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## ACRONYMS

<b>AC</b>	Administrative Control
<b>AIHA</b>	American Industrial Hygiene Association
<b>AIS</b>	Air Intake Shaft
<b>ALARA</b>	As Low As Reasonably Achievable
<b>ANS</b>	American Nuclear Society
<b>ANSI</b>	American National Standard Institute
<b>ARF</b>	Airborne Release Fraction
<b>ARMS</b>	Area Radiation Monitors
<b>ASME</b>	American Society of Mechanical Engineers
<b>BLM</b>	Bureau of Land Management
<b>BR</b>	Breathing Rate
<b>Bq</b>	Becquerel
<b>C&amp;C</b>	Consultation and Cooperation
<b>CA</b>	Controlled Area
<b>CAO</b>	Carlsbad Area Office (DOE)
<b>CAM</b>	Continuous Air Monitor
<b>CCA</b>	Consultation and Cooperation Agreement
<b>CCDF</b>	Complimentary Cumulative Distribution Function
<b>CCTV</b>	Closed Circuit Television
<b>CD</b>	Containers Damaged
<b>CEDE</b>	Committed Effective Dose Equivalent
<b>CFR</b>	Code of Federal Regulations
<b>CH</b>	Contact Handled
<b>Ci</b>	Curie
<b>CI</b>	Container Inventory
<b>CMR</b>	Central Monitoring Room
<b>CMS</b>	Central Monitoring System
<b>D&amp;D</b>	Decontamination and Decommissioning
<b>DAC</b>	Derived Air Concentration
<b>DBA</b>	Design Basis Accident
<b>DBE</b>	Design Basis Earthquake
<b>DBT</b>	Design Basis Tornado
<b>DCF</b>	Dose Conversion Factor
<b>DOE</b>	Department of Energy
<b>DOE-EM</b>	Department of Energy, Office of Environmental Restoration
<b>DOI</b>	Department of Interior
<b>DOP</b>	Diocetylphthalate
<b>DOT</b>	Department of Transportation
<b>DR</b>	Damage Ratio
<b>ECO</b>	Engineering Change Order
<b>EEG</b>	Environmental Evaluation Group
<b>EEGL</b>	Emergency Exposure Guidance Level
<b>EFB</b>	Exhaust Filter Building
<b>EOC</b>	Emergency Operations Center
<b>EPA</b>	Environmental Protection Agency
<b>ERDA</b>	Energy Research and Development Administration
<b>ERPG</b>	Emergency Response Planning Guideline

## ACRONYMS

<b>ESH</b>	Environment, Safety, and Health
<b>ERT</b>	Emergency Response Team
<b>FAS</b>	Fixed Air Sampler
<b>FEP</b>	Features, Events, and Processes
<b>FGE</b>	Fissile Gram Equivalent
<b>FEIS</b>	Final Environmental Impact Statement
<b>FLIRT</b>	First Line Initial Response Team
<b>FMEA</b>	Failure Mode and Effects Analysis
<b>FSEIS</b>	Final Supplement Environmental Impact Statement
<b>FY</b>	Fiscal Year
<b>GM</b>	General Manager
<b>GPDD</b>	General Plant System Design Description
<b>HAZOP</b>	Hazard and Operability Study
<b>HEP</b>	Human Error Probability
<b>HEPA</b>	High Efficiency Particulate Filter
<b>HVAC</b>	Heat, Ventilation, and Air Conditioning
<b>ICRP</b>	International Commission on Radiological Protection
<b>ICV</b>	Inner Containment Vessel
<b>IDLH</b>	Immediately Dangerous to Life and Health
<b>LCO</b>	Limiting Condition for Operation
<b>LCS</b>	Limiting Control Setting
<b>LPF</b>	Leakpath Factor
<b>LPU</b>	Local Processing Unit
<b>LWA</b>	Land Withdrawal Act
<b>MAR</b>	Material at Risk
<b>MDC</b>	Minimum Detectable Concentrations
<b>MEI</b>	Maximally Exposed Individual
<b>MgO</b>	Magnesium Oxide
<b>MOC</b>	Management and Operating Contractor
<b>MOI</b>	Maximally Exposed Off-site Individual
<b>MRF</b>	Material Release Fraction
<b>MSDS</b>	Material Safety Data Sheet
<b>MSHA</b>	Mine Safety and Health Administration
<b>NFPA</b>	National Fire Protection Agency
<b>NIST</b>	National Institute of Science and Technology
<b>NMBMMR</b>	New Mexico Bureau of Mines and Mineral Resources
<b>NMDG&amp;F</b>	New Mexico Department of Game and Fish
<b>NRB</b>	Nuclear Review Board
<b>NRC</b>	Nuclear Regulatory Commission
<b>NVP</b>	Natural Ventilation Pressure
<b>OHP</b>	Operational Health Physics
<b>ORNL</b>	Oak Ridge National Laboratory
<b>ORR</b>	Operational Readiness Review
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PABX</b>	Private Automatic Branch Exchange
<b>PA</b>	Public Address or Performance Assessment
<b>PEL</b>	Permissible Exposure limit

## ACRONYMS

<b>PE-Ci</b>	Plutonium Equivalent Curie
<b>ppmv</b>	Parts per Million Volume
<b>PSM</b>	Process Safety Management
<b>Pu</b>	Plutonium
<b>QA</b>	Quality Assurance
<b>QAPD</b>	Quality Assurance Program Description
<b>QC</b>	Quality Control
<b>RADCON</b>	Radiological Control
<b>RBP</b>	Radiological Baseline Program
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>rem</b>	roentgen equivalent man
<b>REMS</b>	Radiation Effluent Monitoring System
<b>RF</b>	Respirable Fraction
<b>RFAR</b>	Radio Fire Alarm Reporter
<b>RH</b>	Remote Handled
<b>RBA</b>	Radiological Buffer Area
<b>RMA</b>	Radioactive Material Area
<b>RMS</b>	Radiation Monitoring System
<b>ROD</b>	Record of Decision
<b>RWP</b>	Radiation Work Permit
<b>SAR</b>	Safety Analysis Report
<b>SCR</b>	Silicon Controlled Rectifier
<b>SDD</b>	System Design Descriptions
<b>SEIS</b>	Supplement Environmental Impact Statement
<b>SH</b>	Salt Handling Shaft
<b>SOP</b>	Standard Operating Procedure
<b>SL</b>	Safety Limit
<b>SNL</b>	Sandia National Laboratory
<b>SPDV</b>	Site and Preliminary Design Validation
<b>SPEGL</b>	Short-term Public Exposure Guidance Level
<b>SR</b>	Surveillance Requirement
<b>SRS</b>	Savannah River Site
<b>SSC</b>	System, Structure, and Component
<b>STD</b>	Standard
<b>Sv</b>	Sievert
<b>SWB</b>	Standard Waste Box
<b>TDOP</b>	Ten Drum Overpack
<b>TDS</b>	Total Dissolved Solids
<b>TEDE</b>	Total Effective Dose Equivalent
<b>TEEL</b>	Temporary Emergency Exposure Limit
<b>TLD</b>	Thermoluminescent Detector
<b>TLV-C</b>	Threshold Limit Value-Ceiling
<b>TLV-STEL</b>	Threshold Limit Value-Short Term Exposure Limit
<b>TLV-TWA</b>	Threshold Limit Value-Time Weighted Average
<b>TRUPACT</b>	Transuranic Package Transporter
<b>TRU</b>	Transuranic
<b>TSC</b>	Technical Support Contractor

**ACRONYMS**

<b>TSR</b>	Technical Safety Requirements
<b>U/G</b>	Underground
<b>UBC</b>	Uniform Building Code
<b>UPS</b>	Uninterruptible Power Supply
<b>USGS</b>	United States Geological Survey
<b>USQ</b>	Unreviewed Safety Questions
<b>VOC</b>	Volatile Organic Compound
<b>WAC</b>	Waste Acceptance Criteria
<b>WACC</b>	Working Agreement for Consultation and Cooperation
<b>WHB</b>	Waste Handling Building
<b>WIPP</b>	Waste Isolation Pilot Plant
<b>WWIS</b>	WIPP Waste Information System

**GLOSSARY OF TERMS**

**ABNORMAL CONDITION.** Any deviation from normal conditions that adversely affects or potentially adversely affects the safety performance of the facility.

**ACCEPTABLE KNOWLEDGE.** An EPA term which includes process knowledge and results from previous testing, sampling, and analysis associated with the waste. Acceptable knowledge includes information regarding the raw materials used in a process or operation, process description, products, and associated wastes. Acceptable knowledge documentation includes the site history and mission, site-specific processes or operations, administrative building controls, and all previous and current activities that generate a specific waste.

**ACCIDENT.** An unplanned sequence of events that results in undesirable consequences.

**ACCIDENT ANALYSIS.** For the purposes of implementing the USQ order, the term accident analysis refers to those bounding analyses selected for inclusion in the SAR. The accident analysis is the systematic development of numerical estimates of the expected consequence and frequency of potential accidents.

**ACTINIDE.** An element in the actinide series beginning with element 89 and continuing through element 103. All the transuranic nuclides considered in this document are actinides.

**ACTIVE INSTITUTIONAL CONTROL.** (1) Controlling access to a disposal site by any means other than passive institutional controls, (2) performing maintenance operations or remedial actions at a site, (3) controlling or cleaning up releases from a site, or (4) monitoring parameters related to disposal system performance (40 CFR § 191.12).

**ACTIVITY.** A measure of the rate at which a material emits nuclear radiation, usually given in terms of the number of nuclear disintegrations occurring in a given length of time. The unit of activity used in this document is the curie (Ci).

**ADMINISTRATIVE CONTROLS.** Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure the safe operation of the facility.

**AIR DISPERSION FACTOR.** The ratio of the average concentration of a hazardous constituent released into the atmosphere to its maximum concentration at or beyond the unit boundary.

**AIR IMMERSION.** The pathway of direct external dose from a passing cloud of dispersed radioactive material.

**AIR LOCK.** An intermediate chamber between zones of different static pressure.

**ALARA.** As Low As Reasonably Achievable; radiation protection program for minimizing personnel exposures.

**ALPHA PARTICLE.** A positively charged particle emitted in the radioactive decay of certain radionuclides. Made up of two protons and two neutrons bound together, it is identical to the nucleus of a helium atom. It is the least penetrating of the three common types of radiation; alpha, beta, and gamma radiation, but has the highest ionization factor.

**AMERICIUM-241.** A transuranic element resulting from the beta decay of plutonium-241.

**GLOSSARY OF TERMS**

**ATMOSPHERIC DISPERSION.** Movement of a contaminant due to the cumulative effect of the random motions of air.

**AUTHORIZATION BASIS.** Those aspects of the facility design basis and operational requirements relied upon by DOE to authorize operation. The authorization basis is described in the SAR and other safety analyses.

**BARRIER.** "[A]ny material or structure that prevents or substantially delays movement of water and/or radionuclides toward the accessible environment. For example, a barrier may be a geologic structure, a canister, a waste form with physical and chemical characteristics that significantly decrease the mobility of radionuclides, or a material placed over and around waste, provided that the material or structure substantially delays movement of water or radionuclides" (40 CFR § 191.12). Barriers also prevent or delay the movement of hazardous constituents.

**BETA PARTICLE.** A negatively charged particle emitted in the radioactive decay of certain radionuclides; a free electron.

**BECQUEREL.** A unit in the International System of Units (SI), of measurement of radioactivity equal to one transformation per second.

**BRINE.** Saline water containing calcium (Ca), sodium (Na), potassium (K), chlorides (Cl), and minor amounts of other elements.

**BOUNDING.** Producing greater consequences than other scenarios; or would bound the remainder of scenarios.

**CANISTER.** As used in this document, a container, usually cylindrical, for remotely handled TRU waste. The waste will remain in this canister during and after burial. A canister affords physical containment but not shielding; shielding is provided during shipment by a cask.

**CARCINOGEN.** An agent capable of producing or inducing cancer.

**CARCINOGENICITY.** The ability of a substance to cause the development of cancerous growths in living tissue. Such substances are usually grouped in two classifications: (1) those that are known to induce cancer in man or animals either by operational exposure in industry or by ingestion in feedstuffs and (2) those that have been found to cause cancer in animals under experimental conditions.

**CASK.** A massive shipping container providing shielding for highly radioactive materials and holding one or more canisters.

**CENTRAL MONITORING ROOM (CMR).** A room at the WIPP facility equipped to monitor alarm functions and provide reliable communications.

**CENTRAL MONITORING SYSTEM (CMS).** A computer system that monitors the WIPP facility instrumentation; operated from the Central Monitoring Room.



**GLOSSARY OF TERMS**

**COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE).** The sum of the committed dose equivalents to various organs or tissues in the body from radioactive material taken into the body, each multiplied by the tissue-specific weighting factor. Expressed in terms of rem (or sievert).

**CONCENTRATION.** The amount of a substance contained in a unit quantity (mass or volume) of a sample.

**CONSERVATIVE.** As a term used with predictions or estimates, "conservative" means one in which the uncertain inputs are used in a way that overestimates an adverse impact.

**CONSEQUENCE.** The direct, undesirable result of an accident sequence.

**CONSULTATION AND COOPERATION AGREEMENT.** An agreement that affirms the intent of the Secretary of Energy to consult and cooperate with the State of New Mexico with respect to State public health and safety concerns. The term "Agreement" means the July 1, 1981, Agreement for Consultation and Cooperation, as amended by the November 30, 1984, "First Modification," the August 4, 1987, "Second Modification," and the March 22, 1988, modification to the Working Agreement.

**CONTACT-HANDLED WASTE.** Transuranic waste with a surface dose rate not greater than 200 millirem per hour.

**CONTAINER INVENTORY.** The amount of radioactive or hazardous material within a container or source.

**CREEP.** A very slow, usually continuous, time-dependent movement of soil or rock; refers to the geologic phenomenon experienced as the gradual flow of salt under compressive loading.

**CREEP CLOSURE.** Closure of underground openings, especially openings in salt, by plastic flow of the surrounding rock under lithostatic pressure.

**CRITICALITY.** A state in which a self-sustaining nuclear chain reaction is achieved.

**DECOMMISSIONING.** Actions taken upon abandonment of the repository to reduce potential environmental, health, and safety impacts, including repository sealing as well as activities to stabilize, reduce, or remove radioactive materials or demolish surface structures.

**DECOMMISSIONING PHASE.** The term "decommissioning phase" means the period of time beginning with the end of the disposal phase and ending when all shafts at the Waste Isolation Pilot Plant repository have been backfilled and sealed.

**GLOSSARY OF TERMS**

- DEFENSE IN DEPTH.** Defense in depth is a safety design concept or strategy that shall be applied at the beginning and maintained throughout the facility design process. This safety design strategy is based on the premise that no one layer of protection is completely relied upon to ensure safe operation.
- DEFENSE WASTE.** Nuclear waste deriving from the manufacture of nuclear weapons and the operation of naval reactors. Associated activities, such as the research carried on in the weapons laboratories, also produce defense waste.
- DESIGN BASIS.** The set of requirements that bound the design of the structure, systems, or components of the facility.
- DESIGN BASIS EARTHQUAKE (DBE).** An earthquake that is the most severe design basis accident of this type and that produces the vibratory ground motion for which safety class items are designed to remain functional. The DBE is the most severe credible earthquake that could occur at the WIPP site as described in Chapter 2. DBE SSCs shall be designed to withstand a free-field horizontal and vertical ground acceleration of 0.1g, based on a 1,000-year recurrence period, and retain their safety functions.
- DESIGN BASIS TORNADO (DBT).** A tornado that is the most severe design basis accident of that type applicable to the area under consideration. The DBT is the most severe credible tornado that could occur at the WIPP site as described in Chapter 2. DBT SSCs shall be designed to withstand the highest winds generated by this tornado (183 mi/h [293 km/h]), based on a 1,000,000-year recurrence period, and retain their safety function.
- DESIGN LIFE.** The design life of components or systems generally refers to the estimated period of time that the component or system is expected to perform within specifications before the effects of aging result in performance deterioration or a requirement to replace the component or system.
- DISPOSAL.** See Land Disposal.
- DISPOSAL FACILITY.** A facility or part of a facility into which hazardous waste is intentionally placed and in which hazardous waste will remain after closure.
- DISPOSAL PHASE.** The term "disposal phase" means the period of time during which transuranic waste is disposed of at the Waste Isolation Pilot Plant, beginning with the initial emplacement of transuranic waste underground for disposal and ending when the last container of transuranic waste is emplaced underground for disposal.
- DISPOSAL ROOM.** An excavated cavity in the Waste Isolation Pilot Plant underground in which transuranic waste will be emplaced during disposal operations.
- DISPOSAL SYSTEM.** For purposes of defining the PA conceptual model, the disposal system is defined as the combination of engineered and natural barriers and other assurances that isolate waste after disposal, or the more general features, events, and processes that are capable of affecting performance of the disposal unit.
- DOSE.** A general term used for brevity in place of dose equivalent, effective dose equivalent, committed effective dose equivalent, etc.

**GLOSSARY OF TERMS**

**DOSAGE.** The concentration-time profile for exposure to toxicological hazards.

**DOSE CONVERSION FACTOR.** A numerical factor used in converting radionuclide uptake (curies) in the body to the resultant radiation dose (rem).

**DOSE EQUIVALENT.** The product of absorbed dose in rad in tissue, a quality factor, and all other modifying factors at the location of interest. Expressed in rem.

**DOSE RATE.** The radiation dose delivered per unit time (rem per hour).

**DRIFT.** A horizontal passageway in a mine.

**EFFECTIVE DOSE EQUIVALENT (EDE).** The sum of the products of the dose equivalent received by specified tissues of the body and tissue-specific weighting factor. Expressed in rem.

**EFFLUENT.** Wastewater or airborne emissions discharged into the environment.

**EMPLACEMENT.** At the Waste Isolation Pilot Plant, the placing of radioactive wastes in the repository.

**ENGINEERED BARRIERS.** Backfill, seals, and any other man-made barrier components of the disposal system.

**EVENT.** A phenomenon that occurs instantaneously or within a short time interval relative to the time frame of interest.

**EVENT TREE.** A logic model that graphically portrays the combinations of events and circumstances in an accident scenario.

**EXCLUSIVE USE AREA.** This 277-acre area is surrounded by a five-strand barbed wire fence and is restricted for the use of DOE, its contractors and subcontractors in support of the WIPP project. This area is posted against trespass and is excluded from use by the general public. However, public access to the LWA (16 section) area up to the Exclusive Use Area is allowed for grazing purposes (see Figure 5.2-1 and the WIPP Land Management Plan).

**FACILITY.** Any equipment, structure, system, or component, or activity that fulfills a specific purpose. For the purpose of implementing *DOE Standard 3009-94*, the definition most often refers to buildings, and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein to delineate a facility (*DOE Standard 3009-94*).

**FAULT TREE.** A tree-like cause-and-effect diagram of hypothetical events. Analysis of fault trees is used to investigate failures in a system or concept.

**FILTER BANK.** An arrangement of air filters in series and/or parallel.

**FISSILE.** Describes a nuclide that undergoes fission on absorption of neutrons of any energy, in particular, slow neutrons provided the effective thermal neutron production cross section exceeds the effective thermal neutron absorption cross section.

**GLOSSARY OF TERMS**

**FREQUENCY.** The number of occurrences per unit time at which observed events occur or are predicted to occur.

**GAMMA RADIATION.** Short-wavelength electromagnetic radiation emitted in the radioactive decay of certain radionuclides; high-energy photons.

**GAS GENERATION MODEL.** A computational model that can simulate and/or predict the rate and quantity of gases generated by waste transformation processes in a disposal room of the decommissioned repository.

**GAS GENERATION RATE.** The combined gas production rate from all species of gases produced as a result of transuranic waste transformations such as corrosion, microbial degradation, and/or radiolysis at any given time. The rate of gas production throughout the history of the repository is expected to vary depending on repository conditions with respect to humidity, total or partial brine inundation, competitive reactions that absorb specific gases, and the ability of the repository to retain the gases generated. The term is also applied to individual gases.

**GENERATOR AND/OR STORAGE SITES.** Refers to the Department of Energy sites nationwide where transuranic wastes are generated and/or stored as a result of activities associated with nuclear weapons production.

**GROUNDWATER.** Water below the land surface in a zone of saturation.

**GROUNDSHINE.** The pathway of direct external dose received from radioactive material that has been deposited on the ground after being dispersed from the accident site.

**GROUT.** A mortar or cement slurry (of high water content) used to plug potential fluid-flow paths in geologic or engineered structures.

**HAZOP.** Hazard and Operability Study. A systematic method in which process hazards and potential operating problems are identified using a series of guide words to investigate process deviations.

**HAZARD.** A source of danger (i.e., material, process, energy source) with the potential to cause illness, injury, or death, loss of use, or loss of property.

**HAZARD ANALYSIS.** The determination of material, system, process, and plant characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to accidents. The SAR Hazards Analysis examines the complete spectrum of potential accidents that could expose members of the public, onsite workers, facility workers, and the environment to hazardous materials.

**HAZARDOUS CONSTITUENT.** Those chemicals identified in Appendix VIII of 40 CFR Part 261.

**HAZARDOUS MATERIAL.** Any solid, liquid, or gaseous material that is toxic, explosive, flammable, corrosive, or otherwise physically or biologically threatening to health. Candidate hazards include radioactive materials and hazardous chemicals.

**HAZARDOUS WASTE.** A hazardous waste as defined in 40 CFR § 261.3.

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**GLOSSARY OF TERMS**

**HEADSPACE GASES.** The free gas volume at the top of a closed container (between the container lid and the waste inside the container) or containment, such as a drum or bin, containing TRU-mixed or simulated waste. The gas may be generated from biological, chemical, or radiolytic processes; this would include contributions from volatile organic compounds (VOCs) present in the waste.

**HEPA FILTER.** A high-efficiency particulate air filter usually capable of 99.7 percent efficiency as measured by a standard photometric test using 0.3-micron droplets (aerodynamic equivalent diameter) of dioctylphthalate (DOP).

**HORIZON.** In geology, an interface indicative of a particular position in a stratigraphic sequence. For instance, the waste-emplacement horizon in the Salado Formation at the Waste Isolation Pilot Plant is the level about 650 meters (2,150 feet) deep where openings are mined for waste disposal.

**HUMAN ERROR.** Any action (or lack thereof) that exceeds some limit of acceptability where the limits of human performance are defined by the system. Includes actions by designers, operators, or managers that may contribute to or result in accidents.

**HUMAN FACTORS.** A discipline concerned with designing machines, operations, and work environments to match human capabilities, limitations, and needs.

**IDLH.** Immediately Dangerous to Life and Health represents a maximum airborne concentration from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects.

**IMMEDIATE WORKER.** A worker directly involved in the operation of the facility or process (handling waste containers) when an accidental release occurs.

**IN SITU.** In the natural or original position. The phrase is used in this document to distinguish in-place experiments, rock properties, and so on, from those measured in the laboratory.

**INTERNAL ACCIDENT.** Accidents initiated by process systems or human actions under the control of a given facility.

**INITIATING EVENT.** The first event in an event sequence that can result in an accident unless engineered protection systems or human actions intervene to prevent or mitigate the accident.

**INJECTION WELL.** A well into which fluids are injected.

**INSTITUTIONAL CONTROLS.** Human actions to control a waste management facility such as the WIPP. Institutional controls are described as "active" and "passive." Active institutional controls are defined in 40 CFR § 191.12 as: (1) controlling access to a disposal site by any means other than passive institutional controls, (2) performing maintenance operations or remedial actions at a site, (3) controlling or cleaning up releases from a site, or (4) monitoring parameters related to disposal system performance. Passive institutional controls are defined in 40 CFR §191.12 as: (1) permanent markers placed at a disposal site, (2) public records and archives, (3) government ownership and regulations regarding land or resource use, and (4) other methods of preserving knowledge about the location, design, and contents of a disposal system.

**GLOSSARY OF TERMS**

**INTENSITY, EARTHQUAKE.** A measure of the effects of an earthquake on humans and structures at a particular place. Not to be confused with magnitude.

**INTERNATIONAL SYSTEM OF UNITS.** The version of the metric system which has been established by the International Bureau of Weights and Measures and is administered in the United States by the National Institute of Standards and Technology. The abbreviation for this system is "SI".

**ISOTOPE.** An atom of a chemical element with a specific atomic number and atomic weight. Isotopes have the same number of protons, but different number of neutrons.

**LAND DISPOSAL.** Emplacement in or on the land, except in a corrective action management unit, and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault, or bunker intended for disposal purposes.

**LAND WITHDRAWAL ACT.** Public Law 102-579, as amended by Public Law 104-201 (H.R. 3230, 104th Congress--1996), which withdraws the land at the Waste Isolation Pilot Plant site from "entry, appropriation, and disposal"; transfers jurisdiction of the land from the Secretary of the Interior to the Secretary of Energy; reserves the land for activities associated with the development and operation of the Waste Isolation Pilot Plant; and includes many other requirements and provisions pertaining to the protection of public health and the environment.

**LIKELIHOOD.** A measure of the expected probability or frequency of an events occurrence.

**LIMITING CONDITION FOR OPERATION.** The lowest functional capability or performance levels of safety-related structures, systems, or components.

**LONG TERM.** Refers to the 10,000 years after shaft sealing for which performance assessment calculations and models assess the behavior of the repository with respect to compliance with 40 CFR Part 191 and 40 CFR § 268.6.

**LOWER EXPLOSIVE LIMIT.** The lower limit of flammability of a gas or vapor at ordinary ambient temperatures expressed in percent of the gas or vapor in air by volume. This limit is assumed constant for temperatures up to 120 °C (250 °F).

**MAGNITUDE, EARTHQUAKE.** A measure of the total energy released by an earthquake. Not to be confused with intensity.

**MARKER BEDS (MB).** MBs are well-defined layers of rock that mark distinct divisions in major geological strata or geological time frames.

**GLOSSARY OF TERMS**

**MAXIMALLY EXPOSED INDIVIDUAL (MEI).** A hypothetical member of the public who is exposed to a release of radionuclides in such a way that the individual will receive the maximum dose from such a release. Review of the WIPP Land Management Plan (LMP) indicates that public access to the WIPP 16-section area up to the exclusive use area shown is allowed for grazing purposes, and up to the DOE off limits area" for recreational purposes. Although analyses are traditionally conducted for a maximally exposed off-site individual (MOI) at the facility site boundary, in accordance with DOE Order 6430.1A, Section 1300-3.2, the location of the MEI is located at the "closest point of public access," or the WIPP "exclusive use area." The location of the MEI is also consistent with guidance for the implementation of 40 CFR 191, Subpart A.

Exposure to the MEI is greatest at the Exclusive Use Area (closest distance a member of the public may get to the release point due to LMP access restrictions) due to the dispersion model chosen for accident analysis. As discussed in detail in SAR Section 5.2, the release is a non-plume release (vent release as defined in NRG 1.145), not subject to plume lofting or fumigation conditions. The dose to an individual is therefore greatest at the closest allowable access distance to the point of release.

**MEAN.** The average value. For a given set of  $n$  values, the mean is the sum of their values divided by  $n$ .

**MEDIAN.** The median of a set of data is the value such that half of the observations are less than that value and half are greater than that value.

**MERCALLI INTENSITY.** A scale of measurement of earthquake intensity.

**MITIGATE.** To take practicable means to avoid or minimize release of hazardous or radioactive material or consequences to a hypothetical individual or population,

**MITIGATION.** Equipment and/or procedures designed to interfere with accident propagation and/or reduce accident consequences

**MIXED WASTE.** Mixed waste contains both radioactive and hazardous components, as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.

**NASH DRAW.** A shallow valley, approximately 5 mi (8.1 km) wide, open to the southwest located to the west of the WIPP site.

**GLOSSARY OF TERMS**

- NONINVOLVED WORKER.** An onsite worker not involved in the operation of the facility when a release occurs. For accident analysis consequence assessment, the maximally exposed noninvolved worker is assumed to be located at a distance of 100 meters from each release point due to restrictions on dispersion modeling used in this safety analysis at close-in distances (<100 meters).
- NORMAL CONDITIONS.** All activities associated with the facility mission carried out within defined process conditions, performance in accordance with procedures, etc.
- NORMAL OPERATION.** All normal conditions that frequency estimation techniques indicate occur with a frequency greater than 0.1 events per year.
- OFF-SITE.** A position located at or beyond the WIPP Site Boundary.
- OFF LIMITS AREA.** An area consisting of approximately 1454 acres which is posted in accordance with 10 CFR Part 860 and has been designated as such in the Federal Register. This area is managed by an off-limits policy which allows DOE to authorize the use of the area as they determine the need. Public access to the WIPP LWA (16 section) area up to the Off Limits Area is allowed for recreational purposes (see Figure 5.2-1 and the WIPP Land Management Plan).
- ON-SITE.** A position located within the WIPP Site Boundary.
- PACKAGE.** In the regulations governing the transportation of radioactive materials, the packaging together with its radioactive contents as presented for transport.
- PACKAGING.** A shipping container without its contents.
- PANEL.** A group of several underground rooms connected by drifts. Within the Waste Isolation Pilot Plant, a panel consists of seven rooms connected by drifts at each end.
- PARTICULATES.** Solid particles small enough to become airborne.
- PASSIVE INSTITUTIONAL CONTROLS.** "(1) [P]ermanent markers placed at a disposal site, (2) public records and archives, (3) government ownership and regulations regarding land or resource use, and (4) other methods of preserving knowledge about the location, design, and contents of a disposal system" (40 CFR § 191.12).
- PERFORMANCE ASSESSMENT.** A term used to denote quantitative activities carried out to evaluate the long-term ability of the Waste Isolation Pilot Plant to effectively isolate the waste, to ensure long-term health and safety of the public by complying with 40 CFR § 268.6, and to supply data/information to the compliance analysis for demonstrating regulatory compliance. The final analysis of compliance will consist of a qualitative assessment of the quantitative results of the performance assessment.
- PLUTONIUM.** A metallic, radioactive element, symbol Pu, atomic number 94, in the actinide series of elements; used as a nuclear fuel, to produce radioactive nuclides for research, and as the fissile agent in nuclear weapons.



**GLOSSARY OF TERMS**

**POLYHALITE.** An evaporite mineral:  $K_2MgCa_2(SO_4)_4 \bullet 2H_2O$ . It is a hard, nearly insoluble mineral with no economic value.

**POST-CLOSURE PERIOD.** A designated period of time beginning with the end of the Decommissioning Phase and extending through the end of the regulatory time frame of 10,000 years.

**POTASH.** A potassium compound, especially as used in agriculture or industry.

**PREVENTIVE FEATURE.** Any structure, systems, or component that serves to prevent the release of hazardous material in an accident scenario.

**PROPERTY PROTECTION AREA.** The interior core of the facility, comprised of about 34 acres and is bordered by a chain link security fence (see Figure 5.2-1).

**PUBLIC.** Defined in DOE-STD-3009-94 as individuals outside of the DOE Site Boundary. However, review of the WIPP Land Management Plan indicates that public access to the WIPP 16-section area up to the exclusive use area is allowed for grazing purposes, and up to the DOE off limits area" for recreational purposes. Although accident analyses consequences are traditionally conducted for a maximally exposed off-site individual (MOI) at the facility site boundary, in accordance with DOE Order 6430.1A, Section 1300-3.2, the location of the public (MEI) for accident consequence assessment in this safety analysis is at the "closest point of public access," or the WIPP "exclusive use area." The location of the MEI is also consistent with guidance for the implementation of 40 CFR 191, Subpart A.

**PUBLIC LAW 96-164.** The U.S. Department of Energy National Security and Military Applications of Nuclear Energy Act of 1980. Public Law 96-164 directed the Department of Energy to proceed with the design and development of the Waste Isolation Pilot Plant.

**PUBLIC LAW 102-579.** *See* Land Withdrawal Act.

**QUALITY ASSURANCE.** The planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service.

**QUALITY ASSURANCE PROGRAM PLANS (QAPP).** Documents that describe the overall program plans and activities to meet the project's quality assurance goals.

**QUALITY ASSURANCE PROJECT PLANS (QAPjP).** Documents that ensure site-specific waste characterization activities meet the data quality objectives.

**QUALITY CONTROL.** Those quality assurance activities that provide a means to control and measure the characteristics of a structure, system, or component to established requirements.

**RADIOLYSIS.** Chemical decomposition by the action of radiation.

**GLOSSARY OF TERMS**

**REAL-TIME RADIOGRAPHY.** A nondestructive, nonintrusive examination technique that enables a qualitative (and in some cases semiquantitative) evaluation of the contents of a waste container. Real-Time Radiography utilizes x-rays to inspect the contents of the waste container and allows the operator to view events in progress (real time). Real-Time Radiography is used to examine and verify the physical form of the waste for certain waste forms, identify individual waste components, and verify the absence of certain noncompliant items, as applicable.

**REASONABLE.** (1) Not conflicting with reason, (2) not extreme or excessive, (3) having the faculty of reason, or (4) possessing sound judgment.

**RELEASE POINT.** There are two release points for the TRU and mixed wastes accidents described in the SAR, the Exhaust Filter Building exhaust to the atmosphere and the WHB HEPA filtration exhaust to the atmosphere.

**REM.** A common unit of dose equivalent, effective dose equivalent, etc.

**REMOTE-HANDLED WASTE.** Transuranic waste with a surface dose rate of 200 millirem per hour or greater. RH-TRU waste received at the WIPP may not exceed a surface dose rate of 1,000 rem per hour (Public Law 102-579, Section 7(a)(1)(A)).

**REPOSITORY.** The portion of the Waste Isolation Pilot Plant underground system within the Salado Formation, including the access drifts, waste panels, and experimental areas, but excluding the shafts.

**REPOSITORY/SHAFT SYSTEM.** The Waste Isolation Pilot Plant underground workings, including the shafts, all engineered and natural barriers, and the altered zones within the Salado Formation and overlying units resulting from construction of the underground workings.

**RESERVES.** Mineral resources that can be extracted profitably by existing techniques and under present economic conditions.

**RISK.** In accident analysis, the probability of weighted consequences of an accident defined as the accident frequency per year multiplied by the consequences.

**RESOURCE CONSERVATION AND RECOVERY ACT PERMIT APPLICATION.** An application, which is submitted by the owner/operator of a hazardous waste management unit to the state (if authorized by the Environmental Protection Agency) or to the Environmental Protection Agency, for a Resource Conservation and Recovery Act permit to operate the unit.

**RESOURCES.** Mineralization that is concentrated enough, in large enough quantity, and in physical and chemical forms such that extraction is currently or potentially feasible and profitable.

**RETRIEVABLE.** Describes storage of radioactive waste in a manner designed for recovery without loss of control or release of radioactivity.

**ROOM.** An excavated cavity within a panel in the underground. Within the Waste Isolation Pilot Plant, a room is about 33 ft (10 m) wide, 13 ft (4 m) high, and 300 ft (91 m) long.

**GLOSSARY OF TERMS**

**SAFETY ANALYSIS.** A documented process: (1) to provide systematic identification of hazards within a given DOE operation; (2) to describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards; and (3) to analyze and evaluate potential accidents and their associated risks.

**SAFETY ANALYSIS REPORT.** A report that documents the adequacy of safety analysis to ensure that a facility can be constructed, operated, maintained, and shutdown, and decommissioned safely and in compliance with applicable laws and regulations.

**SAFETY ASSURANCE.** The process of providing adequate confidence that an acceptable safety basis for the facility exists.

**SAFETY BASIS.** The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which the DOE depends for its conclusion that activities at the facility may be conducted safely.

**SCENARIO.** A combination of naturally occurring or human-induced events and processes that represent realistic future changes to the repository, geologic, and geohydrologic systems that could cause or promote the escape of radionuclides and/or hazardous constituents from the repository.

**SEAL.** An engineered barrier designed to isolate the waste and to impede fluid flow in the shafts.

**SEISMIC RISK ZONE.** A designation of a geographic region expressing the maximum intensity of earthquakes that could be expected there.

**SHAFT PILLAR.** The cylindrical volume of rock around a shaft from which major underground openings are excluded in order that they not weaken the shaft.

**SIEVERT.** The SI unit of any quantities expressed as dose equivalent. (1 Sv = 100 rem)

**SITE BOUNDARY.** The boundary encompassing the WIPP 10,240 acres (LWA 16 sections).

**SLUDGE.** Refers to de-watered contact-handled transuranic wastes containing both organic and inorganic constituents that must meet the Waste Acceptance Criteria for shipment and disposal at the Waste Isolation Pilot Plant repository. High sludges are contact-handled transuranic waste where the sludge component constitutes 50 percent or more of the waste volume; low sludges are the same type of waste containing less than 50 percent by volume of sludge.

**SOURCE TERM.** Source term is the quantity of radioactive or hazardous constituents available for transport or the maximum concentration of hazardous constituents in a particular phase, depending on the type of information available.

**TECHNICAL SAFETY REQUIREMENTS.** Those requirements that define the conditions, safe boundaries, and the management or administrative controls necessary to ensure the safe operation of the facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive or hazardous materials.

**GLOSSARY OF TERMS**

- TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE).** The sum of the effective dose equivalent (EDE) from sources external to the body during the year, plus the committed effective dose equivalent (CEDE).
- TOXICITY.** The ability of a substance to cause damage to living tissue, impairment of the central nervous system, severe illness or, in extreme cases, death when ingested, inhaled, or absorbed by the skin.
- TOXICOLOGICAL HAZARD.** Any substance having chemical properties that pose a potential threat to the public, workers, or the environment.
- TRANSURANIC NUCLIDE.** A nuclide with an atomic number greater than that of uranium (92). All transuranic nuclides are produced artificially and are radioactive.
- TRANSURANIC WASTE.** The term "transuranic waste" means waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste, (2) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations, or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR 61.
- TREATMENT.** Means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or as to render such waste non-hazardous, or less hazardous; safe to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.
- TYPE A PACKAGING.** Means a packaging designed to retain the integrity of containment and shielding required by this part under normal conditions of transport as demonstrated by the tests set forth in 49 CFR § 173.465 or 173.466, as appropriate. Note: Radioactive waste is transported to WIPP in Type B packaging.
- UNINTERRUPTIBLE POWER SUPPLY (UPS).** A power supply that provides automatic, instantaneous power, without delay or transients, on failure of normal power. It can consist of batteries or full-time operating generators. It can be designated as standby or emergency power depending on the application. Emergency installations must meet the requirements specified for emergency.
- VOLATILE ORGANIC COMPOUNDS (VOCs).** RCRA-regulated organic compounds which readily pass into the vapor state and are present in transuranic mixed waste.
- WASTE ACCEPTANCE CRITERIA.** A set of conditions established for permitting transuranic wastes to be packaged, shipped, managed, and disposed of at the Waste Isolation Pilot Plant.
- WASTE CHARACTERIZATION.** Sampling, monitoring, and analysis activities to determine the nature of the waste.

**GLOSSARY OF TERMS**

**WASTE CHARACTERIZATION PROGRAM.** The processes of transuranic waste analysis to support the Part B of the Resource Conservation and Recovery Act permit application, other permits, transportation requirements, and other program requirements. These analyses include documentation of waste generation processes, visual examination of waste components, radiography analysis, and waste assay for radionuclide content. Waste matrix and headspace gas chemical analyses are also part of the characterization program.

**WASTE FORM.** A term used to emphasize the physical and chemical properties of the waste.

**WASTE MATRIX.** The material that surrounds and contains the hazardous constituents and to some extent protects them from being released into the surrounding rock and groundwater. Only material within the canister (or drum or box) that contains the waste is considered part of the waste matrix.

**WASTE STORAGE/DISPOSAL.** For the purposes of this Safety Analysis Report, with regard to transuranic waste: the term "storage" refers to the temporary storage of that waste above ground; and, the term "disposal" refers to that waste which has been emplaced in the underground horizon.

**WORKING AGREEMENT.** Appendix B of the Agreement of Consultation and Cooperation, which sets forth the working details of that Agreement.

**WORST CASE.** A conservative (high) estimate of the consequences of the most severe accident identified.

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**CHANGE HISTORY**

<b>REVISION</b>	<b>AFFECTED SECTIONS/ PAGE NUMBERS</b>	<b>DATE</b>	<b>ADDITIONAL DESCRIPTION OF NATURE OF REVISIONS</b>
0	Entire Document	01/03	Initial Issue

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