



GLOSSARY

abnormal environment

Environments in a weapon's stockpile-to-target sequence in which the weapon is not expected to retain full operational reliability. [Chapters 7, 8, 14]

active hedge

Warheads retained for deployment to manage technological risks in the Active Ready (AR) stockpile or to augment the AR. [Chapter 4]

active logistics

Warheads used to facilitate workflow and sustain the operational status of Active Ready (AR) or Active Hedge quantities. [Chapter 4]

active ready

Warheads which are operational and designated available for wartime employment planning. [Chapter 4]

active stockpile

Warheads maintained in an operational status. [Chapters 4, 7]

air blast

A dense wall of air caused by the rapid expansion of the fireball following a nuclear detonation initially traveling at several times the speed of sound. [Chapters 9, 13]

alteration (Alt)

Material change to, or a prescribed inspection of, a nuclear weapon or major assembly that does not alter its operational capability but is sufficiently important to the user (regarding assembly, maintenance, storage, or test operations) as to require controlled application and identification. [Chapters 4, 7]

atom

Smallest (or ultimate) particle of an element that still retains the characteristics of that element. Every atom consists of a positively charged central nucleus, which carries nearly all the mass of the atom, surrounded by a number of negatively charged electrons, so that the whole system is electrically neutral. [Chapters 13, 15]

atomic bomb

Term sometimes applied to a nuclear weapon utilizing fission energy only. First term used for a nuclear weapon. [Chapters 1, 3, 11, 13, 14]

atomic mass

Number of protons plus neutrons in the nucleus of an atom. [Chapter 13]

atomic number

Number of protons in the nucleus of an atom. [Chapter 13]

attribution

The confluence of intelligence, investigative, and forensics information to arrive at the nature, source, perpetrator, and pathway of an attempted or actual nuclear or radiological attack. [Chapters 11, 17]

authorization

Legislation that establishes, changes, or continues a federal program or agency. Authorizing legislation is normally a prerequisite for appropriations. [Chapters 1, 2, 4, 6, 7, 8, 10, 17, 18]

ballistic missile

Any missile that does not rely upon aerodynamic surfaces to produce lift and consequently follows a ballistic trajectory when thrust is terminated. [Chapters 1, 2, 4, 8, 9, 12, 15, 16]

blackout

Interference with radio and radar waves from an ionized region of the atmosphere following a nuclear detonation in the atmosphere. [Chapter 13]

blast wave

Sharply defined wave of increased pressure rapidly propagated through a surrounding medium from a center of detonation or similar disturbance. [Chapters 9, 13, 14]

cascade

Series of enrichment stages, with each stage consisting of an apparatus designed to enrich uranium by isotope separation. [Chapter 15]

channel

Joint arrangement between the United States and a foreign government for the exchange of specific project or program-type information. [Chapter 10]

component

Assembly or any combination of parts, subassemblies, and assemblies mounted together in manufacture, assembly, maintenance, or rebuild. [Chapters 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 13, 15, 16, 17, 18]

counterproliferation

Efforts to prevent or interdict the illicit transfer of materials, devices, or information. [Chapters 10, 11, 12]

criticality

Term used in reactor physics to describe the state when the number of neutrons released by fission is exactly balanced by the neutrons being absorbed (by the fuel and poisons) and escaping the reactor core. A reactor is said to be “critical” when it achieves a self-sustaining nuclear chain reaction, as when the reactor is operating. [Chapters 4, 13, 15]

critical mass

Minimum amount of fissionable material capable of supporting a chain reaction under precisely specified conditions. [Chapter 13]

cruise missile

Guided missile that travels at an approximately constant velocity for most of its flight and relies on the dynamic reaction of air for lift and on propulsion forces to balance drag. [Chapters 3, 4, 12]

decision conferencing

A means for senior leaders to provide advice to the President regarding nuclear weapon employment. [Chapter 2]

Defense Acquisition System

Management process that guides all DoD acquisition programs. DoD Directive 5000.1, The Defense Acquisition System, provides the policies and principles that govern the defense acquisition system. DoD Instruction 5000.2, Operation of the Defense Acquisition System, establishes the management framework that implements these policies and principles. [Chapters 16, 17]

Defense Planning Guidance

Document issued by the Secretary of Defense that provides firm guidance in the form of goals, priorities, and objectives, including fiscal constraints, for the development of the Program Objective Memorandums by the Military Branches and defense agencies. [Chapters 9, 16]

delivery platform

Any structure or system on which a weapon can be mounted/loaded (e.g., B-2A). [Chapters 4, 16]

delivery system

Term used for the delivery platform (e.g., SSBN) and the delivery vehicle (e.g., Trident D5 LE Missile). [Chapters 1, 2, 3, 4, 6, 7, 8, 9, 16, 17]

delivery vehicle

A portion of the delivery system which provides the means of delivery of a nuclear warhead or bomb (e.g., ALCM). [Chapters 3, 4, 7, 9, 12, 15]

depleted uranium

Quantity of uranium having a smaller percentage of U-235 than found in natural uranium, i.e., less than 0.72 percent of the total uranium. [Chapters 5, 15]

deuterium

Isotope of hydrogen with one proton and one neutron in the nucleus of each atom. [Chapters 13, 15]

disassembly

Process of taking apart a nuclear warhead and removing one or more subassemblies, components, or individual parts. Disassembly may be required to support quality assurance inspection, reliability testing, or subassembly/component exchange as a part of scheduled maintenance or refurbishment; it is normally done in a manner that permits re-assembly with either the original or replacement subassemblies/components. [Chapters 4, 5, 8]

dismantlement

Process of taking apart a nuclear warhead and removing all subassemblies, components, and individual parts for the purpose of physical elimination of the nuclear warhead. Dismantled subassemblies, components, and parts, including nuclear materials, may be put into a disposal process, may be used again in another warhead, or may be held in strategic reserve. [Chapters 4, 5, 7, 8]

dynamic pressure

Air pressure that results from the mass air flow (or wind) behind the shock front of a blast wave. [Chapter 9, 13]

effects survivability

Ability to withstand, survive, or mitigate the primary (blast, thermal, and prompt radiation) and secondary (delayed radiation, fire, etc.) effects of nuclear weapons on personnel, equipment, and systems. [Chapter 9]

effects testing

Subjecting objects to environments meant to replicate given nuclear effects to measure the response of the object to the energy output of a nuclear weapon. [Chapters 9, 14]

electromagnetic pulse

Electromagnetic radiation from a strong electronic pulse, most commonly caused by a nuclear explosion that may couple with electrical or electronic systems to produce damaging current and voltage surges. [Chapters 2, 9, 12, 13, 14, 17]

electromagnetic radiation

Radiation including visible light, radio waves, gamma rays, and X-rays where electric and magnetic fields vary simultaneously. [Chapters 9, 11, 12, 13, 15]

electron

Particle of very small mass with a negative charge. [Chapters 9, 13]

element

Any of the more than 100 known substances (of which 92 occur naturally) that cannot be separated into simpler substances and that by themselves or in combination constitute all matter. [Chapters 5, 13, 15]

enacted appropriations

Appropriations bills in which a definite amount of money is set aside to pay incurred or anticipated expenditures. [Chapter 16]

enhanced nuclear detonation safety

System of safety features engineered into modern nuclear weapons resulting in a one-in-a-billion chance of a weapon detonating in a normal environment and a one-in-a-million chance of a weapon detonating in an abnormal environment when it is not supposed to detonate. [Chapters 8, 14]

enriched uranium

Quantity of uranium having a larger percentage of U-235 than found in natural uranium, i.e., greater than 0.72 percent of the total uranium. [Chapters 5, 15]

enrichment stage

A single unit apparatus designed to enrich uranium by isotope separation. [Chapter 15]

fallout

Precipitation to Earth of radioactive particulate matter from a nuclear cloud; also applied to the particulate matter itself. [Chapter 2, 9, 12, 13]

fire-resistant pit

Primary in a thermonuclear weapon in which the fissile material is encased in a metal shell with a high melting point and is designed to withstand exposure to jet fuel fire of 1,200 degrees Celsius for several hours. Fire-resistant pits are only used in weapons with insensitive high explosive. [Chapters 8, 14]

fireball

Luminous sphere of hot gases that forms a few millionths of a second after detonation of a nuclear weapon or nuclear device and immediately starts expanding and cooling. [Chapters 13, 14]

fissile

Capable of being split by slow (low-energy) neutrons as well as by fast (high-energy) neutrons. [Chapters 4, 5, 11, 13, 14, 15]

fissile component fabrication

Forming of processed material into a size and shape desirable for a given design. [Chapter 15]

fissile material

Material consisting primarily of atoms of fissile isotopes, i.e., those atoms of certain heavy elements that have a high probability of undergoing immediate fission of the nucleus by absorbing neutrons of any energy level. Examples of fissile material are U-235, U-233, and Pu-239. [Chapters 11, 13, 14, 15]

fission

Process whereby the nucleus of a particular heavy element splits into (generally) two nuclei of lighter elements, with the release of substantial amounts of energy. [Chapters 5, 8, 11, 13, 14, 15, 17, 18]

fissionable material

Material consisting primarily of isotopes whose atoms can undergo fission, but only have a high probability of fission when interacting with neutrons of some energy levels. [Chapters 11, 13]

flag-level

Term applied to an officer holding the rank of general, lieutenant general, major general, or brigadier general in

the U.S. Army, Air Force, or Marine Corps or admiral, vice admiral, or rear admiral in the U.S. Navy or Coast Guard. Also may be used for a government official in the senior executive level (SES) grades. [Chapter 6]

flash blindness

The impairment of vision resulting from an intense flash of light. It includes temporary or permanent loss of visual functions and may be associated with retinal burns. [Chapter 13]

force execution/battle damage assessment

Entails measuring the physical and functional effects of target engagement, assessing the extent of collateral damage, and examining the overall impact on adversary military activities. [Chapter 2]

force planning

Combines target development and weaponeering analysis with available forces marking a shift from analysis to operational planning. [Chapter 2]

forward deployment

Presidentially approved warheads positioned in theater, such as those in support of NATO. [Chapter 4]

fusion

The process whereby the nuclei of light elements, especially the isotopes of hydrogen (deuterium and tritium), combine to form the nucleus of a heavier element and release a substantial amount of energy and a high-energy neutron. [Chapters 5, 8, 9, 13, 14, 15]

gamma rays

Electromagnetic radiation of high photon energy originating in atomic nuclei and accompanying many nuclear reactions (e.g., fission, radioactivity, and neutron capture). [Chapters 9, 11, 13]

gun assembly weapon

Device in which two or more pieces of fissionable material, each less than a critical mass, are brought together very rapidly so as to form a supercritical mass that can explode as the result of a rapidly expanding fission chain. [Chapters 11, 13, 15]

half-life

Time required for the activity of a given radioactive species to decrease to half of its initial value due to radioactive decay. [Chapters 13, 15]

hardening

Employment of any design or manufacturing technique that increases the ability of an item to survive the effects of a nuclear environment, including personnel, facilities, and/or equipment. [Chapters 9, 13, 17]

heavy-water reactor

A reactor which uses natural uranium and specially produced 'heavy' water (processed to remove salt and other minerals as well as the ¹H protium atoms from the water molecules which are replaced with ²H deuterium atoms) to moderate neutrons. [Chapter 15]

height of burst

Vertical angle between the base of a target and the point of burst. [Chapters 2, 9, 13, 17]

igloo

Unofficial but common term to mean a munitions storage bunker, usually protected by several feet (or more) of earth on all sides except for the door, which is normally constructed from large amounts of thick heavy metal. [Chapter 4]

ignition

In theory, the conditions required to heat and compress a fuel of deuterium and tritium to pressures and temperatures that will ignite and burn the fuel to produce an energy gain. [Chapters 5, 9, 14]

implosion weapon

Device in which a quantity of fissile material, less than a critical mass, has its volume suddenly decreased by compression so that it becomes supercritical and an explosion can take place. [Chapters 13, 15]

improvised nuclear device

Crude nuclear device built from the components of a stolen or bought nuclear weapon or built from scratch using nuclear material (plutonium or HEU). [Chapters 11, 17, 18]

inactive hedge

Warheads retained for deployment to manage technological risks in the Active Ready (AR) stockpile or augment the AR stockpile. [Chapter 4]

inactive logistics

Warheads used for logistical and surveillance purposes. [Chapter 4]

inactive reserve

Warheads retained to provide long-term response for risk mitigation of technical failings in the stockpile. [Chapter 4]

inactive stockpile

Warheads maintained in a nonoperational status and do not contain limited life components (LLC). [Chapter 4]

induced radiation

Radiation produced as a result of exposure to radioactive materials, particularly the capture of neutrons. [Chapters 9, 13]

initial nuclear radiation

Radiation resulting from a nuclear detonation and emitted from the fireball within one minute after burst. Also called prompt nuclear radiation. [Chapters 9, 13]

insensitive high explosive

Type of explosives used in the primary of some modern thermonuclear weapons that are remarkably insensitive to shock, high temperatures, and impact when compared to conventional high explosives. [Chapters 8, 14]

ion

Atom that has gained or lost an electron and thus carries an electrical charge. [Chapter 9]

ionizing radiation

Electromagnetic radiation (gamma rays or X-rays) or particulate radiation (alpha particles, beta particles, neutrons, etc.) capable of producing ions directly or indirectly in its passage through, or interaction with, matter. [Chapters 9, 13, 15]

isotopes

Atoms of the same element that have identical atomic numbers (same number of protons) but a different atomic mass (different numbers of neutrons). [Chapters 5, 11, 13, 15]

life cycle

Total phases through which a nuclear weapon passes from the time it is initially developed until the time it is either consumed in use or retired, dismantled, or disposed of. [Chapters 4, 6, 7, 8, 9, 17]

life extension program (LEP)

Life extension activities addressing aging and performance issues within the stockpile as a result of use beyond the originally designed component/system life span. [Chapters 3, 4]

light-water reactor

A reactor which uses low-enriched uranium as a fuel and natural water to moderate neutrons. [Chapter 15]

limited-life component

Weapon component that degrades with age and must be replaced periodically. [Chapters 4, 7, 15]

low-enriched uranium

Quantity of uranium enriched to any level above natural uranium (greater than 0.72 percent U-235), but less than 20 percent. [Chapters 5, 11, 12, 15]

major assembly

Term for a complete nuclear warhead, usually used in the process of approving or revalidating the design. [Chapter 7]

markup

Process by which congressional committees and subcommittees debate, amend, and rewrite proposed legislation. [Chapter 16]

material security

Measures and policies aimed at preventing loss or theft of materials of concern. [Chapter 11]

military characteristics

Required characteristics of a nuclear weapon upon which depend its ability to perform desired military functions, including physical and operational characteristics but not technical design characteristics. [Chapters 5, 6, 7, 8]

modification (Mod)

Change in operational capability that results from a design change that affects delivery (employment or utilization), fuzing, ballistics, or logistics. [Chapters 4, 5, 6, 7, 9, 14, 16]

munition

Complete device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological, or chemical material for use in military operations, including demolitions. Also called ammunition. [Chapters 3, 4, 15, 17, 18]

mutual defense agreement (MDA)

Allows for classified information exchange between the two government signatories for the purposes of promoting mutual defense and security. [Chapter 10]

National Defense Authorization Act (NDAA)

Legislation voted on by Congress for each fiscal year to determine and permit the budget for DoD and national security programs maintained by DOE. [Chapters 1, 4, 6, 7, 16, 17]

national security

Collective term encompassing both national defense and foreign relations of the United States. Specifically, the condition provided by: a) a military or defense advantage over any foreign nation or group of nations; b) a favorable foreign relations position; or c) a defense posture capable of successfully resisting hostile or destructive action from within or without, overt or covert. [Chapters 1, 4, 5, 6, 7, 8, 10, 12, 13, 14, 16, 17, 18]

near-surface burst

Detonation in the air that is low enough for the immediate fireball to touch the ground. [Chapter 13]

neutron

Neutral particle (i.e., with no electrical charge) of approximately unit mass, present in all atomic nuclei, except those of ordinary (light) hydrogen. [Chapters 4, 5, 9, 11, 12, 13, 15]

New Material and Stockpile Evaluation (NMSE) program

Assess the safety, security, performance, and reliability of the current condition of active and inactive stockpile. [Chapter 4]

nonproliferation

Actions (e.g., diplomacy, arms control, multilateral agreements, threat reduction assistance, and export controls) taken to prevent the proliferation of weapons of mass destruction by dissuading or impeding access to, or distribution of, sensitive technologies, material, and expertise. [Chapters 4, 5, 10, 11, 12, 16]

normal environment

Expected logistical and operational environments as defined in a weapon's stockpile-to-target sequence and military characteristics in which the weapon is required to survive without degradation in operational reliability or safety performance. [Chapters 8, 14]

nuclear command and control (NC2)

Exercise of authority and direction by the President, as commander in chief through established command lines over nuclear weapon operations of military forces, as chief executive over all government activities that support those operations, and as head of state over required multinational actions that support those operations. [Chapters 2, 9]

Nuclear Command and Control System (NCCS)

Collection of activities, processes, and procedures performed by appropriate commanders and support personnel who, through the chain of command, allow for senior-level decisions on nuclear weapons employment to be made based on relevant information and subsequently allow for those decisions to be communicated to forces for execution. [Chapters 2, 6, 9, 17]

nuclear command, control, and communications (NC3)

Facilities, equipment, communications, procedures, and personnel that enable presidential nuclear direction to be carried out. [Chapters 1, 2, 3, 17]

nuclear deterrent

A desired strategic effect of the U.S. nuclear offensive and defensive capability seeking to assure allies and dissuade adversaries regarding nuclear and strategic attack endeavors. [Chapters 1, 3, 17]

nuclear enterprise

Composite of DoD U.S. nuclear forces and elements, to include the deterrent forces of Air Force nuclear-capable bombers and fighters and associated nuclear weapons, as well as ICBMs and cruise missiles; the Navy's ballistic missile submarines and associated nuclear SLBMs; the nuclear infrastructure to build, maintain, and sustain the nuclear forces; U.S. nuclear-capable bases and scientific facilities; nuclear command and control; and military personnel, civilians, and contractors performing the nuclear mission. [Chapters 1, 5, 6, 17]

nuclear fuel cycle

The process required to obtain nuclear fuel for use in a nuclear reactor. [Chapters 11, 12, 15]

Nuclear Posture Review (NPR)

Legislatively-mandated review that establishes U.S. nuclear policy, strategy, capabilities, and force posture for five to ten years into the future. [Chapters 1, 2, 11, 17]

nuclear radiation

Particulate and electromagnetic radiation emitted from atomic nuclei in various nuclear processes. The important nuclear radiations, from a nuclear weapon standpoint, are alpha and beta particles, gamma rays, and neutrons. [Chapters 2, 9, 13]

Nuclear Security Enterprise (NSE)

Composite of DOE/NNSA nuclear weapons complex, to include the laboratories, plants, test sites, science and technology, computing tools, and federal and contractor personnel. [Chapter 5]

nuclear survivability

Ability of personnel, equipment, and systems to withstand, survive, or mitigate the effects of nuclear weapons. [Chapters 9, 17]

nuclear threat device

Improvised nuclear or radiological device, a foreign nuclear weapon of proliferation concern, or any nuclear device that may have fallen outside of a foreign nuclear weapon state's custody. [Chapters 10, 11, 13]

nuclear threat reduction (NTR)

Refers to the integrated and layered activities across the full range of U.S. government efforts to prevent and counter radiological and nuclear incidents. [Chapters 10, 11]

nuclear triad

The U.S. nuclear triad consists of strategic forces operating at sea, on land, and in the air. Today's nuclear triad consists of: 14 SSBNs armed with 240 SLBMs; 400 land-based ICBMs; and 60 nuclear-capable heavy bomber aircraft capable of delivering gravity bombs and cruise missiles. [Chapters 1, 3, 4, 14]

nuclear weapon

Complete major assembly (i.e., implosion, gun, or thermonuclear) in its intended ultimate configuration, or in a disassembled configuration for a temporary period of time, which, upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy. [All Chapters]

nuclear weapons surety

Procedures and actions contributing to the safety, security, and control of nuclear weapons, and to the assurance that there will be no nuclear weapon accidents, incidents, or unauthorized weapon detonations, nor any degradation of weapon performance. [Chapters 6, 8]

nuclear weapon system safety

The application of engineering and management principles, criteria, and techniques to protect nuclear weapons against the risks and threats inherent in their environments within the constraints of operational effectiveness, time, and cost throughout all phases of their life cycle. [Chapters 7, 8]

Nuclear Weapon-Free Zone (NWFZ)

Prohibits the stationing, testing, use, and development of nuclear weapons inside a particular geographical region. [Chapter 12]

Nuclear Weapons Council (NWC)

Legislatively mandated body comprised of DoD and DOE members to ensure safety, security, and effectiveness of the nuclear weapons stockpile including multiple aspects of budget, maintenance, development, etc. [Chapters 4, 6, 17]

nuclear weapons design safety

Features meant to provide high assurance that an accident, or other abnormal environment, will not produce a nuclear detonation. [Chapter 8]

nuclear yields

Energy released in the detonation of a nuclear weapon, measured in terms of the kilotons or megatons of TNT required to produce the same energy release. Yields are categorized as follows: very low: less than 1 kiloton; low: 1 kiloton to 10 kilotons; medium: over 10 kilotons to 50 kilotons; high: over 50 kilotons to 500 kilotons; and very high: over 500 kilotons. [Chapters 1, 2, 4, 9, 11, 12, 13, 14, 15]

nucleus

Small, central, positively charged region of an atom, which carries essentially all the mass. Except for the nucleus

of ordinary (light) hydrogen, which is a single proton, all atomic nuclei contain both protons and neutrons. [Chapters 11, 13, 15]

one-point safety

Probability of achieving a nuclear yield greater than 4 pounds TNT equivalent in the event of a one-point initiation of the weapon's high explosive must not exceed one in a million. [Chapter 8]

P3

A trilateral partnership between the United States, United Kingdom, and France to maintain a program of enhanced technical collaboration on a wide range of NTR subjects. [Chapter 10]

peak overpressure

Maximum value of overpressure at a given location that is generally experienced at the instant the shock (or blast) wave reaches that location. [Chapter 9]

Phase 6.X Process

Established in 2000, this process focuses on developing and fielding of replacement non-nuclear components for the nuclear stockpile; the original Nuclear Weapons Life-Cycle Process focuses on development of a complete new warhead, including new nuclear components. [Chapter 7]

phase process

Refers to the complete life cycle of the weapons from conceptualization through retirement and dismantling. Generally encompasses seven steps: concept, design, develop, produce, assess/repair, maintain, retire, dismantle/dispose, and replace. [Chapter 7]

photon

Unit of electromagnetic radiation consisting of pure energy and zero mass. [Chapters 9, 11, 13]

power reactor

Nuclear reactor that operates to generate electricity; plutonium produced as a part of the spent fuel is not intended to be used for nuclear weapons. [Chapters 5, 12, 15]

production reactor

Nuclear reactor designed to produce plutonium for use in nuclear weapons. Most also generate electricity that can be used. [Chapter 15]

Project Officers Groups (POGs)

Joint DoD-NNSA groups associated with each warhead-type, created toward the beginning of a weapon development program and charged with the responsibility to coordinate the development and assure the compatibility of a warhead-type with its designated delivery system(s). [Chapter 6]

prompt radiation

Gamma rays produced in fission and as a result of other neutron reactions and nuclear excitation of the weapon materials appearing within a second or less after a nuclear explosion. The radiations from these sources are known either as prompt or instantaneous gamma rays. [Chapters 9, 13]

proton

Particle with approximately one atomic mass unit carrying a unit positive charge; it is identical physically with the nucleus of the ordinary (light) hydrogen atom. All atomic nuclei contain protons. [Chapters 9, 13]

radioactivity

Spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nuclei of unstable isotopes. [Chapters 13, 15]

reactor-grade plutonium

Quantity of plutonium with the percentage of heavier isotopes (above Pu-239) more than 7 percent but less than 15 percent. [Chapter 15]

readiness state

Refers to the configuration of weapons in the active and inactive stockpiles. [Chapter 4]

reentry vehicle or reentry body

A reentry vehicle (term used by the Air Force) or reentry body (the term used primarily by the Navy SLBM program) protects a warhead as it re-enters the atmosphere from space; it can carry only one warhead. [Chapters 1, 9, 12]

reliability

Probability, without regard to countermeasures, that a nuclear weapon, subassembly, component, or other part will perform in accordance with its design intent or requirements. [Chapters 2, 4, 5, 6, 8, 9, 10, 15, 17]

reprocessing

Activity conducted to extract plutonium from the spent fuel of a nuclear reactor. [Chapter 15]

residual radiation

Nuclear radiation caused by fallout, artificial dispersion of radioactive material, or irradiation that results from a nuclear explosion and persists longer than one minute after burst. [Chapters 9, 13]

retired warhead

Warheads no longer part of the stockpile and set for release for disassembly. [Chapter 4]

special nuclear material

Defined by the Atomic Energy Act of 1954 as plutonium or uranium enriched in the isotopes of U-233 or U-235. [Chapters 4, 5, 8, 11, 17, 18]

staged weapon

Weapon in which energy from the primary initiates the explosion of a secondary. [Chapters 13, 15]

stockpile or nuclear stockpile

Quantity of weapons necessary for U.S. national security including operational weapons and logistical warheads. [Chapters 1, 4, 6, 7, 8, 11, 12, 14, 16, 17, 18]

stockpile evaluation

Efforts taken to plan for and conduct tests of the stockpile for assurance. [Chapters 4, 7]

stockpile hedge

Designated warheads to counter unforeseen significant events adversely affecting U.S. nuclear weapons. [Chapter 4]

stockpile management

Sum of the activities, processes, and procedures for the design, development, production, fielding, maintenance, repair, storage, transportation, physical security, employment (if directed by the President), dismantlement, and disposal of U.S. nuclear weapons and their associated components and materials. [Chapters 4, 14, 17]

stockpile stewardship

Processes or programs aimed at increasing the understanding of the elements of the current and future stockpile. [Chapters 1, 4, 5, 6, 17]

stockpile surveillance

Review of stockpile for purpose of evaluation and quality assurance. [Chapters 4, 6]

stockpile sustainment

Encompasses the refurbishment of existing warheads and the reuse or replacement of nuclear and non-nuclear components in order to maintain the security, safety, reliability, and effectiveness of the nuclear weapon stockpile. [Chapters 6, 7, 17]

stockpile-to-target sequence

1) Order of events involved in removing a nuclear weapon from storage and assembling, testing, transporting, and delivering it on the target. 2) Document that defines the logistic and employment concepts and related physical environments involved in the delivery of a nuclear weapon from the stockpile to the target. It may also define the logistic flow involved in moving nuclear weapons to and from the stockpile for quality assurance testing, modification and retrofit, and the recycling of limited life components. [Chapters 6, 8]

strategic collaborations

Mechanisms categorized by information type for technical exchanges of information between signatories to the U.S./UK Mutual Defense Agreement. [Chapter 10]

subcritical

Mass of fissile material below the amount necessary to cause a self-sustaining nuclear chain reaction. [Chapters 4, 13, 15]

supercritical mass

Quantity of fissionable material needed to support a multiplying chain reaction. [Chapters 11, 13, 15]

surety

Materiel, personnel, and procedures that contribute to the security, safety, and control of nuclear weapons and to the assurance that there will be no nuclear weapon accidents, incidents, unauthorized weapon detonations, or degradation in performance at the target. [Chapters 5, 6, 8, 10, 17]

surveillance

Activities involved in making sure nuclear weapons continue to meet established safety, security, and reliability standards. [Chapters 2, 4, 5, 6, 7, 11, 12, 14]

system survivability

Ability to withstand, survive, or mitigate the effects of nuclear weapons on systems (i.e., communication or weapon operating in a nuclear environment) across a range of potential environmental exposures (i.e., atmospheric, in-flight, near-earth surface). [Chapter 9]

target development

Part of the nuclear planning process, based on analysis of the strategic environment as well as the identification of adversary weaknesses that, if exploited, would help achieve U.S. military goals and objectives. [Chapter 8]

technical nuclear forensics (TNF)

Refers to the analysis and characterization of pre- and post-detonation radiological or nuclear materials, devices, and debris as well as prompt effects from a nuclear detonation. Used in conjunction with law enforcement and intelligence information to identify those responsible for the planned or actual attack. [Chapters 10, 11, 12]

thermal radiation

1) Heat and light produced by a nuclear explosion. 2) Electromagnetic radiation emitted from a heat or light source as a consequence of its temperature; it consists essentially of ultraviolet, visible, and infrared radiations. [Chapters 9, 13, 14]

thermonuclear

Refers to the process (or processes) in which very high temperatures are used to bring about the fusion of light nuclei such as those of hydrogen isotopes (e.g., deuterium and tritium) with the accompanying release of energy and high-energy neutrons. [Chapters 13, 14, 15, 17, 18]

TNT equivalent

Measure of the energy released from the detonation of a nuclear weapon or from the explosion of a given quantity of fissionable material in terms of the amount of TNT that could release the same amount of energy when exploded. [Chapter 8]

Transclassified Foreign Nuclear Information (TFNI)

Information from any intelligence source concerning the nuclear energy programs of foreign governments that was removed from the RD category (by transclassification) under section 142(e) of the Atomic Energy Act by past joint agreements between DOE and the Director of Central Intelligence or past and future agreements with the Director of National Intelligence. [Chapter 18]

transient radiation effects on electronics (TREE)

Effects on electronics that are exposed to transient gammas, neutrons, and X-rays. [Chapters 9, 13]

tritium

Radioactive isotope of hydrogen consisting of one proton and two neutrons in the nucleus; it is produced in nuclear reactors by the action of neutrons on lithium nuclei. [Chapters 4, 5, 7, 13, 15]

two-person rule

Continuous surveillance and control of positive control material at all times by a minimum of two authorized individuals, each capable of detecting incorrect or unauthorized procedures with respect to the task being performed and each familiar with established security requirements. [Chapter 8]

uranium enrichment

Process of isotope separation increasing the percentage of uranium-235 atoms in any given amount of uranium. [Chapters 5, 11, 12, 15]

use control

Positive measures that allow the authorized use and prevent or delay unauthorized use of nuclear weapons. Use control is accomplished through a combination of weapon system design features, operational procedures, security, and system safety rules. [Chapters 7, 8, 17, 18]

warhead

The part of a missile, projectile, torpedo, rocket, or other munition that contains either the nuclear or thermonuclear system, high explosive system, chemical or biological agents, or inert materials intended to inflict damage. [All Chapters]

weaponeering assessment

Part of the nuclear planning process, that considers the characteristics of nuclear systems against the characteristics of targets and seek to identify applications of weapons on targets that would succeed in delaying, disrupting, disabling, or destroying critical enemy forces or resources. [Chapter 2]

weaponization

Weaponization includes all of the activities required to research, develop, test, evaluate, produce, and maintain nuclear weapons components, including those that will interface with weapon system delivery vehicles, other than the production of fissile materials and the fissile component. [Chapter 15]

weapons-grade highly enriched uranium

Quantity of uranium enriched to 90 percent or higher. [Chapter 15]

weapons-grade plutonium

Quantity of plutonium with the percentage of heavier isotopes (above Pu-239) not greater than 7 percent, and the percentage of Pu-239 is at least 93 percent or higher. [Chapters 11, 15]

weapon system

Combination of one or more weapons with all related equipment, materials, services, personnel, and means of delivery and deployment (if applicable) required for self-sufficiency. [Chapters 2, 4, 5, 6, 7, 8, 9, 12, 17]

x-ray

Electromagnetic radiations of high energy having wavelengths shorter than those in the ultraviolet region. [Chapters 5, 9, 12, 14, 17]

yield

Total effective energy released in a nuclear (or atomic) explosion. It is usually expressed in terms of the equivalent tonnage of TNT required to produce the same energy release in an explosion. [Chapters 1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 18]