COM/TA) 1007-1991r

out-of-phase (as prefix to a characteristic quantity) A qualifying term indicating that the characteristic quantity applies to operation of the circuit breaker in out-of-phase conditions. *See also:* out of step. (SWG) 417-1973w

out-of-phase conditions Abnormal circuit conditions of loss or lack of synchronism between the parts of an electrical system on either side of a circuit breaker in which, at the instant of operation of the circuit breaker, the phase angle between rotating phasors representing the generated voltages on either side exceeds the normal value and may be as much as 180° (phase opposition). (SWG) 417-1973w

out-of-roundness (conductor) The difference between the major and minor diameters at any one cross section. *See also:* waveguide. (EEC/REWS) [92]

out of service (1) Occurs when calls cannot be originated or completed due to system failure for an interval greater than a specified time. It is measured as expected long-term average time out of service in minutes per year. (COM/TA) 973-1990w

(2) Lines and equipment are considered out of service when disconnected from the system and not intended to be capable of delivering energy or communications signals. (NESC) C2-1997

out of step A system condition in which two or more synchronous machines have lost synchronism with respect to one another and are operating at different average frequencies. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

out-of-step protection (power system) A form of protection that separates the appropriate parts of a power system, or prevents separation that might otherwise occur, in the event of loss of synchronism. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

outpulsing (telephone switching systems) Pulsing from a sender. (COM) 312-1977w

output (1) (A) (data transmission) Data that have been processed. **(B) (data transmission)** The state or sequence of states occurring on a specified output channel. **(C) (data transmission)** The device or collective set of devices used for taking data out of a device. **(D) (data transmission)** A channel for expressing a state of a device or logic element. **(E) (data transmission)** The process of transferring data from an internal storage to an external storage device. **(F) (software)** Loosely, output data. *Contrast:* input. (C/PE) 599-1985, 610.12-1990

(2) (A) (rotating machinery) (generator). The power (active, reactive, or apparent) supplied from its terminals. **(B) (rotating machinery)** (motor). The power supplied by its shaft. *See also:* asynchronous machine. (PE) [9]

(3) (A) (software) Pertaining to data transmitted to an external destination. **(B) (software)** Pertaining to a device, process, or channel involved in transmitting data to an external destination. **(C) (software)** To transmit data to an external destination. (C) 610.12-1990, 610.10-1994

(4) In an IDEF0 model, that which is produced by a function. (C/SE) 1320.1-1998

(5) *See also:* buffer; display element. (C) 610.5-1990w, 610.6-1991w

output, acoustic *See:* acoustic output.

output angle (1) (gyros) The angular displacement of a gimbal about its output axis with respect to its support. (AES/GYAC) 528-1994

(2) *See also:* radiation angle. (PAS)

output area An area of storage reserved for output data. (C) 610.10-1994w

output argument An argument that has not been specified as an input argument. It is possible for an output argument to have no value at the time a request is made. *Contrast:* input argument. (C/SE) 1320.2-1998

output arrow An arrow or arrow segment that expresses IDEF0 output, i.e., an object type set whose instances are created by a function by transforming the function's input. The arrowtail of an output arrow is attached to the right side of a box. (C/SE) 1320.1-1998

output assertion (software) A logical expression specifying one or more conditions that program outputs must satisfy in order for the program to be correct. *Contrast:* input assertion; loop assertion. *See also:* inductive assertion method. (C) 610.12-1990

output attenuation (signal generators) The ratio, expressed in decibels (dB), of any selected output, relative to the output obtained when the generator is set to its calibration level. *Note:* It may be necessary to eliminate the effect of carrier distortion and/or modulation feedthrough by the use of suitable filters. *See also:* signal generator. (IM/HFIM) [40]

output axis (OA) (accelerometer) (gyros) An axis-of-freedom about which the output of the sensor is measured. A pickoff generates an output signal as a function of the output angle. In an accelerometer, it is sometimes referred to as the hinge axis. (AES/GYAC) 528-1994

output-axis-angular-acceleration drift rate (gyros) Drift rate that is proportional to angular acceleration of the gyro case about the output axis, with respect to inertial space. The relationship of this component of drift rate to angular acceleration can be stated by means of a coefficient having dimensions of angular displacement per unit time divided by angular displacement per unit time squared. (AES/GYAC) 528-1994

output buffer *See:* buffer.

output capacitance (*n*-terminal electron tube) The short-circuit transfer capacitance between the output terminal and all other terminals, except the input terminal, connected together. *See also:* electron-tube admittances. (ED) 161-1971w, [45]

output-capacitor discharge time (power supply) The interval between the time at which the input power is disconnected and the time when the output voltage of the unloaded regulated power supply has decreased to a specified safe value. *See also:* regulated power supply. 209-1950w

output channel A channel for transferring data from a device or logic gate to an external component. *See also:* input channel; input-output channel. (C) 610.10-1994w

output circuit (1) (protective relay system) An output from a relay system which exercises direct or indirect control of a power circuit breaker, such as trip or close. (PE/PSR) C37.90-1978s

(2) (protective relay system) A circuit from a relay system that exercises direct or indirect control of power apparatus such as tripping or closing of a power circuit breaker. (PE/PSR) C37.90.1-1989r

output control characteristics (thyristor) Output operating characteristics that can be deliberately selected or controlled, or both. (IA/IPC) 428-1981w

output control range (thyristor) The continuous range over which the output of a power controller can be changed by control signal input. (IA/IPC) 428-1981w

output current (self-commutated converters) (converters having ac output) The total rms (root-mean-square) current from the output terminals. (IA/SPC) 936-1987w

output-dependent overshoot and undershoot Dynamic regulation for load changes. (AES) [41]

output device A device in a computer system used for presenting information to the user. *Note:* Common output devices include printers, display devices and plotters. *Synonym:* output unit. *Contrast:* input device. *See also:* input-output device. (C) 610.10-1994w

output electrode (electron tube) The electrode from which is received the amplified, modulated, detected, etc., voltage. *See also:* electron tube. (ED) [45], [84]

output enable (semiconductor memory) The inputs that when false cause the output to be in the OFF or high impedance state. This pin must be true for the output to be in any other state. (TT/C) 662-1980s

output factor The ratio of the actual energy output, in the period of time considered, to the energy output that would have occurred if the machine or equipment had been operating at its full rating throughout its actual hours of service during the period. *See also:* generating station. (T&D/PE) [10]

output frequency stability (inverters) The deviation of the output frequency from a given set value. *See also:* self-commutated inverters. (IA) [62]

output gap (electron tube) (traveling-wave tubes) An interaction gap by means of which usable power can be abstracted from an electron stream. (ED) [45]

output hold time *See:* hold time.

output impedance (1) (analog computer) The impedance presented by the transducer to a load. (C) 165-1977w

(2) (self-commutated converters) (converters having ac output) The impedance presented by the converter to the load for specified frequencies. (IA/SPC) 936-1987w

(3) The electrical impedance at an output terminal of a circuit or device, as it appears to the circuit that uses the output signal. (C) 610.10-1994w

(4) (A) (device, transducer, or network) The impedance presented by the output terminals to a load. *Notes:* 1. Output impedance is sometimes incorrectly used to designate load impedance. 2. This is a frequency-dependent function, and is used to help describe the performance of the power supply and the degree of coupling between loads. *See also:* self-impedance. **(B) (power supplies)** The effective dynamic output impedance of a power supply is derived from the ratio of the measured peak-to-peak change in output voltage to a measured peak-to-peak change in load alternating current. Output impedance is usually specified throughout the frequency range from direct current to 100 kilohertz. *See also:* self-impedance. (AES) [41]

(5) The output electrode impedance at the output electrodes. *See also:* self-impedance. (ED) [45]

(6) (transformer-rectifier system) Internal impedance in ohms measured at the direct current terminals when the rectifier is continuously providing direct current to a load. This impedance is perferably expressed as a curve of impedance in ohms versus frequency, over the frequency range of interest to the application. (PEL/ET) 295-1969r

(7) (Hall generator) The impedance between the Hall terminals. (MAG) 296-1969w

output media Media that are generated as output; for example, paper reports, or magnetic tapes. *Contrast:* input media. (C) 610.10-1994w

output phase displacement (power inverters that have polyphase output) (inverters) The angular displacement between fundamental phasors. *See also:* self-commutated inverters. (IA) [62]

output pin A component pin that drives signals onto external connections. (TT/C) 1149.1-1990

output power (1) (general) The power delivered by a system or transducer to its load. (SP) 151-1965w

(2) (electron tube or valve) The power supplied to the load by the electron tube or valve at the output electrode. *See also:* ON period. (ED) [45], [84]

output primitives Primitives that include source statements, function points, and documents. (C/SE) 1045-1992

output pulse (accelerometer) A pulse that represents the minimum unit of velocity increment ($g \cdot$ s, m/s). (AES/GYAC) 528-1994, 530-1978r

output pulse amplitude (digital delay line) Peak amplitude of the output doublet which is obtained across the specified output load for a given amplitude of input step. (UFFC) [22]

output pulse duration (digital delay line) Time spacing between the 10 percent amplitude point of the rise of the first peak to the 10 percent amplitude point of the fall of the second peak. (UFFC) [22]

output pulse shape (pulse transformers) Load current pulse flowing in a winding or voltage pulse developed across a winding in response to application of an input pulse. The shape of the output pulse is described by a current- or voltage-time relationship. The following definitions for the input pulse shape apply to the output pulse shape: pulse amplitude; rise time; pulse duration; fall time; trailing edge; tilt; overshoot; backswing; return swing; rolloff; ringing; leading edge linearity; quiescent value; leading edge; pulse top; trailing edge. Typically, a prominent feature of the output pulse is an accentuated backswing (last transition overshoot), ABS. (PEL/MAG/ET) 390-1987r, 391-1976w

output queue The database that the client of the MT interface uses to convey objects to the service. (C/PA) 1224.1-1993w

output range (accelerometer) (gyros) The product of input range and scale factor. (AES/GYAC) 528-1994

output reference axis (ORA) (accelerometer) (gyros) The direction of an axis defined by the case mounting surfaces or external case markings or both. It is nominally parallel to the output axis. (AES/GYAC) 528-1994

output resonator (electron tube) (catcher) A resonant cavity, excited by density modulation of the electron beam, that supplies useful energy to an external circuit. *See also:* velocity-modulated tube. (ED) [45], [84]

output (reverse transfer) impedance (of a power source) Similar to forward transfer impedance, but it describes the characteristic impedance of the power source as seen from the load, looking back at the source. *See also:* forward transfer impedance. (IA/PSE) 1100-1999

output ripple voltage (regulated power supply) The portion of the output voltage harmonically related in frequency to the input voltage and arising solely from the input voltage. Note: Unless otherwise specified, percent ripple is the ratio of root-mean-square value of the ripple voltage to the average value of the total voltage expressed in percent. In television, ripple voltage is usually expressed explicitly in peak-to-peak volts to avoid ambiguity. *See also:* regulated power supply. 209-1950w

output signal (1) (hydraulic turbines) The physical reaction of of any element of a control system to an input signal. (PE/EDPG) 125-1977s

(2) (control system feedback) A signal delivered by a system or element. *See also:* feedback control system. (NESC/PE/EDPG) 421-1972s, [86]

output span (accelerometer) (gyros) The algebraic difference between the upper and lower values of the output range. (AES/GYAC) 528-1994

output-structure transit time That portion of the photomultiplier transit time occurring with the output structure. (NPS) 398-1972r

output terminal (A) A terminal used to display or generate output. **(B)** A point in a system or communication network at which data can leave the system *Contrast:* input terminal. (C) 610.10-1994

output torque without excitation (electric coupling) The torque an electric coupling will transmit or develop with zero excitation. (EM/PE) 290-1980w

output-transfer function (control system feedback) (closed loop) The transfer function obtained by taking the ratio of the Laplace transform of the output signal to the Laplace transform of the input signal. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

output unit *See:* output device.

output variable A variable delivered by a system or element. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

output voltage (converters having ac output) (self-commutated converters) The fundamental rms (root-mean-square) voltage (unless otherwise specified for a particular load) between the output terminals. (IA/SPC) 936-1987w

output voltage regulation (power supply) The change in output voltage, at a specified constant input voltage, resulting from a change of load current between two specified values. *See also:* regulated power supply. 209-1950w

output voltage stabilization (power supply) The change in output voltage, at a specified constant load current, resulting from a change of input voltage between two specified values. *See also:* regulated power supply. 209-1950w

output voltage versus input voltage characteristics Ferroresonant regulators may have output versus input characteristics as shown below and in the figure under jump resonance. (PEL) 449-1998

output winding (1) (secondary windings) The winding(s) from which the output is obtained. *See also:* magnetic amplifier. (Std100) [123]

(2) The winding of the ferroresonant transformer used to provide the regulated output voltage. *Note:* The output winding is wound on the secondary section of the core and separated from the primary by a magnetic shunt. (PEL) 449-1998

outrigger (of a switching-device terminal) An attachment that is fastened to or adjacent to the terminal pad of a switching device to maintain electrical clearance between the conductor and other parts or, when fastened adjacent, to relieve mechanical strain on the terminal, or both. (SWG/PE) C37.100-1992

outside plant (communication practice) That part of the plant extending from the line side of the main distributing frame to the line side of the station or private-branch-exchange protector or connecting block, or to the line side of the main distributing frame in another central office building. (PE/EEC) [119]

outside space block *See:* end finger.

outstanding directory operation A directory operation, invoked asynchronously (i.e., with **asynchronous** = **true** in the context), that has not yet been the subject of an invocation of the `ds_abandon` interface operation or the `ds_receive_results` interface operation. (C/PA) 1326.2-1993w, 1224.2-1993w, 1328.2-1993w, 1327.2-1993w

outward-wats service (telephone switching systems) A flat-rate or measured-time direct distance dialing service for defined geographical groups of numbering plan areas. (COM) 312-1977w

oven (analog computer) An enclosure and associated sensors and heaters for maintaining components at a controlled and usually constant temperature. (C) 165-1977w, 166-1977w

oven, wall-mounted *See:* wall-mounted oven.

overall The acoustic output level of a telephone set due to an acoustic input to another telephone set to which it is connected by a test circuit. (COM/TA) 269-1992

over-all electrical efficiency (dielectric and induction heater) The ratio of the power absorbed by the load material to the total power drawn from the supply lines. *See also:* induction heating; load-circuit efficiency. (IA) 54-1955w, 169-1955w

over-all generator efficiency (thermoelectric device) The ratio of (A) electric power output to (B) thermal power input. *See also:* thermoelectric device. (ED) [46]

overall objective loudness rating (OOLR) (loudness ratings of telephone connections)

$$\mathbf{OOLR} = -20 \log_{10} \frac{S_E}{S_M}$$

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

overall power efficiency (laser maser) The ratio of the useful power output of the device to the total input power. (LEO) 586-1980w

overall regulation (power supplies) The maximum amount that the output will change as a result of the specified change in line voltage, output load, input frequency, temperature, or time. *Note:* Line regulation, load regulation, effect of frequency variation, stability, and temperature coefficient are defined and usually specified separately as follows:

— *Line regulation*. The maximum amount that the output voltage or current will change as the result of a specified change in line voltage. (Regulation is given either as a percentage of the rated output voltage or current, or as an absolute change, ΔE or ΔI.)

— *Load regulation*. The maximum amount that the output voltage will change as the result of a specified change in load current. (Regulation is given either as a percentage of the rated output voltage or as an absolute change, ΔE.)

— *Frequency regulation*. The maximum amount that the output voltage or current will change as the result of a specified change in line frequency. (Regulation is given either as a percentage of the rated output voltage or current, or as an absolute change, ΔE or ΔI.)

— *Temperature coefficient (power supplies)*. The percent change in the output voltage or current as a result of a 1°C change in the ambient operating temperature (percent per degree Celsius).

— *Long-term stability (LTS) (power supplies)*. The change in output voltage or current as a function of time, at constant line voltage, load, and ambient temperature (sometimes referred to as *drift*).

(PEL) 449-1998

overbilling error Occurs when a call is billed more that it should be. (COM/TA) 973-1990w

overbunching (electron tube) The bunching condition produced by the continuation of the bunching process beyond the optimum condition. (ED) 161-1971w

overburden (earth conductivity) The surface layers or regions of the earth that are water bearing and are subject to weathering. They comprise predominantly sand, gravel, clays, and poorly consolidated rocks. (COM) 365-1974w

overcast sky (illuminating engineering) A sky which has 100 percent cloud cover; the sun is not visible. (EEC/IE) [126]

overcharge The forcing of current through a battery after it has been fully recharged. (PV) 1013-1990, 1144-1996

overcompounded A qualifying term applied to a compound-wound generator to denote that the series winding is so proportioned that the terminal voltage at rated load is greater than at no load. (EEC/PE) [119]

overcurrent (1) Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload (see definition) short circuit, or ground fault. A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Hence the rules for overcurrent protection are specific for particular situations. (NESC/NEC) [86]
(2) (packaging machinery) An abnormal current greater than the full-load value. (IA/PKG) 333-1980w

overcurrent protection (1) (thyristor) (power and distribution transformers) A form of protection(s) that operates when current exceeds a predetermined value. (SWG/IA/PE/IPC/TR) 428-1981w, C57.12.80-1978r
(2) Protection of the battery charger against excessive current, including short circuit current. (IA/PSE) 602-1996
(3) A form of protection that operates when current exceeds a predetermined value. (SWG/PE) C37.100-1992
(4) (overload protection) The effect of a device, operative on excessive current (but not necessarily on short circuit), to cause and maintain the interruption of current flow to the device governed. (IA/MT) 45-1998

overcurrent protective device (packaging machinery) A device operative on excessive current that causes and maintains the interruption of power in the circuit. (IA/PKG) 333-1980w

overcurrent relay A relay that operates when its input current exceeds a predetermined value. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

overcurrent release (trip) A release that operates when the current in the main circuit is equal to or exceeds the release setting. (SWG/PE) C37.100-1992

overcutting (disk recording) The effect of excessive level characterized by one groove cutting through into an adjacent one. *See also:* phonograph pickup. (SP) [32]

overdamped A degree of damping that is more than sufficient to prevent the oscillation of the output following an abrupt stimulus. *Note:* For a linear second order system the roots of the characteristic equation must then be real and unequal. *See also:* control system; feedback. (CAS/IA/ICTL/IAC) [13], [60]

overdamping (aperiodic damping) The special case of damping in which the free oscillation does not change sign. A damped harmonic system is overdamped if $F^2 > 4MS$. (Std100) 270-1966w

over-erased cell An unselected cell that has excessive source-drain leakage current resulting from an erase operation that has reduced the threshold of the cell below the applied control gate voltage. (ED) 1005-1998

over-erased device A device that cannot be read or programmed correctly because of excessive over-erase leakage. (ED) 1005-1998

over-erase leakage The current on the bit-line caused by over-erased cell(s). (ED) 1005-1998

over-erase recover A custom programming algorithm to raise the threshold of an over-erased cell. (ED) 1005-1998

overfilled launch The overfilled launch condition that excites both radial and azimuthal modes. (C/LM) 802.3-1998

overflow (A) (mathematics of computing) The condition that arises when the result of an arithmetic operation exceeds the capacity of the number representation system used in a digital computer. **(B) (mathematics of computing)** The carry digit arising from this condition. *Synonym:* arithmetic overflow. (C) 1084-1986

overflow area A physical location in which data are placed when there is no available space in the primary data area. Overflow areas may be allocated within stored record, physical blocks, disk tracks, or disk cylinders. (C) 610.5-1990w

overflow error The error caused by an overflow condition in computer arithmetic. (C) 1084-1986w

overflow exception An exception that occurs when the result of an arithmetic operation exceeds the size of the storage location designated to receive it. *See also:* addressing exception; underflow exception; operation exception; protection exception; data exception. (C) 610.12-1990

overflow loss *See:* matching loss.

overflow sequential access method (OSAM) An access method for handling data overflow from ISAM. (C) 610.5-1990w

overflow traffic (telephone switching systems) That part of the offered traffic that cannot be carried by a group of servers. (COM) 312-1977w

overhang packing (rotating machinery) Insulation inserted in the end region of the winding to provide spacing and bracing. *See also:* stator; rotor. (PE) [9]

overhaul Work done with the objective of repairing or replacing parts that are found to be out of tolerance by inspection, or test, or examination, or as required by equipment maintenance manual, in order to restore the component and/or the circuit breaker to an acceptable condition. (SWG/PE) C37.10-1995

overhead bits (1) Bits assigned at the source that remain with the information payload until the payload reaches the sink. The overhead bits are used for functions associated with transporting the payload. (COM/TA) 1007-1991r
(2) In data communications, additional bits transmitted for control framing, synchronization, and error checking purposes. (C/Std100) 610.7-1995

overhead electric hoist A motor-driven hoist having one or more drums or sheaves for rope or chain, and supported overhead. It may be fixed or traveling. *See also:* hoist. (EEC/PE) [119]

overhead ground wire (OHGW) (1) (lightning protection) (conductor stringing equipment) Multiple grounded wire or wires placed above the phase conductor for the purpose of intercepting direct strokes in order to protect the phase conductors from the direct strokes. *Synonyms:* shield wire; static wire; sky wire; earth wire. (T&D/PE) 524a-1993r, 524-1992r, 1048-1990
(2) A grounded, bare conductor suspended horizontally between supporting rods or masts to provide protection from lightning strikes for structures, equipment, or suspended conductors within the zone of protection created by the combination of the masts and the overhead ground wire. (PE/EDPG) 665-1995
(3) Grounded wire or wires placed above phase conductors for the purpose of intercepting direct strokes in order to protect the phase conductors from the direct strokes. They may be grounded directly or indirectly through short gaps. *See also:* direct-stroke protection. (SPD/PE/T&D) C62.23-1995, 1243-1997, 1410-1997

overhead insulated ground (static or sky) wire-coupling protector (wire-line communication facilities) A device for protecting carrier terminals which are used in conjunction with overhead, insulated, ground wires (static wire) of a power transmission line. (PE/PSC) 487-1980s

overhead line charging current Current supplied to an unloaded overhead line. *Note:* Current is expressed in rms amperes. (SWG/PE) C37.100-1992

overhead operation *See:* housekeeping operation.

overhead power line, corona (overhead-power-line corona and radio noise) Corona occurring at the surfaces of electrodes during the positive or negative polarity of the power-line voltage. *Notes:* 1. Surfaces irregularities such as stranding, nicks, scratches, and semiconducting or insulating protrusions are usual corona sites. 2. Dry or wet airborne particles in proximity of electrodes may cause corona discharges. 3. Weather has a pronounced influence on the occurrence and characteristics of overhead-power-line corona. (T&D/PE) 539-1979s

overhead structure (elevators) All of the structural members, platforms, etc., supporting the elevator machinery, sheaves, and equipment at the top of the hoistway. *See also:* elevator. (PE/EEC) [119]

overhead system service-entrance conductors 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/NEC) [86]

overhead time The amount of time a computer system spends performing tasks that do not contribute directly to the progress of any user task; for example, time spent tabulating computer resource usage for billing purposes. (C) 610.12-1990

overjacket A polymeric sheath, sometimes fabric reinforced, applied over the metallic covering. (IA/PC) 515.1-1995

overlap The distance the control of one signal extends into the territory that is governed by another signal or other signals. *See also:* neutral zone. (EEC/PE) [119]

overlap angle (1) (gas tube) The time interval, in angular measure, during which two consecutive arc paths carry current simultaneously. (ED) [45], [84]
(2) (rectifier circuits) *See also:* commutating angle. (IA) [62]

overlap control *See:* two-step control system.

overlap interval (self-commutated converters) (circuit properties) The time interval during which two commutating converter branches are carrying principal current simultaneously. (IA/SPC) 936-1987w

overlapped execution A mode of operation in which the execution of one instruction overlaps the fetch and decode of the next to be executed. *See also:* pipelining. (C) 610.10-1994w

overlapping protection A situation in which the protected zone of one relay overlaps the protected zone of another relay (usually done to ensure protection of equipment at the border of a protected zone). This is often necessary due to the location of current transformers (CTs) on equipment. (PE/PSR) C37.113-1999

overlapping register set A set of registers, only part of which is available to an application at any given time. *Note:* A subset of the available registers is shared with the calling routine and a subset may be shared with any routines called by the current routine. (C) 610.10-1994w

overlap testing (nuclear power generating station) Overlap testing consists of channel, train, or load group verification by performing individual tests on the various components and subsystems of the channel, train, or load group. The individual component and subsystem tests check common parts of adjacent subsystems, such that the entire channel, train, or load group is verified by testing of individual components or subsystems and by repetitive testing of common parts of adjacent subsystems. (PE/NP) 338-1987r

overlap X (facsimile) The amount by which the recorded spot X dimension exceeds that necessary to form a most nearly constant density line. *Note:* This effect arises in that type of equipment which responds to a constant density in the subject copy by a succession of discrete recorded spots. *See also:* recording. (COM) 168-1956w

overlap Y (facsimile) The amount by which the recorded spot Y dimension exceeds the nominal line width. *See also:* recording. (COM) 168-1956w

overlay (1) (A) (software) A storage allocation technique in which computer program segments are loaded from auxiliary storage to main storage when needed, overwriting other segments not currently in use. **(B) (software)** A computer program segment that is maintained in auxiliary storage and loaded into main storage when needed, overwriting other segments not currently in use. **(C) (software)** To load a computer program segment from auxiliary storage to main storage in such a way that other segments of the program are overwritten. (C) 610.12-1990
(2) (transmission lines) A layer of dielectric material placed upon a single or coupled planar transmission line. It is often used to make the two modes of coupled transmission lines have phase velocities nearly the same. (MTT) 1004-1987w

overlay supervisor A routine that controls the sequencing and positioning of overlays. (C) 610.12-1990

overload (1) (power operations) Loading in excess of normal rating of equipment. (PE/PSE) 858-1987s
(2) (protection and coordination of industrial and commercial power systems) Generally used in reference to an overcurrent that is not of sufficient magnitude to be termed a short circuit. An overload is normally that overcurrent value from 100 percent of fuse rating up to ten times fuse rating. *See also:* short circuit. (IA/PSP) 242-1986r
(3) (power and distribution transformers) Output of current power, or torque, by a device, in excess of the rated

output of the device on a specified rating basis. (PE/TR) C57.12.80-1978r

(4) Operation of equipment in excess of normal, full load rating, or of a conductor in excess of rated ampacity which, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault, is not an overload. *See also:* overcurrent. (NEC/NESC/C/MM) [86], 1296-1987s

(5) (radiation protection) Response of less than full scale (that is, maximum scale reading) when exposed to radiation intensities greater than the upper detection limit. (NI) N323-1978r

(6) (test, measurement, and diagnostic equipment) To exceed the rated capacity of. (MIL) [2]

(7) (thyristor power computer) A condition existing when the load current exceeds the continuous rating of the converter unit in magnitude or time, or both, but the conduction cycles and waveforms remain essentially normal. (IA/IPC) 444-1973w

(8) (software) To assign an operator, identifier, or literal more than one meaning, depending upon the data types associated with it at any given time during program execution. (C) 610.12-1990

(9) A condition existing in an analog computer, within or at the output of a computing element, that causes a substantial computing error because of the voltage or current saturation of one or more of the parts of the computing element. *Note:* This condition is similar to an overflow of an accumulator in a digital computer. (C) 610.10-1994w

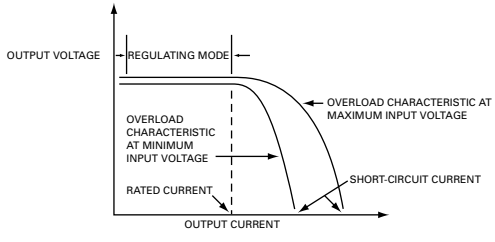
(10) A condition in which the maximum current of the power supply is exceeded. (PEL) 1515-2000

overload capacity (1) The current, voltage, or power level beyond which permanent damage occurs to the device considered. This is usually higher than the rated load capacity. *Note:* To carry load greater than the continuous rating, may be acceptable for limited use. (AP/ICTL/ANT) 145-1983s

(2) (accelerometer) The maximum acceleration to which an accelerometer may be subjected beyond the normal operating range without causing a permanent change in the specified performance characteristics. (AES/GYAC) 528-1994

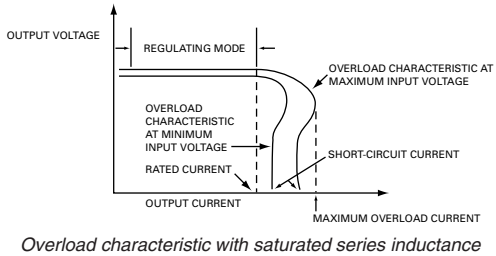
overload capacity factor The number by which a maximum load is multiplied to assure that the system does not fail when loaded beyond the design load. (T&D/PE) 1307-1996

overload characteristic That portion of the output voltage versus output current characteristic of ferroresonant regulators from rated current to short-circuit current. See figures below.



Overload characteristic with unsaturated series inductance

Overload characteristic



Overload characteristic with saturated series inductance

Overload characteristic

(PEL) 449-1998

overload detection A means to detect excessive overload of series capacitor bank components and to initiate an alarm signal, the closing of the associated bypass switch, or both. (T&D/PE) 824-1994

overload factor The ratio of the maximum value of a signal for which the operation of the predetector circuits of the receiver does not depart from linearity by more than one decibel, to the value corresponding to full-scale deflection of the indicating instrument. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

overload level (system or component) That level above which operation ceases to be satisfactory as a result of signal distortion, overheating, or damage. *See also:* level. (SP) 151-1965w

overload ON-state current (thyristor) An ON-state current of substantially the same wave shape as the normal ON-state current and having a greater value than the normal ON-state current. *See also:* principal current. (IA) [62]

overload point, signal *See:* signal overload point.

overload protection The effect of a device operative on excessive current, but not necessarily on short circuit, to cause and maintain the interruption of current flow to the device governed. *See also:* overcurrent protection. (IA/ICTL/IAC) [60]

overload pulse (x-ray energy spectrometers) An signal that drives a section of the amplifying chain into saturation. (NPS/NID) 759-1984r

overload recovery time (diode-type camera tube) A measure of the ability of the camera tube to recover from a specified overload signal, defined as the increased time required for the readout process to reach its nonoverload third-field value. Units: seconds or numbers of fields. (ED) 503-1978w

overload relay (1) (general) A relay that responds to electric load and operates at a preset value of overload. *Note:* Overload relays are usually current relays but they may be power, temperature, or other relays. (SWG/PE) C37.100-1981s

(2) An overcurrent relay that functions at a predetermined value of overcurrent to cause the disconnection of the power supply. *Note:* An overload relay is intended to protect the motor or controller and does not necessarily protect itself. (IA/MT) 45-1998

overmoded waveguide A waveguide used to propagate a single mode, but capable of propagating more than one mode at the frequency of interest. *See also:* waveguide. (MTT) 146-1980w

overpotential *See:* overvoltage.

overprint In text formatting, to print the same or different characters at the same position on an output page. Used to create bold-face type, underlining, and special characters. (C) 610.2-1987

overpunch To punch holes into a column of a punch card that already contains one or more holes. *Note:* Often used to represent special characters. (C) 610.10-1994w

overrange (1) (noun) (system or element) Any excess value of the response above its nominal full-scale value, or deficiency below the nominal minimum value. (PE/EDPG) [3]

(2) (test, measurement, and diagnostic equipment) An input to a measuring device which exceeds in magnitude the capability of a given range. (MIL) [2]

overrange velocity storage (accelerometer) (digital accelerometer) The velocity information that can be stored in the accelerometer during the application of an acceleration exceeding its input range. (AES/GYAC) 530-1978r, 528-1994

overreaching protection A form of protection in which the relays at one terminal operate for faults beyond the next terminal. They may be constrained from tripping until an incoming signal from a remote terminal has indicated whether the fault is beyond the protected line section. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

overreach (of a relay) The extension of the zone of protection beyond that indicated by the relay setting. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

override (1) (general system) (microcomputer system bus) A bus master overrides the bus control logic when it is necessary to guarantee itself back-to-back bus cycles. This is called overriding the bus, temporarily preventing other masters from using the bus. (MM/C) 796-1983r

(2) The ability of a property in a subclass to respecify the realization of an inherited property of the same name while retaining the same meaning. (C/SE) 1320.2-1998

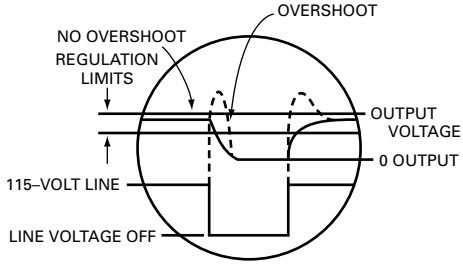
overriding property A property in a subclass that has the same meaning and signature as a similarly named property in one of its superclasses, but has a different realization. (C/SE) 1320.2-1998

overshoot (1) (pulse transformers) (first transition overshoot, a_{os}) The amount by which the first maximum occurring in the pulse-top region exceeds the straight-line segment fitted to the top of the pulse in determining A_M. It is expressed in amplitude units or as a percentage of A_M. (PEL/ET) 390-1987r

(2) (pulse terminology) A distortion that follows a major transition. *See also:* preshoot. (IM/WM&A) 194-1977w

(3) (oscilloscopes) In the display of a step function (usually of time), that portion of the waveform which, immediately following the step, exceeds its nominal or final amplitude. (IM) 311-1970w

(4) (A) (data transmission) *(Instrument).* The amount of the overtravel of the indicator beyond its final steady deflection when a new constant value of the measured quantity is suddenly applied to the instrument. The overtravel and deflection are determined in angular measure and the overshoot is expressed as a percentage of the change in steady deflection. *Notes:* 1. Since in some instruments the percentage depends on the magnitude of the deflection, a value corresponding to an initial swing from zero to end scale is used in determining the overshoot for rating purposes. 2. Overshoot and damping factor have a reciprocal relationship. The percentage overshoot may be obtained by dividing 100 by the damping factor. **(B) (data transmission)** *(Power supplies).* A transient rise beyond regulated output limits, occurring when the alternating current power input is turned on or off, and for line or load step changes.



Scope view of turn-off/turn-on effects of a power supply, showing overshoot.

overshoot

(PE) 599-1985

(5) (television) That part of a distorted wave front characterized by a rise above (or a fall below) the final value, followed by a decaying return to that final value. *Note:* Generally overshoots are produced in transfer devices having excessive transient response. (BT/AV) 201-1979w

(6) The value by which a lightning impulse exceeds the defined crest value. (PE/PSIM) 4-1995

(7) The maximum amount by which the step response exceeds the topline, specified as a percentage of (recorded) pulse amplitude. (IM/WM&A) 1057-1994w

overshoot duration (low voltage varistor surge arresters) The time between the point at which the wave exceeds the clamping voltage and the point at which the voltage overshoot has decayed to 50 percent of its peak. For the purpose of this definition, clamping voltage is defined with an 8×29 μs current waveform of the same peak current amplitude as the waveform used for the overshoot duration. (PE) [8]

overshoot response time (low voltage varistor surge arresters) The time between the point at which the wave exceeds the clamping voltage and the peak of the voltage overshoot. For the purpose of this definition, clamping voltage is defined with an 8×20 μ current waveform of the same peak current amplitude as the waveform used for the response time. (PE) [8]

overshoot switch-off (transformer-rectifier system) The transient output voltage pulse occurring as the result of deenergization of the core on switch-off. (PEL/ET) 295-1969r

overshoot switch-on (transformer-rectifier system) The transient voltage on the output direct voltage following the completion of capacitor charging in the direct current circuit. It may be expressed as a percentage of excess over the steady-state direct voltage. (PEL/ET) 295-1969r

overshoot, system *See:* system overshoot.

overshoot transient *See:* transient deviation.

over-sized packet *See:* long packet.

oversized waveguide A waveguide operated in its dominant mode, but far above cutoff; sometimes termed quasioptical waveguide. (MTT) 146-1980w

over-size insulation (electrical heat tracing for industrial applications) A term applied to thermal insulation when the inside diameter of the thermal insulation must be larger than the nominal outside diameter of a particular pipe so as to accommodate the heating cable. (BT/IA/AV) 152-1953s, 515-1997

overslung car frame A car frame to which the hoisting-rope fastenings or hoisting-rope sheaves are attached to the crosshead or top member of the car frame. *See also:* hoistway. (EEC/PE) [119]

overspeed (1) (hydraulic turbines) Any speed in excess of rated speed expressed as a percent of rated speed. (PE/EDPG) 125-1977s

(2) (hydroelectric power plants) Any speed in excess of rated speed. (PE/EDPG) 1020-1988r

overspeed and overtemperature protection system (gas turbines) The overspeed governor, overtemperature detector, fuel stop valve(s), blow-off valve, other protective devices and their interconnections to the fuel stop valve, and to the blow-off valve, if used, that are required to shut off all fuel flow and shut down the gas turbine. (PE/EDPG) 282-1968w

overspeed device (power system device function numbers) Usually a direct-connected speed switch which functions on machine overspeed. (PE/SUB) C37.2-1979s

overspeed governor (gas turbines) A control element that is directly responsive to speed and that actuates the overspeed and overtemperature protection system when the turbine reaches the speed for which the device is set. (PE/EDPG) 282-1968w

overspeed protection (1) The effect of a device operative whenever the speed rises above a preset value to cause and maintain an interruption of power to the protected equipment or a reduction of its speed. *See also:* relay. (IA/ICTL/IAC) [60]

(2) (relay systems) A form of protection that operates when the speed of rotation exceeds a predetermined value. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

overspeed test (rotating machinery) A test on a machine rotor to demonstrate that it complies with specified overspeed requirements. *See also:* rotor. (PE) [9]

overspray A portion of the water stream that is unintentionally directed away from the device being washed. (T&D/PE) 957-1995

overtemperature (rotating machinery) Unusually high temperature from causes such as overload, high ambient temperature, restricted ventilation, etc. (PE/EM) 432-1976s

overtemperature detector (gas turbines) The primary sensing element that is directly responsive to temperature and that actuates the overspeed and overtemperature protection system when the turbine temperature reaches the value for which the device is set. (PE/EDPG) 282-1968w

overtemperature protection (1) (power supplies) A thermal relay circuit that turns off the power automatically should an overtemperature condition occur. (AES) [41]

(2) A feature in a power supply that senses and responds to an over-temperature condition. (PEL) 1515-2000

overtesting Testing beyond requirements. (PE/SUB) 693-1997

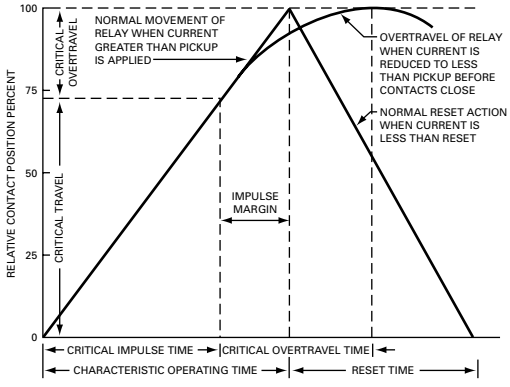
over-the-horizon radar (OHR, OTH) (1) (navigation aid terms) Radar using sufficiently low carrier frequencies, usually in the high-frequency (hf) band, so that ground-wave or ionospherically refracted sky-wave propagation can allow detection far beyond the ranges allowed by line-of-sight propagation. (AES/GCS) 172-1983w

(2) Radar using sufficiently low carrier frequencies, usually in the high-frequency (HF) band typically from about 5–30 MHz, so that ionospherically refracted sky-wave propagation can allow detection at ranges (nominally from perhaps 1000–4000 km) far beyond the ranges allowed by line-of-sight propagation. At HF, the surface wave, or ground wave, mode of propagation can allow detection of low-altitude targets at ranges from perhaps 40–200 km, depending on the size of the target and the radar. (AES) 686-1997

overtone *See:* harmonic.

overtone-type piezoelectric-crystal unit *(A)* An overtone driven by the action of the piezoelectric effect; *(B) (crystal unit)* A resonator constructed from a piezoelectric crystal material and designed to operate in the vicinity of an overtone of that device. (CAS) [13]

overtravel (of a relay) The amount of continued movement of the responsive element after the input is changed to a value below pickup.



overtravel

(SWG/PE) C37.100-1992

overvoltage (1) (rotating machinery) An abnormal voltage higher than the normal service voltage, such as might be caused from switching or lightning surges. (PE/EM) 432-1976s

(2) (radiation counter tubes) The amount by which the applied voltage exceeds the Geiger-Mueller threshold. (ED) [45]

(3) (electrochemistry) The displacement of an electrode potential from its equilibrium (reversible) value because of flow of current. *Note:* This is the irreversible excess of potential required for an electrochemical reaction to proceed actively at a specified electrode, over and above the reversible potential characteristic of that reaction. (IA) [59]

(4) (rotating machinery) (overpotential) A voltage above the normal rated voltage or the maximum operating voltage of a device or circuit. A direct test overvoltage is a voltage above the peak of the alternating line voltage. (PE/EM) 95-1977r

(5) Any voltage whose magnitude is less than the maximum safe input voltage of the recorder but greater than the full-scale value for the selected range. (IM/WM&A) 1057-1994w

(6) An rms increase in the ac voltage, at the power frequency, for durations greater than a few seconds. (T&D/PE) 1250-1995

(7) Voltage, between one phase and ground or between two phases, having a crest value exceeding the corresponding crest of the maximum system voltage. Overvoltage may be classified by shape and duration as either *temporary* or *transient*. *Notes:* 1. Unless otherwise indicated, such as for surge arresters, overvoltage are expressed in per unit with reference to $V_m\sqrt{2}\sqrt{3}$. 2. A general distinction may be made between highly damped overvoltages of relatively short duration (*transient overvoltages*) and undamped or only slightly damped overvoltages of relatively long duration (*temporary overvoltages*). The transition between these two groups cannot be clearly defined. (PE/C) 1313.1-1996

(8) Abnormal voltage between two points of a system that is greater than the highest value appearing between the same two points under normal service conditions. Overvoltages may be low-frequency, temporary, and transient (surge). (SPD/PE) C62.22-1997

(9) When used to describe a specific type of long duration variation, refers to a measured voltage having a value greater than the nominal voltage for a period of time greater than 1 min. Typical values are 1.1 to 1.2 pu. (SCC22) 1346-1998

(10) When used to describe a specific type of long duration variation, refers to an RMS increase in the ac voltage, at the power frequency, for a period of time greater than 1 min. Typical values are 1.1-1.2 pu. *See also:* swell; transient. (IA/PSE) 1100-1999

overvoltage due to resonance (surge arresters) Overvoltage at the fundamental frequency of the installation, or of a harmonic frequency, resulting from oscillation of circuits. (PE) [8], [84]

overvoltage protection The effect of a device operative on excessive voltage to cause and maintain the interruption of power in the circuit or reduction of voltage to the equipment governed. (IA/IAC) [60]

overvoltage relay A relay that operates when its input voltage exceeds a predetermined value. (SWG/PE/SUB/PSR) C37.100-1992, C37.2-1979s, C37.90-1978s

overvoltage release (trip) A release that operates when the voltage of the main circuit is equal to or exceeds the release setting. (SWG/PE) C37.100-1992

overvoltage suppressors (thyristor) Devices used in the ac power controller to attenuate repetitive and nonrepetitive overvoltages of internal or external origin, for example, snubbers, surge arresters, limiters, etc. (IA/IPC) 428-1981w

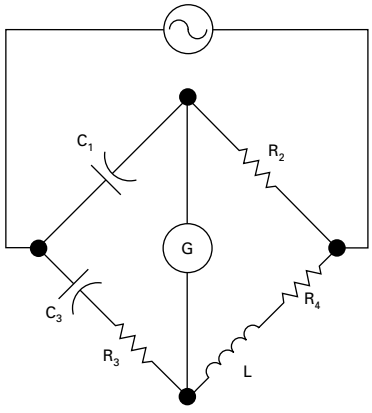
overvoltage test (rotating machinery) A test at voltages above the rated operating voltage. (PE) [9]

overwriting (charge-storage tubes) Writing in excess of that which produces write saturation. *See also:* charge-storage tube. (ED) 158-1962w

OW *See:* oil-immersed water-cooled transformer.

O wave *See:* ordinary wave.

Owen bridge A 4-arm alternating-current bridge in which one arm, adjacent to the unknown inductor, comprises a capacitor and resistor in series: the arm opposite the unknown consists of a second capacitor, and the fourth arm of a resistor. *Note:* Normally used for the measurement of self-inductance in terms of capacitance and resistance. Usually, the bridge is balanced by adjustment of the resistor that is in series with the first capacitor and of another resistor that is inserted in series with the unknown inductor. The balance is independent of frequency. *See also:* bridge.



$C_3R_4 = C_1R_2$
$L = C_1R_3R_2$

Owen bridge

(EEC/PE) [119]

owned attribute An attribute of an entity that has not migrated into the entity. (C/SE) 1320.2-1998

owner (1) (nuclear power quality assurance) The person, group, company, agency, or corporation who has or will have title to the nuclear power plant. (PE/NP) [124]

(2) A party who owns the transmission line during the construction phase of the line and may include a person who acts for, or on behalf of, an owner as the owner's agent or delegate. (T&D/PE) 1025-1993r, 951-1996

(3) A single point of contact, identified by organization position. (T&D/PE/C/SE) 1074-1995s

(4) The individual, corporation, or organization that intends to use the shield and that is the ultimate source of the shielding requirement. (EMC/STCOORD) 299-1997

ownership State of a master that has arbitrated and won the bus and has not yet lost a bus arbitration contest. (C/MM) 1196-1987w

oxidant A chemical element or compound that is capable of being reduced. *See also:* electrochemical cell. (IA/APP) [73]

oxidation (electrochemical cells and corrosion) Loss of electrons by a constituent of a chemical reaction. *See also:* electrochemical cell. (IM/HFIM) [40]

oxidation inhibitor (insulating oil) Any substance added to an insulating fluid to improve its resistance to deleterious attack in an oxidizing environment. For example, 2, 6-ditertiary-butyl para-cresol or 2,6-ditertiary-butyl phenol, or both, are sometimes added to petroleum insulating oil to improve its oxidation stability. (PE/TR) 637-1985r

oxide-cathode *See:* oxide-coated cathode.

oxide-coated cathode (oxide-cathode) (thermionics) A cathode whose active surface is a coating of oxides of alkaline earths on a metal. *See also:* electron emission. (ED) [45], [84]

oxidizing (electrotyping) The treatment of a graphited wax surface with copper sulfate and iron filings to produce a conducting copper coating. (PE/EEC) [119]

oxygen-concentration cell A galvanic cell resulting primarily from differences in oxygen concentration. *See also:* electrolytic cell. (IA) [59]

oxygen index The minimum concentration of oxygen, expressed as volume percent, in a mixture of oxygen and nitrogen that will just support flaming combustion of a material initially at room temperature, referred to in battery manufacturers' flammability designations for battery cases. *Synonym:* limiting oxygen index. (IA/PSE) 446-1995

oxygen recombination The process by which oxygen is generated at the positive plates and ultimately recombined with hydrogen ions at the negative plates and converted back to water. In this process, hydrogen gas formation and evolution are suppressed. (SB) 1189-1996

oxygen recombination efficiency The amount of oxygen ultimately converted to water at the negative plates expressed as a percentage of the total amount of oxygen produced at the positive plates:

$$O_{2\text{eff}} = \frac{O_2 \text{ converted to water at the negative plates}}{\text{total } O_2 \text{ produced at the positive plates}} \times 100$$

(SB) 1189-1996

ozone A colorless gas, $0s_3$, with a penetrating odor; an allotropic form of oxygen. *Note:* Corona and other electrical discharges dissociate the oxygen molecule, which can cause the following reactions:

$$O_2 \rightarrow O + O$$

$$O + O_2 \rightarrow O_3$$

(T&D/PE) 539-1990

ozone-producing radiation (illuminating engineering) Ultraviolet energy shorter than 220 nm (nanometers) that decomposes oxygen O_2, thereby producing ozone O_3. Some ultraviolet sources generate energy at 184.9 nm, which is particularly effective in producing ozone. (EEC/IE) [126]