COMBINED SET OF RECOMMENDED OPTIONS AND IMPLEMENTATION ACTIONS FOR ALL INDIVIDUAL LICENSE TERMINATION RULE ISSUES

The recommended options and implementation actions for each License Termination Rule (LTR) issue are provided below.

Restricted Release/Alternate Criteria and Institutional Control

1.1. Clarify the existing risk-informed graded approach for restricting use. Implement with revised guidance and a Regulatory Issue Summary (RIS).

1.2. Emphasize the availability of the option for restricting use with layered and redundant institutional controls with a independent third party that is also responsible for one of the institutional controls. Implement with revised guidance and a RIS.

1.3. Add a new option for restricting use by U. S. Nuclear Regulatory Commission (NRC) monitoring and enforcement of institutional controls, after license termination using either the regulation or legal agreement. Implement with revised guidance (that includes a model restrictive covenant) and a RIS.

1.4. Add a new option for restricting use by an NRC possession- only specific license. Implement with revised guidance and a RIS.

1.5 Note that the staff plans on continuing to monitor the U. S. Department of Energy's (DOE's) Long-Term Stewardship Program changes and reevaluate the potential for restricting use through future site transfers to DOE under the Nuclear Waste Policy Act, section151(b).

1.6 Note that the staff plans on continuing to monitor and participate, where beneficial to the staff, with cooperative, interagency activities to share information and develop solutions to long-term stewardship/institutional control issues (e.g., Environmental Council of States Long-Term Stewardship Subcommittee, DOE Long-Term Stewardship Roadmap development).

1.7 Note that the staff will continue to explore with licensees the use of the recommended approaches for restricted release, pending the Commission's deliberations. The staff will inform the Commission if a licensee is willing to adopt any of these approaches. In addition, if the Commission approves one or more of the options, the staff will seek to implement the option(s) in advance of the RIS and guidance, if it will further the decommissioning process.

Relationship between LTR Release Limits and Other Release Limits

Unimportant Quantities under 10 CFR 40.13(a)

2.1. As the elimination or resolution of inconsistency between the LTR and 10 CFR 40.13(a) is not a current possibility, the staff recommends clarifying that 10 CFR 40.13(a) should not be used as a decommissioning criterion. Implement with a RIS.

Appropriateness of Developing a Separate Unrestricted Release Standard for Uranium and Thorium

3.1 The staff acknowledges that there are some significant inconsistencies in the potential exposures allowed between 10 CFR 20.1402 and other regulations in 10 CFR Part 40. Although the staff is reevaluating some of these 10 CFR Part 40 regulations, the staff does not believe that they are applicable as unrestricted release criteria for source material specific licensees.

3.2 The staff has also found that there are only a limited number of existing source material sites that have not already sought unrestricted release that may find it necessary to cleanup to requirements other than those in 10 CFR 20.1402. If NRC jurisdiction of non-purposefully-used uranium and thorium is transferred to other agencies, as discussed in the JWG's paper, the number of existing NRC and Agreement State source material sites licensed under the AEA, and potential future licensees, would be further reduced. However, because the staff believes that it may be necessary to retain the SDMP/complex decommissioning sites under NRC jurisdiction, the recommendation of the JWG will not result in a significant reduction in the number of overall sites that would benefit from a separate unrestricted standard.

3.3 In summary, the staff believes that the opportunity provided by the existing LTR allows complex source material sites the flexibility to reduce burden through a graded approach (unrestricted use to restricted use to alternate criteria) that can be based on risk. Continued use of the LTR would also maintain 10 CFR 20.1402 as an unrestricted release standard for source material sites that are not so complex so that public confidence is not impacted. As a result, the staff believes that given the flexibility in the existing regulations in 10 CFR 20.1402, 20.1403, and 20.1404,and in conjunction with the limited number of sites that may require cleanup to criteria other than those in 10 CFR 20.1402, it is not appropriate at this time to develop a separate unrestricted release standard for source material licensees. This issue should be discussed in a RIS.

On-Site Disposal under 10 CFR 20.2002

4.1 Continue the current practice of approving on-site disposals with a dose criterion of a "few millirem." This is consistent with staff's goal of preventing future legacy sites, and not unnecessarily creating restricted release sites. This option should be implemented with revised guidance and a Regulatory Issue Summary.

4.2 Permit burial requests with a dose criterion of 1 mSv/yr (100 mrem/yr), as long as such requests are approved contingent on providing additional financial assurance to cover the cost of decommissioning the burial site for license termination. The additional financial assurance satisfies staff's concern with preventing future legacy sites, while leaving this option available provides licensees with maximum flexibility under the existing regulation. Note that this issue is addressed in Attachment 7 as an indicator of the need for increased financial assurance.

Controlling the Disposition of Solid Materials

5.1 Describe the relationship between the LTR's unrestricted-release dose constraint and the existing case-by-case approach for controlling the disposition of solid materials. The staff's qualitative judgment, at this time, is that the LTR is protective of public health if materials are removed from a site after license termination for unrestricted use, mainly due to the conservatism in the LTR technical basis and current dose-modeling assumptions, ALARA considerations, and the effects of mixing when residual radioactivity is moved to other locations. This should be clarified in a Regulatory Issue Summary.

5.2 Note that insights from the ongoing technical development associated with the rulemaking effort on controlling the disposition of solid materials can be used in the development of a rationale to further explain the relationship between criteria in the LTR and those for controlling the disposition of solid materials, and support the current view that the LTR is protective of offsite releases after license termination for unrestricted use.

Realistic Exposure Scenarios

6.1. Clarify that more realistic exposure scenarios can be justified by licensees assuming reasonable foreseeable (e.g., a few decades and possibly up to 100 years) land use for the 1,000 year analysis time period. Implement in revised guidance and a RIS.

6.2 Note that the staff will provide to the Commission cases that may implement this approach in the near future for the AAR, Cabot-Revere, Michigan Department of Natural Resources, and Fansteel sites. In addition, if the Commission approves the recommended opition, the staff will seek to implement the option in advance of the RIS and guidance, if it will further the decommissioning process.

6.3 The staff continues to be committed to improving the other technical areas of dose modeling for decommissioning. These include improving the guidance, pursuing computer model improvements and development, and improving the state of knowledge on individual parameters and processes involved.

Measures to Prevent Future Legacy Sites

Changes to Financial Assurance

Initial Underestimation of Decommissioning Cost:

7.1 Revise regulation to provide for NRC approval of the decommissioning funding plan (DFP) and to require licensees to provide a DFP and financial assurance based on unrestricted release. Provide existing licensees with the option to provide financial assurance for restricted release if the licensee submits and receives NRC approval of a decommissioning plan (DP) demonstrating its ability to meet restricted use criteria, or alternatively, if the licensee implements institutional controls and obtains third party oversight for a restricted release. Implement with a rulemaking, new guidance, and a RIS.

Operational Indicators of Increasing Costs

7.2 Revise regulation to require a licensee to re-evaluate its decommissioning cost estimate, and, if necessary, provide additional financial assurance to cover

higher costs, within a reasonable time after an operational event that indicates a potential for increasing decommissioning costs. Operational indicators would include: spills and spread of contamination, groundwater contamination, and other events. Implement with a rulemaking, new guidance, and a RIS.

7.3 Revise regulation, for sites with large radioactive material throughput or liquid processes, to require licensee to periodically obtain subsurface soil and groundwater contamination data to update its decommissioning cost estimate. Implement with a rulemaking, new guidance, and a RIS.

Unavailability of Funds in Bankruptcy Where Financial Assurance Is Provided by Parent Company or Self-guarantee

7.4 Request comments on options under consideration for changing the parent company and self-guarantee mechanisms in a notice of proposed rulemaking, beyond the option in 7.6. Implement in the Federal Register Notice of a proposed rulemaking and a RIS.

Inadequate Financial Disclosure

7.5 Revise regulation to require licensee with a parent or self-guarantee to provide additional certification that its financial statements do not omit off-balance sheet liabilities that would prevent it from meeting the financial test. Implement with a rulemaking, new guidance, and a RIS.

Reaching Assets after Corporate Reorganization If Financial Assurance Proves Inadequate

7.6 Revise regulation to require licensees to provide NRC with agreements that allow NRC to hold parent companies and subsidiaries liable for decommissioning costs. As part of the rulemaking, consider requiring the parent company of licensee subsidiaries to be a co-licensee. Implement with a rulemaking, new guidance, and a RIS.

Investment Losses Reduce Trust Account Balance

7.7 Where decommissioning funds are held in investments that may suffer market losses, revise regulation to require licensee to perform periodic comparison of actual amount of funds in trust to its decommissioning funding requirement, make up any shortfall, and report the funding addition to NRC. Implement in a rulemaking, new guidance, and a RIS.

Accidental Release Increases Decommissioning Cost

7.8 Revise regulation to require certain licensees to obtain onsite property damage insurance to cover the cost of cleaning up accidental releases. Implement in a rulemaking, new guidance, and a RIS.

Changes in Licensee Operations

Chronic Releases

8.1. Revise requirement (10 CFR 20.1406) to remove the "other than renewals" statement, so that both current licensees and new applicants are required to design and operate facilities to minimize contamination. For existing licensees, the emphasis should be on procedural changes. Physical changes to the facility should be made only when procedures fail to reduce releases. There should be a cost-risk-benefit analysis evaluating effects of potential contamination. For example, contamination that impacts groundwater could migrate through large volumes of the subsurface, and potentially beyond the site boundary. This would result in a large cost to remediate, that could be avoided by an investment in prevention. Implement in a rulemaking, revised guidance, and a RIS.

8.2. Increase emphasis on the potential for enforcement sanctions for non-compliances with the requirements related to surveys and monitoring, records of operational and environmental releases, reporting, etc. (i.e., 10 CFR Sections 20.1500, 20.2100, 20.2200, and 40.36). Take enforcement actions, as appropriate, to better focus licensee response to environmental contamination problems resulting from such non-compliances. Implement in revised enforcement guidance and a RIS.

Reporting Deficiencies

8.3. Develop a risk-informed approach that includes requiring definition of sites with "high risk" of subsurface contamination as those with large volumes of long-lived radionuclides, large throughput, or liquid processes. Implement in a rulemaking, revised guidance, and a RIS.

8.4. Implement the risk-informed approach (Recommendation 8.3) to require specific monitoring and reporting programs including subsurface characterization, monitoring, and reporting under two conditions:

1) For sites with "high risk", at license application or renewal, a minimum plan to define and monitor the subsurface (e.g., three to five wells to identify geologic and hydrologic characteristics of the site), and an annual report of the concentrations of contaminants of concern;

2) For all sites, on experiencing events(s) that contaminate the subsurface, an expanded monitoring and reporting program that adds wells to fully characterize the extent and migration of resultant plume(s), and more frequent monitoring and reporting, approximately quarterly. This would be done in conjunction with financial assurance requirements. Implement in a rulemaking, revised guidance, and RIS.

8.5. Implement the risk-informed approach (Recommendation 8.3) to increase NRC's inspection focus on sites with "high risk" of environmental contamination concerns by:

1) Increasing inspector qualifications in hydrology, geology, etc.;

2) Increasing inspections and inspector evaluations of record keeping requirements [i.e., 10 CFR 20.1501 (Surveys and Monitoring); 10 CFR 20.2103 (Records of Surveys); 10 CFR 20.2203 (Reports of radioactive material exceeding constraints or limits)];

3) Increasing inspections and inspector evaluations of record keeping requirements of 10 CFR 40.36 and others to identify potential problems early; and

4) Modifying Manual Chapter 2600, to include performance- and risk-informed evaluations, using those in Manual Chapter 2500 as examples.

Implement in revised inspection procedures and a RIS.