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Mr. Michael Lesar
Chief of the Rules and Directives Branch
U. S. Nuclear Regulatory Commission
MS T-6 D 59
Washington, DC 20555-0001

Dear Mr. Lesar:

As a former Chicagoan and one retired from the nuclear power plant business, as well as a former nuclear Naval officer now living in an adjacent state with operating nuclear plants where the spent nuclear fuel assemblies are stored, I have followed the development of the nuclear waste repository more closely than many. I have kept a close eye on DOE's web site where they put the latest information on Yucca Mountain and all the studies they have conducted.

As one familiar with NRC rules and regulations, I took it upon myself to review portions of your Yucca Mountain Review Plan. It is very well done and will help ensure that the repository is designed, built and operated safely. Nevertheless, I would like to suggest a few comments that I feel could improve the document. My comments are attached.

Thank you for considering them.

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1. I am familiar with the existing regulatory format and content documents regarding safety analysis reports (SAR). They typically address many individual areas like an introduction, the site, the design criteria, the reactor, the connected systems, QA, etc and each had its own chapter. This arrangement proved invaluable when it was necessary to revise the SAR due to reviewed and approved changes in facility design and description. The Review Plan (RP) for YM (Chapter 4) unfortunately puts the entire SAR in one chapter. This will become cumbersome in the future as the owners process potential changes to the SAR. The arrangement may thus increase the possibility of inadequate SAR revision control.

   It would be better to break up the material by subject area into several chapters. For example, one obvious division would be to have one chapter on "Repository Safety Before Permanent Closure" and a second on "Repository Safety After Permanent Closure." You may want to make what is now section 4.2.1.3, "Model Abstraction," into another chapter. Section 4.2.1.4 could also be a chapter, as could sections 4.3, 4.4, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.5.6, 4.5.7, 4.5.8, 4.5.9, and 4.5.10. I assume section 4.5.10, "License Specifications" is the same thing as reactor technical specifications.

2. The introductory and explanatory information provided in sections 1 and 2 defocus the reader from the actual review plan guidance.

   It is recommended that in the coming revision to the RP you put the technical review material in the first chapters and put the current Chapters 1 and 2 as supplements or appendices.

3. The RP would be easier to follow if there were less bullets and dashes.

   The bullet and dash system is cumbersome and should be changed to a numerical outline format similar to that of existing NRC guidance.

4. While the RP indicates in many places that it is risk-informed, performance-based, I cannot find anywhere in the RP where risk-informed, performance based is defined.

   Definitions for 1) "risk-informed", and 2) "performance-based" should be provided. It would be helpful if some examples were given.

5. Page 1-9, the first bullet under section 1.3 clearly places the safety case where it belongs: in the license application (reactors call it a Safety Analysis Report). However, on page 1-17, the RP makes it sound like the safety case and application are two separate things. If they are two different things, why not combine them so that the safety case is put in the S AR like it is for reactors?

6. My understanding is that the licensing process for YM is bifurcated, like it is for reactors. In many sections of regulatory guide 1.70 and NUREG 800, the specific items applicants had to provide were listed and they differed for what was needed to support Construction Permit (CP) versus Operating License (OL). The RP does this only in a few places where they ask for a commitment in the CP stage and the detailed information in the OL stage. For example, the review guidance "Reviewers will evaluate the information required by 10 CFR 63.21(c)(23)" implies that there is material for the reviewer to review. The guidance of section 4.5.2 is an example of where this two-step process is alluded to by the review guide but no structure for how the commitment to develop and implement plans is provided.

   I would expect that the NRC would have an expectation of when identified requirements are to be implemented and available for NRC review. The RP should clearly state what is needed for NRC review at the appropriate licensing stage. This approach would be like that in the power reactor licensing process and would provide what amount of detail is needed for facility design to support construction versus the amount of detail to support receipt of a license to operate.

   The clarification of the two-step process could be accomplished by having the Acceptance Criteria divided into Construction Permit Acceptance Criteria and Operating License Acceptance Criteria. It is recommended that at a minimum this two-step review process be included into Review Plan section 4.5.

7. The RP refers to codes and standards that are in some cases outdated or inappropriate to a repository. For example, ACI 359 is for nuclear power plant containment buildings. The citation of the code and standard date is appropriate but may imply that newer standards will not be acceptable.

   It would be better for the applicant to propose and defend a certain standard and for the NRC to then evaluate the suitability of that code or standard.

8. Page 3-4, section 3.1.2, RM 3 seems to have mixed statutory licensing authority for the Commission with its many regulations. The NRC develops implementing regulations based on statutory authority. The statutory authority for the Commission's licensing authority for a repository is derived from the AEA of 1954, as amended, the Energy Reorganization Act of 1974, and the more recent Nuclear Waste Policy Act, as amended, not from any of its regulations. RM3 and AC3 should be modified to delete the request for "applicable regulatory citations" since same give no licensing authority but are the result of such authority granted to the NRC by Congress. Perhaps you meant "applicable statutory citations" which would be clearer.

9. Section 3.3 addresses physical protection (PP). Page 3-8 cites that physical requirements are being reviewed in light of the events of September 11th.

   The physical protection planning of the repository should be controlled in such a manner that the plans and contingencies are made known to those who have a "need to know." The response of the licensee should also be provided to the NRC in a controlled manner. For reactors, we were required to submit the PP information under separate cover and withhold the information from public disclosure. I suggest you do the same for YM. If that is what you want the applicant to do, it is not very clear. This information should not be in the SAR (or the GI). Also, I suggest you take out of the next version of the RP all RMs and ACs relating to PP.

10. At the top of page 3-15, it is suggested that the need for more than two patrols per shift be left to the discretion of the DOE since the fact that the site is so remotely located and on protected and guarded government land that additional patrols may not be necessary. The same concern applies to section 3.4, MC&A.

    For security reasons the RMs and ACs for sections 3.3 and 3.4 could be provided to the applicant but controlled via a "need to know" process.

11. At the top of page 3-15, it is suggested that the need for more than two patrols per shift be left to the discretion of the DOE since the fact that the site is so remotely located and on protected and guarded government land that additional patrols may not be necessary. The same concern applies to section 3.4, MC&A. Section.

    It would seem that these PP performance requirements should be made risk-informed, performance-based since a dose is involved in meeting the requirements (72.106).

12. It is suggested that the seventh dash bullet on page 3-31 be deleted since it appears to go against the regulation that the applicant not assume changes in conditions as they exist today.

13. Section 4.1.1.2.2, RM 4 on page 4.1-15 asks for a range of spent fuel characteristics. I do not believe that this range should include the specifics asked for naval fuel. Such information is classified for naval fuel.

    I suggest you make provisions for identification of fuel characteristics that are classified due to national security concerns.

14. Section 4.1.1.2.2, RM 4, it is not clear what is meant by "cask type" or how same would provide any information on spent fuel. Also, it isn't clear to me that there is any difference between "thermal characteristics" and "heat generation rate."

Also, many spent fuel assemblies may no longer have an identifiable "number" on them after years of storage.

15. Section 4.1.1.7 does not appear to be system driven. The NRC used a systems approach for reactors. Rather than having a section listing the design criteria for all the systems, then a section addressing all the functional requirements for all the systems, and then a section listing all the design codes and standards used for all the systems, the reactor side of the house told us to identify the system and put all this information under each system. This made for a more comprehensive description of the systems. You may want to consider this for the RP.

16. Section 4.2.1.3 addresses model abstractions. Since DOE addressed expert elicitation in its models, it may better to delete section 4.5.4, "Expert Elicitation", as a standalone section and have the use of Expert Elicitation addressed in each model abstraction where it applies. Also, in their Site Recommendation documents the DOE used different models than those you list in section 4.2.1.3. Would it be better to use their (DOE) models?

17. Part 63 uses "license specifications" (63.21(c)(18)) rather than "technical specifications," as used in Part 50. However, the RP seems to mix up "license conditions" and "license specifications" and sometimes appears to make "license specifications" a subset of "license conditions." This error is seen clearly in 63.42, "Conditions of License." License conditions are placed on the CP or OL. One obvious license condition would be the one discussed in 63.42(d), no more than 70,000 MT until a second repository is in operation. Conditions are also placed on CPs (CA is this case). License specifications, on the other hand, are based on the analyses and results of accident analyses. Section 50.36 explains the role of license specifications (technical specifications). It is suggested that the subjects of license conditions and license specifications be reviewed in Part 50 and similarly presented in the RP.

18. Page 4.1-8, Section 4.1.1.8.2, requires that the reviewer "Confirm that the management commitment includes provisions for ensuring that:.." If this commitment is a written policy, the review criteria should be changed to verify that written guidance exists to institutionalize the management commitment to the ALARA principles.

19. Section 4.1.1.8.2, RM2 notes that the regulatory guidance cited is for power reactors and allows the reviewer to "consider this aspect when using this guidance." It is unclear if the guidance is to be followed, or if it is only to be considered as a good practice. If it is good practice, then I question the need for it to be in the repository review plan. The performance of good radiological practices by the repository staff should be monitored and evaluated by the NRC inspector program.

20. Section 4.1.3.1(third paragraph) notes that in preparing for the review of proposed plans that the reviewer should consult the general review procedures contained in any Office Of Nuclear Material Safety and Safeguards (ONMSS) decommissioning standard review plan. If the ONMSS review plans are to be used then why is the NRC providing review plans in section 4.1.3?

21. Section 4.5 implies that the Quality Assurance Program (QAP) will be implemented and available for effectiveness evaluation at the time of SAP submittal. As in power reactor licensing activities, I would expect the QAP to be submitted to NRC separately from the SAR well before the QAP is fully implemented by having field procedures in place and being followed. Follow-on commitments would then ensure that planned programmatic activities are implemented.

    The review plan should clearly state which elements of the QAP need to be in place at the time of SAR submittal and which ones are expected to be in the planning stage. For example:

    21.1 On page 4.5-6(3rd Bullet) the QAP program is acceptable provided that "clear management controls and effective lines of communication exist." Typically the effectiveness of a communication program cannot be evaluated until well after it is implemented.

    21.2 On page 4.5-8(2nd Bullet) the QAP program is acceptable provided that "designated quality assurance individuals are involved in the day-to-day facility activities important to safety or important to waste isolation." It is unclear how personnel would perform this with no waste onsite at the initial SAR submittal date.

    21.3 On page 4.5-30, AC16(1st Bullet) the corrective action program is acceptable provided that "an effective corrective action program has been established." Typically the effectiveness of a corrective action program cannot be evaluated until well after it is implemented.

22. Page 4.5-9(second dash bullet) cites that the use of computer software will be conducted in accordance with the quality assurance program. I question what type of software is included in this requirement. Do desktop commercial PC software programs used within the repository facility such as Microsoft Word and Microsoft Outlook Email programs fall under this umbrella? Page 4.5-34, AC18 (7th dash bullet) also identifies computer software as being involved with the audit process but does not describe what type of software is subject to the guidance. Page 4.5-35 AC19 defines software as "computer programs, procedures, rules, and associated documentation" which leads the reader to conclude that Microsoft Word and any other commercial PC application would indeed be subject to the QAP.

    The review guidance should only require software developed to support a safety or waste isolation function be developed and maintained under the QAP and subject to QAP audit requirements.

23. Page 4.5-30, AC 16 attempts to define the repository corrective action program. The definition of a "significant Condition Adverse To Quality" is provided in Bullet paragraph two and both paragraphs of bullet five. A single definition should be provided.

24. The role of the Quality Assurance (QA) group in the corrective action program cited on Page 4.5-30, AC 16 needs to be clarified. As written, the QA group is responsible for reviewing repository corrective action procedures, evaluation adequacy of the corrective action, verification of implementation of the corrective action, and trend analysis. In power reactor corrective action programs, the site staff is typically involved in the daily performance of the corrective action program, and the QA group provides program oversight. If the review plan is intending to have this arrangement, then the review guidance should be clarified.