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ACRONYMS

1	AC	Administrative Control
2	AIHA	American Industrial Hygiene Association
3	AIS	Air Intake Shaft
4	ALARA	As Low As Reasonably Achievable
5	ANS	American Nuclear Society
6	ANSI	American National Standard Institute
7	ARF	Airborne Release Fraction
8	ARMS	Area Radiation Monitors
9	ASME	American Society of Mechanical Engineers
10	BLM	Bureau of Land Management
11	BR	Breathing Rate
12	Bq	Becquerel
13	C&C	Consultation and Cooperation
14	CA	Controlled Area
15	CAO	Carlsbad Area Office (DOE)
16	CAM	Continuous Air Monitor
17	CCA	Consultation and Cooperation Agreement
18	CCDF	Complimentary Cumulative Distribution Function
19	CCTV	Closed Circuit Television
20	CD	Containers Damaged
21	CEDE	Committed Effective Dose Equivalent
22	CFR	Code of Federal Regulations
23	CH	Contact Handled
24	Ci	Curie
25	CI	Container Inventory
26	CMR	Central Monitoring Room
27	CMS	Central Monitoring System
28	D&D	Decontamination and Decommissioning
29	DAC	Derived Air Concentration
30	DBA	Design Basis Accident
31	DBE	Design Basis Earthquake
32	DBT	Design Basis Tornado
33	DCF	Dose Conversion Factor
34	DOE	Department of Energy
35	DOE-EM	Department of Energy, Office of Environmental Restoration
36	DOI	Department of Interior
37	DOP	Diocetylphthalate
38	DOT	Department of Transportation
39	DR	Damage Ratio
40	ECO	Engineering Change Order
41	EEG	Environmental Evaluation Group
42	EEGL	Emergency Exposure Guidance Level
43	EFB	Exhaust Filter Building
44	EOC	Emergency Operations Center
45	EPA	Environmental Protection Agency
46	ERDA	Energy Research and Development Administration
47	ERPG	Emergency Response Planning Guideline

ACRONYMS

1	ESH	Environment, Safety, and Health
2	ERT	Emergency Response Team
3	FAS	Fixed Air Sampler
4	FEP	Features, Events, and Processes
5	FGE	Fissile Gram Equivalent
6	FEIS	Final Environmental Impact Statement
7	FLIRT	First Line Initial Response Team
8	FMEA	Failure Mode and Effects Analysis
9	FSEIS	Final Supplement Environmental Impact Statement
10	FY	Fiscal Year
11	GM	General Manager
12	GPDD	General Plant System Design Description
13	HAZOP	Hazard and Operability Study
14	HEP	Human Error Probability
15	HEPA	High Efficiency Particulate Filter
16	HVAC	Heat, Ventilation, and Air Conditioning
17	ICRP	International Commission on Radiological Protection
18	ICV	Inner Containment Vessel
19	IDLH	Immediately Dangerous to Life and Health
20	LCO	Limiting Condition for Operation
21	LCS	Limiting Control Setting
22	LPF	Leakpath Factor
23	LPU	Local Processing Unit
24	LWA	Land Withdrawal Act
25	MAR	Material at Risk
26	MDC	Minimum Detectable Concentrations
27	MEI	Maximally Exposed Individual
28	MgO	Magnesium Oxide
29	MOC	Management and Operating Contractor
30	MOI	Maximally Exposed Off-site Individual
31	MRF	Material Release Fraction
32	MSDS	Material Safety Data Sheet
33	MSHA	Mine Safety and Health Administration
34	NFPA	National Fire Protection Agency
35	NIST	National Institute of Science and Technology
36	NMBMMR	New Mexico Bureau of Mines and Mineral Resources
37	NMDG&F	New Mexico Department of Game and Fish
38	NRB	Nuclear Review Board
39	NRC	Nuclear Regulatory Commission
40	NVP	Natural Ventilation Pressure
41	OHP	Operational Health Physics
42	ORNL	Oak Ridge National Laboratory
43	ORR	Operational Readiness Review
44	OSHA	Occupational Safety and Health Administration
45	PABX	Private Automatic Branch Exchange
46	PA	Public Address or Performance Assessment
47	PEL	Permissible Exposure limit

ACRONYMS

1	PE-Ci	Plutonium Equivalent Curie
2	ppmv	Parts per Million Volume
3	PSM	Process Safety Management
4	Pu	Plutonium
5	QA	Quality Assurance
6	QAPD	Quality Assurance Program Description
7	QC	Quality Control
8	RADCON	Radiological Control
9	RBP	Radiological Baseline Program
10	RCRA	Resource Conservation and Recovery Act
11	rem	roentgen equivalent man
12	REMS	Radiation Effluent Monitoring System
13	RF	Respirable Fraction
14	RFAR	Radio Fire Alarm Reporter
15	RH	Remote Handled
16	RBA	Radiological Buffer Area
17	RMA	Radioactive Material Area
18	RMS	Radiation Monitoring System
19	ROD	Record of Decision
20	RWP	Radiation Work Permit
21	SAR	Safety Analysis Report
22	SCR	Silicon Controlled Rectifier
23	SDD	System Design Descriptions
24	SEIS	Supplement Environmental Impact Statement
25	SH	Salt Handling Shaft
26	SOP	Standard Operating Procedure
27	SL	Safety Limit
28	SNL	Sandia National Laboratory
29	SPDV	Site and Preliminary Design Validation
30	SPEGL	Short-term Public Exposure Guidance Level
31	SR	Surveillance Requirement
32	SRS	Savannah River Site
33	SSC	System, Structure, and Component
34	STD	Standard
35	Sv	Sievert
36	SWB	Standard Waste Box
37	TDOP	Ten Drum Overpack
38	TDS	Total Dissolved Solids
39	TEDE	Total Effective Dose Equivalent
40	TLD	Thermoluminescent Detector
41	TLV-C	Threshold Limit Value-Ceiling
42	TLV-STEL	Threshold Limit Value-Short Term Exposure Limit
43	TLV-TWA	Threshold Limit Value-Time Weighted Average
44	TRUPACT	Transuranic Package Transporter
45	TRU	Transuranic
46	TSC	Technical Support Contractor
47	TSR	Technical Safety Requirements

ACRONYMS

1	U/G	Underground
2	UBC	Uniform Building Code
3	UPS	Uninterruptible Power Supply
4	USGS	United States Geological Survey
5	USQ	Unreviewed Safety Questions
6	VOC	Volatile Organic Compound
7	WAC	Waste Acceptance Criteria
8	WACC	Working Agreement for Consultation and Cooperation
9	WHB	Waste Handling Building
10	WIPP	Waste Isolation Pilot Plant
11	WWIS	WIPP Waste Information System

GLOSSARY OF TERMS

1 ABNORMAL CONDITION. Any deviation from normal conditions that adversely affects or
2 potentially adversely affects the safety performance of the facility.
3

4 ACCEPTABLE KNOWLEDGE. An EPA term which includes process knowledge and results from
5 previous testing, sampling, and analysis associated with the waste. Acceptable knowledge
6 includes information regarding the raw materials used in a process or operation, process
7 description, products, and associated wastes. Acceptable knowledge documentation includes the
8 site history and mission, site-specific processes or operations, administrative building controls,
9 and all previous and current activities that generate a specific waste.
10

11 ACCIDENT. An unplanned sequence of events that results in undesirable consequences.
12

13 ACCIDENT ANALYSIS. For the purposes of implementing the USQ order, the term accident analysis
14 refers to those bounding analyses selected for inclusion in the SAR. The accident analysis is the
15 systematic development of numerical estimates of the expected consequence and frequency of
16 potential accidents.
17

18 ACTINIDE. An element in the actinide series beginning with element 89 and continuing through
19 element 103. All the transuranic nuclides considered in this document are actinides.
20

21 ACTIVE INSTITUTIONAL CONTROL. (1) Controlling access to a disposal site by any means other
22 than passive institutional controls, (2) performing maintenance operations or remedial actions at
23 a site, (3) controlling or cleaning up releases from a site, or (4) monitoring parameters related to
24 disposal system performance (40 CFR § 191.12).
25

26 ACTIVITY. A measure of the rate at which a material emits nuclear radiation, usually given in terms of
27 the number of nuclear disintegrations occurring in a given length of time. The unit of activity
28 used in this document is the curie (Ci).
29

30 ADMINISTRATIVE CONTROLS. Provisions relating to organization and management, procedures,
31 record keeping, assessment, and reporting necessary to ensure the safe operation of the facility.
32

33 AIR DISPERSION FACTOR. The ratio of the average concentration of a hazardous constituent released
34 into the atmosphere to its maximum concentration at or beyond the unit boundary.
35

36 AIR IMMERSION. The pathway of direct external dose from a passing cloud of dispersed radioactive
37 material.
38

39 AIR LOCK. An intermediate chamber between zones of different static pressure.
40

41 ALARA. As Low As Reasonably Achievable; radiation protection program for minimizing personnel
42 exposures.
43

44 ALPHA PARTICLE. A positively charged particle emitted in the radioactive decay of certain
45 radionuclides. Made up of two protons and two neutrons bound together, it is identical to the
46 nucleus of a helium atom. It is the least penetrating of the three common types of radiation;
47 alpha, beta, and gamma radiation, but has the highest ionization factor.
48

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

GLOSSARY OF TERMS

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

3
4 AUTHORIZATION BASIS. Those aspects of the facility design basis and operational requirements
5 relied upon by DOE to authorize operation. The authorization basis is described in the SAR and
6 other safety analyses.

7
8 BARRIER. "[A]ny material or structure that prevents or substantially delays movement of water and/or
9 radionuclides toward the accessible environment. For example, a barrier may be a geologic
10 structure, a canister, a waste form with physical and chemical characteristics that significantly
11 decrease the mobility of radionuclides, or a material placed over and around waste, provided that
12 the material or structure substantially delays movement of water or radionuclides" (40 CFR §
13 191.12). Barriers also prevent or delay the movement of hazardous constituents.

14
15 BETA PARTICLE. A negatively charged particle emitted in the radioactive decay of certain
16 radionuclides; a free electron.

17
18 BECQUEREL. A unit in the International System of Units (SI), of measurement of radioactivity equal
19 to one transformation per second.

20
21 BRINE. Saline water containing calcium (Ca), sodium (Na), potassium (K), chlorides (Cl), and minor
22 amounts of other elements.

23
24 BOUNDING. Producing greater consequences than other scenarios; or would bound the remainder of
25 scenarios.

26
27 CANISTER. As used in this document, a container, usually cylindrical, for remotely handled TRU
28 waste. The waste will remain in this canister during and after burial. A canister affords physical
29 containment but not shielding; shielding is provided during shipment by a cask.

30
31 CARCINOGEN. An agent capable of producing or inducing cancer.

32
33 CARCINOGENICITY. The ability of a substance to cause the development of cancerous growths in
34 living tissue. Such substances are usually grouped in two classifications: (1) those that are
35 known to induce cancer in man or animals either by operational exposure in industry or by
36 ingestion in feedstuffs and (2) those that have been found to cause cancer in animals under
37 experimental conditions.

38
39 CASK. A massive shipping container providing shielding for highly radioactive materials and holding
40 one or more canisters.

41
42
43 CENTRAL MONITORING ROOM (CMR). A room at the WIPP facility equipped to monitor alarm
44 functions and provide reliable communications.

45
46 CENTRAL MONITORING SYSTEM (CMS). A computer system that monitors the WIPP facility
47 instrumentation; operated from the Central Monitoring Room.

GLOSSARY OF TERMS

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

5
6 CONCENTRATION. The amount of a substance contained in a unit quantity (mass or volume) of a
7 sample.

8
9 CONSERVATIVE. As a term used with predictions or estimates, "conservative" means one in which the
10 uncertain inputs are used in a way that overestimates an adverse impact.

11
12 CONSEQUENCE. The direct, undesirable result of an accident sequence.

13
14 CONSULTATION AND COOPERATION AGREEMENT. An agreement that affirms the intent of the
15 Secretary of Energy to consult and cooperate with the State of New Mexico with respect to State
16 public health and safety concerns. The term "Agreement" means the July 1, 1981, Agreement
17 for Consultation and Cooperation, as amended by the November 30, 1984, "First Modification,"
18 the August 4, 1987, "Second Modification," and the March 22, 1988, modification to the
19 Working Agreement.

20
21 CONTACT-HANDLED WASTE. Transuranic waste with a surface dose rate not greater than
22 200 millirem per hour.

23
24 CONTAINER INVENTORY. The amount of radioactive or hazardous material within a container or
25 source.

26
27 CREEP. A very slow, usually continuous, time-dependent movement of soil or rock; refers to the
28 geologic phenomenon experienced as the gradual flow of salt under compressive loading.

29
30 CREEP CLOSURE. Closure of underground openings, especially openings in salt, by plastic flow of the
31 surrounding rock under lithostatic pressure.

32
33 CRITICALITY. A state in which a self-sustaining nuclear chain reaction is achieved.

34
35 DECOMMISSIONING. Actions taken upon abandonment of the repository to reduce potential
36 environmental, health, and safety impacts, including repository sealing as well as activities to
37 stabilize, reduce, or remove radioactive materials or demolish surface structures.

38
39 DECOMMISSIONING PHASE. The term "decommissioning phase" means the period of time
40 beginning with the end of the disposal phase and ending when all shafts at the Waste Isolation
41 Pilot Plant repository have been backfilled and sealed.

GLOSSARY OF TERMS

1 DEFENSE IN DEPTH. Defense in depth is a safety design concept or strategy that shall be applied at
2 the beginning and maintained throughout the facility design process. This safety design strategy
3 is based on the premise that no one layer of protection is completely relied upon to ensure safe
4 operation.

5
6 DEFENSE WASTE. Nuclear waste deriving from the manufacture of nuclear weapons and the operation
7 of naval reactors. Associated activities, such as the research carried on in the weapons
8 laboratories, also produce defense waste.

9
10 DESIGN BASIS. The set of requirements that bound the design of the structure, systems, or
11 components of the facility.

12
13 DESIGN BASIS EARTHQUAKE (DBE). An earthquake that is the most severe design basis accident of
14 this type and that produces the vibratory ground motion for which safety class items are designed
15 to remain functional. The DBE is the most severe credible earthquake that could occur at the
16 WIPP site as described in Chapter 2. DBE SSCs shall be designed to withstand a free-field
17 horizontal and vertical ground acceleration of 0.1g, based on a 1,000-year recurrence period, and
18 retain their safety functions.

19
20 DESIGN BASIS TORNADO (DBT). A tornado that is the most severe design basis accident of that type
21 applicable to the area under consideration. The DBT is the most severe credible tornado that
22 could occur at the WIPP site as described in Chapter 2. DBT SSCs shall be designed to
23 withstand the highest winds generated by this tornado (183 mi/h [293 km/h]), based on a
24 1,000,000-year recurrence period, and retain their safety function.

25
26 DESIGN LIFE. The design life of components or systems generally refers to the estimated period of
27 time that the component or system is expected to perform within specifications before the effects
28 of aging result in performance deterioration or a requirement to replace the component or
29 system.

30
31 DISPOSAL. See Land Disposal.

32
33 DISPOSAL FACILITY. A facility or part of a facility into which hazardous waste is intentionally
34 placed and in which hazardous waste will remain after closure.

35
36 DISPOSAL PHASE. The term "disposal phase" means the period of time during which transuranic
37 waste is disposed of at the Waste Isolation Pilot Plant, beginning with the initial emplacement of
38 transuranic waste underground for disposal and ending when the last container of transuranic
39 waste is emplaced underground for disposal.

40
41 DISPOSAL ROOM. An excavated cavity in the Waste Isolation Pilot Plant underground in which
42 transuranic waste will be emplaced during disposal operations.

43
44 DISPOSAL SYSTEM. For purposes of defining the PA conceptual model, the disposal system is
45 defined as the combination of engineered and natural barriers and other assurances that isolate
46 waste after disposal, or the more general features, events, and processes that are capable of
47 affecting performance of the disposal unit.

GLOSSARY OF TERMS

1 DOSE. A general term used for brevity in place of dose equivalent, effective dose equivalent, committed
2 effective dose equivalent, etc.

3
4 DOSAGE. The concentration-time profile for exposure to toxicological hazards.

5
6 DOSE CONVERSION FACTOR. A numerical factor used in converting radionuclide uptake (curies)
7 in the body to the resultant radiation dose (rem).

8
9 DOSE EQUIVALENT. The product of absorbed dose in rad in tissue, a quality factor, and all other
10 modifying factors at the location of interest. Expressed in rem.

11
12 DOSE RATE. The radiation dose delivered per unit time (rem per hour).

13
14 DRIFT. A horizontal passageway in a mine.

15
16 EFFECTIVE DOSE EQUIVALENT (EDE). The sum of the products of the dose equivalent received
17 by specified tissues of the body and tissue-specific weighting factor. Expressed in rem.

18
19 EFFLUENT. Wastewater or airborne emissions discharged into the environment.

20
21 EMPLACEMENT. At the Waste Isolation Pilot Plant, the placing of radioactive wastes in the
22 repository.

23
24 ENGINEERED BARRIERS. Backfill, seals, and any other man-made barrier components of the
25 disposal system.

26
27 EVENT. A phenomenon that occurs instantaneously or within a short time interval relative to the time
28 frame of interest.

29
30 EVENT TREE. A logic model that graphically portrays the combinations of events and circumstances
31 in an accident scenario.

32
33 EXCLUSIVE USE AREA. This 277-acre area is surrounded by a five-strand barbed wire fence and
34 is restricted for the use of DOE, its contractors and subcontractors in support of the WIPP
35 project. This area is posted against trespass and is excluded from use by the general public.
36 However, public access to the LWA (16 section) area up to the Exclusive Use Area is allowed
37 for grazing purposes (see Figure 5.2-1 and the WIPP Land Management Plan).

38
39 FACILITY. Any equipment, structure, system, or component, or activity that fulfills a specific purpose.
40 For the purpose of implementing *DOE Standard 3009-94*, the definition most often refers to
41 buildings, and other structures, their functional systems and equipment, and other fixed systems
42 and equipment installed therein to delineate a facility (*DOE Standard 3009-94*).

43
44 FAULT TREE. A tree-like cause-and-effect diagram of hypothetical events. Analysis of fault trees is
45 used to investigate failures in a system or concept.

46
47 FILTER BANK. An arrangement of air filters in series and/or parallel.

GLOSSARY OF TERMS

1 FISSILE. Describes a nuclide that undergoes fission on absorption of neutrons of any energy, in
2 particular, slow neutrons provided the effective thermal neutron production cross section exceeds
3 the effective thermal neutron absorption cross section.
4

5 FREQUENCY. The number of occurrences per unit time at which observed events occur or are
6 predicted to occur.
7

8 GAMMA RADIATION. Short-wavelength electromagnetic radiation emitted in the radioactive decay
9 of certain radionuclides; high-energy photons.
10

11 GAS GENERATION MODEL. A computational model that can simulate and/or predict the rate and
12 quantity of gases generated by waste transformation processes in a disposal room of the
13 decommissioned repository.
14

15 GAS GENERATION RATE. The combined gas production rate from all species of gases produced as a
16 result of transuranic waste transformations such as corrosion, microbial degradation, and/or
17 radiolysis at any given time. The rate of gas production throughout the history of the repository
18 is expected to vary depending on repository conditions with respect to humidity, total or partial
19 brine inundation, competitive reactions that absorb specific gases, and the ability of the
20 repository to retain the gases generated. The term is also applied to individual gases.
21

22 GENERATOR AND/OR STORAGE SITES. Refers to the Department of Energy sites nationwide where
23 transuranic wastes are generated and/or stored as a result of activities associated with nuclear
24 weapons production.
25

26 GROUNDWATER. Water below the land surface in a zone of saturation.
27

28 GROUND SHINE. The pathway of direct external dose received from radioactive material that has
29 been deposited on the ground after being dispersed from the accident site.
30

31 GROUT. A mortar or cement slurry (of high water content) used to plug potential fluid-flow paths in
32 geologic or engineered structures.
33

34 HAZOP. Hazard and Operability Study. A systematic method in which process hazards and potential
35 operating problems are identified using a series of guide words to investigate process deviations.
36

37 HAZARD. A source of danger (i.e., material, process, energy source) with the potential to cause
38 illness, injury, or death, loss of use, or loss of property.
39

40 HAZARD ANALYSIS. The determination of material, system, process, and plant characteristics that
41 can produce undesirable consequences, followed by the assessment of hazardous situations
42 associated with a process or activity. Largely qualitative techniques are used to pinpoint
43 weaknesses in design or operation of the facility that could lead to accidents. The SAR Hazards
44 Analysis examines the complete spectrum of potential accidents that could expose members of
45 the public, onsite workers, facility workers, and the environment to hazardous materials.
46

47 HAZARDOUS CONSTITUENT. Those chemicals identified in Appendix VIII of 40 CFR Part 261.
48

GLOSSARY OF TERMS

1 HAZARDOUS MATERIAL. Any solid, liquid, or gaseous material that is toxic, explosive, flammable,
2 corrosive, or otherwise physically or biologically threatening to health. Candidate hazards
3 include radioactive materials and hazardous chemicals.
4

5 HAZARDOUS WASTE. A hazardous waste as defined in 40 CFR § 261.3.
6

7 HEADSPACE GASES. The free gas volume at the top of a closed container (between the container lid
8 and the waste inside the container) or containment, such as a drum or bin, containing TRU-
9 mixed or simulated waste. The gas may be generated from biological, chemical, or radiolytic
10 processes; this would include contributions from volatile organic compounds (VOCs) present in
11 the waste.
12

13 HEPA FILTER. A high-efficiency particulate air filter usually capable of 99.7 percent efficiency as
14 measured by a standard photometric test using 0.3-micron droplets (aerodynamic equivalent
15 diameter) of dioctylphthalate (DOP).
16

17 HORIZON. In geology, an interface indicative of a particular position in a stratigraphic sequence. For
18 instance, the waste-emplacement horizon in the Salado Formation at the Waste Isolation Pilot
19 Plant is the level about 650 meters (2,150 feet) deep where openings are mined for waste
20 disposal.
21

22 HUMAN ERROR. Any action (or lack thereof) that exceeds some limit of acceptability where the
23 limits of human performance are defined by the system. Includes actions by designers,
24 operators, or managers that may contribute to or result in accidents.
25

26 HUMAN FACTORS. A discipline concerned with designing machines, operations, and work
27 environments to match human capabilities, limitations, and needs.
28

29 IDLH. Immediately Dangerous to Life and Health represents a maximum airborne concentration from
30 which one could escape within 30 minutes without any escape-impairing symptoms or any
31 irreversible health effects.
32

33 IMMEDIATE WORKER. A worker directly involved in the operation of the facility or process
34 (handling waste containers) when an accidental release occurs.
35

36 IN SITU. In the natural or original position. The phrase is used in this document to distinguish in-place
37 experiments, rock properties, and so on, from those measured in the laboratory.
38

39 INTERNAL ACCIDENT. Accidents initiated by process systems or human actions under the control
40 of a given facility.
41

42 INITIATING EVENT. The first event in an event sequence that can result in an accident unless
43 engineered protection systems or human actions intervene to prevent or mitigate the accident.
44

45 INJECTION WELL. A well into which fluids are injected.
46

GLOSSARY OF TERMS

1 INSTITUTIONAL CONTROLS. Human actions to control a waste management facility such as the
2 WIPP. Institutional controls are described as "active" and "passive." Active institutional
3 controls are defined in 40 CFR § 191.12 as: (1) controlling access to a disposal site by any
4 means other than passive institutional controls, (2) performing maintenance operations or
5 remedial actions at a site, (3) controlling or cleaning up releases from a site, or (4) monitoring
6 parameters related to disposal system performance. Passive institutional controls are defined in
7 40 CFR §191.12 as: (1) permanent markers placed at a disposal site, (2) public records and
8 archives, (3) government ownership and regulations regarding land or resource use, and (4) other
9 methods of preserving knowledge about the location, design, and contents of a disposal system.

10
11 INTENSITY, EARTHQUAKE. A measure of the effects of an earthquake on humans and structures at a
12 particular place. Not to be confused with magnitude.

13
14 INTERNATIONAL SYSTEM OF UNITS. The version of the metric system which has been established
15 by the International Bureau of Weights and Measures and is administered in the United States by
16 the National Institute of Standards and Technology. The abbreviation for this system is "SI".

17
18 ISOTOPE. An atom of a chemical element with a specific atomic number and atomic weight. Isotopes
19 have the same number of protons, but different number of neutrons.

20
21 LAND DISPOSAL. Emplacement in or on the land, except in a corrective action management unit, and
22 includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection
23 well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave,
24 or placement in a concrete vault, or bunker intended for disposal purposes.

25
26 LAND WITHDRAWAL ACT. Public Law 102-579, as amended by Public Law 104-201 (H.R. 3230,
27 104th Congress--1996), which withdraws the land at the Waste Isolation Pilot Plant site from
28 "entry, appropriation, and disposal"; transfers jurisdiction of the land from the Secretary of the
29 Interior to the Secretary of Energy; reserves the land for activities associated with the
30 development and operation of the Waste Isolation Pilot Plant; and includes many other
31 requirements and provisions pertaining to the protection of public health and the environment.

32
33 LIKELIHOOD. A measure of the expected probability or frequency of an events occurrence.

34
35 LIMITING CONDITION FOR OPERATION. The lowest functional capability or performance levels
36 of safety-related structures, systems, or components.

37
38 LONG TERM. Refers to the 10,000 years after shaft sealing for which performance assessment
39 calculations and models assess the behavior of the repository with respect to compliance with 40
40 CFR Part 191 and 40 CFR § 268.6.

41
42 LOWER EXPLOSIVE LIMIT. The lower limit of flammability of a gas or vapor at ordinary ambient
43 temperatures expressed in percent of the gas or vapor in air by volume. This limit is assumed
44 constant for temperatures up to 120 °C (250 °F).

45
46
47
48 MAGNITUDE, EARTHQUAKE. A measure of the total energy released by an earthquake. Not to be
49 confused with intensity.

GLOSSARY OF TERMS

1 MARKER BEDS (MB). MBs are well-defined layers of rock that mark distinct divisions in major
2 geological strata or geological time frames.
3

4 MAXIMALLY EXPOSED INDIVIDUAL (MEI). A hypothetical member of the public who is exposed
5 to a release of radionuclides in such a way that the individual will receive the maximum dose
6 from such a release. Review of the WIPP Land Management Plan (LMP) indicates that public
7 access to the WIPP 16-section area up to the exclusive use area shown is allowed for grazing
8 purposes, and up to the DOE off limits area" for recreational purposes. Although analyses are
9 traditionally conducted for a maximally exposed off-site individual (MOI) at the facility site
10 boundary, in accordance with DOE Order 6430.1A, Section 1300-3.2, the location of the MEI is
11 located at the "closest point of public access," or the WIPP "exclusive use area." The location of
12 the MEI is also consistent with guidance for the implementation of 40 CFR 191, Subpart A.
13

14 Exposure to the MEI is greatest at the Exclusive Use Area (closest distance a member of the
15 public may get to the release point due to LMP access restrictions) due to the dispersion model
16 chosen for accident analysis. As discussed in detail in SAR Section 5.2, the release is a non-
17 plume release (vent release as defined in NRG 1.145), not subject to plume lofting or fumigation
18 conditions. The dose to an individual is therefore greatest at the closest allowable access
19 distance to the point of release.
20

21 MEAN. The average value. For a given set of n values, the mean is the sum of their values divided by n .
22

23 MEDIAN. The median of a set of data is the value such that half of the observations are less than that
24 value and half are greater than that value.
25

26 MERCALLI INTENSITY. A scale of measurement of earthquake intensity.
27

28 MITIGATE. To take practicable means to avoid or minimize release of hazardous or radioactive
29 material or consequences to a hypothetical individual or population,
30

31 MITIGATION. Equipment and/or procedures designed to interfere with accident propagation and/or
32 reduce accident consequences
33

34 MIXED WASTE. Mixed waste contains both radioactive and hazardous components, as defined by the
35 Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.
36

37 NASH DRAW. A shallow valley, approximately 5 mi (8.1 km) wide, open to the southwest located to
38 the west of the WIPP site.
39
40

GLOSSARY OF TERMS

1 NONINVOLVED WORKER. An onsite worker not involved in the operation of the facility when a
2 release occurs. For accident analysis consequence assessment, the maximally exposed
3 noninvolved worker is assumed to be located at a distance of 100 meters from each release point
4 due to restrictions on dispersion modeling used in this safety analysis at close-in distances (<100
5 meters).

6
7 NORMAL CONDITIONS. All activities associated with the facility mission carried out within defined
8 process conditions, performance in accordance with procedures, etc.

9
10 NORMAL OPERATION. All normal conditions that frequency estimation techniques indicate occur
11 with a frequency greater than 0.1 events per year.

12
13 OFF-SITE. A position located at or beyond the WIPP Site Boundary.

14
15 OFF LIMITS AREA. An area consisting of approximately 1454 acres which is posted in accordance
16 with 10 CFR Part 860 and has been designated as such in the Federal Register. This area is
17 managed by an off-limits policy which allows DOE to authorize the use of the area as they
18 determine the need. Public access to the WIPP LWA (16 section) area up to the Off Limits Area
19 is allowed for recreational purposes (see Figure 5.2-1 and the WIPP Land Management Plan).

20
21 ON-SITE. A position located within the WIPP Site Boundary.

22
23 PACKAGE. In the regulations governing the transportation of radioactive materials, the packaging
24 together with its radioactive contents as presented for transport.

25
26 PACKAGING. A shipping container without its contents.

27
28 PANEL. A group of several underground rooms connected by drifts. Within the Waste Isolation Pilot
29 Plant, a panel consists of seven rooms connected by drifts at each end.

30
31 PARTICULATES. Solid particles small enough to become airborne.

32
33 PASSIVE INSTITUTIONAL CONTROLS. "(1) [P]ermanent markers placed at a disposal site,
34 (2) public records and archives, (3) government ownership and regulations regarding land or
35 resource use, and (4) other methods of preserving knowledge about the location, design, and
36 contents of a disposal system" (40 CFR § 191.12).

37
38 PERFORMANCE ASSESSMENT. A term used to denote quantitative activities carried out to evaluate
39 the long-term ability of the Waste Isolation Pilot Plant to effectively isolate the waste, to ensure
40 long-term health and safety of the public by complying with 40 CFR § 268.6, and to supply
41 data/information to the compliance analysis for demonstrating regulatory compliance. The final
42 analysis of compliance will consist of a qualitative assessment of the quantitative results of the
43 performance assessment.

44
45 PLUTONIUM. A metallic, radioactive element, symbol Pu, atomic number 94, in the actinide series of
46 elements; used as a nuclear fuel, to produce radioactive nuclides for research, and as the fissile
47 agent in nuclear weapons.

GLOSSARY OF TERMS

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

3
4 POST-CLOSURE PERIOD. A designated period of time beginning with the end of the
5 Decommissioning Phase and extending through the end of the regulatory time frame of 10,000
6 years.

7
8 POTASH. A potassium compound, especially as used in agriculture or industry.

9
10 PREVENTIVE FEATURE. Any structure, systems, or component that serves to prevent the release
11 of hazardous material in an accident scenario.

12
13 PROPERTY PROTECTION AREA. The interior core of the facility, comprised of about 34 acres and
14 is bordered by a chain link security fence (see Figure 5.2-1).

15
16 PUBLIC. Defined in DOE-STD-3009-94 as individuals outside of the DOE Site Boundary. However,
17 review of the WIPP Land Management Plan indicates that public access to the WIPP 16-section
18 area up to the exclusive use area is allowed for grazing purposes, and up to the DOE off limits
19 area" for recreational purposes. Although accident analyses consequences are traditionally
20 conducted for a maximally exposed off-site individual (MOI) at the facility site boundary, in
21 accordance with DOE Order 6430.1A, Section 1300-3.2, the location of the public (MEI) for
22 accident consequence assessment in this safety analysis is at the "closest point of public access,"
23 or the WIPP "exclusive use area." The location of the MEI is also consistent with guidance for
24 the implementation of 40 CFR 191, Subpart A.

25
26 PUBLIC LAW 96-164. The U.S. Department of Energy National Security and Military Applications of
27 Nuclear Energy Act of 1980. Public Law 96-164 directed the Department of Energy to proceed
28 with the design and development of the Waste Isolation Pilot Plant.

29
30 PUBLIC LAW 102-579. *See* Land Withdrawal Act.

31
32 QUALITY ASSURANCE. The planned and systematic actions necessary to provide adequate
33 confidence that a structure, system, or component will perform satisfactorily in service.

34
35 QUALITY ASSURANCE PROGRAM PLANS (QAPP). Documents that describe the overall program
36 plans and activities to meet the project's quality assurance goals.

37
38 QUALITY ASSURANCE PROJECT PLANS (QAPjP). Documents that ensure site-specific waste
39 characterization activities meet the data quality objectives.

40
41 QUALITY CONTROL. Those quality assurance activities that provide a means to control and measure
42 the characteristics of a structure, system, or component to established requirements.

43
44 RADIOLYSIS. Chemical decomposition by the action of radiation.

GLOSSARY OF TERMS

1 REAL-TIME RADIOGRAPHY. A nondestructive, nonintrusive examination technique that enables a
2 qualitative (and in some cases semiquantitative) evaluation of the contents of a waste container.
3 Real-Time Radiography utilizes x-rays to inspect the contents of the waste container and allows
4 the operator to view events in progress (real time). Real-Time Radiography is used to examine
5 and verify the physical form of the waste for certain waste forms, identify individual waste
6 components, and verify the absence of certain noncompliant items, as applicable.
7

8 REASONABLE. (1) Not conflicting with reason, (2) not extreme or excessive, (3) having the faculty of
9 reason, or (4) possessing sound judgment.
10

11 RELEASE POINT. There are two release points for the TRU and mixed wastes accidents described in
12 the SAR, the Exhaust Filter Building exhaust to the atmosphere and the WHB HEPA filtration
13 exhaust to the atmosphere.
14

15 REM. A common unit of dose equivalent, effective dose equivalent, etc.
16

17 REMOTE-HANDLED WASTE. Transuranic waste with a surface dose rate of 200 millirem per hour or
18 greater. RH-TRU waste received at the WIPP may not exceed a surface dose rate of 1,000 rem
19 per hour (Public Law 102-579, Section 7(a)(1)(A)).
20

21 REPOSITORY. The portion of the Waste Isolation Pilot Plant underground system within the Salado
22 Formation, including the access drifts, waste panels, and experimental areas, but excluding the
23 shafts.
24

25 REPOSITORY/SHAFT SYSTEM. The Waste Isolation Pilot Plant underground workings, including the
26 shafts, all engineered and natural barriers, and the altered zones within the Salado Formation and
27 overlying units resulting from construction of the underground workings.
28

29 RESERVES. Mineral resources that can be extracted profitably by existing techniques and under present
30 economic conditions.
31

32 RISK. In accident analysis, the probability of weighted consequences of an accident defined as the
33 accident frequency per year multiplied by the consequences.
34

35 RESOURCE CONSERVATION AND RECOVERY ACT PERMIT APPLICATION. An application,
36 which is submitted by the owner/operator of a hazardous waste management unit to the state (if
37 authorized by the Environmental Protection Agency) or to the Environmental Protection Agency,
38 for a Resource Conservation and Recovery Act permit to operate the unit.
39

40 RESOURCES. Mineralization that is concentrated enough, in large enough quantity, and in physical and
41 chemical forms such that extraction is currently or potentially feasible and profitable.
42

43 RETRIEVABLE. Describes storage of radioactive waste in a manner designed for recovery without loss
44 of control or release of radioactivity.
45

46 ROOM. An excavated cavity within a panel in the underground. Within the Waste Isolation Pilot Plant,
47 a room is about 33 ft (10 m) wide, 13 ft (4 m) high, and 300 ft (91 m) long.
48

GLOSSARY OF TERMS

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

5
6 SAFETY ANALYSIS REPORT. A report that documents the adequacy of safety analysis to ensure
7 that a facility can be constructed, operated, maintained, and shutdown, and decommissioned
8 safely and in compliance with applicable laws and regulations.

9
10 SAFETY ASSURANCE. The process of providing adequate confidence that an acceptable safety basis
11 for the facility exists.

12
13 SAFETY BASIS. The combination of information relating to the control of hazards at a facility
14 (including design, engineering analyses, and administrative controls) upon which the DOE
15 depends for its conclusion that activities at the facility may be conducted safely.

16
17 SCENARIO. A combination of naturally occurring or human-induced events and processes that
18 represent realistic future changes to the repository, geologic, and geohydrologic systems that
19 could cause or promote the escape of radionuclides and/or hazardous constituents from the
20 repository.

21
22 SEAL. An engineered barrier designed to isolate the waste and to impede fluid flow in the shafts.

23
24 SEISMIC RISK ZONE. A designation of a geographic region expressing the maximum intensity of
25 earthquakes that could be expected there.

26
27 SHAFT PILLAR. The cylindrical volume of rock around a shaft from which major underground
28 openings are excluded in order that they not weaken the shaft.

29
30 SIEVERT. The SI unit of any quantities expressed as dose equivalent. (1 Sv = 100 rem)

31
32 SITE BOUNDARY. The boundary encompassing the WIPP 10,240 acres (LWA 16 sections).

33
34 SLUDGE. Refers to de-watered contact-handled transuranic wastes containing both organic and
35 inorganic constituents that must meet the Waste Acceptance Criteria for shipment and disposal at
36 the Waste Isolation Pilot Plant repository. High sludges are contact-handled transuranic waste
37 where the sludge component constitutes 50 percent or more of the waste volume; low sludges are
38 the same type of waste containing less than 50 percent by volume of sludge.

39
40 SOURCE TERM. Source term is the quantity of radioactive or hazardous constituents available for
41 transport or the maximum concentration of hazardous constituents in a particular phase,
42 depending on the type of information available.

43
44
45
46 TECHNICAL SAFETY REQUIREMENTS. Those requirements that define the conditions, safe
47 boundaries, and the management or administrative controls necessary to ensure the safe
48 operation of the facility and to reduce the potential risk to the public and facility workers from
49 uncontrolled releases of radioactive or hazardous materials.

GLOSSARY OF TERMS

1 TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE). The sum of the effective dose equivalent
2 (EDE) from sources external to the body during the year, plus the committed effective dose
3 equivalent (CEDE).
4

5 TOXICITY. The ability of a substance to cause damage to living tissue, impairment of the central
6 nervous system, severe illness or, in extreme cases, death when ingested, inhaled, or absorbed by
7 the skin.
8

9 TOXICOLOGICAL HAZARD. Any substance having chemical properties that pose a potential threat
10 to the public, workers, or the environment.
11

12 TRANSURANIC NUCLIDE. A nuclide with an atomic number greater than that of uranium (92). All
13 transuranic nuclides are produced artificially and are radioactive.
14

15 TRANSURANIC WASTE. The term "transuranic waste" means waste containing more than
16 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater
17 than 20 years, except for: (1) high-level radioactive waste, (2) waste that the Secretary has
18 determined, with the concurrence of the Administrator, does not need the degree of isolation
19 required by the disposal regulations, or (3) waste that the Nuclear Regulatory Commission has
20 approved for disposal on a case-by-case basis in accordance with 10 CFR 61.
21

22 TREATMENT. Means any method, technique, or process, including neutralization, designed to change
23 the physical, chemical, or biological character or composition of any hazardous waste so as to
24 neutralize such waste, or so as to recover energy or material resources from the waste, or as to
25 render such waste non-hazardous, or less hazardous; safe to transport, store, or dispose of; or
26 amenable for recovery, amenable for storage, or reduced in volume.
27

28 TYPE A PACKAGING. Means a packaging designed to retain the integrity of containment and
29 shielding required by this part under normal conditions of transport as demonstrated by the tests
30 set forth in 49 CFR § 173.465 or 173.466, as appropriate. Note: Radioactive waste is transported
31 to WIPP in Type B packaging.
32

33 UNINTERRUPTIBLE POWER SUPPLY (UPS). A power supply that provides automatic, instantaneous
34 power, without delay or transients, on failure of normal power. It can consist of batteries or full-
35 time operating generators. It can be designated as standby or emergency power depending on the
36 application. Emergency installations must meet the requirements specified for emergency.
37

38 VOLATILE ORGANIC COMPOUNDS (VOCs). RCRA-regulated organic compounds which readily
39 pass into the vapor state and are present in transuranic mixed waste.
40

41 WASTE ACCEPTANCE CRITERIA. A set of conditions established for permitting transuranic wastes
42 to be packaged, shipped, managed, and disposed of at the Waste Isolation Pilot Plant.
43

44 WASTE CHARACTERIZATION. Sampling, monitoring, and analysis activities to determine the nature
45 of the waste.
46

GLOSSARY OF TERMS

1 WASTE CHARACTERIZATION PROGRAM. The processes of transuranic waste analysis to support
2 the Part B of the Resource Conservation and Recovery Act permit application, other permits,
3 transportation requirements, and other program requirements. These analyses include
4 documentation of waste generation processes, visual examination of waste components,
5 radiography analysis, and waste assay for radionuclide content. Waste matrix and headspace gas
6 chemical analyses are also part of the characterization program.
7

8 WASTE FORM. A term used to emphasize the physical and chemical properties of the waste.
9

10 WASTE MATRIX. The material that surrounds and contains the hazardous constituents and to some
11 extent protects them from being released into the surrounding rock and groundwater. Only
12 material within the canister (or drum or box) that contains the waste is considered part of the
13 waste matrix.
14

15 WASTE STORAGE/DISPOSAL. For the purposes of this Safety Analysis Report, with regard to
16 transuranic waste: the term "storage" refers to the temporary storage of that waste above ground;
17 and, the term "disposal" refers to that waste which has been emplaced in the underground
18 horizon.
19

20 WORKING AGREEMENT. Appendix B of the Agreement of Consultation and Cooperation, which sets
21 forth the working details of that Agreement.
22

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

1

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**WIPP Safety Analysis Report
DOE/WIPP-DRAFT-3174**

CHANGE HISTORY

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REVISION	AFFECTED SECTIONS/ PAGE NUMBERS	DATE	ADDITIONAL DESCRIPTION OF NATURE OF REVISIONS
0	Entire Document	XX/XX	Initial Issue