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Mr. Charles H. Peterson
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Mail Stop 4H3
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Dear Chuck:

DEFINITION OF TERMS FOR ASTM
STANDARD PRACTICE

I have, finally, gone through the glossary of terms in the SCP and extracted from it definitions of terms that coincide with, or are related to, those terms that have to be defined in the draft ASTM standard practice on long-term performance of waste package materials. Also enclosed is a list of relevant definitions from other sources.

Unfortunately, neither of these lists covers all of the terms that have to be defined in the standard practice. However, I hope that they will help the subcommittee to converge on acceptable definitions for some of the terms that have to be defined.

Please let me know if you have any questions concerning the enclosed materials.

Sincerely,

James C. Cunnane

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Materials Advisor

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Enclosure

SOURCE: SITE CHARACTERIZATION PLAN GLOSSARY

Alteration (Geologic) - Changes in the chemical or mineralogic composition of a rock, generally produced by weathering, hydrothermal solutions, or metamorphism.

Characterization Parameter - A physical property or condition (either measurable or calculable) whose value is to be determined in the site program in order to obtain, compute, or evaluate a performance parameter for a design or performance issue.

Degradation - The general lowering of the surface of the land by erosive processes, especially by the removal of material by flowing water.

Disposal - The emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste and the isolation of such waste from the accessible environment.

Engineered Barrier System (EBS) - (1) the waste packages and the underground facility (10 CFR Part 60); (2) the man-made components of a disposal system designed to prevent the release of radionuclides from the underground facility or into the geohydrologic setting. The EBS includes the radioactive-waste form, radioactive-waste canisters, materials placed over and around such canisters, any other components of the waste package, and barriers used to seal penetrations in and into the underground facility (10 CFR Part 960).

Geologic Repository - A system requiring licensing by the U.S. Nuclear Regulatory Commission used for the disposal of radioactive wastes in excavated geologic media. A geologic repository includes (1) the geologic repository operations area and (2) the portion of the geologic setting that provides isolation of the radioactive waste and is located within the controlled area.

High-Level Radioactive Waste - The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that the U.S. Nuclear Regulatory Commission, consistent with existing law, determines by rule requires permanent isolation.

Validation (of a Computer Code) - The documented confirmation of the adequacy, (i.e., suitability for its intended purpose) of the computer code under review--demonstration that what the software does is appropriate to the problem. Validation includes assurance that any physical model, as embodied in software, is a correct representation of the intended physical system or process.

Verification of Computer Codes - The documented confirmation that the computer code performs exactly the mathematical and logical operations described in the user's manual and other documents.

Waste Matrix - The material that surrounds and contains the waste and to some extent protects it from being released into the surrounding rock and ground water. Only material within the canister (or drum or box) that contains the waste is considered part of the waste matrix.

Waste Package - The waste form and any containers, shielding, packing, and other absorbent materials immediately surrounding an individual waste container.

OTHER SOURCES

Disposal - The emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste, and the isolation of such waste from the accessible environment (10 CFR Part 960).

Engineered-Barrier System - The manmade components of a disposal system designed to prevent the release of radionuclides from the underground facility or into the geohydrologic setting. Such term includes the radioactive-waste form, radioactive-waste canisters, materials placed over and around such canisters, any other components of the waste package, and barriers used to seal penetrations in and into the underground facility (10 CFR Part 960).

Geologic Repository - A system requiring licensing by the NRC, that is intended to be used, or may be used, for the disposal of radioactive waste in excavated geologic media. A geologic repository includes (1) the geologic-repository operations area and (2) the portion of the geologic setting that provides isolation of the radioactive waste and is located within the controlled area (10 CFR Part 960).

High-Level Radioactive Waste - (1) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations and (2) other highly radioactive material that the NRC, consistent with existing law, determines by rule requires permanent isolation (10 CFR Part 960).

High-Level Radioactive Waste - or "HLW" - Means (1) irradiated reactor fuel and (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility subject to the licensing and related regulatory authority of the Commission pursuant to Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974 (10 CFR Part 960).

Model - A representation of a process, component, or system (NUREG-0856, NUREG-0960, NRC HLW Glossary). A conceptual description and the associated mathematical representation of a system, subsystem, component, or condition that is used to predict changes from a baseline state as a function of internal and/or external stimuli and as a function of time and space (10 CFR Part 960).

Validation - Assurance that a model as embodied in a computer code is a correct representation of the process or system for which it is intended (NUREG-0856). Usually, accomplished by comparing code results to (1) physical data, or (2) a validated code designed to perform the same type of analysis (bench-marking with a validated code). Peer review may be used for code validation if it is the only available means for validating a code (BPMD TMP 12-02). Ideally, validation is a comparison of predictions derived from the model with empirical observation; however, as this is frequently impractical or impossible owing to the large physical and time scales involved in HLW disposal, short term testing supported by other avenues such as peer review are used to obtain this assurance (NRC HLW Glossary).

Verification - Assurance that a computer code correctly performs the operations specified in the numerical model (NUREG-0856). Usually accomplished by comparing code results to (1) a hand calculation, (2) an analytical solution or approximation, or (3) a verified code designed to perform the same type of analysis (benchmarking) [BPMD TMP 12-02]. The process of obtaining assurance that a computer program correctly implements the numerical model (NRC HLW Glossary).