

May 10, 1995

Mr. Ronald A. Milner, Acting Director  
 Office of Program Management and Integration  
 Office of Civilian Radioactive Waste Management  
 U. S. Department of Energy  
 1000 Independence Avenue, S.W.  
 Washington, D. C. 20585

Dear Mr. Milner:

**SUBJECT: SECOND UPDATE OF THE REGULATORY STRATEGY AND SCHEDULES FOR THE  
 HIGH-LEVEL WASTE REPOSITORY PROGRAM**

As you requested at the May 4, 1995, Technical Exchange, enclosed is a copy of the July 29, 1995, Commission Paper on the above subject. If you have any questions, you may contact me at (301) 415-6643.

Sincerely,

Original Signed By John Thoma

Joseph J. Holonich, Chief  
 High-Level Waste and Uranium Recovery  
 Projects Branch  
 Division of Waste Management  
 Office of Nuclear Material Safety  
 and Safeguards

Enclosure: As stated

cc: See attached list

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cc: R. Loux, State of Nevada  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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*John O. Thorne for*

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Projects Branch  
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Enclosure: As stated

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## **POLICY ISSUE** **(Information)**

July 29, 1991

SECY-91-225

For: The Commissioners

From: James M. Taylor  
Executive Director  
for Operations

Subject: SECOND UPDATE OF THE REGULATORY STRATEGY AND SCHEDULES FOR  
THE HIGH-LEVEL WASTE REPOSITORY PROGRAM

Purpose: To inform the Commission of the staff's second update to  
"Regulatory Strategy and Schedules for the High-Level Waste  
Repository Program," SECY-88-285.

Summary: This paper is the second update of SECY-88-285. The staff issued the "First Update of the Regulatory Strategy and Schedules for the High-Level Waste Repository Program," SECY-90-207, in June 1990. Updates are given for the existing regulatory framework and strategies for identifying and reducing uncertainties. Because there have not been any major changes to the staff's strategy, this second update primarily summarizes important progress and future activities for identifying and reducing regulatory, institutional, and technical uncertainties. Finally, the current schedules for potential rulemakings and regulatory guides planned for reducing regulatory uncertainties are given.

Contact:  
Robert L. Johnson, NMSS  
492-0409

NOTE: TO BE MADE PUBLICLY AVAILABLE  
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DATE OF THIS PAPER

~~9108070220~~ 28 pp.

Background:

In response to a Commission request, the staff issued SECY-88-285 in October 1988. This paper identified the existing regulatory framework, strategies for identifying uncertainties in the framework, strategies for reducing uncertainties in the framework, schedules for rulemakings, and key programmatic schedules. The first update to the regulatory strategy was issued in June 1990 (SECY-90-207). It described changes to the initial strategy and summarized progress and future activities.

The staff has prepared a second update to the regulatory strategy in this Commission paper. SECY-88-285 and SECY-90-207 should continue to be referenced for descriptions of the staff's basic regulatory strategy. Because there have not been any major changes to the staff's strategy, this second update primarily summarizes progress since SECY-90-207 was issued about one year ago. The organization of this second update is the same as was used in SECY-88-285 and SECY-90-207. Section I identifies the existing regulatory framework, Section II addresses the strategy and progress related to identifying uncertainties, and Section III addresses the strategy and progress associated with reducing uncertainties.

Discussion:

I. Existing Regulatory Framework

Since the first update of the regulatory strategy in SECY-90-207 was issued in June 1990, a number of guidance documents have been added to the existing regulatory framework. The staff issued a draft Format and Content Regulatory Guide (FCRG) for the license application, one final staff technical position on regulatory considerations in the design and construction of the Exploratory Shaft Facility, and two draft staff technical positions, one on fault displacement and seismic hazard investigations and the other on thermal loads. In addition, three staff positions were completed. One provided important clarification that the period for substantially complete containment within the waste package as specified in 10 CFR 60.113(a)(1)(ii)(A) is a minimum requirement and therefore not a cap on the allowable lifetime of the waste package. The other two staff positions clarified which performance objectives of 10 CFR Part 60 are related to the siting criteria in 10 CFR 60.122 and the thermal loads design criterion in 10 CFR 60.133(i). A revised list of issued rulemakings and guidance documents applicable to the Yucca Mountain site is given in Enclosure 1.

## II. Identifying Uncertainties

### A. Regulatory and Institutional Uncertainties

The staff's strategy for identifying regulatory and institutional uncertainties described in SECY-88-285 and SECY-90-207 remains unchanged. Continued use of the Systematic Regulatory Analysis (SRA) process in the development of the License Application Review Plan (LARP) and FCRG, together with pre-licensing reviews and consultations with the U.S. Department of Energy (DOE), might lead to the staff identifying additional regulatory uncertainties in the future. These additional uncertainties will be added to Enclosure 2, which lists all regulatory and institutional uncertainties identified to date.

Since SECY-90-207 was issued, four additional uncertainties have been identified. These uncertainties are discussed below and described in Enclosure 3. At the time of this second update, 54 regulatory and institutional uncertainties have been identified; 50 are regulatory and 4 are institutional.

Of the four additional uncertainties identified, two are related to the subsystem performance objectives. The first is a regulatory uncertainty concerned with the relationship of U.S. Nuclear Regulatory Commission's (NRC's) subsystem performance objectives, in 10 CFR Part 60, to the U.S. Environmental Protection Agency (EPA) Standards. The second is an institutional uncertainty pertaining to the Commission's implementation of the flexibility provision in 10 CFR 60.113(b), for the subsystem performance objectives. The staff has identified two additional regulatory uncertainties. The first relates to different interpretations of the time periods for which the criticality control requirements in 10 CFR Part 60 apply. The second is concerned with inconsistencies in the use of the phrase "Quaternary Period."

Additional regulatory uncertainties could be identified as the staff and Center for Nuclear Waste Regulatory Analyses (Center) continue to analyze 10 CFR Part 60. One ongoing activity that may result in additional regulatory uncertainties is an overall adequacy analysis of 10 CFR Part 60. The first part of this overall analysis was a functional analysis that, independent of 10 CFR Part 60, identified the functions of the site, the repository, and the engineered barrier system that are related to either radiological safety or waste isolation and should, therefore, be covered by 10 CFR Part 60. In keeping with the

generic nature of 10 CFR Part 60, these functions were not specific to a particular design or site. The second part, referred to as a sufficiency analysis, evaluated whether each radiological safety or waste isolation function identified in the first part was either covered, partially covered, or not covered by 10 CFR Part 60. Those functions that were either partially covered or not covered indicate potential insufficiencies in 10 CFR Part 60. As discussed later, under the Repository Operations Criteria rulemaking, these potential insufficiencies together with other insufficiencies identified by the staff are being further analyzed during FY 1991, to determine if 10 CFR Part 60 is adequate to ensure radiological health and safety for those pre-closure functions related to design, construction, and operation of a repository. Resulting inadequacies, if any, will be identified as regulatory uncertainties. Although the staff is not currently aware of any substantial problems (other than some of the uncertainties that have previously been identified), a similar adequacy analysis is scheduled for FY 1992, for the post-closure requirements of 10 CFR Part 60 (i.e., those related to the waste isolation functions).

#### B. Technical Uncertainties

The staff's strategy for identifying technical uncertainties, which was described in SECY-88-285 and SECY-90-207, has not changed. Ongoing pre-license application reviews continue to identify concerns, with DOE's program, that the staff considers to be technical uncertainties. In particular, the staff has been reviewing study plans during this reporting period. A phase I review has been completed for eight, and a detailed technical review has been completed for four. Phase I reviews consist of a screening review to determine if the staff has any objection to DOE implementing the work described in the study plan, and a review to identify those study plans the staff believes warrant more detailed technical review.

There is also the need to focus the staff's work on those technical uncertainties that are most significant to assessment of compliance with the performance objectives at the Yucca Mountain site. These are referred to as key technical uncertainties, which the staff will soon begin to identify, using the SRA process. Previously identified technical uncertainties (e.g., technical position topics and Site Characterization Plan comments), together with results from the staff's iterative performance assessments, will also be considered in identifying key technical uncertainties. As expressed in SECY-90-207, the staff continues to plan on using key technical uncertainties to focus on those technical

areas where the staff should develop an in-depth review capability, develop guidance documents, conduct detailed pre-license application reviews, and conduct research

### III. Reducing Uncertainties

#### A. Regulatory and Institutional Uncertainties

The staff continues to follow the general strategy, delineated in SECY-88-285, of recommending major rulemakings to address omissions, major deficiencies, and clarifications requiring a change in the regulatory language, and to issue conforming amendments.

Since the issuance of SECY-90-207, staff positions have been used as an additional mechanism to reduce some regulatory uncertainties by giving the staff's interpretation of the existing requirement. Preparation of staff positions involves coordination between the Office of Nuclear Material Safety and Safeguards (NMSS) and the Office of the General Counsel (OGC). Staff positions are noticed in the Federal Register, so that DOE and other parties are aware of the staff's interpretations of 10 CFR Part 60. However, as staff positions are prepared as guidance to the NMSS staff, to help ensure consistency of the staff's regulatory interpretations, they would not be binding on the Commission, licensing boards, or parties to a licensing proceeding. They might eventually be followed, however, by one or more rulemaking actions. Staff positions should not be confused with staff technical positions, which are used to give guidance to DOE on selected technical uncertainties (see Section III B).

The staff is continuing to plan on potential rulemakings for the four topics listed in Enclosure 4. Schedules for these potential rulemakings have been revised, as shown in Enclosure 5. The schedules for the two rulemakings related to the EPA Standards have been extended as a result of EPA extending its schedule for revising the standards. The staff assumes for planning purposes, that the proposed EPA Standards will be issued in late 1991. One potential rulemaking topic listed in SECY-90-207 that is not shown on Enclosure 4 is "Establishment of Criteria for Containment of Greater-Than-Class-C Low-Level Waste when it is Disposed of in a Deep Geologic Repository." The staff is working with DOE as DOE defines the characteristics and volume of commercial Greater-Than-Class-C (GTCC) low-level waste that exists today or will exist in the future. At the same time, DOE is examining the present and future quantities of its own GTCC and high-level wastes; the quantities of its own wastes identified can affect the strategy for dealing

with commercial GTCC wastes significantly. Nevertheless, the staff will begin to formulate disposal requirements for GTCC wastes in a deep geological repository. This is expected to lead to a formal rulemaking in the future.

The uncertainty involved with the potential rulemaking listed in SECY-90-207, entitled "License Application Docketing Criteria and Content," is presently being partially addressed in the draft FCRG and will be completely addressed in the LARP. Therefore, at present, the staff does not see a need for this rulemaking.

With regard to the EPA Standards conforming rulemaking, the staff activities have been centered around EPA's progress toward revising its remanded standards. The staff commented to EPA on its Working Draft 2 during August 1990 and subsequently discussed these comments with EPA. EPA issued Working Draft 3 in late April 1991, and the staff is planning to give comments to EPA in August 1991. The staff has also been investigating issues significant to implementing the EPA Standards. These issues will be discussed in a staff paper that describes uncertainties related to the EPA Standards and approaches to reducing these uncertainties. A draft of this paper was completed in March 1991. Based on comments from the Advisory Committee on Nuclear Waste (ACNW), the staff is revising the draft paper and expects to be sending it to the Commission in August 1991.

For the potential rulemaking entitled "Repository Operations Criteria," the staff is continuing to develop the technical basis that would support its recommendation on any potential rulemakings or regulatory guidance. The staff anticipates that this work will have progressed enough to allow the use of the results obtained by the end of 1991 to support a planned rulemaking, to begin in FY 1992 for the specific area of design basis accident dose limit. Technical basis work will continue and will be completed in FY 1992, to support any additional uncertainty reductions for repository operations criteria.

In July 1990, the staff noticed in the Federal Register the receipt of a petition from DOE requesting that NRC amend 10 CFR Part 60 to include a quantitative accident dose criterion. The notice also requested public comment both on DOE's approach in its petition and the staff's expanded, systematic approach for repository operations criteria. The subject of the DOE petition is closely related to the staff's ongoing work associated with the design basis accident dose

limit. Therefore, the staff anticipates that its potential rulemaking will also address the issues raised by DOE in its petition.

Work will be done under the SRA process to address uncertainties related to the subsystem performance objectives, including their relationship to the overall system performance objective (EPA Standard). Since SECY-90-207 was issued, attention has been focused on reducing the regulatory uncertainty in the term "substantially complete containment" as used in 10 CFR 60.113(a). The staff has completed three reports that assess the feasibility of developing numerical guidance for this performance objective. Using the results of these reports, the staff is initiating an effort to assess what technology can achieve in terms of containment of materials, especially radioactive materials. This effort will include performance assessments of representative waste package designs, in the context of representative waste package environments. The intended results of these activities are to clarify the containment requirement and provide sufficient guidance for DOE's waste package development program.

The staff has also initiated work to evaluate the reasonableness and technical feasibility of implementing the groundwater travel time/disturbed zone requirement. This work includes evaluating options for the requirement as well as options for methods to evaluate compliance. Finally, as the iterative performance assessment capability is developed, the staff will examine both the feasibility of implementing the subsystem requirements and the relationship of subsystem requirements to the total system requirement.

In addition to potential rulemakings and staff positions, the staff is continuing work on two regulatory guides that address regulatory uncertainties. The first is the draft FCRG, which was issued for public comment in November 1990. In addition to obtaining feedback through the public comments, the staff has also recommended that DOE prepare, for the staff's review, an annotated outline of the license application specifically for the Yucca Mountain site. This will allow the staff an opportunity to evaluate how DOE interprets the FCRG. DOE has indicated that it would support this recommendation.

The second regulatory guide will revise the topical guidelines for the Licensing Support System (LSS). A draft was given to the Commission for review, and the Commission

directed that the staff also provide this draft to the LSS Advisory Review Panel (LSSARP) for comment. In February 1991, the LSSARP provided its comments on the regulatory guide. The major comment offered was that information associated with transportation and the environmental impact statement be included in the LSS. The staff is presently reviewing the LSSARP comments and is preparing a recommendation to the Commission on how to address this issue. The staff anticipates issuing a Commission paper with its recommendations in the near future.

Progress has been made toward the reduction of the regulatory and institutional uncertainties identified by the staff and Center and discussed in SECY-90-207. The staff identified seven uncertainties, and the Center, through its independent analysis of 10 CFR Part 60, identified 42 potential uncertainties. The staff, with advice from the Center, analyzed each of these 49 uncertainties. This initial analysis resulted in recommendations to reduce each uncertainty and supporting rationales. The following four alternative reduction methods were identified: guidance, minor rule change, major rule change, and further analysis.

The guidance category contains those uncertainties where the staff considered the intent of the rule to be clear; however, there was a recognition that other parties might find additional information useful to avoid varying interpretations of the rule. Guidance documents under development, such as the draft FCRG and the LARP, are considered the most appropriate way to document the reduction of these uncertainties. However, should more immediate guidance be requested or required, the staff has the option of developing either staff positions or staff technical positions. Although only regulatory guides and staff technical positions are specifically issued as guidance for DOE, staff positions and the LARP indirectly provide guidance to DOE. Because the staff will use these two types of guidance documents in judging license application adequacy, DOE may find them useful for guidance, as well.

The minor rule change category contains those uncertainties where a minor correction is needed to 10 CFR Part 60. The analysis of these uncertainties includes recommended reduction language. To conserve resources, the staff does not expect to undertake separate rulemakings for minor rule changes. Rather, these would be incorporated into a single rulemaking, as appropriate. The major rule change category contains those uncertainties where there is a substantive need for

rulemaking. All the uncertainties requiring this type of reduction can be addressed in the rulemakings contained in Enclosure 4 and previously documented in SECY-90-207. Therefore, no new rulemakings are needed to address these uncertainties. The further analysis category includes those uncertainties that cannot be placed in one of the preceding categories until an additional policy and/or technical analysis of the topic has been conducted to serve as a basis for recommending a reduction method.

A description of the initial uncertainty analysis and the results are documented in a staff paper entitled "Systematic Regulatory Analysis: Regulatory and Institutional Uncertainty Reduction Recommendations" (March 1991). In summary, of the 49 uncertainties analyzed, the guidance method was recommended for 25 uncertainties, minor rule change was recommended for 3 uncertainties, major rule change was recommended for 7 uncertainties, and 14 uncertainties need further analysis before a reduction method can be recommended.

The analyzed 49 uncertainties, together with 1 uncertainty previously reduced, and the 4 new uncertainties discussed in Section II A give a total of 54 uncertainties which are listed in Enclosure 2, which also gives information on the reduction status of these uncertainties. Of these 54 uncertainties identified to date, 50 have been analyzed to determine the method of reduction. Out of these 50 uncertainties, 5 have been reduced in staff documents, 4 in final form, and 1 in draft form. As mentioned previously, most of these uncertainties will be reduced by either ongoing or planned rulemakings, the FCRG, or the LARP. Enclosure 2 gives both a summary of the overall reduction status for all 54 uncertainties and a status for each individual uncertainty.

#### B. Technical Uncertainties

The staff has not changed its strategy in SECY-88-285 and SECY-90-207 for giving guidance on DOE's reduction of technical uncertainties. The staff continues to conduct its pre-license application reviews and interactions with DOE. In particular, the staff will complete its review of DOE's response to the staff's Site Characterization Analysis (SCA) by October 1991. This review will determine the degree to which technical uncertainties identified in the staff's SCA, have been resolved by DOE. In addition, the staff will continue to use Staff Technical Positions to reduce technical uncertainties, and in some cases where the use of

certain methods is required, such as implementing the EPA Standards, rulemakings will be used.

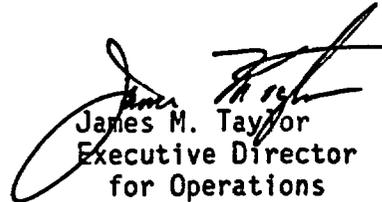
As previously mentioned in Section I, the staff has also contributed to technical uncertainty reduction by completing one final staff technical position and two draft staff technical positions (see Enclosure 1). Work will continue on three staff technical positions listed in Enclosure 4. Finally, the staff will be developing the LARP using the SRA process and focusing its detailed review plan development in areas of key technical uncertainties.

Conclusions:

Based on the discussion above, the staff has the following major conclusions:

1. No major changes have been made to the staff's regulatory strategy.
2. Additions to the existing regulatory framework include one draft regulatory guide, one final staff technical position, two draft staff technical positions, and three final staff positions.
3. Four additional regulatory and institutional uncertainties have been identified, resulting in a total of 54 regulatory and institutional uncertainties identified, to date.
4. Staff positions have been used as an additional mechanism to reduce some regulatory uncertainties, by giving staff interpretations of the regulation.
5. Of the 54 regulatory and institutional uncertainties identified to date, 50 have been analyzed to determine the methods of reduction. Out of these 50 uncertainties, 5 have been reduced in staff documents, 4 in final form, and 1 in draft form.
6. Pre-license application reviews continue to be used to identify technical uncertainties and determine DOE's progress toward reduction. In addition, the staff is preparing to identify key technical uncertainties using the SRA process.
7. This regulatory strategy will be updated annually and important changes will continue to be included in the quarterly reports to the Commission.

Coordination: OGC has reviewed this paper and has no legal objection. The activities addressed in this paper are consistent with the currently approved NRC Five-Year Plan.

  
James M. Taylor  
Executive Director  
for Operations

Enclosures:

1. Issued Rulemakings and Guidance Doc.  
Appl. to the Yucca Mt. Site
2. Reg. & Instit. Uncert. Red. Status,  
June 1991
3. Add'l Reg. & Instit. Uncert. Ident.  
since SECY-90-207 Issued
4. Ongoing & Planned Potential  
Rulemakings and Guidance Documents
5. Schedule of NRC Rulemakings and RGs

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ENCLOSURE 1

LIST OF ISSUED RULEMAKINGS AND GUIDANCE DOCUMENTS  
APPLICABLE TO THE YUCCA MOUNTAIN SITE

Rulemaking Titles

Issue Dates

- |  |               |
|--|---------------|
| 1. "Licensing Procedures for High-Level Waste (HLW) in Geologic Repositories"  | February 1981 |
| 2. "Technical Criteria for HLW in Geologic Repositories"   | June 1983     |
| 3. "Disposal of HLW within the Unsaturated Zone"   | July 1985     |
| 4. "Site Characterization and State/Tribal Participation"  | July 1986     |
| 5. "Negotiated Rulemaking on Submission and Management of Records and Documents"   | April 1989    |
| 6. "Implementation of Nuclear Waste Policy Act (NWP) Provisions Requiring NRC to Adopt DOE's Environmental Impact Statement" | July 1989     |

Staff Technical Position Titles

- |  |                |
|--|----------------|
| 1. "Documentation of Computer Codes" (Final) (NUREG-0856)  | June 1983      |
| 2. "Licensing Assessment Methodology for HLW Geologic Repositories" (Draft)  | July 1984      |
| 3. "Issue-Oriented Site Technical Position (ISTP) for Nevada Nuclear Waste Storage Investigation (NNWSI)" (Draft)              | September 1984 |
| 4. "Determination of Radionuclide Solubility in Groundwater for Assessment of High-Level Radionuclide Waste Isolation" (Final) | November 1984  |
| 5. "Waste Package Reliability Analysis" (Final)  | December 1985  |
| 6. "In-Situ Testing during Site Characterization"  | December 1985  |
| 7. "Design Information Needs in Site Characterization"   | December 1985  |
| 8. "Borehole and Shaft Seals" (Final)  | February 1986  |
| 9. "Groundwater Travel Time" (Draft)   | July 1986      |
| 10. "Interpretation and Identification of the Disturbed Zone" (Draft)  | July 1986      |

11. "Determination of Radionuclide Sorption for HLW Repositories" (Final) January 1987
12. "Qualification of Existing Data for HLW Repositories" (Final) (NUREG-1928 dated February 1988) June 1987
13. "Peer Review for HLW Repositories" (Final) (NUREG-1297 dated February 1988) June 1987
14. "Guidance for Determination of Anticipated Processes and Events and Unanticipated Processes and Events" (Draft) February 1988
15. "Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements" (Final) (NUREG-1318) April 1988
16. "Tectonic Models under 10 CFR Part 60 (Draft) June 1989
17. "Postclosure Seals, Barriers, and Drainage System in an Unsaturated Medium" (Final) (NUREG-1373) August 1989
- \*18. "Investigations of Fault Displacement and Seismic Hazards at a Geologic Repository" (Revised Draft) (Formerly entitled "Methods of Evaluating the Seismic Hazard at a Geologic Repository") May 1991
- \*19. "Repository Design: Regulatory Considerations in the Design and Construction of the Exploratory Shaft Facility" (Final) (NUREG-1439) July 1991
- \*20. "Geologic Repository Operations Area Underground Facility Design: Thermal Loads" July 1991

Staff Position Titles

- \* 1. "Clarification of the 300-1000 Years Period for Substantially Complete Containment of High-Level Waste with the Waste Packages under 10 CFR 60.113(A)(1)(i)(A) August 1990
- \* 2. "Performance Objectives Relating to Isolation of the Waste" August 1990
- \* 3. "Definition of the Term 'Performance Objectives' as used in 10 CFR 60.133(i)" August 1990

Regulatory Guide Title

- |      |  |               |
|------|--|---------------|
| 1.   | "Standard Format and Content of Site Characterization Plans for High-Level Waste Geologic Repositories" (Regulatory Guide 4.17) (Revision 1) | March 1987    |
| * 2. | "Format and Content for the License Application for the High-Level Waste Repository (Draft)  | November 1990 |

\* Guidance Documents issued since SECY-90-207.

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ENCLOSURE 2

REGULATORY AND INSTITUTIONAL UNCERTAINTY REDUCTION STATUS

JUNE 1991

## ABBREVIATIONS

### Reduction Methods

TBD -- to be determined

SP -- staff position

STP -- staff technical position

RG -- regulatory guide

LARP -- License Application Review Plan

### Status

(6/91) -- indicates date of completed activity

SUMMARY OF UNCERTAINTY REDUCTION STATUS

Uncertainty Type

Total	54
Regulatory	50
Institutional	4

Reduction Methods

Guidance	25
Major Rule	7
Minor Rule	3
Commission Paper	1
To be determined after further analysis	18

Reduction Status

Reduced in draft form	1
Reduced in final form	4

REGULATORY AND INSTITUTIONAL UNCERTAINTY REDUCTION STATUS  
 June 1991

NUMBER	UNCERTAINTY TYPE	RULE CITATION	SHORT UNCERTAINTY STATEMENT	ANALYZED	REDUCTION METHOD	REDUCED
UN1	Regulatory	CFR60.10(b)	Information having significant implications	Analyzed(3/91)	Guidance	
UN2	Regulatory	CFR60.23	Environmental Report vs. EIS	Analyzed(3/91)	Minor Rule	
UN3	Regulatory.	CFR60.21	Detailed content of application not in CFR60.21	Analyzed(3/91)	Guidance	
UN4	Regulatory	CFR60.24(a)	Criteria used to accept the license application	Analyzed(3/91) Analyzed(6/91)	Guidance(RG,LARP)	Reduced-Draft(11/90)
UN5	Regulatory	CFR60.22(d)	Responsibility for Public Document Room	Analyzed(3/91)	Minor Rule	
UN6	Regulatory	CFR60.31	Consideration of performance confirmation during construction authorization	Analyzed(3/91)	Minor Rule	
UN7	Regulatory	CFR60.31(a)(5)	Unpublished Subpart I in '10 CFR Part '60	Analyzed(3/91)	Major Rule	
UN8	Regulatory	CFR60.46(a)(1)	Clarify 'substantially increasing retrieval difficulty'	Analyzed(3/91)	Guidance	
UN9	Regulatory	CFR60.51(a)(2)(ii)	Compliance demonstration/determination regarding human intruders and record archiving	Analyzed(3/91)	Guidance	
UN10	Regulatory	CFR60.72(b)(6)	Construction problems' needs clarification	Analyzed(3/91)	Guidance	
UN11	Regulatory	CFR60.72(b)(7)	Anomalous condition' needs clarification	Analyzed(3/91)	Guidance	
UN12	Regulatory	CFR60.73	Substantial safety hazard	Analyzed(3/91)	Guidance	
UN13	Regulatory	CFR60.73(b)	Significant deviation	Analyzed(3/91)	Guidance	
UN14	Regulatory	CFR60.111(a)	Reference clarification	Analyzed(3/91)	Guidance	
UN15	Regulatory	CFR60.111(a)	Design radiation dose criteria	Analyzed(3/91)	Major Rule	
UN16	Regulatory	CFR60.111(b)(1)	Facilitate versus not prevent waste retrieval	Analyzed(3/91)	Guidance	
UN17	Regulatory	CFR60.112	Anticipated and unanticipated processes and events	Analyzed(3/91)	Major Rule	
UN18	Regulatory	CFR60.112	Amendments to 10 CFR 60.112 to conform to EPA Standard	Analyzed(3/91)	Major Rule	
UN19	Regulatory	CFR60.113(a)(1)(i)(A)	Substantially complete containment	Analyzed(3/91)	Further Analysis	
UN20	Regulatory	CFR60.133(C)(1)	Solid waste form	Analyzed(3/91)	Guidance	
UN21	Regulatory	CFR60.113(b)	Anticipated processes and events	Analyzed(3/91)	Major Rule	
UN22	Regulatory	CFR60.113(c)	Unanticipated processes and events	Analyzed(3/91)	Major Rule	
UN23	Regulatory	CFR60.121(a)(1)	Milestone for land ownership and control	Analyzed(3/91)	Guidance	
UN24	Regulatory	CFR60.122(b)(1)	Clarification of 'Geologic Setting'	Analyzed(3/91)	Further Analysis	

REGULATORY AND INSTITUTIONAL UNCERTAINTY REDUCTION STATUS  
June 1991

NUMBER	UNCERTAINTY TYPE	RULE CITATION	SHORT UNCERTAINTY STATEMENT	ANALYZED	REDUCTION METHOD	REDUCED
UN25	Regulatory	CFR60.122(a)(2)(i)	'Taking into account the degree of resolution'	Analyzed(3/91)	Further Analysis	
UN26	Regulatory	CFR60.122(a)(2)(iii)	'Not to affect significantly'	Analyzed(3/91)	Further Analysis	
UN27	Regulatory	CFR60.122(a)(2)(i)	Need for criteria for 'adequately evaluated'	Analyzed(3/91)	Further Analysis	
UN28	Regulatory	CFR60.122(a)(2)(i)	Meaning of 'not likely to underestimate effect'	Analyzed(3/91)	Further Analysis	
UN29	Regulatory	CFR60.122(a)(2)(i)	Need for criteria for 'adequately investigated'	Analyzed(3/91)	Further Analysis	
UN30	Regulatory	CFR60.122(b)(1)	Definition of 'geologic setting'	Analyzed(3/91)	Further Analysis	
UN31	Regulatory	CFR60.21(c)(1)(ii)(C) CFR60.122	Treatment of combinations of potentially adverse conditions	Analyzed(3/91)	Guidance	
UN32	Regulatory	CFR60.122(c)(3)	Meaning of 'regional groundwater flow system'	Analyzed(3/91)	Further Analysis	
UN33	Regulatory	CFR60.122(c)(4)	Meaning of 'regional groundwater flow system'	Analyzed(3/91)	Further Analysis	
UN34	Regulatory	CFR60.122(c)(8)	Sorption of radionuclides	Analyzed(3/91)	Further Analysis	
UN35	Regulatory	CFR60.122(c)(16)	Clarification of 'Extreme Erosion'	Analyzed(3/91)	Guidance	
UN36	Regulatory	CFR60.122(c)(24)	'Air-filled' pore spaces	Analyzed(3/91)	Guidance	
UN37	Regulatory	CFR60.131(b)(5)	Design all utility testing for essential function	Analyzed(3/91)	Guidance	
UN38	Regulatory	CFR60.131(b)(6)	'Design to permit periodic inspection'	Analyzed(3/91)	Guidance	
UN39	Institutional	CFR60.131(b)(9)	Secondary effects/non-radiological accidents	Analyzed(3/91)	Guidance	
UN40	Regulatory	CFR60.131(b)(10)	Insufficient guidance in design criteria	Analyzed(3/91)	Guidance	
UN41	Institutional	CFR60.133(e)	Will MRC regulate non-radiological safety?	Analyzed(3/91)	Guidance	
UN42	Regulatory	Subpart I	Subpart I	Analyzed(3/91)	Major Rule	
UN43	Regulatory	CFR60.122 and CFR60.112	Applicability of siting criteria to performance objectives	Analyzed(3/91)	Guidance (SP)	Reduced-Final(8/90)
UN44	Regulatory	CFR60.133, CFR60.111 CFR60.112, CFR60.113	Applicability of thermal load requirement to performance objectives	Analyzed(3/91)	Guidance (SP)	Reduced-Final(8/90)
UN45	Regulatory	CFR60.113(a)(1)(ii)(A)	Waste package containment time frame	Analyzed(3/91)	Guidance (SP)	Reduced-Final(8/90)
UN46	Regulatory	CFR60.113(a)(ii)(B)	Engineered barrier system release rate limit	Analyzed(3/91)	Further Analysis	
UN47	Regulatory	CFR60.131(b)(9)	Reference to applicable mine safety requirements	Analyzed(3/91)	Further Analysis	

REGULATORY AND INSTITUTIONAL UNCERTAINTY REDUCTION STATUS  
June 1991

NUMBER	UNCERTAINTY TYPE	RULE CITATION	SHORT UNCERTAINTY STATEMENT	ANALYZED	REDUCTION METHOD	REDUCED
UN48	Regulatory	10 CFR Part 2.1003	Topical Guidelines for Licensing Support System	Analyzed(3/91)	Guidance (RG)	
UN49	Regulatory	CFR60.113(a)(1)(ii)(A)	Criteria for containment of Greater-Than-Class-C	Analyzed(3/91)	Further Analysis	
UN50	Institutional	None	MRC's role regarding EPA's implementation of the Resource Conservation and Recovery Act for the High-Level Waste Repository Program	Analyzed(6/90)	Commission Paper	Reduced-Final(6/90)
UN51	Regulatory	CFR60.112, CFR60.113	Relationship between subsystem performance objectives and overall system performance objective (EPA Standard)		TBD	
UN52	Institutional	CFR60.113(b)	Commission's implementation of the flexibility provision for the subsystem performance objectives		TBD	
UN53	Regulatory	CFR60.131(b)(7)	Criticality control		TBD	
UN54	Regulatory	Numerous	Use of the phrase 'Quaternary Period'		TBD	

ENCLOSURE 3

ADDITIONAL REGULATORY AND INSTITUTIONAL UNCERTAINTIES IDENTIFIED  
SINCE SECY-90-207 WAS ISSUED

Regulatory Uncertainties

1. Relationship of Subsystem Performance Objectives in 10 CFR Part 60 to the U.S. Environmental Protection Agency (EPA) Standards

Compliance with 10 CFR Part 60 subsystem performance objectives is not necessarily sufficient to constitute compliance with the EPA overall system performance objective. This has been identified as a regulatory uncertainty, because there is not a direct and complete linkage between the subsystem performance objectives and overall system performance objective (EPA Standard).

2. Criticality Control Time Period

The criticality control requirements in 10 CFR Part 60 could be interpreted to apply just to the time period of operations before repository closure, or to apply in the post-closure time frame, as well.

3. Use of the Phrase "Quaternary Period"

10 CFR Part 60 and the accompanying statements of consideration appear inconsistent in the treatment of the phrase "Quaternary Period." In addition, the technical literature has proposed many different chronological time periods for this period of geologic time.

Institutional Uncertainties

1. Commission Implementation of the Flexibility Provision in 10 CFR 60.113(b) for the Subsystem Performance Objectives

Flexibility in implementing the subsystem performance objectives of 10 CFR 60.113(a) is provided by 10 CFR 60.113(b), which states "On a case-by-case basis, the Commission may approve or specify some other radionuclide release rate, designed containment period or pre-waste-emplacement groundwater travel time, provided that the overall system performance objective, as it relates to anticipated processes and events, is satisfied." There is a concern that this provision may inadviesly require the Commission, which is ultimately concerned with achievement of an overall safety goal, to become unduly involved in the subsystem balancing function that is appropriately the role of the system designer (e.g., the U.S. Department of Energy). It is also unclear how and when the Commission would implement this provision.

ENCLOSURE 4

## LIST OF ONGOING AND PLANNED POTENTIAL RULEMAKINGS AND GUIDANCE DOCUMENTS

### Potential Rulemakings

1. "Conforming Part 60 to U.S. Environmental Protection Agency (EPA) High-Level Waste (HLW) Standards" (now includes the previous potential rulemaking addressing "Anticipated Processes and Events and Unanticipated Processes and Events")
2. "Methodology for Demonstrating Compliance with EPA HLW Standards"
3. "Repository Operations Criteria" (formerly entitled "Design Basis Accident Dose Limit for Repository Operations")
4. "Establishment of Emergency Planning Criteria under Subpart I of 10 CFR Part 60"

### Staff Technical Positions

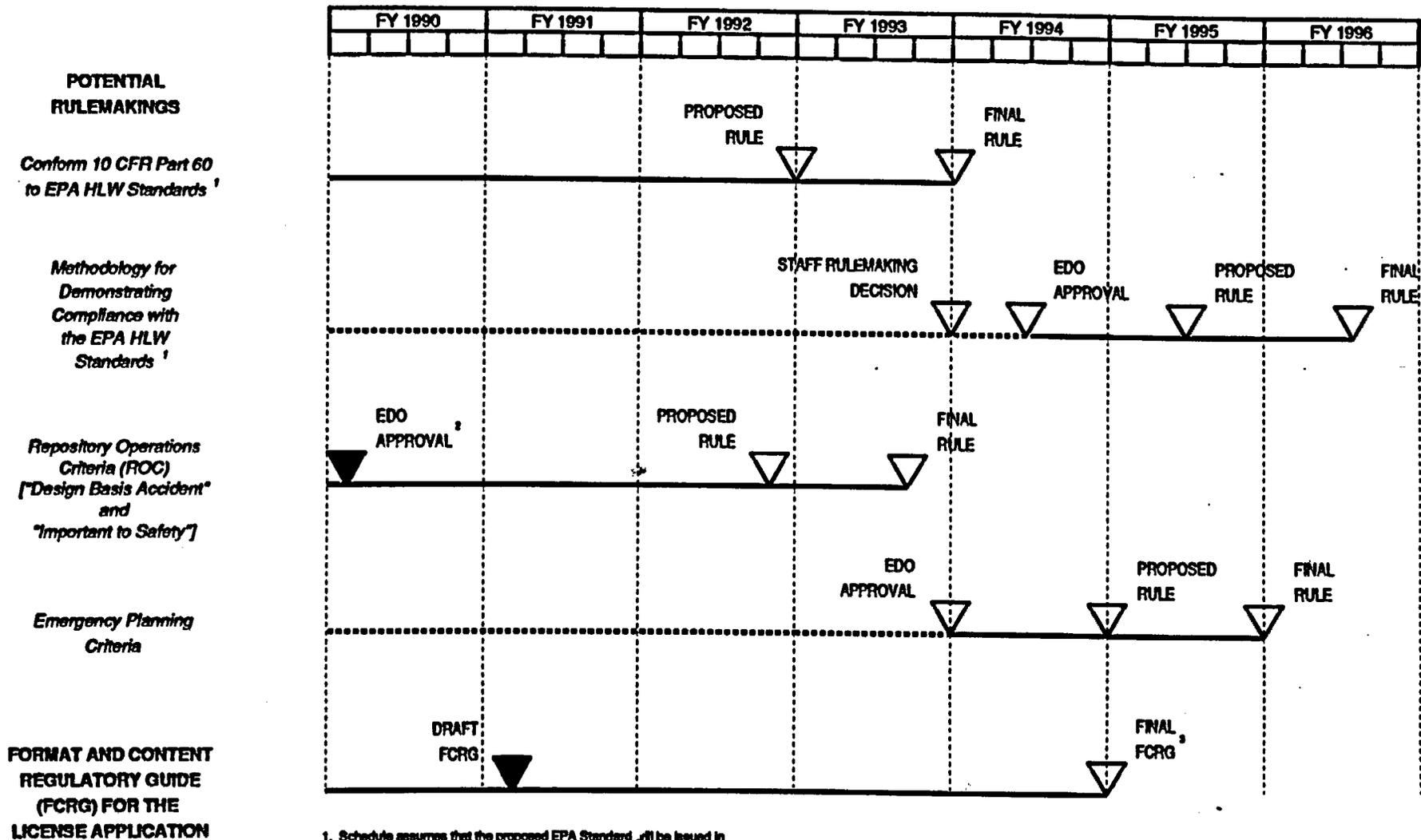
1. "Investigations to Identify Fault Displacement and Seismic Hazards at a Geologic Repository" (formerly entitled "Methods of Evaluating the Seismic Hazards at a Geologic Repository")
2. "Deterministic and Probabilistic Fault Displacement and Seismic Hazard Analysis"
3. "Geologic Repository Operations Area Underground Facility Design: Thermal Loads"

### Regulatory Guides

1. "Format and Content of License Application for the High-Level Waste Repository"
2. "Topical Guidelines for the Licensing Support System"

ENCLOSURE 5

# SCHEDULE OF NRC RULEMAKINGS AND REGULATORY GUIDES



1. Schedule assumes that the proposed EPA Standard will be issued in late 1991. EDO approval was given on August 7, 1993.

2. After initiation of the rulemaking, the staff determined that because the surface facilities regulated under 10 CFR Part 60 are similar to those for a monitored retrievable storage facility regulated under 10 CFR Part 72, both should offer equivalent protection. Therefore, it was decided to consider 10 CFR Part 72 when performing the systematic analysis of 10 CFR Part 60 before proceeding with a proposed rule. This expanded analysis is now part of the overall ROC work task.

3. Activities to complete a final FCRG include: evaluate public comments on the draft; suggest that DOE prepare a License Application annotated outline for Yucca Mountain; review the annotated outline; and make the FCRG consistent with the License Application Review Plan.

Formal two-year rulemaking activity

Technical basis development and staff decision on whether a rulemaking should be prepared



Milestone



Completed milestone