

Regulatory Guide 3.69 Topical Guidelines: Clarification, Considerations and Comments

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1 Document Overview

The Regulatory Guide 3.69 is a set of topical categories that aids the selection of documents and other materials for inclusion in the *Licensing Support Network* (LSN). *Information Science Research Institute* (ISRI) has applied these guidelines for the purpose of developing “training material” to be used for categorization and possibly other tasks that will assist the DOE in selecting appropriate documents for the LSN.

In the process of selecting training material, ISRI became intimately familiar with Regulatory Guide 3.69. This document tries to characterize the Regulatory Guide by including the following for each topical category applied in our categorization process:

1. ISRI’s interpretation of the guideline.
2. Confusing issues and overlap among guidelines.
3. Good representative document titles.

Several of the 3.69 categories are not covered in this document. These are listed in Section 2 with an explanation of why each is not included. Finally, we summarize the issues of the Regulatory Guide in Section 4, *Collective Overview*.

2 Categories Not Covered

Third tier subcategories Only top level categories and second level subcategories were applied to this categorization process. Third level divisions were used to aid selection into upper levels.

01.5 Any Publicly Available Information on the Physical Security Plan Guidelines 01.4 and 01.5 are topically very close; documents discussing safeguards almost always discuss physical security plans as well. We combined these categories for categorization purposes.

01.7 License Specifications Documents that fall into 01.7 overlapped those in 01.2. For this reason, 01.7 was not used as a training category. All documents of this type were placed into 01.2.

04.3 Underground Facility Both 03.3 and 04.3 are entitled “Underground Facility.” Unless a clear distinction exists between the two, we recommend eliminating this category. Guideline 04.3 was not used as a training category. All documents about the underground facility were placed into 03.3.

06.0 through 06.9 Conduct of Repository Operations Since these categories all pertain to *actual* repository operations, no documents currently exist.

08.3 QA Records Covering Operations, Permanent Closure, Decontamination, and Decommissioning Again, since the repository does not exist, no documents are available for this category.

3 Interpretation & Comments

00.1 Exclusionary Short Term

1. **Interpretation** Although not a guideline in 3.69, Appendix B of the Regulatory Guide lists types of information that is considered exclusionary. These materials, as opposed to long term exclusionary, have short retention schedules and no long term value of any sort. The types of documents that have been classified here include: short letters and title pages containing no relevant material, correspondence and memorandums not relating to any 3.69 category, personnel information, cost estimates and funding information, document reviews and comments with no attached document, editing notes with no attached document, Y2K compliance information, janitorial information, and office moving.
2. **Confusion and Overlap** Confusion arises because the topics this category covers are defined by omission. No explicit genre is described.
3. **Representative Documents**
 - *Talking Points for Allen Benson’s Presentation on Program Financial Assistance to the Independent Financial Review Panel, May 11, 1994* (HQO.19940608.0024)

- *United States Department of Energy Office of Civilian Radioactive Waste Management Nuclear Waste Fund: Financial Statement* (HQO.19950303.0010)
- *FY 1995 Mid-year Review, FY 1996 Annual Work Plan, and FY 1997 2001 Budget Development Guidance* (HQO.19950406.0030)

00.2 Exclusionary Long Term

1. **Interpretation** Exclusionary Long Term includes documents that are not relevant to 3.69 but may have some long term historical value. The types of documents that are classified here include dictionaries, glossaries, manuals, document preparation plans, publishing guidelines, reference lists and indexes.
2. **Confusion and Overlap** Confusion arises because the topics this category covers are defined by omission. No explicit genre is described.
3. **Representative Documents**
 - *Licensing Support System (LSS): Keyword Dictionary* (HQO.19950531.0005)
 - *United States Acceptance of Spent Nuclear Fuel from Foreign Research Reactors.* (HQO.19950823.0007)
 - *TBM Electrician Guide* (MOL.19950524.0173)

01.0 General Information

1. **Interpretation** This category includes documents covering several major topics, documents about management, general documents about Yucca Mountain that do not discuss any 3.69 topic and documents that discuss the MRS facility. These documents are relevant but do not fall under any of the more specific categories.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *System Architecture Panel Meeting, Final Report* (HQO.19941215.0009)
 - *Interim Storage of Spent Nuclear Fuel* (HQO.19950223.0020)
 - *Civilian Radioactive Waste Management System Throughput Rate Analysis* (HQO.19961022.0005)

01.1 General Facility Description

1. **Interpretation** This category includes any documents on general overall repository facility information *not pertaining* to the GROA (Geologic Repository Operations Area). Reference design descriptions, MGR, MGDS, and Interim Storage Facility documents belong here.
2. **Confusion and Overlap** It's not clear that this category covers general facilities operations. Also, there seems to be some overlap with 03.0, "Geologic Repository Operations Area (GROA: Physical Facilities)."
3. **Representative Documents**
 - *Strategic Plan for High-Level Nuclear Waste Disposal* (HQO.19940927.0016)
 - *Concepts of a Geologic Repository* (MOL.19960729.0102)
 - *Mined Geologic Disposal System Functional Analysis Document* (MOL.19961217.0184)

01.2 Basis for Licensing Authority

1. **Interpretation** 01.2 includes documents pertaining to licensing or developing the Licensing Application (LA). Overall test and evaluation documents for Viability Assessment and the LA. License Application review plans are included here.
2. **Confusion and Overlap** Documents that fall into 01.2 overlap those in 01.7. For this reason, 01.7 was not used as a training category. All documents of this type were placed into 01.2. Further, more explicit descriptions are required to determine where a viability assessment documents belong. Several categories cover topics concerning viability assessment (e.g., under 01.2, 01.6, and the 05.X categories).
3. **Representative Documents**
 - *Lesson Plan, Lesson Title: The Licensing Process* (HQF.19940331.0041)
 - *License Application Review Plan for a Geologic Repository for Spent Nuclear Fuel and High-Level Radioactive Waste, Draft Review Plan* (HQO.19941003.0026)
 - *Draft, Revised Prelicensing Program Strategy for the U.S. Nuclear Regulatory Commission High-Level Waste Repository Program* (HQO.19950912.0009)

01.3 Schedules Relevant to the NRC/DOE Repository Programs

1. **Interpretation** Includes Schedules for site/facility evaluations and assessments. Program and official schedules are included here. Schedules *not* included are QA schedules, milestones, and estimated dates of task completion
2. **Confusion and Overlap** It's not clear what "baselined schedules" are and if they should be included in this category.
3. **Representative Documents**
 - *Program Cost and Schedule Baseline, Revision 6* (HQO.19970317.0001)
 - *em Nuclear Waste Disposal Schedule* (HQO.19971114.0016)
 - *NNWSI Project Cost/Schedule Change Request: Change the Date of Level 2 Milestone M649 - Completion of DOE/NRC Workshop on ESTP* (MOL.19980601.1395)

01.4 Any Publicly Available Information on Certification of Safeguards

1. **Interpretation** This category includes documents pertaining to the safeguarding of special nuclear material (SNM) and its prevention from theft, loss, or sabotage.
2. **Confusion and Overlap** "Safeguards" should be defined explicitly. Guidelines 01.4 and 01.5 are topically very close; documents discussing safeguards almost always discuss physical security plans as well. Unless a more clear distinction can be made, combining these categories is recommended (for categorization purposes, 01.4 and 01.5 were combined). It's unclear whether "Safety Assessment Reports (SAR) belong to 01.4.
3. **Representative Documents**
 - *Revision I of the OCRWM Regulatory Guidance (RGD) - Appendix D: Safeguards and Security Plan (BCP-00-94-0006)* (HQO.19940923.0024)
 - *Final Report, Office of Storage and Transportation, Informal Self-Assessment: Environment, Safety, and Health and Safeguards and Security* (HQO.19940927.0004)
 - *Weston Review of the Integrated Safeguards and Security Requirements* (HQO.19960206.0011)

01.6 Site Characterization

1. **Interpretation** Included here are documents pertaining to overall site characterization processes (reports and plans), documents on the Exploratory Studies Facility (ESF), documents pertaining to performance confirmation and viability assessment design and reviews.
2. **Confusion and Overlap** Confusion exists for viability assessment documents as stated in guideline 01.2.
3. **Representative Documents**
 - *Site Characterization Plan Overview, Yucca Mountain Site, NV Research and Development Area, NV* (HQO.19881201.0001)
 - *Yucca Mountain Site Characterization Project, Monthly Activity Report for August/September 1994. Semiannual Progress Report, April, 1994 - September 30, 1994* (HQO.19950523.0025)
 - *Site Characterization Progress Report, Yucca Mountain, NV Nuclear Waste Policy Act (Section 113) April 1 - September 30, 1997. November 17, April 1998.* (HQO.19980226.0001)

01.8 Information Relevant to NRC Findings Regarding Compliance with Statutes [other than (a) The Atomic Energy Act, as amended, (b) the Energy Reorganization Act of 1974, and (c) the Nuclear Waste Policy Act, as amended] that Federal agencies must take cognizance of in licensing actions (e.g., American Indian Religious Freedom Act, Endangered Species Act of 1973, or the National Environmental Policy Act).

1. **Interpretation** Documents here discuss repository activities that comply or implement certain statutes. In particular, compliance/implementation of those Acts listed above or any other act or statute that may impact the repository.
2. **Confusion and Overlap** Some EIS documents discuss NEPA (National Environmental Policy Act). It's unclear whether these documents should be placed in 01.8.
3. **Representative Documents**
 - *Statement of Position Regarding the U.S. Department of Energy Office of Civilian Radioactive Waste Management Compliance with the National Environmental Policy Act* (HQO.19940622.0022)
 - *OCRWM NEPA Compliance Approach* (HQO.19941003.0031)
 - *Annual NEPA Planning Summary for the Yucca Mountain Site Characterization Office, January 31, 1999* (HQO.19990707.0019)

02.0 The Natural Systems of the Geologic Setting

1. **Interpretation** Documents classified under 02.0 discuss multiple natural system topics. They give general descriptions of the natural systems; They are geotechnical documents that fit into two or more subcategories within 02.0 or are relevant to the geologic setting but do not discuss topics covered in 02.1 through 02.7.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Paleoflood Deposits Provide Flood-Prediction Tools in Southern Nevada* (MOL.19950130.0005)
 - *Precipitation and Meteorological Monitoring for Regional Hydrology (USGS)* (MOL.19950615.0018)
 - *Geothermal Resource Assessment of the Yucca Mountain Area, Nye County, Nevada, Final Report* (MOL.19961017.0061)

02.1 Geologic System

1. **Interpretation** Included here are documents pertaining to regional and site geology that discuss stratigraphy, lithology, and/or predicted future geologic variations. Other document themes include rock mass strength and tensile tests and models, Young's Modulus, rock permeability, faults, rocks, unsaturated zone, saturated zone, and other geologic layers.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Geologic Map of Bare Mountain, Nye County, Nevada* (MOL.19941214.0064)
 - *Rock Quality Designation (RQD) After Twenty Years* (HQO.19941222.0017)
 - *Review Draft, Development of Stochastic Indicator Models of Lithology, Yucca Mountain, Nevada* (MOL.19941201.0031)

02.2 Hydrologic System

1. **Interpretation** 02.2 contains documents pertaining to the regional hydrology, site hydrology, surface water issues, perched water, water flow paths, and saturated and unsaturated zone hydrology.
2. **Confusion and Overlap** It's not clear that documents discussing hydro-chemistry belong to 02.2 or 02.3.

3. Representative Documents

- *Development of Models for Fast Fluid Pathways Through Unsaturated Heterogeneous Porous Media* (MOL.19941025.0001)
- *Selected Hydrologic Data from Fortymile Wash in the Yucca Mountain Area, Nevada, Water Year 1992* (MOL.19941219.0059)
- *Scenarios Constructed for Nominal Flow in the Presence of a Repository at Yucca Mountain and Vicinity* (MOL.19950202.0001)

02.3 Geochemical System

1. **Interpretation** This category includes documents pertaining to regional and site geochemistry, mineralogy, composition of water and natural distribution of isotopes.
2. **Confusion and Overlap** See 02.2.
3. **Representative Documents**

- *Mineralogical Characterization of Selected Shales in Support of Nuclear Waste Repository Studies: Progress Report for October 1987-September 1988* (HQX.19890823.0043)
- *Geochemistry of Outcrop Samples from Raven Canyon and Paintbrush Canyon Reference Sections, Yucca Mountain Nevada* (MOL.19960603.0134)
- *Summary and Synthesis Report on Mineralogy and Petrology Studies for the Yucca Mountain Site Characterization Project, Volume II, History of Mineralogical and Geochemical Alteration of Yucca Mountain* (MOL.19961230.0038)

02.4 Climatological and Meteorological Systems

1. **Interpretation** Documents here discuss climate and meteorologic conditions including present climate and meteorology, paleoclimatology, and future climatic variations. These document may discuss wind speeds and patterns, precipitation, snowfall, and extreme weather and temperature variations.
2. **Confusion and Overlap** None.
3. **Representative Documents**

- *Estimating Past Precipitation and Temperature from Fossil Ostracodes* (MOL.19941129.0049)
- *Engineering Design Climatology and Regional Meteorological Conditions Report* (MOL.19971210.0773)
- *Regional and Local Wind Patterns Near Yucca Mountain* (MOL.19980204.0319)

02.5 Integrated Natural System Response to the Maximum Design Thermal Loading

1. **Interpretation** This guideline includes documents about near-field and altered-zone models and reports, natural analog synthesis reports, and heater test reports. These documents may also discuss the natural system response to thermal loading.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Bulk and Mechanical Properties of the Paintbrush Tuff Recovered From Borehole USW NRG-6: Data Report* (MOL.19940811.0001)
 - *Modeling Spatial Heterogeneity of Thermal Conductivity Using a Surrogate Property* (MOL.19950310.0153)
 - *Use of Geostatistical Modeling to Capture Complex Geology in Finite Element Analyses* (MOL.19950310.0173)

02.6 Processes and Events (anticipated, unanticipated and potentially disruptive)

1. **Interpretation** These documents discuss natural processes, events, probabilities, and models of future occurrences. These documents discuss volcanism, seismology (plate movement tectonics), flooding, water table rise or other seismic events.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Tectonic Models and Synthesis* (HQO.19951201.0002)
 - *Study Plan for Study 8.3.1.17.4.1: Historical and Current Seismicity* (MOL.19941220.0018)
 - *Topical Report: Methodology to Assess Seismic Hazards at Yucca Mountain* (MOL.19951121.0244)

02.7 Effectiveness of Natural Barriers Against the Release of Radioactive Material to the Environment (information relevant to the performance objectives of 10 CFR 60.113)

1. **Interpretation** These documents pertain to the *effectiveness* of natural barriers, such as zeolites, that can shield against the spread or release of radionuclides from the geologic repository. Block tests may also be discussed.

2. **Confusion and Overlap** Most radionuclide migration documents discuss hydrology and water paths as well. This makes the distinction between 02.2 and 02.7 difficult. Guideline 02.3 and 02.7 both discuss environmental isotope distributions. These also overlap. Most documents that review 10 CFR 60.113 also discuss other 10 CFR 60 categories; in this regard, confusion exists with 02.7, 03.6, and 04.6.

3. **Representative Documents**

- *Lateral Continuity of Sorptive Mineral Zones Underlying Yucca Mountain, Nevada* (HQS.19880517.3042)
- *Performance of Calico Hills Relative to Other Natural Barriers* (MOL.19951121.0210)
- *Site Scale Unsaturated Zone Flow and Transport Model, Milestone 3672 - Modeling of Flow, Radionuclide Migration, and Environmental Isotope Distributions at Yucca Mountain* (MOL.19970103.0042)

03.0 Geologic Repository Operations Area (GROA): Physical Facilities

1. **Interpretation** This category includes documents *exclusively* about the GROA, not the facility/repository as a whole. These documents describe the physical facilities of the GROA and seismic design of the overall facility. The documents classified here include information pertaining to two or more of the subcategories 03.1 through 03.6. Also included are documents that are relevant to the GROA physical facilities but do not fit into 03.1 through 03.6.
2. **Confusion and Overlap** See 01.1. Also, the subcategories under 3.0 overlap; in these cases, documents were placed here in 03.0.

3. **Representative Documents**

- *Topical Report and Annotated Outline, Seismic Design Methodology for a Geologic Repository at Yucca Mountain* (HQO.19950127.0030)
- *Mined Geologic Disposal System Functional Analysis Document* (MOL.19970124.0397)
- *Overview of the Surface and Subsurface Access Characteristics Program: Description of the Surface and Subsurface Access Characteristics Required by the Performance and Design Issues* (MOL.19980422.0813)

03.1 Surface Facilities

1. **Interpretation** Documents included in this category discuss matters of the surface facility of the GROA only. Examples of these matters include

handling systems, buildings, hotcells, equipment, the onsite radioactive waste management system, fire and explosion protection systems, communication systems, utility systems, control systems, onsite transportation, ventilation systems, operations support, and the canister transfer system.

2. **Confusion and Overlap** None.

3. **Representative Documents**

- *Memorandum: YMPO Review of Draft Fire Protection and Tunnel Safety Audit Plan* (HQO.19930422.0004)
- *Waste Acceptance System Requirements Document* (HQV.19931115.0007)
- *Repository Surface Design Site Layout Analysis* (MOL.19980202.0159)

03.2 Shafts/Ramps

1. **Interpretation** These documents pertain to the shafts and ramps to and from the GROA. These documents usually discuss their use for waste/muck removal, ventilation intake/exhaust, personnel use, materials use, and decommissioning.

2. **Confusion and Overlap** Most documents discussing shafts and ramps also discuss the underground facility. If shafts and ramps are part of the underground facility, there is some overlap with categories 03.3 and 03.4. If not, this distinction should be made more clear.

3. **Representative Documents**

- *Repository Shafts and Ramps Design Concepts Report for FY 1994* (MOL.19950830.0233)
- *Request for Support to Develop a Repository Shaft Design Guide for the Shafts at the Prospective Yucca Mountain Nuclear Waste Repository* (MOL.19980106.0423)
- *Geomorphic Evaluation of Proposed Shaft and Ramp Locations Yucca Mountain High Level Waste Site* (MOL.19980225.0872)

03.3 Underground Facility

1. **Interpretation** These documents pertain to the underground facility of the GROA only. They discuss excavation and ground support systems, waste emplacement in the drifts, underground communication systems, and decommissioning plans with respect to the underground facility.

2. **Confusion and Overlap** See 03.2. Also, according to the Regulatory Guide, documents about the waste retrieval system (3.3.5) should be classified under this category. However, category 03.5 “Retrievability of Waste” seems like a more appropriate category.

3. Representative Documents

- *Subsurface Ventilation System* (MOL.19980430.0098)
- *Waste Emplacement System* (MOL.19980519.0274)
- *Title III Evaluation Report for the Conveyor System* (MOL.19981214.0103)

03.4 Interface of Structures, Systems, and Components

1. **Interpretation** Documents classified in 03.4 discuss integrated interface controls and low level waste treatment strategies pertaining solely to the GROA.
2. **Confusion and Overlap** See 03.2.
3. **Representative Documents**

- *Interface Control Drawings* (MOL.19980213.0294)
- *Ex-Container System* (MOL.19980618.0062)
- *Integrated Interface Control Document Volume I: U.S. Department of Energy Spent Nuclear Fuel to the Monitored Geologic Repository For Mechanical and Envelope Interfaces* (MOL.19990428.0236)

03.5 Retrievability of Waste

1. **Interpretation** 03.5 includes documents discussing how waste canisters and other facilities are used to retrieve waste from the underground GROA in case of a disaster. These documents pertain specifically to the Monitored Geologic Repository (MGR).
2. **Confusion and Overlap** It was indicated that documents discussing the Monitored Geological Repository (MGR) should be classified in this category. Many of the MGR documents however, never discuss retrievability of waste. This causes some confusion about whether or not MGR documents should be classified under 03.5. Also, since 03.5 is a subcategory of 03.0, GROA Physical Facilities, would it be accurate to classify documents here that discuss the process of retrieving waste without respect to GROA? There is also confusion of whether documents that discuss general facility descriptions of the Monitored Retrievable Storage (MRS) should be classified in 03.5. These are currently categorized under 01.0.

3. Representative Documents

- *Retrieval Equipment Descriptions* (MOL.19971222.0395)
- *Retrievability Strategy Report* (MOL.19980723.0025)
- *Waste Retrieval System* (MOL.19980825.0010)

03.6 Effectiveness of the GROA against the Release of Radioactive Materials to the Environment

1. **Interpretation** These documents pertain to how well the GROA (engineered and natural barriers) can shield against the spread or release of radionuclides from the geologic repository. These documents discuss the design of the GROA with regard to its effectiveness against radionuclide migration; they may focus on the NRC's position on the underground facility design with regard to its effectiveness; and they may discuss 10 CFR 60.111 or information relevant to it.
2. **Confusion and Overlap** See 02.7. There are four categories that deal directly with the release of radioactive materials to the environment. They include: 02.7, 03.6, 04.6 and 05.3. Some documents fit into more than one of these categories.
3. **Representative Documents**
 - *Petition of the U.S. Department of Energy for a Rulemaking to Establish Accident Dose Criteria for a Geologic Repository for High-level Radioactive Waste* (HQO.19900425.0031)
 - *Nuclear Regulatory Commission, 10CFR Part 60, Disposal of High-Level Radioactive Wastes in Geologic Repositories, Design Basis Events* (MOL.19970424.0278)
 - *Proposed Rulemaking to 10 CFR Part 60 (Important to Safety)* (MOL.19971007.0384)

04.0 Engineered Barrier Systems

1. **Interpretation** Documents categorized here include information pertaining to two or more of the subcategories 04.1 through 04.6. Also included are documents that are relevant to Engineered Barrier Systems but do not specifically discuss topics of the subcategories.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Multi-Purpose Canister System Evaluation - A Systems Engineering Approach* (HQC.19940804.0037)
 - *Engineered Materials Characterization Report for the Yucca Mountain Site Characterization Project: Volume 1: Introduction, History, and Current Candidates* (MOL.19960402.0547)
 - *Waste Package Material Properties: Waste Form Materials* (MOL.19990811.0234)

04.1 Waste Package

1. **Interpretation** Documents categorized in 04.1 consider the following topics: waste package, disposal containers, waste package design, waste canisters, and casks, surveys, test results and models. These documents include topics discussing disposal containers and/or their components (i.e. MPC) and waste package criticality.
2. **Confusion and Overlap** Some documents state that the waste container is part of the waste form. This interpretation causes ambiguity between 04.1 and 04.2. Overlap exists among documents discussing “waste criticality” with respect to 04.1, 04.2, and 04.4.
3. **Representative Documents**
 - *Explosive Consolidation of Waste Canisters* (HQO.19950501.0017)
 - *Impacts of Initial Enrichment, Water Density, and Ferriferous Filler on the Criticality Control of Large MPCs/Waste Packages* (HQO.19960326.0014)
 - *Localized Corrosion of Container Materials in Anticipated Repository Environments* (MOL.19960411.0395)

04.2 Waste Form

1. **Interpretation** Documents here discuss actual waste forms including SNF, PWR, BWR, Naval Fuel, low level and high level waste. They discuss waste fuel, spent fuel, nuclear material stored in waste, radionuclide inventories and waste form criticality. Reports, models, and analyses with regard to waste forms would also be included here.
2. **Confusion and Overlap** See 04.1.
3. **Representative Documents**
 - *WVDP Waste Form Qualification Report Waste Form Specifications. Specification for Product Consistency* (HQO.19950428.0017)
 - *Waste Form Characteristics Report* (MOL.19970728.0022)
 - *The Burnup Dependence of Light Water Reactor Spent Fuel Oxidation*(MOL.19980810.0383)

04.4 Engineered Barrier System Waste Package Emplacement Environment

1. **Interpretation** These documents pertain to engineered barriers outside the waste package. They discuss concrete properties and tests, rock properties and tests, waste package supports, sorptive inverts, other invert materials, backfill, grout, drip shields, packing or shielding around the

waste form/package, and any materials between the waste package and the EBS/Natural Barrier System. Documents may include disposal criticality in conjunction with the waste package emplacement environment.

2. **Confusion and Overlap** Notes indicate that documents about disposal criticality should be classified under this category as well as 04.2, Waste Form. However, the NRC defines criticality as “. . . a term used in reactor physics to describe the state when the number of neutrons released by fission is exactly balanced by the neutrons being absorbed (by the fuel and poisons) and escaping the reactor core. A reactor is said to be ‘critical’ when it achieves a self-sustaining nuclear chain reaction, as when the reactor is operating.” Criticality in most documents that have been classified refer to the nuclear waste form and thus seem to be better classified under 04.2.

3. Representative Documents

- *Development of Backfill Material as an Engineered Barrier in the Waste Package System — Interim Topical Report* (HQS.19880517.3219)
- *Waste Package Supports and Sorptive Inverts Materials Selection* (MOL.19980127.0347)
- *Emplacement Drift Invert — Precast Concrete Outline Specification* (MOL.19980722.0243)

04.5 Engineered Barrier System Alternative Design Features

1. **Interpretation** These documents cover any engineered barrier system alternatives such as alternative waste package designs or disposal containers, alternative backfill materials, and emplacement environments. They may also discuss alternatives to any of the engineered barrier components.
2. **Confusion and Overlap** Some documents classified here can also be placed in 11.0, “Any Alternatives Considered.”

3. Representative Documents

- *Evaluation of Enhanced Design Alternative II With and Without Backfill* (MOL.20000427.0024)
- *Engineered Barrier Alternative Design Configurations Item 1 QAP 3-12 Transmittal from Dulin to Andrews, Revision 00 15 Jan 98* (MOL.19980217.0164)
- *Engineered Barrier System Alternative Concept: Use of Gravel Backfill as a Hydraulic and Diffusion Barrier* (MOL.19980505.0061)

04.6 Effectiveness of Engineered Barriers Against the Release of Radioactive Material to the Environment

1. **Interpretation** Documents discussing the *effectiveness* of the engineered barriers against the release of radionuclides from the geologic repository into the environment; These documents contain information relevant to the performance objectives of 10 CFR 60.113.
2. **Confusion and Overlap** See 04.4 and 03.6.
3. **Representative Documents**
 - *Defense-in-Depth and the Role of Multiple Barriers in the Development of 10 CFR Part 60 Technical Criteria* (HQO.20000502.0015)
 - *Strategy to Exempt Repository Releases of Carbon-14 from Dioxide Environmental Protection Agency and Nuclear Regulatory Commission Regulatory Commission Regulations, 40 CFR Part 191 and 10 CFR Part 60* (MOL.19980914.0615)
 - *Draft Generic Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to 10 CFR 60 Quality Assurance Requirements* (NNA.19870615.0004)

05.0 Overall System Performance Assessment

1. **Interpretation** Documents categorized here include information pertaining to two or more of the subcategories 05.1 through 05.4. Also included are documents that are relevant to Overall System Performance Assessment but do not specifically discuss topics of the subcategories.
2. **Confusion and Overlap** It is unclear whether *Total System Performance Assessment* (TSPA) documents should fall at this top level 05.0. It seemed though that many if not all of the TSPA documents could fit into one of the 05.0 subcategories. Category 05.1 specifically includes TSPA documents.
3. **Representative Documents**
 - *Performance Assessment Implementation Plan for the Geologic Repository Program* (HQO.19900302.0001)
 - *Information Resources Management Performance Assessment and Improvement, Program Plan May 1995* (HQO.19950614.0013)
 - *Schedule and Outline for Discussion 93rd ACNW Meeting, Performance Assessment Capability in the NRC High-Level Waste Program* (MOL.19980211.0359)

05.1 Basic Approach

1. **Interpretation** Documents here refer to Total System Performance Assessment (TSPA) peer reviews, how to implement TSPA, and TSPA documents discussing overall repository performance. These documents may also cover post-closure repository strategies.
2. **Confusion and Overlap** See 05.0.
3. **Representative Documents**
 - *U.S. Department of Energy Determination of the Use of the Results of the Peer Review Report on the Thermohydrologic Modeling and Testing Program* (MOL.19961122.0380)
 - *Supporting Material for the Response Made on the Thermohydrologic Modeling and Testing Peer Review Report Recommendations* (MOL.19970625.0278)
 - *First Interim Report, Total Systems Performance Assessment Peer Review Panel June 20, 1997* (MOL.19970715.0417)

05.2 System Description

1. **Interpretation** These documents discuss the TSPA and system descriptions without emphasis on release or migration of radionuclides. They include system-level design reviews, TSPA documents on performance assessment of processes and events (potentially disruptive or undisturbed), and conceptual models of the repository. Chapters 2, 3, and 4 of the TSPA should be included in this subcategory.
2. **Confusion and Overlap** See 05.0. The main topics covered in the TSPA seem to fall into 05.3. Combining these subcategories or clarifying their differences should help resolve this issue.
3. **Representative Documents**
 - *Provide Model Assumption Testing of Thermal Hydrology Models Used for TSPA-LA* (MOL.19990707.0088)
 - *Chapter 3, Total System Performance Assessment-Viability Assessment (TSPA-VA) Analyses Technical Basis Document - Thermal Hydrology* (MOL.19980724.0392)
 - *Chapter 4, Total System Performance Assessment — Viability Assessment (TSPA-VA) Analyses Technical Basis Document — Near Field Geochemical Environment* (MOL.19990723.0313)

05.3 Cumulative Release of Radioactive Materials

1. **Interpretation** Chapters 5 through 11 of the TSPA should be included here: Documents discussing the TSPA and cumulative release or migration of radioactive materials and documents discussing processes and events which can result in the release of radioactive material. These documents would include screening processes and events, scenario development and screening, consequences analyses, estimates of cumulative releases, probability estimates, and model and code validations of dose rates.
2. **Confusion and Overlap** See 02.7 and 05.2.
3. **Representative Documents**
 - *TSPA 95 Np237 Dose Calculation* (MOL.19961104.0068)
 - *Chapter 5, Total System Performance Assessment — Viability Assessment Analyses (TSPA-VA) Technical Basis Document — Waste Package Degradation Modeling and Abstraction* (MOL.19980724.0394)
 - *TSPA-VA Analyses Technical Basis Document — Chapter 6, Waste Form Degradation, Radionuclide Mobilization, and Transport Through the Engineered Barrier System* (MOL.19990902.0272)

05.4 Undisturbed Performance

1. **Interpretation** Documents categorized here discuss the undisturbed performance of the repository with an emphasis on individual and/or groundwater protection from radiation and contamination. Some documents may discuss the Safe Drinking Water Act. This subcategory may include models and computer code validations of dose rates that try to predict undisturbed performance.
2. **Confusion and Overlap** Some overlap exists between 05.4 and 10.3 since both may cover EPA guidelines for the protection of individuals and groundwater.
3. **Representative Documents**
 - *Chapter 8, Section 8.3.5.14, Individual Protection Requirements, Draft Site Characterization Plan January 15, 1987* (HQZ.19890410.0352)
 - *An Appraisal of the 1992 Preliminary Performance Assessment for the Waste Isolation Pilot Plan* (MOL.19950623.0379)
 - *PORB Position Paper, Issue 4, Groundwater Protection Requirement in 40 CFR 197* (MOL.20000906.0717)

07.0 Land Ownership and Control

1. **Interpretation** Documents categorized here include information pertaining to two or more of the subcategories 07.1 through 07.4. Also included are documents that are relevant to “Land Ownership and Control” but do not specifically discuss topics of the subcategories.
2. **Confusion and Overlap** There seems to be some confusion over the definition of the terms “controlled area,” “regulation,” and “restriction”. More clear definitions are required to accurately classify these documents. For example, the NRC defines controlled areas as “. . . surface locations extending no more than 10km from the outer boundary of underground facilities and the underlying subsurface; these areas are committed for repository use, and incompatible activities would be restricted from them following closure.” Using this definition, 07.1 and 07.3 overlap.
3. **Representative Documents**
 - *Yucca Mountain Site Characterization Project Land Use Profile: Clark and Nye Counties, Nevada* (MOL.19951006.0060)
 - *Definitions of Reference Boundaries for the Underground Repository Facilities, Disturbed Zone, Geologic Repository Operations Area, Restricted Area, Controlled Area, and Accessible Environment at the Yucca Mountain Repository Site, Southern Nevada* (MOL.19980526.0794)
 - *Working Draft License Application, Chapter 13, Land Ownership and Control* (MOL.19990608.0108)

07.1 Plans for Restricting Controlled Area Access

1. **Interpretation** These documents cover issues on land use in the controlled area which includes the repository and the 10 km radius around it. Casual use permits, land use profiles, environmental baseline files on land use, land use agreements, water rights, existing legal interests, and legal interests to be obtained in reference to the controlled area.
2. **Confusion and Overlap** See 07.0.
3. **Representative Documents**
 - *Environmental Baseline File for Land Use December 1998* (MOL.19990406.0084)
 - *Memorandum: Land Access Options Paper* (NNA.19880628.0031)
 - *Request for Land Access and Environmental Compliance for Neutron Boreholes* (MOL.19980330.0168)

07.2 Plans for Regulating Land Use Outside the Controlled Area

1. **Interpretation** Documents classified here pertain to areas immediately outside the 10 km radius surrounding the controlled area. Examples of these areas are Armagosa Valley, Lathrop Wells and other adjacent areas of concern (areas close to the perimeter of the controlled area). Other relevant information would be census tract area data, rail and land use to transport waste, existing legal interests and those to be obtained, and real estate issues. Plans for regulating use in these surrounding areas would be included here.
2. **Confusion and Overlap** See 07.0.
3. **Representative Documents**
 - *January 20, 1960 Notice of Proposed Withdrawal and Reservation of Lands* (MOL.19980714.0324)
 - *Preliminary Real Estate Plan, Extension of Public Land Order and Rights-of-Way Reservations, Yucca Mountain, Nye County, Nevada* (MOL.19990309.0070)
 - *Extension of Public Land Order 6802* (MOL.20000302.0059)

07.3 Plans for Regulating Land Use at the GROA

1. **Interpretation** These documents pertain to the repository itself and the land up to 5 km surrounding the repository. These documents consider land at the site, not the land around it that makes up the controlled area.
2. **Confusion and Overlap** See 07.0.
3. **Representative Documents**¹
 - *Definitions of Reference Boundaries* (NNA.19870430.0044)

07.4 Other Types of Legal Interests

1. **Interpretation** These documents cover other legal interests regarding land or land use, includes tribal, American Indian, concerns about using the land at or near the proposed repository. Any document that doesn't fit into one of the other 07.0 subcategories should be placed here.
2. **Confusion and Overlap** In most cases, the top level category covers "other" documents that don't quite fit the subcategories. Also, it seems 07.1, 07.2, and 07.3 cover all land use issues in the areas of concern.
3. **Representative Documents**

¹Only one document has been found for this category in the RIS.

- *100th Congress, 1st Session, S.854, Nevada-Florida Land Exchange Authorization Act of 1987* (MOL.19980610.0065)
- *Inter-Office Memo: United States Senate Appropriations Subcommittee Hearing on the Proposed Aerojet General/Bureau of Land Management (BLM) Land Exchange* (NNA.19870922.0035)
- *Land Questions* (HQV.19930415.0003)

08.0 Quality Assurance (QA) Records

1. **Interpretation** Documents categorized here include information pertaining to two or more of the subcategories 08.1 through 08.4. Also included are documents that are relevant to quality assurance issues and QA management assessments but do not specifically discuss topics of the subcategories.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *LANL Segment of the OCRWM FY 1996 Quality Assurance Management Assessment, Preliminary Report, May 9, 1996* (HQQ.19960530.0012)
 - *FY 1996 OCRWM QA Management Assessment, Preliminary Report for the Lawrence Berkeley National Laboratory Yucca Mountain Project* (HQQ.19960710.0017)
 - *1992 Quality Assurance Management Assessment of the Office of Civilian Radioactive Waste Management (OCRWM) Final Report February 26, 1993* (HQP.19940817.0007)

08.1 QA Records for Site Characterization

1. **Interpretation** 08.1 includes audit and surveillance schedules relating to Site Characterization and any other QA documents relating to Site Characterization.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *LLNL-YMP FY94 Quality Assurance Audit Schedules, Rev. 2, and Surveillance Schedules, Rev. 1* (MOL.19950307.0015)
 - *Audit Report YMSCO-ARC-98-17 of the U.S. Department of Energy, Yucca Mountain Site Characterization Office, Las Vegas, Nevada August 3-7, 1998* (MOL.19981202.0285)
 - *Memorandum: Evaluation of Changes in the Audit and Surveillance Schedules* (NNA.19910313.0064)

08.2 QA Records for Design and Construction

1. **Interpretation** This category includes corrective action reports for design, surveillance of facilities and supplies at the Exploratory Studies Facility (ESF) and any other QA documents relating to design and construction.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Corrective Action Report* (HQF.19931123.0052)
 - *Review Comments on Los Alamos National Laboratory (Los Alamos) Quality Assurance(QA) Level Assignments for the Exploratory Shaft Facility (ESF) Design, Construction, and Operation* (NNA.19870314.0594)
 - *Joint OCRWM Headquarters/Yucca Mountain Project Office, Quality Assurance Surveillance Report of the Yucca Mountain Project Office, Surveillance number YMP-SR-89-004 Conducted January 11-13, 1989* (NNA.19900112.0054)

08.4 QA Records for All Relevant Research Activities

1. **Interpretation** QA documents such as NRC papers and reports regarding relevant research of repository activities and the site itself.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Memorandum: QA Review of Study Plan 8.3.1.14.2, Studies to Provide Soil and Rock Properties for Potential Locations of Surface Facilities and Subsurface Access Facilities* (MOL.19980415.0921)
 - *Quality Review Board (QRB) Record, (Meeting Minutes) Date: April 10, 1991* (MOL.19980507.0889)
 - *Acceptance of Quality Assurance Grading (QAG) Reports LLNL-QAG-007.5, WBS 1.2.2.2;1.2.2.3, Waste Package Environment; Waste Form/Materials Testing, Excluding Preliminary/Administrative and LLNL-QAG-006.5 WBS 1.2.9.3, Quality Assurance by the Quality Review Board (QRB)* (MOL.19980611.0835)

09.0 Emergency Planning

1. **Interpretation** Includes documents that cover any type of emergency plan. Includes document discussing emergency training, such as training of nearby residents in case of a transportation accident, emergency event recognition, classification, notification and action and reports.

2. **Confusion and Overlap** None.

3. **Representative Documents**

- *Memorandum of Agreement Between the Office of Civilian Radioactive Waste Management and the Office of Environmental Restoration and Waste Management Concerning Emergency Preparedness Planning Activities* (HQO.19991108.0011)
- *Conceptual Outline for Emergency Management Plan Based On NUREG 3.67* (MOL.19970806.0278)
- *Emergency Readiness Assurance Plan* (MOL.19980414.0431)

10.0 Radiation Protection

1. **Interpretation** Documents categorized here include information pertaining to two or more of the subcategories 10.1 through 10.6. Also included are documents that are relevant to radiation protection issues but do not specifically discuss topics of the subcategories.

2. **Confusion and Overlap** None.

3. **Representative Documents**

- *Perspectives on Risks from the Nevada Test Site, Feasibility and Methods for Assessing Cumulative Radiological Exposure Risks Associated with Department of Energy Activities at the Nevada Test Site, Phase 1 Report to Lincoln County, Nevada* (MOL.19941110.0102)
- *Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O) Radiation Protection Program and Implementation Plan (RPP)* (MOL.19960429.0025)
- *Request for Radiation Protection Information* (HQO.19940622.0001)

10.1 Ensuring that Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)

1. **Interpretation** Documents categorized here are studies and reports discussing ALARA goals, policies and acceptable levels of radiation. Documents that consider radiation exposure and mention ALARA should be classified here.

2. **Confusion and Overlap** None.

3. **Representative Documents**

- *Technical Document Preparation Plan for ALARA Plan and ALARA Program Documents FY 1995 Technical Documents* (MOL.19950522.0079)

- *MGR Compliance Program Guidance Package for As Low As Is Reasonably Achievable (ALARA) During the Design Phase* (MOL.19991020.0171)
- *Minutes of the August 24, 2000 Meeting of the Civilian Radioactive Waste Management System, Management & Operating Contractor (M&O) Radon ALARA Committee and the YMP Radon ALARA Committee Charter* (MOL.20000927.0239)

10.2 Radiation Sources

1. **Interpretation** Documents included here discuss sources of radiation within the repository site such as materials, radiation producing equipment, buildings, and the waste packages themselves. Also, authorization to use radiation sources, documents that discuss testing of radiation sources, and other tests, reports, and models dealing with radiation sources would be classified here.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Request for Temporary Use of Radioactive Material and Ionizing Radiation-Producing Equipment in Yucca Mountain Site Characterization Boreholes* (MOL.19941214.0039)
 - *Radioactive Source/Material Control and Accountability* (MOL.19990708.0122)
 - *Review, Change to Authorization to Receive and Use Radioactive Source/Material at the YMP Site* (MOL.19990708.0127)

10.3 Radiation Protection Design Features

1. **Interpretation** Documents here discuss EPA standards for radiation protection of workers, shielding and waste package designs that directly impact radiation protection.
2. **Confusion and Overlap** See 05.4.
3. **Representative Documents**
 - *EPA Radiation Protection Standard for a Geologic Repository at Yucca Mountain* (HQO.19980406.0004)
 - *Final Environmental Standards for Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes (40 CFR Part 191) Action Memorandum* (MOL.19980528.0836)

- *Comments on the June 1988 Draft of the Technical Resource Group (TRG) Report “Changes in the Remanded Environmental Protection Agency (EPA) Standard, 40 CFR 191; Discussion and Recommended Position”*
(NN1.19880714.0019)

10.4 Estimated Onsite Dose Assessment

1. **Interpretation** Documents here discuss onsite dose assessment methods and/or results. These documents pertain to radiation dose estimates to site personnel.
2. **Confusion and Overlap** Documents that discuss dose criteria for accidents are currently being classified in 03.6 but seem more relevant to this subcategory.
3. **Representative Documents**
 - *System Architecture Study, Technical Supplement: The Fuel Operations and Occupational Radiation Exposure* (HQO.19940811.0084)
 - *Preliminary Dose Assessment for the MGDS Surface Facility Waste Handling Operations* (MOL.19960312.0110)
 - *Spent Nuclear Fuel Storage Dose Assessment in the MRS Design Process* (MOL.19970729.0619)

10.5 Health Physics Program

1. **Interpretation** These documents discuss the UNLV Health Physics Program and the Health Physics Program Advisory Council.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Meeting Summary for 27th Midyear Topical Meeting of the Health Physics Society on Managing Radioactive and Mixed Waste*
(HQV.19940427.0010)
 - *Health Physics Certification* (NNA.19870402.0144)
 - *WMPO and Health Physics Division Review of BTP-ER-001, “Preparation of Environmental Radiological Monitoring Technical Procedures”* (NNA.19870819.0023)

10.6 Estimated Offsite Dose Assessment

1. **Interpretation** These documents cover topics such as offsite dose assessments, dose assessment methodologies, biosphere modeling, site specific dose assessments, groundwater release scenarios (i.e. estimated public radiation exposure) including radiation doses to the population, livestock, soils, and plants.
2. **Confusion and Overlap** None.
3. **Representative Documents**
 - *Draft Site-Specific Assessment Context for Development of Biosphere Dose Conversion Factors, Utilizing the International Features, Events, and Processes (FEPs) List* (MOL.19970725.0095)
 - *Biosphere Modeling Yucca Mountain, Nevada* (MOL.19980213.0479)
 - *Work Plan: Atmospheric Dispersion Modeling* (MOL.19980820.0017)

11.0 Any Alternatives Considered (e.g., design interpretations, models)

1. **Interpretation** Any alternatives considered including design interpretations, models, alternatives for repository facilities, etc. Jerry Symanski reports that discuss alternative designs should be placed in this category. “Engineered barrier alternative” documents though should be placed under 04.5 as discussed under that subcategory.
2. **Confusion and Overlap** See 04.5.
3. **Representative Documents**
 - *Assessing Alternative Conceptual Models of Fracture Flow* (MOL.19950310.0098)
 - *IDCS Network Alternatives Analysis* (MOL.19960102.0636)
 - *Evaluation of Alternative Licensing Strategies for the Development of High-Level Nuclear Waste Repository, Deliverable 1, Description of Alternative Strategies* (MOL.19980724.0005)

12.0 Information for Preparation of a Geologic Repository Environmental Impact Statement

1. **Interpretation** Documents categorized here include EIS documents that cover two or more of the subcategories 12.1 through 12.3. Also included are EIS draft reports, comments, reviews that are relevant to but do not specifically discuss topics of the subcategories.

2. **Confusion and Overlap** EIS documents sometimes discuss topics covered in other categories and subcategories. This may cause confusion when selecting an appropriate category. For example, EIS documents discuss NEPA which could also be classified in 01.8.

3. **Representative Documents**

- *Memorandum: Supplemental FY 1995 Program Guidance and Funding, OCRWM Multi-Purpose Canister (MPC) Environmental Impact Statement (EIS) Support Tasks at Argonne National Laboratory* (HQO.19950410.0001)
- *Preparation of an Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (HQO.19950810.0003)
- *Final Environmental Impact Statement, Management of Commercially Generated Radioactive Waste* (HQZ.19870302.0183)

12.1 Environmental

1. **Interpretation** Documents here pertain to the environmental section of the EIS including pollutant assessment systems, studies, results, and models (i.e., Stormwater Pollution Prevention Plan), site flora and fauna reports and studies and endangered species information. This category includes documents that discuss any type of environmental factor, the affect the repository on local ecology.

2. **Confusion and Overlap** It's not clear that other documents discussing environmental matters should be classified here or if *only* EIS documents are placed in this subcategory.

3. **Representative Documents**

- *Use of a Tracer Gas for Determining Atmospheric Contamination of the Unsaturated Zone in a Dry-Drilled Borehole* (DRC.19980128.0012)
- *Waste Minimization and Pollution Prevention Awareness Plan December 1994* (HQO.19950103.0004)
- *Site Environmental Report for Calendar Year 1994, Yucca Mountain Site, Nye County, Nevada* (HQO.19950622.0020)

12.2 Socioeconomic Documents here pertain to socioeconomic and demographic data, reports from the Socioeconomic Monitoring Program and socioeconomics section of the EIS.

1. **Interpretation**

2. **Confusion and Overlap** It's not clear that other documents discussing socioeconomic matters should be classified here or if *only* EIS documents are placed in this subcategory.

3. **Representative Documents**

- *Socioeconomic Monitoring Program 1994, U.S. Department of Energy/Nevada Survey of Yucca Mountain Site Characterization Project Work Force, State and Country Data* (MOL.19941214.0038)
- *Socioeconomic Monitoring Program, July 1993 Employee Survey Data Report, Executive Summary* (MOL.19980320.0071)
- *Socioeconomic Monitoring Program, Procurement Data Report, October 1, 1997 to March 31, 1998* (MOL.19980902.0124)

12.3 Transportation

1. **Interpretation** Documents classified here discuss transportation (and different transportation modes) of nuclear waste to the proposed repository, in particular, transportation sections of the EIS. Transportation safety items, transportation system requirements, and transportation policy resolution documents should be classified here. Documents that cover protecting waste from loss, sabotage, or theft during transportation should *not* be placed in this category but should be placed into category 01.4 "Certification of Safeguards."

2. **Confusion and Overlap** It's not clear that other documents discussing transportation matters should be classified here or if *only* EIS documents are placed in this subcategory.

3. **Representative Documents**

- *White Paper, Overview of the Multi-Purpose Canister Environmental Impact Statement Transportation Assessment* (HQO.19941103.0029)
- *High-Level Nuclear Waste Shipping Route Maps to Yucca Mountain and Shipment Number Estimates - Multi-Purpose Canister Base Case* - (HQO.19950127.0011)
- *Browns Ferry Nuclear Plant Units 1,2, and 3, Tennessee Valley Authority, Site and Facility Waste Transportation Services Planning Document, March 1994* (HQV.19940510.0026)

4 Collective Overview

For our purposes, the Regulatory Guide 3.69 was employed to select training material for automatic categorization. This of course was not the intent when the guidelines were written and so any comments should be received with this in mind.

One of the most important points is the *lack* of topical definitions for exclusionary categories. These are only defined as *short term exclusionary* and *long term exclusionary*. With respect to categorization, this lack of definition makes it difficult to automatically exclude documents.

There tends to be a considerable amount of grey area. We understand that this guide was non-exhaustive and was purposely left open-ended so as not to eliminate any material that might prove useful during the licensing process. But even humans tend to have difficulty making binary decisions when the rules for inclusion are not explicit.

There is obvious overlap. Of the 57 categories discussed in this paper, 39 include comments on confusion and overlap. This may prove to be useful to ensure no documents fall “between the cracks” but it makes automatic classification much more difficult. Typically, the more disparate the categories, the better the categorization results. It is important to note however, that no overlap should exist between any inclusionary category and any exclusionary category if the goal is to distinguish these with the highest level of accuracy. Based on our utilization of the guidelines, we believe that topical overlap does exist across these categories.

Terminology should be unambiguous. A glossary of explicit definitions should be included with the Guidelines for terms that may help define the categories; “disposal criticality” is a good example.

Some confusion exists because the categories are defined by both document type *and* content. For automatic categorization, topical content works best. For categories where this separation cannot be made, both classification methods should be well-defined.

Ensure that a topic isn’t missed. This is critical for automatic categorization but is important to manual classification as well. For example, 02.2 covers the Hydrologic System, 02.3 covers the Geochemical System. Where do documents about Hydrochemistry get classified?

We hope that these comments prove useful. We are currently defining topical exclusionary categories. These are based solely on documents contained in the DOE Records Information System (RIS). A broader base may be necessary to comprehensively define these categories.