17 DECOMMISSIONING PLANS: PROGRAM ORGANIZATION

17.1 PLANNED DECOMMISSIONING ACTIVITIES

OVERVIEW

The staff will review the information supplied by the licensee to determine if the description of the planned decommissioning activities is adequate to allow the staff to fully understand the methods and procedures the licensee intends to use to remove residual radioactive material at the site to levels that allow for release of the site in accordance with NRC requirements. This information should include descriptions of how the licensee intends to remediate structures, systems and equipment, surface and subsurface soil, and surface and groundwater at the site. In addition, the licensee should provide a schedule that demonstrates how the licensee will complete the interrelated decommissioning activities and the time frames for completing the decommissioning. The licensee should also summarize which activities are being performed by licensee staff and which are being performed by decommissioning contractors, including which activities are being performed under the licensee's license and which are being performed under the contractor's license.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is informational in nature, and no specific detailed technical analysis is required. The staff will make a qualitative assessment as to whether the licensee's descriptions of planned decommissioning activities are adequate to serve as the basis for evaluating the licensee's methods and procedures for remediating the site and whether the decommissioning activities proposed by the licensee to remediate the facility can be conducted safely. In addition, the staff will ensure that the licensee's proposed schedule for completing the decommissioning complies with the NRC's requirements under 10 CFR 30.36(h), 10 CFR 40.42(h), 70.38(h), or 72.54(j). Finally, the staff will ensure that the licensee and contractor are already authorized to perform the decommissioning procedures described in the decommissioning plan or that the licensee has described the decommissioning procedures sufficiently to allow the staff to incorporate them into the license.

17.1.1 CONTAMINATED STRUCTURES

The purpose of the review of the planned decommissioning activities for contaminated structures is to allow the staff to fully understand what methods and procedures the licensee will undertake to remediate the contaminated structure. This will allow the staff to evaluate the licensee's methods and procedures to qualitatively assess if they can be performed safely and in compliance with NRC's requirements. This information may also aid the staff in evaluating the estimates of radioactive waste that will be generated during decommissioning, the cost estimates for the decommissioning, and the ALARA evaluations developed by the licensee to support the decommissioning.

Regulatory Requirements

10 CFR 30.36(g), 40.42(g), 70.38(g), and 72.54(g)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to remediate the contaminated structure. In addition, the information should be sufficient to allow the staff to determine if the licensee's radiation safety procedures are appropriate, given the level of contamination and proposed method(s) for remediation. The staff's review should verify that the following information is included in the authorized activities section of the facility decommissioning plan:

- A summary of the remediation tasks planned for each room or area in the contaminated structure in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- A description of the remediation techniques (such as scabbling, hydrolazing or grit blasting) that will be employed in each room or area of the contaminated structure. Licensees may generically describe these techniques once at the beginning of the "Contaminated Structures" section and refer to them in the descriptions of the remediation of the individual rooms or areas;
- A summary of the radiation protection methods (such as PPE, step-off pads and exit monitoring) and control procedures (such as scabbler shrouds, HEPA vented enclosures or superfine water misting) that will be employed in each room or area[15]. The staff's technical

[15] The staff's technical review of the adequacy of the licensee's or responsible party's radiation safety procedures should be performed pursuant to the criteria in Section 17.3. In Section 17.3, the staff should make a qualitative assessment of the adequacy of the radiation protection and control methods proposed by the licensee or responsible party to determine if the procedures described in the Radiation Safety and Health section of the decommissioning plan have been followed.

review of the adequacy of the licensee's radiation safety procedures should be performed pursuant to the criteria in Section 16.10 of this DGC. In this section of the DGC, the staff should make a qualitative assessment of the adequacy of the radiation protection and control methods proposed by the licensee to determine if the procedures described in the Radiation Safety and Health section of the decommissioning plan have been followed;

- A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- A summary of any unique safety or remediation issues associated with remediating the room or area; and,
- For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

If the licensee intends to dismantle structures with contamination present in excess of the unrestricted use limits, the decommissioning plan should provide a separate summary of the information listed above for the areas containing contamination in excess of the unrestricted use limits. In addition, the licensee should provide a description of the techniques and procedures that will be used to dismantle the building or structure and the licensee's procedures for evaluating the areas prior to dismantlement.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee has described the remediation activities and associated safety precautions in sufficient detail to allow the staff to make a qualitative assessment of the adequacy of the proposed activities with respect to safety in compliance with NRC requirements. The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning activities portion of the decommissioning plan. The staff should make a qualitative assessment of the adequacy of the licensee's proposed remediation methods and procedures to accomplish the remedation objectives in a manner that is protective of workers and the public and in compliance with NRC requirements. Detailed technical review of the safety precautions and procedures should be conducted pursuant to the criteria in Section 16.9 of this volume.

Sample Evaluation Findings

The staff may combine the evaluation finding for the licensee's description of the planned decommissioning activities with the findings for the remaining areas in this section of this volume as follows:

> The NRC staff has reviewed the decommissioning activities described in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Consolidated Decommissioning Guidance, Volume 1, Section 17.1 (Planned Decommissioning Activities). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to allow the NRC staff to evaluate the licensee's planned decommissioning activities to ensure that the decommissioning can be conducted in accordance with NRC requirements.

17.1.2 CONTAMINATED SYSTEMS AND EQUIPMENT

The purpose of the review of the description of the planned decommissioning activities for contaminated systems and equipment is to allow the staff to fully understand what methods and procedures the licensee will undertake to remediate the contaminated systems or equipment at its facility. This will allow the staff to evaluate the licensee's methods and procedures to qualitatively assess if they can be performed safely and in compliance with NRC's requirements. This information may also aid the staff in evaluating the estimates of radioactive waste that will be generated during decommissioning, the cost estimates for the decommissioning, and the ALARA evaluations developed by the licensee to support the decommissioning.

Regulatory Requirements

10 CFR 30.36(g), 40.42(g), and 70.38(g)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to remediate the contaminated systems and equipment. In addition, the information should be sufficient to allow the staff to determine if the licensee's radiation safety procedures are appropriate, given the level of contamination and proposed method(s) for remediation. The staff's review should verify that the following information is included in the authorized activities section of the facility decommissioning plan:

- A summary of the remediation tasks planned for each system in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;

- A description of the techniques (such as scabbling, hydrolazing or grit blasting) that will be employed to remediate each system in the facility or site. Licensees may generically describe these techniques once at the beginning of the "Contaminated Systems" section and refer to them in the descriptions of the remediation of the individual systems;
- A description of the radiation protection methods (such as personal protective equipment (PPE), step-off pads and exit monitoring) and control procedures (such as scabbler shrouds, HEPA vented enclosures or superfine water misting) that will be employed while remediating each system. See footnote 15;
- A summary of the equipment that will be removed or decontaminated and how the decontamination will be accomplished;
- A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- A summary of any unique safety or remediation issues associated with remediating any system or piece of equipment; and
- For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee has described the remediation activities and associated safety precautions in sufficient detail to allow the staff to determine if the proposed activities can be conducted safely and in compliance with NRC requirements. The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning activities portion of the decommissioning plan. The staff should make a qualitative assessment of the adequacy of the licensee's proposed remediation methods and procedures to accomplish the remedation objectives in a manner that is protective of workers and the public and in compliance with NRC requirements. Detailed technical review of the safety precautions and procedures should be conducted pursuant to the criteria in Section 17.3 of this volume.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of decommissioning activities for contaminated systems and equipment with the findings for the remaining areas in this section of this volume (see Section 17.1.1, above).

17.1.3 SOIL

The purpose of the review of the description of the planned decommissioning activities for soil is to allow the staff to fully understand what methods and procedures the licensee will undertake to remove or remediate the surface and subsurface soil at the site. This will allow the staff to evaluate the licensee's methods and procedures to qualitatively assess if they can be performed safely and in compliance with NRC's requirements. This information may also aid the staff in evaluating the estimates of radioactive waste that will be generated during decommissioning, the cost estimates for the decommissioning, and the ALARA evaluations developed by the licensee to support the decommissioning.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g), 40.42(g), and 70.38(g)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to remove or remediate contaminated soil at the site. In addition, the information should be sufficient to allow the staff to determine if the licensee's radiation safety procedures are appropriate, given the level of contamination in the soil and proposed method(s) for removal or remediation. The staff's review should verify that the following information is included in the description of soil decommissioning activities in the facility decommissioning plan:

- A summary of the removal/remediation tasks planned for surface and subsurface soil at the site in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- A description of the techniques that will be employed to remove or remediate surface and subsurface soil at the site;
- A description of the radiation protection methods (such as PPE, or area exit monitoring) and control procedures (such as the use of HEPA vented enclosures during excavation or covering soil piles to prevent wind dispersion) that will be employed during soil removal/remediation. See footnote 15;
- A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- A commitment to conduct decommissioning activities in accordance with written, approved procedures;

- A summary of any unique safety or removal/remediation issues associated with remediating the soil; and
- For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee has described the remediation activities and associated safety precautions in sufficient detail to allow the staff to determine if the proposed activities can be conducted safely and in compliance with NRC requirements. The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning activities portion of the decommissioning plan. The staff should make a qualitative assessment of the adequacy of the licensee's proposed remediation methods and procedures to accomplish the remedation objectives in a manner that is protective of workers and the public and in compliance with NRC requirements. Detailed technical review of the safety precautions and procedures should be conducted pursuant to the criteria in Section 17.3 of this volume.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of decommissioning activities for soil with the findings for the remaining areas in this NUREG volume (see Section 17.1.1, above).

17.1.4 SURFACE AND GROUNDWATER

The purpose of the review of the description of the planned decommissioning activities for surface and groundwater is to allow the staff to fully understand what methods and procedures the licensee will undertake to remediate the contaminated water. This will allow the staff to evaluate the licensee's methods and procedures to qualitatively assess if they can be performed safely and in compliance with NRC's requirements. This information may also aid the staff in evaluating the estimates of radioactive waste that will be generated during decommissioning, the cost estimates for the decommissioning, and the ALARA evaluations developed by the licensee to support the decommissioning.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g), 40.42(g), 70.38(g)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to remediate the contaminated ground or surface water. In addition, the information should be sufficient to allow the staff to determine if the licensee's radiation safety procedures are appropriate, given the level of contamination and proposed method(s) for remediation. The staff's review should verify that the following information is included in the authorized activities section of the facility decommissioning plan:

- A summary of the remediation tasks planned for ground and surface water in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- A description the remediation techniques that will be employed to remediate the ground or surface water;
- A description of the radiation protection methods and control procedures that will be employed during ground or surface water remediation. See footnote 15;
- A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- A commitment to conduct decommissioning activities in accordance with written, approved procedures; and
- A summary of any unique safety or remediation issues associated with remediating the ground or surface water.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee has described the remediation activities and associated safety precautions in sufficient detail to allow the staff to determine if the proposed activities can be conducted safely and in compliance with NRC requirements. The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning activities portion of the decommissioning plan. The staff should make a qualitative assessment of the adequacy of the licensee's proposed

remediation methods and procedures to accomplish the remedation objectives in a manner that is protective of workers and the public and in compliance with NRC requirements. Detailed technical review of the safety precautions and procedures should be conducted pursuant to the criteria in Section 17.3 of this volume.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of decommissioning activities for surface and ground water with the findings for the remaining areas in this section of this NUREG volume (see Section 17.1.1, above).

17.1.5 SCHEDULES

The purpose of the review of the licensee's schedule is to determine whether it complies with NRC's requirements for the completion of decommissioning activities.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(h), 10 CFR 40.42(h), 70.38(h), and 72.54(j)

Information to be Submitted

The schedule supplied by the licensee should be sufficient to allow the staff to fully understand what activities will be performed to complete the decommissioning, the amount of time required to perform the activity, and the timeframe for performing the activities. The staff's review should verify that the licensee has included:

- A Gantt or PERT chart detailing the proposed remediation tasks in the order in which they will occur and including the amount of time required to perform each decommissioning activity and the initiation and completion dates for the activities;
- A statement acknowledging that the dates in the schedule are contingent on NRC approval of the decommissioning plan;

- A statement acknowledging that circumstances can change during decommissioning, and, if the licensee determines that the decommissioning cannot be completed as outlined in the schedule, the licensee will provide an updated schedule to NRC; and
- If the decommissioning is not expected to be completed within the time frames outlined in NRC regulations at 10 CFR 30.36(h)(1), 10 CFR 40.42(h)(1), 70.38(h)(1), or 72.54(j)(1), the staff should verify that the licensee has requested an alternative schedule for completing the decommissioning and has addressed the criteria in NRC regulations at 10 CFR 30.36(h)(2)(i)(1-5), 10 CFR 40.42(h)(2)(i) (1-5), 70.38(h)(2)(i)(1-5), or 72.54(k)(1-5).

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee's schedule for decommissioning its facility is in compliance with NRC requirements. The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning activities portion of the decommissioning plan.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of decommissioning activities for soil with the findings for the remaining areas in this section of this NUREG volume (see Section 17.1.1, above).

17.2 DECOMMISSIONING PLAN: PROJECT MANAGEMENT AND ORGANIZATION

OVERVIEW

The staff will review the information supplied by the licensee to determine if the description of the licensee's decommissioning project organization and management structure is sufficient to allow the staff to fully understand how the licensee will ensure that it will exercise adequate control over the decommissioning project. This information should include a description of the management structure for the project, including individual organizational unit reporting responsibilities and lines of authority; a description of how radioactive material work procedures/practices (such as Radiation Work Permits) are developed reviewed, implemented, and managed; a description of the qualifications necessary for individuals performing the various project management and safety functions; a description of the relationship between the various organizational units within the decommissioning organization (such as remedial activities and health and safety units), including the responsibilities and authority to revise or stop work; a description of the licensee's training program; and a description of how contractors performing work at the facility will be managed during the decommissioning project.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is informational in nature, and no specific detailed technical analysis is required. The staff will make a qualitative assessment as to whether the licensee's descriptions of the proposed decommissioning project management and organization are adequate to serve as the basis for concluding that the licensee's management program will ensure that the appropriate control will be exercised during decommissioning operations.

17.2.1 DECOMMISSIONING MANAGEMENT ORGANIZATION

The purpose of the review of the description of the decommissioning project management organization is to verify that the licensee has a management organization and the personnel resources to ensure that the decommissioning of the facility can be completed safely and in accordance with NRC requirements.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 70.38(g)(4)(ii) and 72.54(g)(2)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the structure and functions of the decommissioning project management organization. The staff's review should verify that the following information is included in the description of the decommissioning project management organization:

- A description of the decommissioning organization, including descriptions of the individual decommissioning project units within the decommissioning project; organization, such as project management, health and safety, and remedial activities;
- A description of the responsibilities of each of these decommissioning project units;
- A description of the reporting hierarchy within the decommissioning project management organization, including a chart or diagram showing the relationship of each decommissioning project unit to other project units and decommissioning project management; and
- A description of the responsibility and authority of each unit to ensure that decommissioning activities are conducted in a safe manner and in accordance with approved written procedures, including both stop-work authority of each unit and the manner in which concerns about safety issues are managed within the overall decommissioning project.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the decommissioning project management organization. NRC staff should verify that the descriptions of the decommissioning project management organization and individual project unit responsibilities are sufficiently detailed to allow the staff to understand the manner in which the organization will ensure that decommissioning will be conducted safely. The staff should verify that the individual project unit reporting hierarchy and lines of authority within the decommissioning project do not create conflicts that could compromise safety during decommissioning and that, as appropriate, individual units report directly to the unit responsible for overall decommissioning project management. The staff should verify that the individual project units, and individuals within each unit, have the responsibility and authority to bring safety concerns to decommissioning project management and that stop-work authority is provided to the unit responsible for safety and health. The staff should make a qualitative assessment of the adequacy of the licensee's proposed decommissioning management organization to accomplish the remediation objectives in a manner that is protective of workers and the public and in compliance with NRC requirements.

Sample Evaluation Findings

The NRC staff has reviewed the description of the decommissioning project management organization, position descriptions, management and safety position qualification requirements and the manner in which the licensee, [insert name and license number of licensee], will use contractors during the decommissioning of its facility located at [insert location of facility] according to the NMSS Consolidated Decommissioning Guidance, Section 17.1, or the Standard Review Plan, Section 9 ("Decommissioning Management Organization"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to allow the NRC staff to evaluate the licensee's decommissioning project management organization and structure to determine if the decommissioning can be conducted safely and in accordance with NRC requirements. (Note that this finding incorporates the results of the staff's assessment under Sections 17.2.2 - 17.2.5, below).

17.2.2 DECOMMISSIONING TASK MANAGEMENT

The purpose of the review of the description management of decommissioning tasks is to verify that all decommissioning activities will be conducted in accordance with written, approved procedures and that the licensee has a methodology in place to manage the development of, review, and maintain the procedures.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 70.38(g)(4)(ii) and 72.54(g)(2)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the manner in which the licensee will evaluate decommissioning tasks and develop and manage the procedures necessary for conducting the tasks. The staff's review should verify that the following information is included in the description of decommissioning task management:

- A description of the manner in which the decommissioning tasks are managed, such as through the use of Radiation Work Permits (RWPs). The term "RWP" will be used throughout this section to refer to the written procedure used to manage individual decommissioning tasks;
- A description of how individual decommissioning tasks are evaluated and how the RWPs are developed for each task;
- A description of how the RWPs are reviewed and approved by the decommissioning project management organization;
- A description of how RWPs are managed throughout the decommissioning project (i.e., how they are issued, maintained, revised, and terminated); and
- A description of how individuals performing the decommissioning tasks are informed of the procedures in the RWP, including how they are initially informed and how they are informed when an RWP is revised or terminated.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the manner in which decommissioning tasks will be managed. The staff should verify that the licensee will control decommissioning tasks through the use of written procedures. These procedures should be developed by individuals/units familiar with the physical and safety requirements necessary to complete the tasks safely. The procedures should be reviewed and approved by units responsible for physical, radiological, chemical, and occupational safety, as well as decommissioning project management. Note that NRC staff is not responsible for ensuring that physical, chemical or occupational safety procedures are adequate. Rather, the intent is to ensure that the licensee has

an integrated approach for reviewing and approving procedures that could impact radiological safety. Procedures should also undergo separate review by a group charged with ensuring that activities are conducted safely and in a manner that ensures that exposures to radiation are ALARA. Staff should verify that the licensee has a methodology to issue, modify (after appropriate review and approval), and terminate RWPs, as well as a program for ensuring that individuals performing the tasks are informed or trained in the procedures. The staff should make a qualitative assessment of the adequacy of the licensee's proposed decommissioning task management procedures to accomplish the decommissioning in a manner that is protective of workers and the public and in compliance with NRC requirements.

Sample Evaluation Findings

None. The staff should combine the assessment of this section of the decommissioning plan with Section 17.2.1, above.

17.2.3 DECOMMISSIONING MANAGEMENT POSITIONS AND QUALIFICATIONS

The purpose of the review of the licensee's decommissioning management positions and qualifications is to ensure that the licensee has the personnel resources to safely conduct and manage the decommissioning of its facility.

ACCEPTANCE CRITERIA

Regulatory Requirements

- 10 CFR 30.33(3), 40.32(b), 70.22(a)(6), 72.28(a-d)
- 10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 70.38(g)(4)(ii) and 72.54(g)(2)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the responsibilities and minimum qualifications required for each of the management and safety-related positions within the licensee's decommissioning project organization. The staff's review should verify that the following information is included in the description of decommissioning positions and qualifications:

- A description of the duties and responsibilities of each management position in the decommissioning organization and the reporting responsibility of the position;
- A description of the duties and responsibilities of each chemical, radiological, physical and occupational safety-related position in the decommissioning organization, and the reporting responsibility of the position;

- A description of the duties and responsibilities of each engineering, quality assurance, and waste management position in the decommissioning organization and the reporting responsibilities of their respective positions;
- The minimum qualifications for each of the positions described above, and the qualifications of the individuals currently occupying the positions (the licensee should also commit to providing the staff with the qualifications of any newly hired employees or replacements for these positions); and
- A description of all decommissioning and safety committees, including the membership of the committees, the duties and responsibilities of each committee, and the authority of each committee.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the previous decommissioning activities carried out under the license. The staff should make a qualitative assessment of the adequacy of the licensee's decommissioning position and qualification requirements to ensure that the decommissioning can be conducted in a manner that is protective of workers and the public and in compliance with NRC requirements.

Sample Evaluation Findings

None. The staff should combine its assessment of this section of the decommissioning plan with Section 17.2.1, above.

Minimum qualifications should be summarized in tabular form, and the licensee should submit the *curricula vitae* of the individuals currently occupying the positions.

17.2.3.1 Radiation Safety Officer

The purpose of the review of the Radiation Safety Officer (RSO) position is to ensure that a qualified individual is designated and empowered to oversee the licensee's radiation protection program. The RSO must be qualified by training and experience for the types and quantities of radionuclides that will be encountered during decommissioning operations, as well as the operations that will be undertaken to decommission the facility. In addition, the RSO must be empowered by the licensee and be responsible for the implementation of the radiation protection program.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 33.13(c)(2), 33.14(b)(1), 34.42, 35.900, and 36.13(d)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully evaluate the qualifications, authority and responsibilities of the RSO. The staff's review should verify that the following information is included in the description of the RSO's qualifications, duties, and responsibilities:

- A description of the health physics and radiation safety education and experience required for individuals acting as the licensee's RSO;
- A description of the responsibilities and duties of the RSO; and
- A description of the specific authority of the RSO to implement and manage the licensee's radiation protection program, including the RSO's access and "stop-work" authority for all activities involving radioactive material at the site.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the duties and responsibilities of the RSO. The staff should verify that the description of the RSO's duties and responsibilities are sufficiently detailed to allow the staff to determine whether the RSO can, and will be able to, oversee the site radiation protection program effectively. The staff should verify that the RSO has clearly defined authority and responsibility to oversee the radiation protection program, such that if conflicts arise regarding the appropriate manner in which to conduct the decommissioning, the RSO can ensure that the decommissioning will be conducted safely.

The RSO is adequately qualified if he/she meets the following criteria:

- Education: A Bachelors' degree in the physical sciences, industrial hygiene or engineering from an accredited college or university or an equivalent combination of training and relevant experience in radiological protection. Two years of relevant experience are generally considered equivalent to 1 year of academic study;

- Health physics experience: At least 1 year of work experience in applied health physics, industrial hygiene or similar work relevant to radiological hazards associated with site remediation. This experience should involve actually working with radiation detection and measurement equipment, not simply administrative or "desk" work; and
- Specialized knowledge: A thorough knowledge of the proper application and use of all health physics equipment used for the radionuclides present at the site, the chemical and analytical procedures used for radiological sampling and monitoring, and methodologies used to calculate personnel exposure to the radionuclides present at the site.

Note that if the RSO does not have the decommissioning experience indicated above, the RSO could be supported by a contractor or someone on his/her staff who does have the experience.

The description of the RSO's duties and responsibilities should include the responsibility and authority to: review and approve all procedures involving the use of radioactive material at the facility; review and approve individuals as radiation workers at the site; conduct audits and inspections to ensure that activities involving the use of radioactive material are being conducted safely; monitor materials use and storage areas at the site; oversee the inventory, ordering, receipt and shipment of all radioactive material and radioactive waste at the site; ensure that all personnel at the site are trained in site radiation safety procedures and practices; ensure that sealed sources are leak-tested per NRC requirements; respond to and investigate incidents and accidents involving radioactive material at the site; monitor and evaluate radiation worker exposures at the site; and maintain all required records.

The RSO should have the authority and access to all areas involved in decommissioning or radioactive material usage at the site and the specific authority and responsibility to stop any operations that in the RSO's opinion are not being conducted safely.

Sample Evaluation Findings

None. The staff should combine their assessment of this section of the decommissioning plan with Section 17.2.1, above.

17.2.4 TRAINING

The purpose of the review of the licensee's training program is to provide the staff with sufficient information to determine if the licensee can provide its employees with the training necessary to complete the decommissioning safely and in accordance with NRC requirements. Note that training related to the Radiation Health and Safety Program will be evaluated under Section 17.3.1.2 of this volume.

ACCEPTANCE CRITERIA

Regulatory Requirements

- 10 CFR 19, 30.33(3), 40.32(b), 70.22(a)(6), 72.28(a), (b) and (d)
- 10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 70.38(g)(4)(ii) and 72.54(g)(2)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether the licensee has an acceptable program to train employees in the remediation and safety procedures that will be used to decommission the facility. The staff's review should verify that the following information is included in the description of the training program for the facility:

- A description of the radiation safety training that the licensee will provide to each employee including pre-employment, annual/periodic training and specialized training to comply with 10 CFR Part 19;
- A description of any daily worker "jobside" or "tailgate" training that will be provided at the beginning of each workday or job task to familiarize workers with job-specific procedures or safety requirements; and
- A description of the documentation that will be maintained to demonstrate that training commitments are being met.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of training at its facility. The staff should make a qualitative assessment of the adequacy of the licensee's training programs to ensure that workers are adequately informed of the hazards, preventative measures, and procedures associated with performing each decommissioning task.

Sample Evaluation Findings

None. The staff should combine its assessment of this section of the decommissioning plan with Section 17.2.1, above.

17.2.5 CONTRACTOR SUPPORT

The purpose of the review of the licensee's description of interaction between the licensee and contractors is to determine if the interactions will occur such that both licensee and contractor personnel are adequately protected and that the decommissioning can be conducted in accordance with NRC requirements.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 70.38(g)(4)(ii) and 72.54(g)(2)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether the licensee's radiation protection procedures are adequate to ensure the safety of contractor and licensee personnel. The staff's review should verify that the following information is included in the discussion of contractor support at the facility:

- A summary of decommissioning tasks that will be performed by contractors, including the areas at the site where they will perform these tasks;
- A description of the management interfaces that will be in place between the licensee's management and on-site supervisors, and contractor management and on-site supervisors;
- A description of the oversight responsibilities and authority that the licensee will exercise over contractor personnel;
- A description of the training that will be provided to contractor personnel by the licensee, and the training that will be provided by the contractor; and
- A commitment that the contractor will comply with all radiation safety and license requirements at the facility.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of contractor support at the site. The staff should make a qualitative assessment of the adequacy of the licensee's planned management interface procedures with contractor management to ensure that both licensee and contractor personnel are adequately informed of the hazards, preventative measures, and procedures associated with

performing each decommissioning task. The staff will verify that the licensee has the authority and responsibility to ensure that contractor personnel perform decommissioning activities in accordance with all license commitments and NRC requirements. The staff will verify that all contractor personnel will receive adequate training (per the training program in Section 17.2.4, above), either as part of the licensee's training program or as part of the contractor's training program.

Sample Evaluation Findings

None. The staff should combine its assessment of this section of the decommissioning plan with Section 17.2.1, above.

17.3 DECOMMISSIONING PLAN: RADIATION SAFETY AND HEALTH PROGRAM DURING DECOMMISSIONING

AREAS OF REVIEW

The NRC staff will review the information supplied by the licensee to determine if the health and safety measures to be used to control and monitor the impacts of ionizing radiation on workers comply with the NRC's regulations in 10 CFR Parts 19 and 20. The NRC staff will review only those parts of the applicant's Radiation Health and Safety Program (RH&SP) that were not previously approved in the original submission for a licensing action. The information requested should address the following aspects of the RH&SP program: a description of the radiation safety controls and types of monitoring to be used to ensure that internal and external exposures to workers are ALARA (including administrative procedures); a commitment in the licensee's RH&SP program to written procedures (and changes to procedures); a commitment to perform periodic inspections and audits; and a commitment to a record-keeping program.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is technical in nature. The staff will make a quantitative assessment as to whether the licensee's proposed health and safety program complies with the regulatory requirements in 10 CFR Parts 19 and 20 and is adequate to protect workers from ionizing radiation during decommissioning activities. The staff will assess whether the applicant's radiological safety measures for workers are commensurate with the risks associated with licensed activities as required by 10 CFR 20.1101.

17.3.1 RADIATION SAFETY CONTROLS AND MONITORING FOR WORKERS

17.3.1.1 Workplace Air Sampling Program

The purpose of the review of the description of the licensee's air sampling program is to verify that the licensee has a program adequate to demonstrate compliance with the dose assessment requirements of 10 CFR 20.1204, the survey requirements in 10 CFR 20.1501(a)-(b), and the requirements in 10 CFR 20.1703(a)(3)(i)-(ii), when respirators are worn.

Regulatory Requirements

10 CFR 20.1204, 20.1501(a)-(b), 20.1502 (b), and 20.1703(a)(3)(I)-(ii)

Regulatory Guidance

Regulatory Guide 8.25, Rev. 1, Air Sampling in the Workplace, June 1992

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the licensee's air sampling program under routine and emergency conditions. The staff's review should verify that the following information is included in the description of the licensee's air sampling program:

- A demonstration that the air sampling program is representative of the workers' breathing zones and will be initiated whenever a worker's intake is likely to exceed the criteria in 20.1502(b);
- A description of the criteria used for selection of the placement of air samplers in work areas where potential for airborne hazards exists;
- A description of the criteria demonstrating that air samplers with appropriate sensitivities will be used; and that samples will be collected at appropriate frequencies;
- A description of the conditions under which constant air monitors (CAMs) (or similar equipment), general air and breathing zone samplers will be used, including a description of their readouts, annunciators, and alarm setpoints;
- A description of the criteria used to determine the frequency of calibration of the flow meters on the air samplers;

- A description of the action levels for air sampling results, including the actions to be taken when they are exceeded; and
- A description of how minimum detectable activities (MDAs) for each specific radionuclide that may be collected in air samples are determined.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the air sampling program proposed by the licensee will be in compliance with 10 CFR 20.1204, 20.1501(a)-(b), 20.1502(b) 20.1703(a)(3)(I)-(ii), and Regulatory Guide 8.25. The staff shall verify that the licensee's air sampling program will:

- Require air samples when a worker's intake is likely to exceed the criteria in 20.1502(b) and will demonstrate that the air samples are representative of the air inhaled in any work areas in which a potential exists for airborne radioactive materials, as indicated in Regulatory Position 3 of Regulatory Guide 8.25;
- Provide the bases for selection of the locations of air samplers in all work areas in which a potential exists for airborne radioactivity, as indicated in Regulatory Position 2 of Regulatory Guide 8.25;
- Measure air concentrations with sufficient sensitivity over the ranges of concentrations encountered in the various work areas, and with frequencies of sampling, as indicated in Regulatory Position 1 of Regulatory Guide 8.25;
- Specify the conditions under which CAMs will be used, and provide a description of their readouts, annunciators, and alarm setpoints, as indicated in Regulatory Position 1.6 of Regulatory Guide 8.25;
- Ensure that the frequency of calibration of the flow meters on the air samplers is as indicated in Regulatory Position 5 of Regulatory Guide 8.25;
- Provide action levels for air sampling results, actions to be taken when they are exceeded, and their technical bases, as indicated in Regulatory Position 6.1 of Regulatory Guide 8.25; and
- Provide the MDA for each specific radionuclide that may be collected in air samples, as indicated in Regulatory Position 6.3 of Regulatory Guide 8.25.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.1 (Air Sampling Program). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information on when air samples will be taken in work areas, the types of air sample

equipment to be used and where they will be located in work areas, calibration of flow meters, minimum detectable activities (MDA) of equipment to be used for analyses of radionuclides collected during air sampling, action levels for airborne radioactivity (and corrective actions to be taken when these levels are exceeded), to allow the NRC staff to conclude that the licensee's air sampling program will comply with 10 CFR 20.1204, 20.1501(a)-(b), 20.1502(b), 20.1703(a)(3)(I)-(ii), and Regulatory Guide 8.25.

17.3.1.2 Respiratory Protection Program

The purpose of the review of the description of the respiratory protection program is to verify

that the measures used by the licensee in its respiratory protection program adequately limit intakes of airborne radioactive materials for workers in restricted areas and to keep the total effective dose equivalent as low as is reasonably achievable (ALARA).

Regulatory Requirements

10 CFR 20.1101(b), 20.1701, 20.1702, 20.1703, and 20.1704

Regulatory Guidance

- Draft Regulatory Guide DG-8022, "Acceptable Programs for Respiratory Protection"
- NUREG-0041, Rev. 1, "Manual of Respiratory Protection Against Airborne Radioactive Material"

Information to be Submitted

The staff's review will verify that the licensee's program description for respiratory protection will meet the requirements of 10 CFR 20.1101(b), 20.1701 - 20.1704, Appendix A of 10 CFR Part 20, and of the guidance in Draft Regulatory Guide DG-8022. The staff's review should verify that the following information is included in the description of the licensee's respiratory protection program:

- A description of the process controls, engineering controls, or procedures to control concentrations of radioactive materials in air;
- A description of the evaluation that will be performed when it is not practical to apply engineering controls or procedures, that demonstrates that the use of respiratory protection equipment is ALARA;
- A description of the considerations used to demonstrate that respiratory protection equipment is appropriate for a specific task, based on the guidance on assigned protection factors (APF);

- A description of the medical screening and fit testing required before workers will use any respirator that is assigned a protection factor;
- A description of the written procedures maintained to address all the elements of the respiratory protection program;
- A description of the use, maintenance, and storage of respiratory protection devices in such a manner that they are not modified and are in like-new condition at the time of issue;
- A description of the respiratory equipment users' training program; and
- A description of the considerations made when selecting respiratory protection equipment to mitigate existing chemical or other respiratory hazards instead of (or in addition to) radioactive hazards.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the licensee's respiratory protection program will be in compliance with the requirements of 20.1101(b), 20.1701 - 20.1704, Appendix A of 10 CFR Part 20, and of Draft Regulatory Guide DG-8022. The staff shall verify that the licensee's program for respiratory protection for workers in restricted areas will:

- Apply process controls, engineering controls or procedures to control concentrations of radioactive materials in air as required by 10 CFR 20.1702 when practical;
- When it is not practical to apply engineering controls or procedures, perform an evaluation to show the use of respiratory equipment is ALARA, as indicated in Regulatory Positions C.2.2 and C2.3 of Draft Regulatory Guide DG-8022;
- Consider which respiratory protection equipment is appropriate for a specific task based on the guidance on APF in Regulatory Position C.2.3 of Draft Regulatory Guide DG-8022;
- Require medical screening and fit testing before workers will use any respirator that is assigned a protection factor, as indicated in Regulatory Position C5 of Regulatory Guide DG-8022;
- Maintain written procedures to address all the elements of the respiratory protection program as required by 10 CFR 20.1703 and as identified in Regulatory Position C3 of Regulatory Guide DG-8022;
- Use, maintain, and store respiratory protection devices in such a manner that they are not modified and are in like-new condition at the time of issue, as indicated in Regulatory Position C4 of Regulatory Guide DG-8022;
- Establish and implement a program to train respirator users, as indicated in Regulatory Position C5.2 of Regulatory Guide DG-8022;

- Comply with the safety concerns as indicated in Regulatory Position C6 of Regulatory Guide DG-8022; and
- Consult the Occupational Safety and Health regulations of the Department of Labor when selecting respiratory protection equipment to mitigate existing chemical or other respiratory hazards instead of (or in addition to) radioactive hazards, as required by Footnote (a) of Appendix A of 10 CFR Part 20.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.2 ("Respiratory Protection Program"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to implement an acceptable respiratory protection program so as to allow the NRC staff to conclude that the licensee's program will comply with 10 CFR 20.1101(b), and 10 CFR 20.1701 to 20.1704 and Appendix A of 10 CFR Part 20.

17.3.1.3 Internal Exposure Determination

ACCEPTANCE CRITERIA

The purpose of the review of the description of the Internal Exposure Determination Program is to verify that the measures used by the licensee to determine a worker's internal exposure complies with 10 CFR Part 20 and NRC guidance documents, focusing on techniques used to estimate intake of radionuclides by workers and the calculations necessary for the conversion of an intake either to a committed effective dose equivalent or to a total organ dose equivalent.

Regulatory Requirements

10 CFR 20.1101(b), 20.1201(a)(1), 20.1201 (d) and (e), 20.1204, and 20.1502(b)

Regulatory Guidance

- Regulatory Guide 8.9, Rev 1, "Acceptable Concepts, Models Equations, and Assumptions For A Bioassay Program"
- Regulatory Guide 8.25, "Air Sampling in the Workplace"
- Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses"
- Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus"

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to determine a worker's internal exposure. The staff's review should verify that the following information is included in the description of the licensee's program:

- A description of the monitoring to be performed to determine worker exposure during routine operations, special operations, maintenance, and clean-up activities;
- A description of how worker intakes are determined using measurements of quantities of radionuclides excreted from, or retained in the human body. The licensee will include in its description the following:
  - — How frequencies for bioassay measurements for baseline, periodic, special, and termination assays are assigned;
  - — How radioactivity measured in the human body by bioassay techniques are converted into worker intake; and
  - — Action levels for bioassay samples, actions to be taken when they are exceeded, and their technical bases;
- A description of how worker intakes are determined by measurements of the concentrations of airborne radioactive materials in the workplace. To determine worker intake by measurements of the concentrations of airborne radioactive materials in the workplace, the licensee will include the following:
  - — How airborne concentrations of radioactivity are measured;
  - — How airborne concentrations are converted to determine intakes;
  - — Action levels for a worker's intake based on dose, and actions to be taken when they are exceeded; and
  - — Action levels for a worker's intake based on chemical toxicity if soluble uranium is present in the work area;
- A description of how worker intakes, for an adult, a minor, and a declared pregnant woman are determined using any combination of the measurements above, as necessary; and
- A description of how worker intakes are converted into committed effective dose equivalent (and organ-specific committed dose equivalent), including how the intake of radioactivity by a declared pregnant woman will be converted into a dose to the embryo/fetus.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review shall verify that the measures used to determine a worker's internal exposure will be in compliance with 10 CFR 20.1101(b), 20.1201(a)(1), (d) and (e), 20.1204 and 20.1502(b). The staff shall verify that the licensee's program to determine internal exposure will:

- Monitor workers who meet the criteria in 10 CFR 20.1502(b)(1) and (2) for potential internal exposures during routine operations, special operations, maintenance, and clean-up activities;
- Determine worker intake by measurements of quantities of radionuclides excreted from, or retained in the human body by:
  - — Assigning frequencies for bioassay measurements for baseline, periodic, special, and termination assays, as indicated in Regulatory Position 2 in Regulatory Guide 8.9, Rev. 1;
  - — Converting radioactivity measured in the human body by bioassay techniques into worker intake, as indicated in Regulatory Position 4 of Regulatory Guide 8.9, Rev. 1; and
  - — Providing action levels for bioassay samples, actions to be taken when they are exceeded, and their technical bases as indicated in Regulatory Position 2.3 of Regulatory Guide 8.9, Rev. 1;
- Licensees may also determine worker intake by measurements of the concentrations of airborne radioactive materials in the workplace by:
  - — Measuring airborne concentrations of radioactivity, as indicated in Section 17.3.3.1 this volume;
  - — Converting airborne concentrations to intakes, as indicated in Regulatory Position 3.3 of Regulatory Guide 8.34;
  - — Providing action levels for a worker's intake based on dose, and actions to be taken when they are exceeded (these will be found in Section 17.3.3.1 of this guidance); and
  - — Providing action levels for a worker's intake based on chemical toxicity, if soluble uranium is present in the work area, as indicated in 10 CFR 20.1201(e);
- Determine worker intake for an adult, a minor, and a declared pregnant woman by any combination of the measurements above as may be necessary, as required by 10 CFR 20.1204(a)(1)-(4);

- Convert worker intakes into committed effective dose equivalent (and organ-specific committed dose equivalent) as indicated in Regulatory Positions 4, 5 and 6 of Regulatory Guide 8.34. The intake of radioactivity by a declared pregnant woman shall be converted into a dose to the embryo/fetus, as identified in Regulatory Position 2 (or 3) of Regulatory Guide 8.36; and
- Maintain worker internal exposures ALARA, as required by 10 CFR 20.1101(b) and as described in Section 17.3.2.1 of this NUREG volume.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Consolidated Decommissioning Guidance, Volume 1, Section 17.3.1.3 ("Internal Exposure Determination"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information on methods to calculate internal dose of a worker based upon measurements from air samples or bioassay samples to allow the NRC staff to conclude that the licensee's program to determine internal exposure will comply with 10 CFR 20.1101(b), 20.1201(a)(1), (d) and (e), 20.1204, and 20.1502(b).

17.3.1.4 External Exposure Determination

The purpose of the review of the description of the licensee's external exposure determination program is to verify if the licensee has a program adequate to demonstrate that the workers' external exposure program complies with 10 CFR Part 20 and NRC Guidance Documents. External exposure can be measured with dosimeters worn on the human body or calculated from measurements with appropriate instruments during surveys in areas where decommissioning activities are carried out.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 20.1101(b), 20.1201, 20.1203, 20.1501(a)(2)(i), and (c), 20.1502(a), and 20.1601

Regulatory Guidance

- Regulatory Guide 8.4, "Direct-reading and Indirect-reading Pocket Dosimeters"
- Regulatory Guide 8.28, "Audible-Alarm Dosimeters"
- Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses"

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what methods, procedures, and techniques the licensee intends to use to determine a worker's external exposure. The staff's review should verify that the following information is included in the description of the licensee's program:

- A description of the individual-monitoring devices that will be provided to workers who meet the criteria in 10 CFR 20.1502(a) and 20.1601 for external exposures;
- A description of the type, range, sensitivity, and accuracy of each individual-monitoring device;
- A description of the use of extremity and whole body monitors when the external radiation field is non-uniform;
- A description of when audible-alarm dosimeters and pocket dosimeters will be provided, and a description of their performance specifications;
- A description of how external dose from airborne radioactive material is determined;
- A description of the procedure to insure that surveys necessary to supplement personnel monitoring are performed; and
- A description of the action levels for workers' external exposure, including the technical bases and actions to be taken when they are exceeded.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the measures used to determine a worker's external exposure will be in compliance with the requirements of 10 CFR 20.1101(b), 20.1201(c), 20.1203, 20.1501(a)(2)(i) and (c), 20.1502(a), and 20.1601, and the guidance in Regulatory Guides 8.4, 8.28 and 8.34. The staff shall verify that the licensee's program to determine external exposure will:

- Provide individual-monitoring devices to workers who meet the criteria in 10 CFR 20.1502(a) and 20.1601 for external exposures;
- Provide a description of the type, range, sensitivity, and accuracy of each individual-monitoring device;
- Require that individual monitoring devices be worn near the location on the human body that is expected to receive the highest dose, as required by 10 CFR 20.1201(c), and as indicated in Regulatory Positions C2.1 and C2.2 of Regulatory Guide 8.34;

- Require that all personnel dosimeters, which require processing to determine radiation dose, be processed and evaluated by a dosimetry processor that meets the criteria in 10 CFR 20.1501(c);
- Use extremity monitors when the external radiation field is non-uniform, as indicated in Regulatory Position C2.3 of Regulatory Guide 8.34;
- Use only audible-alarm dosimeters and pocket dosimeters that meet the performance specifications identified in Regulatory Guide 8.28 and Regulatory Guide 8.4; respectively;
- Determine external dose from airborne radioactive material, as required by 10 CFR 20.1203;
- Conduct a reasonable number of surveys to supplement personnel monitoring, as required by Section 20.1501(a)(2)(i); and
- Provide action levels for workers' external exposure, including actions to be taken when they are exceeded.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.4 ("External Exposure Determination"). Based upon this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information on methods to measure or calculate the external dose of a worker to allow the NRC staff to conclude that the licensee's program to determine external exposure will comply with the requirements of 10 CFR 20.1101(b), 20.1201(c), 20.1203, 20.1501(a)(2)(i) and (c), 20.1502(a), and 20.1601.

17.3.1.5 Summation of Internal and External Exposures

The purpose of the review of the licensee's description of its radiation monitoring program is to verify that the calculations and procedures used to sum external and internal doses satisfy the provisions of 10 CFR Part 20.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 20.1202, 20.1208(c)(1) and (2), 20.2106

Regulatory Guidance

- Regulatory Guide 8.7, "Instructions for Recording and Reporting Occupational Radiation Exposure Data"
- Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses"
- Regulatory Guide 8.36, "Radiation Dose to the Embryo/Fetus"

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the calculations and procedures used in summing external and internal doses. The staff's review should verify that the following information is included in the licensee's program to sum internal and external doses:

- A description of how the internal and external monitoring results are used to calculate Total Organ Dose Equivalent (TODE) and Total Effective Dose Equivalent (TEDE) doses to occupational workers;
- A description of how internal doses to the embryo/fetus, which is based on the intake of an occupationally-exposed, declared pregnant woman, will be determined;
- A description of the monitoring of the intake of a declared pregnant woman if determined to be necessary; and
- A description of the program for the preparation, retention and reporting of records for occupational radiation exposures.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review should verify that the method used to sum internal and external exposures will be in compliance with 10 CFR 20.1202, 20.1208(c)(1) and (2), and 20.2106. The staff shall verify that the licensee's calculations to sum internal and external exposures will:

- Use the results of internal and external monitoring to calculate TODE and TEDE to occupational workers as indicated in Regulatory Positions 7.1-C7.3 of Regulatory Guide 8.34 (a sample calculation is can be found in the Appendix to Regulatory Guide 8.34);
- Sum the internal exposure to the embryo/fetus, which is based on the intake of an occupationally-exposed, declared pregnant woman (DPW), as indicated in Regulatory Positions C1 to C3 of Regulatory Guide 8.36, with external dose to the DPW to obtain the "dose equivalent" to the embryo/fetus;

- Monitor the intake of a DPW if her internal exposure is likely to exceed the intake criteria indicated in Regulatory Position C1.1 of Regulatory Guide 8.36; and
- Follow the program for the preparation, retention and reporting of records for occupational radiation exposures, as indicated in Regulatory Guide 8.7, and as discussed in Section 17.3.2.3 of this volume.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.5 ("Summation of Internal and External Exposures"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to conclude that the licensee's program for summation of internal and external exposures will comply with 10 CFR 20.1202, 20.1208(c)(1) and (2), and 20.2106.

17.3.1.6 Contamination Control Program

The purpose of the staff's review of the licensee's description of its program to monitor and control contamination during decommissioning activities is to verify that it complies with the requirements of 10 CFR Part 20. This section focuses on surveys of skin, protective and personal clothing, fixed and removable surface contamination, transport vehicles, equipment (including ventilation surveys), and packages.

NRC requires testing to determine whether there is any radioactive leakage from sealed sources. The NRC NUREG-1556 series lists guidance documents specific to the many license applications for sealed sources and sealed sources used in devices.

Regulatory Requirements

10 CFR 20.1501, 20.1702, 20.1906 (b), (d), and (f), 20.2103, 30.53

Regulatory Guidance

- Information Notice #97-55, "Calculation of Surface Activity for Contaminated Equipment and Materials"
- Regulatory Guide 8.21, "Health Physics Surveys for Byproduct Material at NRC-Licensed Processing and Manufacturing Plants"
- Regulatory Guide 8.23, "Radiation Surveys at Medical Institutions"
- Regulatory Guide 8.24, "Health Physics Surveys During Enriched Uranium-235 Processing and Fuel Fabrication"

- Regulatory Guide 8.25, "Air Sampling in the Workplace"
- NUREG-1660, "Specific Schedules of Requirements for Transport of Specified Types of Radioactive Material Consignments"
- Branch Technical Position, "License Condition for Leak Testing Sealed Sources"

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand how the licensee will implement and modify its contamination control program throughout the schedule phases of the decommissioning activities.

The staff's review should verify that the following information is included in the description of the licensee's contamination control program:

- A description of the written procedures to control both access to and stay time in contaminated areas by workers, if they are needed;
- A description of surveys to supplement personnel monitoring for workers during routine operations, maintenance, clean-up activities, and special operations;
- A description of the surveys that will be performed to determine the baseline of background radiation levels and radioactivity from natural sources for areas where decommissioning activities will take place;
- A description in matrix or tabular form that describes contamination action limits (i.e., actions taken either to decontaminate a person, place or area, or to restrict access, or to modify the type or frequency of radiological monitoring);
- A description (included in the matrix or table mentioned above) of proposed radiological contamination guidelines for specifying and modifying the frequency for each type of survey used to assess the reduction of total contamination; and
- A description of the procedures used to test sealed sources and to insure that sealed sources are leak tested at appropriate intervals.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review shall verify that the measures used to control contamination will be in compliance with the requirements of 10 CFR 20.1501(a); 20.1702, 20.1906 (b), (d) and (f); the guidance in Regulatory Guides 8.21, 8.23, 8.24, Rev. 1, and 8.25; and, for Part 70 licensees, the

Fuel Cycle Branch Technical Positions for leak testing sealed sources. The staff shall verify that the licensee's contamination control program during decommissioning operations (prior to the final status survey) will:

- Establish a program and written procedures to control both access to and stay time in contaminated areas by workers, as required by 10 CFR 20.1702;
- Require surveys to supplement personnel monitoring for workers during routine operations, maintenance, clean-up activities, and special operations;
- Require surveys to determine the baseline of background radiation levels and radioactivity from natural sources for areas where decommissioning activities will take place;
- Require surveys of air quality based on Regulatory Guide 8.25, as described in Section 17.3.3.1 of this volume;
- Follow the procedures for surveys as indicated in Regulatory Position C.1, Types of Surveys, in Regulatory Guide 8.21, 8.23, or 8.24, Rev.1 (depending on the kind of nuclear facility being decommissioned);
- Propose and justify administrative limits for removable surface contamination that will be allowed for restricted and unrestricted areas before decontamination will be performed. Refer to Regulatory Position C.1 of the appropriate Regulatory Guide 8.21, 8.23 or 8.24, for an illustration of generic administrative limits for contamination of surfaces, and of generic limits for contamination of clothing to be worn inside and outside restricted areas. Refer to Regulatory Guide 1.86 and FC83-23 for an illustration of administrative limits for the uncontrolled release of equipment for sites with decommissioning plans approved before August 20, 1999. Refer to Table 1 in 63 FR 64132, November 18, 1998 for acceptable license termination screening values of common radionuclides for building surface contamination. Refer to NUREG-1660 for Limits of Contamination established by the Department of Transportation;
- Calculate the surface activity of contaminated materials with a 4-pi surface-efficiency factor for gamma emitters, and 2-pi surface-efficiency factor for beta emitters as required by NRC Information Notice No.7-55;
- Propose and justify administrative guidelines for the frequency for each type of survey used to assess trends in the reduction of total contamination during decontamination of each work area, as indicated in Regulatory Position C.2 in the appropriate Regulatory Guide 8.21, 8.23 or 8.24, Rev. 1; and
- Leak-test sealed sources on a regular basis in accord with the guidance in Annex A.2.1 of ANSI/HPS N43.6-1997 (or for Part 70 licenses, as indicated in NRC's Branch Technical Positions for Leak Testing, April 1993).

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.6 ("Contamination Control Program"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to control contamination on skin, on protective and personal clothing, on fixed and removable contamination on work surfaces, on transport vehicles, on equipment (including ventilation hoods), and on packages to allow the NRC staff to conclude that the licensee's contamination control program will comply with 20.1501(a), 20.1702, 20.1906 (b), (d); and (f) of 10 CFR Part 20. The staff has verified that the information summarized under "Evaluation Criteria" above is included in the licensee's description of the methodology used to control contamination at the facility.

17.3.1.7 Instrumentation Program

The purpose of the staff's review is to verify that the licensee's description of its instruments and equipment used to make quantitative radiation measurements during surveys are calibrated periodically and have sufficient sensitivity to detect the types and magnitudes of ionizing radiation. Instrumentation will be used to: conduct radiation and contamination surveys, sample airborne radioactivity, monitor radiation levels in work areas, monitor airborne radionuclides in effluents, monitor personal dose, and analyze environmental air, water, soil and vegetation samples.

Regulatory Requirements

10 CFR 20.1501(b) and (c)

Regulatory Guidance

- NUREG-1506, "Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria"
- NUREG-1507, "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions"
- NUREG-1549, "Decision methods for Dose Assessment to Comply With Radiological Criteria for License Termination"
- NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM)
- Table 10.1 of NCRP Report 127 "Operational Radiation Safety Program," 1998

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand how the licensee will implement and maintain its radiological instrumentation program. The staff's review should verify that the following information is included in the licensee's instrumentation program:

- A description of the instruments to be used to support the health and safety program including the manufacturer's name, the intended use of the instrument, the number of units available for the intended use, the ranges on each scale, the counting mode and the alarm set-points;
- A description of instrumentation storage, calibration and maintenance facilities for instruments used in field surveys, including on-site facilities used for laboratory analyses of samples collected during surveys;
- A description of the method used to estimate the Minimum Detectable Concentration (MDC) or Minimum Detectable Activity (MDA) (at the 95% confidence level) for each type of radiation to be detected;
- A description of the instrument calibration and quality assurance procedures;
- A description of the methods used to estimate uncertainty bounds for each type of instrumental measurement; and
- A description of air sampling calibration procedures or a statement that the instruments will be calibrated by an accredited laboratory.

EVALUATION FINDINGS

Evaluation Criteria

The staff's review will verify that the licensee's instrumentation program will meet the requirements of 10 CFR 20.1501(b) and (c) and the guidance in NUREG-1506, NUREG-1507 and NUREG-1575. The selection of the instruments to be used for each type of field survey or laboratory analysis should comply with the general guidance on selection of instruments during decommissioning activities, as recommended in Sections 6.1-6.5.3 and Appendix H of NUREG-1575. The method used to estimate the MDC or MDA (at the 95 percent confidence level) for each type of radiation to be detected should comply with the methods recommended in Section 6.7 of NUREG-1575. Chapters 4 and 5 of NUREG-1507 provide additional information on the extent to which the ideal MDC and MDA values may be affected when a contaminated surface is covered by paint, dust, oil, or moisture. The description of the instrument calibration and quality assurance procedures should comply with Table 10.1 of NCRP Report 127; the description of the methods used to estimate uncertainty bounds for each type of instrumental measurement should comply with recommendations indicated in Section 6.8 of NUREG-1575.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility], located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.1.7 ("Instrumentation Program"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information on the sensitivity and the calibration of instruments and equipment to be used to make quantitative measurements of ionizing radiation during surveys to allow the NRC staff to conclude that the licensee's instrumentation program will comply with 10 CFR 20.1501(b) and (c).

17.3.2 NUCLEAR CRITICALITY SAFETY

The purpose of the review of the licensee's nuclear criticality safety program description is to verify that the licensee has an adequate program to maintain the criticality safety basis established in the facility's existing safety analyses.

It is essential that all operations and personnel involved in decommissioning maintain the safety basis as established in the facility's existing safety analyses. In principle, the criticality safety requirements and other Items Relied on for Safety (IROFS) resulting from Nuclear Criticality Safety Analysis (NCSA) or Integrated Safety Analysis (ISA) of plant processes will have covered all credible operations involving that process, including shutting the process down and rendering it safe by removal of all fissile material. However, decommissioning challenges this existing safety basis in two ways:

1. Certain unique operations may not be covered by the existing safety analysis because decommissioning involves actions differing from normal shutdown, such as dismantlement or special decontamination; and
2. Decommissioning may involve the use of different personnel than normal operations.

Therefore, in selected cases, new or updated safety analyses may be required. This is not a new provision, but is simply the existing fundamental Nuclear Criticality Safety standard from consensus standard ANSI/ANS 8.1 that:

> *"Before a new operation with fissionable materials is begun or before an existing operation is changed, it shall be determined that the entire process will be subcritical under both normal and credible abnormal conditions."*

This provision, although not usually present verbatim in the license, is normally implemented by specific commitments stated in the NCS section of the license application. To the extent that decommissioning operations are new or involve changes to existing operations, compliance with the above fundamental standard means that re-analysis to assure subcriticality would be needed. Therefore, before decommissioning operations involving new steps are begun on processes that

may contain fissionable material, a review of the NCSA or ISA for that operation must be conducted. It is expected that a summary of this review be submitted as part of the Decommissioning Plan. Staff should review this summary to assure completeness and adequacy of items relied on for safety during decommissioning.

Regulatory Requirements

10 CFR Parts 70 and 76

Regulatory Guidance

Regulatory Guide 3.71 and endorsed standards of ANSI/ANS Series 8

Information to be Submitted

The staff's review will verify that the following information (at a minimum) is included in the licensee's NCS information:

- A description of how the NCS functions, including management responsibilities and technical qualifications of safety personnel, shall be maintained when needed throughout the decommissioning process;
- A description of how an awareness of procedures and other items relied on for safety shall be maintained throughout decommissioning among all personnel with access to systems that may contain fissionable material in sufficient amounts for criticality;
- A summary of the review of NCSAs or the ISA indicating either that the process needs no new safety procedures or requirements, or that new requirements or analysis have been performed; and
- A summary of any generic NCS requirements to be applied to general decommissioning, decontamination, or dismantlement operations, including those dealing with systems that may unexpectedly contain fissionable material.

Acceptance Criteria

The description of NCS functions for decommissioning is acceptable if its implementation would reasonably assure the continuance of necessary NCS functions where and when needed throughout the decommissioning process.

The description of how an awareness of procedures and other items relied on for safety shall be maintained is acceptable if it provides for measures that would reasonably assure that all personnel with access to systems that might contain fissionable material will conform to necessary NCS requirements. To be acceptable, the general methods for informing or training of personnel involved in decommissioning but who are not qualified operators of processes with

fissionable materials should be sufficient to assure that such personnel do not inadvertently violate safety requirements. It is not necessary that all such personnel be trained in the details of all NCS requirements of systems, but they should be aware that operations involving such systems where fissile material may be present are subject to NCS requirements. For instance, certain operations may need to be conducted under the supervision of appropriately trained personnel.

The summary of the review of NCSAs or the ISA is acceptable if it indicates, for each process that may contain fissionable material in amounts of concern, whether the analysis is already adequate to cover all operations needed for decommissioning, or if new analysis or requirements were developed to address decommissioning tasks. In addition, the reviewer should make a selection of individual processes that is representative of the whole facility but based on risk. These selected safety analyses should then be reviewed for adequacy. The analyses are acceptable if they comply with the same criteria and commitments as for NCSAs applied during normal operations; namely, those specified in the license and plant procedures in conformance with the regulations and guidance. The guidance on acceptance NCS criteria includes the ANSI/ANS Series 8 standards endorsed by Regulatory Guide 3.71, as well as more detailed criteria in the DGC applicable to the licensee.

The summary of generic NCS requirements for decommissioning is acceptable if they provide reasonable assurance that existing specific NCS requirements will be complied with despite the general dismantlement and decontamination operations involved in decommissioning. Specifically, these requirements are acceptable if they provide, as necessary, reasonable assurance that potentially critical masses of fissionable material in unexpected but credible locations will be detected and safely dispositioned. The potential for mobilizing or moderating such material by introduction of fluids should be addressed, as well as changes in any other parameters affecting criticality.

EVALUATION FINDINGS

The results of the NRC staff's review of the licensee's submittal should be stated in the form of findings of fact and acceptability for compliance with the regulations as guided by this volume. In particular, the evaluation should make findings as to the acceptability and adequacy of the items addressed by this volume to provide reasonable assurance of protection of public health and safety from the risk of nuclear criticality during decommissioning.

17.3.3 HEALTH PHYSICS AUDITS, INSPECTIONS, AND RECORDKEEPING PROGRAM

The staff should review the applicant's proposed audit, internal inspection, and record-keeping procedures. The program should identify the scope of the audit and inspections, their frequency, the responsibilities of all participants in these programs, and any corrective actions to be taken if deficiencies are found.

ACCEPTANCE CRITERIA

Regulatory Requirements

Broad Scope Licensees:

- 10 CFR 33.13(c); 33.14(b); and 33.15(c)

All Licensees:

- 10 CFR 20.1101; and 20.2102

Regulatory Guidance

- Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," dated May 1, 1996
- NUREG-1460, "Guide to NRC Reporting and Recordkeeping Requirements," Rev. 1, July 1994

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully evaluate the applicants' executive management and RSO audit program established to insure compliance with license conditions, commitments and regulatory requirements. The staff review should verify that the following information is included in the description of the audit program:

- A general description of the annual program review conducted by executive management;
- A description of the records to be maintained of the annual program review and executive audits;
- A description of the types and frequencies of surveys and audits to be performed by the RSO and RSO staff. These surveys and audits should be frequent enough to ensure close communications and proper surveillance of individual radiation workers. Applicants should consider developing survey and audit schedules based on activity and use (e.g., highly contaminated areas or facilities involving volatile radioactive materials may be audited weekly or biweekly, moderately contaminated areas or facilities may be audited monthly, and slightly contaminated facilities may be audited quarterly). The audit program should include routine unannounced inspections;

- A description of the process used in evaluating and dealing with violations of NRC requirements or license commitments identified during audits;
- A description of the records maintained of RSO audits, for example, the date of each audit, name of person(s) who conducted the audit, persons contacted by the auditor(s), areas audited, audit findings, corrective actions, and follow-up.

EVALUATION FINDINGS

The staff's review should verify that the licensee's audit and recordkeeping program implemented to evaluate, control, and monitor health and safety procedures is appropriate and consistent with the guidance in this volume The proposed audit program should insure timely identification and correction of health and safety issues, such that compliance with NRC's requirements for the protection of the public health and safety and the environment is insured.

Sample Evaluation Findings

The NRC staff has reviewed the description of the licensee's, [insert name and license number of licensee], audit and recordkeeping program, which the licensee will use during the decommissioning of its facility located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.3.3 ("Health Physics Audit, Inspection and Record-Keeping Program"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information to allow the NRC staff to evaluate the licensee's executive management and RSO audit and recordkeeping program to determine if the decommissioning can be conducted safely and in accordance with NRC requirements.

17.4 DECOMMISSIONING PLAN: ENVIRONMENTAL MONITORING AND CONTROL PROGRAM

OVERVIEW

The NRC staff will review the information submitted by the licensee to determine if the environmental monitoring and control program complies with the regulatory requirements in 10 CFR Part 20 and if it is adequate to protect workers, the public, and the environment from ionizing radiation during decommissioning activities. The staff should verify that the licensee's radiological effluent management practices are adequate to ensure that radiological effluent levels are maintained within applicable standards and are as low as reasonably achievable (ALARA). The environmental monitoring and control program should include descriptions of: (1) the environmental exposure evaluations to be performed during decommissioning; (2) the effluent monitoring for radioactive material at potential points of release to the environment; and (3) the controls that the licensee will use to ensure that radioactive material in effluents does not exceed applicable NRC, state, or local requirements.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is technical in nature. The staff will make a quantitative assessment as to whether the licensee's proposed effluent monitoring and control program complies with the regulatory requirements in 10 CFR Part 20 and is adequate to protect workers, the public and the environment from ionizing radiation during decommissioning activities. The staff will assess whether the applicant's environmental monitoring and control measures are commensurate with the risks associated with the proposed decommissioning activities.

17.4.1 ENVIRONMENTAL ALARA EVALUATION PROGRAM

The purpose of the review of the licensee's environmental ALARA evaluation program description is to verify if the licensee has a program adequate to demonstrate compliance with the requirements of 10 CFR Part 20 to maintain releases of radioactive material to the environment ALARA.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR Part 20.1101(b) and (d)

Regulatory Guidance

- Regulatory Guide 8.37, "ALARA Levels for Effluents from Materials Facilities," July 1993
- Regulatory Guide 4.20, "Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees Other Than Power Reactors," December 1998

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the licensee's environmental evaluation activities and procedures. The staff's review should verify that the following information is included in the description of the licensee's environmental ALARA evaluation program:

- A description of ALARA goals for effluent control;
- A description of the procedures, engineering controls, and process controls to maintain doses ALARA (may be discussed under section 17.4.3, below); and
- A description of the ALARA reviews and reports to management.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Evaluation Criteria," above, is included in the licensee's environmental ALARA evaluation program description. The staff should verify that the licensee's program for the management of radiological materials released to the environment complies with NRC requirements at 10 CFR Part 20, and that the program uses appropriate methods and procedures based upon recognized NRC and other professional health physics organizations' guidance documents.

The staff shall verify that the licensee's ALARA goals are a fraction (10 to 20 percent) of the values in Appendix B, Table 2, Columns 1 and 2, Table 3, and the external exposure limit in 10 CFR 20.1302(b)(2)(ii), or the applicable dose limit for members of the public. An approach is acceptable if it is consistent with guidance found in Regulatory Guide 4.20 and if the description of the approach provides sufficient detail to demonstrate specific application of the guidance to the proposed operations. The licensee shall use sound, commonly accepted, and well-established procedures, engineering controls, and process controls to achieve ALARA goals for effluent minimization. These include filtration, encapsulation, adsorption, containment, recycling, leakage reduction, and the storage of materials for radioactive decay. Practices for large, diffuse sources such as contaminated soils or surfaces include covers, wetting during operations, and the application of stabilizers. In addition, the licensee must demonstrate a commitment to reducing unnecessary exposure to members of the public and releases to the environment.

ALARA program management should include a commitment to perform annual reviews of the content and implementation of the environmental radiation protection program. This review includes an analysis of trends in release concentrations, environmental monitoring data, and radionuclide usage, a determination of whether operational changes are needed to achieve the ALARA effluent goals, and an evaluation of all designs for system installations or modifications.

The description shall also include a commitment to report the results to senior management along with recommendations for changes in facilities or procedures that are necessary to achieve ALARA goals.

Sample Evaluation Findings

The NRC staff has reviewed the information in the Decommissioning Plan for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Decommissioning Standard Review Plan, Section 17.4 ("Environmental Monitoring and Control Program"). Based on this review, the NRC staff has determined that the licensee, [insert name], has provided sufficient information on the staff to conclude that the licensee's program will comply with 10 CFR Part 20.

Note that the results from the staff's evaluation of the Environmental ALARA, Environmental Monitoring, and Effluent Control programs should be combined in this finding.

17.4.2 EFFLUENT MONITORING PROGRAM

The purpose of the review of the description of the licensee's effluent monitoring program is to determine if the licensee has an adequate program for the collection and analysis of airborne and liquid effluents, for assessing radiation exposures to members of the public, and for demonstrating compliance with applicable regulations.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 20.1301(a) and (d), 20.1302(a) and (b), 20.1501, 2001(a), 20.2003(a), 20.2103 (b), 20.2107(a), 20.2202(a), 20.2203(a), and 70.59.

Regulatory Guidance

- ANSI N13.1-1982, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities"
- ANSI N42.18-1980, "Specification and Performance of On-site Instrumentation for Continuously Monitoring Radioactive Effluents"
- NCRP Report No. 123, "Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground," January 1996
- NRC Information Notice 94-07, "Solubility Criteria for Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20," January 28, 1994
- NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations)!Effluent Streams and the Environment"
- NRC Regulatory Guide 4.16, "Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants"

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand how the licensee will implement and conduct its effluent monitoring program. The staff's review should verify that the following information is included in the licensee's effluent monitoring program:

- A demonstration that background and baseline concentrations of radionuclides in environmental media have been established through appropriate sampling and analysis;
- A description of the known or expected concentrations of radionuclides in effluents;
- A description of the physical and chemical characteristics of radionuclides in effluents;
- A summary or diagram of all effluent discharge locations;
- A demonstration that samples will be representative of actual releases;
- A summary of the sample collection and analysis procedures, including the minimum detectable concentrations of radionuclides (if this information is not already described pursuant to Section 17.4 of this volume);
- A summary of the sample collection frequencies;
- A description of the environmental monitoring recording and reporting procedures; and
- A description of the quality assurance program to be established and implemented for the effluent monitoring program (if this is not already described under Section 17.6 of this volume).

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Evaluation Criteria," above, is included in the licensee's description of its effluent monitoring program. The staff should verify that the licensee's program complies with NRC requirements at 10 CFR Part 20 and that the program uses appropriate methods and procedures based upon recognized NRC and other professional health physics organizations' guidance documents. Concentrations of radioactive materials in airborne and liquid effluents as well as physical and chemical characteristics should be estimated based on operational data for the facility.

Releases shall be maintained below the limits in 10 CFR Part 20, Appendix B, Table 2 or below site-specific limits established in accordance with 20.1302(c) and should be ALARA. NRC regulations require that licensees demonstrate that releases are maintained below the limits in 10 CFR Part 20 by calculation or measurement. If a licensee elects to make this demonstration by calculation, the estimate should be based on the total volume of effluents (air or liquid) released from the facility during a year and the total activity of radioactive material possessed by the licensee during the year. The total activity of radioactive material may be adjusted to reflect the actual activity that could have been released in effluents, as long as the licensee or responsible party can justify the adjustment through materials inventory and balance records.

If the licensee elects to demonstrate compliance with NRC requirements by sampling, all liquid and airborne effluent discharge locations should be described, with a description of how each location is monitored such that the samples collected are representative of the concentration and quantity of radiological material released to the environment. A description of the effluents that are continuously sampled from radiological operations associated with the plant, such as laboratories, experimental areas, and storage areas, should also be included.

For liquid effluents, representative samples should be taken at each release point for the determination of concentrations and quantities of radionuclides released to an unrestricted area, including discharges to sewage systems. For continuous releases, samples should be continuously collected at each release point. For batch releases, a representative sample of each batch should be collected. If periodic sampling is used in lieu of continuous sampling, the description should demonstrate that the samples are representative of actual releases. Sample collection frequencies are appropriate for the effluent medium and the radionuclide(s) being sampled if they are performed during activities that could generate effluents in the medium being sampled and the samples collected can be shown to be representative of the concentrations of radionuclides in the medium. Reporting procedures are adequate if they comply with the guidance specified in Regulatory Guide 4.16. Reports of the concentrations of principal radionuclides released to unrestricted areas in liquid and gaseous effluents should be provided and include the MDC for the analysis and the error for each data point.

If the licensee believes that radioactivity in effluents is insignificant and will remain so during decommissioning and after license termination, a justification for this assertion shall be included. For the purposes of this SRP, an effluent is significant if the concentration averaged over a calendar quarter is equal to 10 percent or more of the applicable concentration listed in Table 2 of Appendix B to 10 CFR Part 20.

17.4.3 EFFLUENT CONTROL PROGRAM

The purpose of the review of the licensee's effluent control program description is to verify that the licensee has a program to control radioactive material in effluents and to comply with all applicable standards and permit requirements related to the release of radioactive material in effluents.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 20.1301(a) and (d), 20.1302(a) and (b), 20.1501, 2001(a), 20.2003(a), 20.2103 (b), 20.2107(a), 20.2202(a), and 20.2203(a)

Regulatory Guidance

- Regulatory Guide 4.20, "Constraints on Releases of Airborne Radioactive Materials to the Environment for Licensees other than Power Reactors," December 1996.
- NRC Information Notice 94-23: "Guidance to Hazardous, Radioactive and Mixed Waste Generators on the Elements of a Waste Minimization Program," March 25, 1994
- IAEA, No. 16, "Manual on Environmental Monitoring in Normal Operations," Vienna, 1996
- IAEA, No. 18, "Environmental Monitoring in Emergency Situations", Vienna, 1966
- IAEA, Safety Series No. 41, "Objectives and Design of Environmental Monitoring Programs for Radioactive Contaminants," Vienna, 1975
- NCRP Report No. 50, "Environmental Radiation Measurements," December 1976
- NCRP Report No. 123, "Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground," January 1996

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand how the licensee will implement and conduct its effluent control program. The staff's review should verify that the following information is included in the licensee's effluent control program:

- A description of the controls that will be used to minimize releases of radioactive material to the environment;
- A summary of the action levels and description of the actions to be taken, should a limit be exceeded;
- A description of the leak detection systems for ponds, lagoons, and tanks;
- A description of the procedures to ensure that releases to sewer systems are controlled and maintained to meet the requirements of 10 CFR 20.2003; and
- A summary of the estimates of doses to the public from effluents and a description of the method used to estimate public dose.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Evaluation Criteria," above, is included in the description of the licensee's effluent control program. The staff should verify that the licensee's program for the control of radiological materials released to the environment

complies with NRC requirements at 10 CFR Part 20, and that the program uses appropriate methods and procedures, based upon recognized NRC and other professional health physics organizations' guidance documents. The staff shall verify that the licensee has identified all possible effluent pathways, based on current and expected future site conditions, and evaluated the likelihood of releases via these pathways. The controls proposed by the licensee to minimize releases of radioactive material to the environment should be based on well-recognized industry practices and procedures.

Proposed action levels should be a fraction (10-20 percent) of limits and should be justified. Action levels should be incremental, such that each increasing action level results in a more aggressive action to assure and control effluents. A slightly higher than normal concentration of a radionuclide in effluent triggers an investigation into the cause of the increase. In addition, an action level shall be specified that will result in the shutdown of an operation if this level is exceeded. These action levels should be selected on the likelihood that a measured increase in concentration could indicate potential violation of the effluent limits. Actions to be taken if the levels are exceeded should be described in sufficient detail to allow the staff to fully understand the scope and results of the actions.

The description of the system(s) for the detection of leakage from ponds, lagoons, and tanks are adequate if they are based on well-recognized engineering practices and allow for the intervention and response to leaks before radioactive material enters unrestricted areas.

Controls for releases to sewer systems shall meet the requirements of 10 CFR 20.2003, including (i) the material is water soluble; (ii) known or expected discharges meet the effluent limits of 10 CFR 20 Appendix B, Table 3; and (iii) the known or expected total quantity of radioactive material released into the sewer system in a year does not exceed 5 Ci (185 GBq) of 3H, 1 Ci (37 GBq) of 14C, and 1 Ci (37 GBq) of all other radioactive materials combined. Solubility is determined in accordance with the procedure described in NRC Information Notice 94-07. If the licensee proposes to demonstrate compliance with 10 CFR 20.1301 through a calculation of the total effective dose equivalent (TEDE) to the individual likely to receive the highest dose in accordance with 20.1302(b)(1), calculation of the TEDE by pathways analyses uses appropriate models and codes and assumptions that accurately represent the facility, the site, and the surrounding area. It is also required that assumptions are reasonable, input data are accurate, all applicable pathways are considered, and the results are interpreted correctly. NCRP Report No. 123, "Screening Models for Releases of Radionuclides to Atmosphere, Surface Water, and Ground," January 1996, provides acceptable methods for calculating the dose from radioactive effluents. Computer codes are acceptable tools for pathways analysis if the applicant is able to demonstrate that the code has undergone validation and verification to demonstrate the validity of estimates developed using the code for established input sets. Dose conversion factors used in the pathways analyses are acceptable if they are based on the methodology described in ICRP 30, "Limits for Intakes of Radionuclides by Workers," as reflected in Federal Guidance Report 11.

Sample Evaluation Findings

None. The staff should combine the findings from the review of the Effluent Control Program with the findings from Section 17.4.1, above.

17.5 DECOMMISSIONING PLAN: RADIOACTIVE WASTE MANAGEMENT PROGRAM

OVERVIEW

The staff will review the information supplied by the licensee to determine if the description of the program for the management of radioactive waste generated as part of the decommissioning of the facility is adequate to allow the staff to fully understand the types of radioactive waste that will be generated by decommissioning operations and the manner in which the licensee will manage these wastes. This information will be used by the staff to ensure that the waste will be managed in accordance with NRC requirements, to support the staff's evaluation of the licensee's health and safety program, the evaluation of potential accidents, and the licensee's cost estimates for decommissioning. This information should include descriptions of the types, volumes, and activities of radioactive waste generated by the decommissioning operations, a description of how the wastes will be stored, treated (if on-site treatment is anticipated), and packaged for transport and disposal, and the name and location of the facility where the licensee intends to treat and/or dispose of the waste.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is informational in nature, and no specific detailed technical analysis is required. The staff will verify that the manner in which the licensee intends to package the waste for transport and disposal is acceptable by comparing the descriptions of the waste and the packaging procedures with the relevant NRC regulations. The staff will verify that the waste disposal locations are appropriate for the wastes generated during decommissioning by comparing the waste generated by the decommissioning operations with publically available information on the types of wastes that are accepted by the disposal facility. The staff will make a qualitative assessment as to whether the licensee's descriptions of the types, volumes, and activities of radioactive waste generated by the decommissioning operations appear accurate (given the information presented in the facility radiological status section of the decommissioning plan) and if the descriptions of how the wastes will be stored and treated are appropriate for the types and volumes of wastes, as well as being protective of worker and public health and safety.

17.5.1 SOLID RADIOACTIVE WASTE

The purpose of the review of the description of the management of solid radioactive waste generated during decommissioning operations is to ensure that the manner in which the licensee proposes to manage the waste will be protective of the public health and safety and that the waste will be treated and disposed of in accordance with NRC requirements. The information will also be used to support the staff's evaluation of potential accidents and the licensee's cost estimates for decommissioning.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the types, volumes, and activities of solid radioactive waste generated during decommissioning operations and the manner in which the licensee intends to manage and dispose of the wastes. The staff's review should verify that the following information is included in the solid radioactive waste section of the facility decommissioning plan:

- A summary of the types of solid radioactive waste that are expected to be generated during decommissioning operations, including (but not limited to) soil, structural and component metal, concrete, activated components, contaminated piping, wood, and plastic;
- A summary of the estimated volume, in cubic feet, of each solid radioactive waste type summarized under bullet 1, above;
- A summary of the radionuclides (including the estimated activity of each radionuclide) in each estimated solid radioactive waste type summarized under bullet 1, above;
- A summary of the volumes of Classes A, B, C, and Greater-than-Class-C solid radioactive waste that will be generated by decommissioning operations;
- A description of how and where each of the solid radioactive wastes summarized under bullet 1, above, will be stored on-site prior to shipment for disposal;
- A description of how the each of the solid radioactive wastes summarized under the first bullet above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- If appropriate, how the licensee intends to manage volumetrically contaminated material;
- A description of how the licensee will prevent contaminated soil, or other loose solid radioactive waste, from being re-disbursed after exhumation and collection; and
- The name and location of the disposal facility that the licensee intends to use for each solid radioactive waste type summarized under the first bullet, above.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the solid radioactive waste management program. The staff should verify that the licensee's program for the management of solid radioactive waste complies with NRC requirements at 10 CFR Part 20, Subpart K, 10 CFR 61.55, 61.56, 61.57 and 71.5. The staff should make a qualitative assessment of the accuracy of the licensee's descriptions of the types, volumes, and activities of the solid radioactive waste by comparing them with the information presented in the facility description, planned decommissioning activities, and radiological status portions of the decommissioning plan. The staff should make a qualitative assessment of the licensee's proposed methods to store solid radioactive waste prior to disposal, including the manner in which volumetrically contaminated waste will be managed. The staff will verify that the waste disposal locations are appropriate for the solid wastes generated during decommissioning by comparing the solid waste generated by the decommissioning operations with publically available information on the types of solid wastes that are accepted by the disposal facility.

Sample Evaluation Findings

The staff may combine the evaluation finding for the licensee's description of solid radioactive waste management programs with the findings for the remaining areas in this section of this guidance, as follows:

The NRC staff has reviewed the licensee's descriptions of the radioactive waste management program for the [insert name and license number of facility] located at [insert location of facility] according to the NMSS Decommissioning Consolidated Guidance, Volume 1, Section 17.5 ("Radioactive Waste Management Program"). Based on this review, the NRC staff has determined that the licensee's [insert name] programs for the management of radioactive waste generated during decommissioning operations ensure that the waste will be managed in accordance with NRC requirements and in a manner that is protective of the public health and safety.

17.5.2 LIQUID RADIOACTIVE WASTE

The purpose of the review of the description of the management of liquid radioactive waste generated during decommissioning operations is to ensure that the manner in which the licensee proposes to manage the waste will be protective of the public health and safety and that the waste will be treated and disposed of in accordance with NRC requirements. The information will also be used to support the staff's evaluation of potential accidents and the licensee's cost estimates for decommissioning.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the types, volumes, and activities of liquid radioactive waste generated during decommissioning operations and the manner in which the licensee intends to manage and dispose of the wastes. The staff's review should verify that the following information is included in the liquid radioactive waste section of the facility decommissioning plan:

- A summary of the types of liquid radioactive waste that are expected to be generated during decommissioning operations;
- A summary of the estimated volume, in liters, of each liquid radioactive waste type summarized under the first bullet above;
- A summary of the radionuclides (including the estimated activity of each radionuclide) in each liquid radioactive waste type summarized under the first bullet above;
- A summary of the estimated volumes of Class A, B, C and Greater-than-Class-C liquid radioactive waste that will be generated by decommissioning operations;
- A description of how and where each of the liquid radioactive wastes summarized under the first bullet above, will be stored on-site prior to shipment for disposal;
- A description of how the each of the liquid radioactive wastes summarized under the first bullet above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal; and
- The name and location of the disposal facility that the licensee intends to use for each liquid radioactive waste type summarized under the first bullet, above.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the liquid radioactive waste management program. The staff should verify that the licensee's program for the management of liquid radioactive waste complies with NRC requirements at 10 CFR Part 20, Subpart K, 61.55, 61.56, 61.57 and 71.5. The staff should make a qualitative assessment of the accuracy of the licensee's descriptions of the types, volumes, and activities of liquid radioactive waste by comparing them with the information presented in the facility description, planned decommissioning activities, and radiological status portions of the decommissioning plan. The staff should make a qualitative assessment of the licensee's proposed methods to store liquid radioactive waste prior to disposal. The staff will verify that the waste disposal locations are appropriate for the liquid

wastes generated during decommissioning by comparing the liquid waste generated by the decommissioning operations with publically available information on the types of liquid wastes that are accepted by the disposal facility.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of liquid radioactive waste management programs with the findings for the remaining areas in this section of this guidance (see Section 17.5.1, above).

17.5.3 MIXED WASTE

The purpose of the review of the description of the management of mixed waste generated during decommissioning operations is to ensure that the manner in which the licensee proposes to manage the mixed waste will be protective of the public health and safety and that the waste will be managed, treated and disposed of in accordance with NRC and Environmental Protection Agency (EPA) or EPA-authorized State requirements. The information will also be used to support the staff's evaluation of potential accidents and the licensee's cost estimates for decommissioning.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the types, volumes, and activities of mixed waste generated during decommissioning operations and the manner in which the licensee intends to manage and dispose of the wastes. The staff's review should verify that the following information is included in the mixed waste section of the facility decommissioning plan:

- A summary of the types of solid and liquid mixed waste that are expected to be generated during decommissioning operations;
- A summary of the estimated volumes, in cubic feet, of each solid mixed waste type summarized under bullet 1 above and in liters for each liquid mixed waste;
- A summary of the radionuclides (including the estimated activity of each radionuclide) in each type of mixed waste type summarized under bullet 1 above;
- A summary of the estimated volumes of Class A, B, C and Greater-than-Class-C mixed waste that will be generated by decommissioning operations;
- A description of how and where each of the mixed wastes summarized under bullet 1 above, will be stored on-site prior to shipment for disposal;

- A description of how the each of the mixed wastes summarized under bullet 1 above, will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- The name and location of the disposal facility that the licensee intends to use for each mixed waste type summarized under bullet 1 above;
- A discussion of the requirements of all other regulatory agencies having jurisdiction over the mixed waste; and
- A demonstration that the licensee possesses the appropriate EPA or State permits to generate, store and/or treat the mixed wastes.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the liquid radioactive waste management program. The staff should verify that the licensee's program for the management of mixed waste complies with NRC requirements at 10 CFR Part 20, Subpart K, 61.55, 61.56, 61.57 and 71.5. The staff should make a qualitative assessment of the accuracy of the licensee's descriptions of the types, volumes, and activities of mixed waste by comparing it to the information presented in the facility description, planned decommissioning activities, and radiological status portions of the decommissioning plan. The staff should make a qualitative assessment of the licensee's proposed methods to store mixed waste prior to disposal. The staff will verify that the waste disposal locations are appropriate for the mixed wastes generated during decommissioning by comparing the mixed waste generated by the decommissioning operations to publically available information on the types of mixed wastes that are accepted by the disposal facility.

Note that the NRC staff is NOT responsible for ensuring that the licensee's program complies with the requirements of 40 CFR 260-270 or the Department of Transportation regulations pertaining to the transportation of the hazardous component of the mixed waste. The staff should make a qualitative assessment of the acceptability of the licensee's descriptions of the methods they will employ to comply with the requirements of other Agencies with regulatory responsibility for the mixed waste.

Sample Evaluation Findings

None. The staff should combine the evaluation finding for the licensee's description of mixed waste management programs with the findings for the remaining areas in this section of the guidance (see Section 17.5.1, above).

17.6 DECOMMISSIONING PLAN: QUALITY ASSURANCE PROGRAM

OVERVIEW

The staff will review the information supplied by the licensee to determine if the description of the quality assurance (QA) program is adequate to allow the staff to conclude that the licensee has adequate controls in place to support the decommissioning. Further, if the licensee effectively implements the QA program described, the data collected should be accurate and of sufficient quality to justify the conclusions drawn from the information. This information should include a description of the organization responsible for implementing the QA program; a description of the QA program, including descriptions of the manner in which QA activities are controlled; a description of the manner in which QA program documents are controlled; a description of how measuring and test equipment is controlled; a description of how conditions adverse to quality are corrected; a description of the QA records that will be maintained; and a description of the audits and surveillances that are performed as part of the QA program.

REVIEW PROCEDURES

Safety Evaluation

The material to be reviewed is informational in nature, and no specific detailed technical analysis is required. The staff will make a qualitative assessment as to whether the licensee's QA program is adequate to ensure that accurate, high-quality information is developed to support the decommissioning of the facility.

17.6.1 ORGANIZATION

The purpose of the review of the QA organization is to verify that the licensee has an adequate organization, sound management philosophy, and the resources necessary to ensure that the information submitted to support the decommissioning is accurate and of sufficient quality to justify the conclusions drawn from the information.

ACCEPTANCE CRITERIA

Information to be Submitted

The staff will review the licensee's description of its organizational structure to ensure that persons and organizations performing quality affecting activities have sufficient authority and freedom to identify quality problems, provide solutions, and verify that solutions have been

implemented. The staff's review should verify that the following information is included in the description of the QA program organization:

- A description of the QA program management organization;
- A description of the duties and responsibilities of each unit within the organization and how delegation of responsibilities is managed within the decommissioning program;
- A description of how work performance is evaluated;
- A description of the authority of each unit within the QA program; and
- An organization chart of the QA program organization.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the QA program. The staff should verify that the organization or individual responsible for submitting the license application exercises and retains the responsibility for the establishment and execution of the overall program. The staff should verify that major delegations of work are fully described and that in each case, organizational responsibilities and methods for control of the work by the applicant are described, including how responsibility for delegated work is to be retained and exercised. The staff should verify that the licensee and its prime contractors describe how responsibility is exercised for the overall QA program and that the extent of management responsibility and authority are addressed. The staff should verify that policies regarding the implementation of the QA program are documented and made mandatory.

The staff should verify that the licensee and its contractors will evaluate the performance of work delegated to other organizations, including audits/surveillances of the contractor's QA programs and audits/surveillances of subcontractors, consultants, and vendors furnishing equipment or services to the applicant or its contractors. The frequency and method of this evaluation should be specified.

The staff should verify that the licensee and prime contractors identify a management position that retains overall authority and responsibility for the QA program (normally, this position is filled by the QA Manager). The staff should verify that the QA Manager position is at the same or a higher organization level than the position of the highest line manager directly responsible for performing activities affecting quality (such as engineering, procurement, construction, and operation) and is sufficiently independent from cost and schedule restraints (this does not mean that the QA position must report outside of the project or program). The staff should verify that the authority and duties of persons and organizations performing functions related to meeting the performance objectives are clearly established and delineated in writing, including both the

performing functions of attaining the requisite quality of work (quality achieving) and the assurance functions of verifying the attainment of quality (quality assuring). The staff should verify that designated QA personnel, sufficiently free from direct pressures resulting from cost and schedule, have the responsibility, delineated in writing, to stop unsatisfactory work and control further processing or delivery of nonconforming material.

The staff should verify that persons and organizations performing quality assurance functions have sufficient authority and organizational freedom (1) to identify quality problems, (2) to initiate, recommend, or provide solutions through designated channels, and (3) to verify implementation of solutions. The staff should verify that persons and organizations with the above authority are identified and a description of how those actions are carried out is provided.

The staff should verify that provisions are established for the resolution of disputes involving quality arising from a difference of opinion between QA personnel and other department personnel. The staff should verify that the position description ensures that the individual directly responsible for the definition, direction, and effectiveness of the overall QA program has sufficient authority to implement responsibilities effectively. This position is to be sufficiently free from cost and schedule responsibilities.

The staff should verify that the person responsible for the on-site QA program is identified by position and has the appropriate organizational position, responsibilities, and authority to exercise proper control over the QA program.

The staff should verify that organization charts clearly identify all the on-site and off-site organizational elements that function under the cognizance of the QA program.

17.6.2 QUALITY ASSURANCE PROGRAM

The purpose of the review of the QA program is to verify that the licensee's QA program and activities affecting quality will be controlled by written policies, procedures and instruction, which, if effectively implemented, should ensure that the information submitted to support the decommissioning is accurate and of sufficient quality to justify the conclusions drawn from the information.

ACCEPTANCE CRITERIA

Information to be Submitted

The staff will review the licensee's QA program to determine if activities affecting quality will be conducted in accordance with written policies, procedures, and instructions, and that activities affecting quality are accomplished by suitably trained and qualified individuals. The staff shall review the licensee's QA program to ensure that quality affecting activities are prescribed by

documented procedures, drawings, or instructions. The staff will verify that the following information is included in the description of the QA program:

- A commitment that activities affecting the quality of site decommissioning will be subject to the applicable controls of the QA program and activities covered by the QA program are identified on program defining documents;
- A brief summary of the company's corporate QA policies;
- A description of provisions to ensure that technical and quality assurance procedures required to implement the QA program are consistent with regulatory, licensing, and QA program requirements and are properly documented and controlled;
- A description of the management reviews, including the documentation of concurrence in these quality-affecting procedures;
- A description of the quality-affecting procedural controls of the principal contractors, including documentation of the acceptance of the controls before the initiation of activities affected by the program;
- A description of how NRC will be notified of changes (a) for review and acceptance in the accepted description of the QA program as presented or referenced in the decommissioning plan before implementation and (b) in organizational elements within 30 days after the announcement of the changes (Note: Editorial changes or personnel reassignments of a nonsubstantive nature do not require NRC notification);
- A description is provided of how management (above or outside the QA organization) regularly assesses the scope, status, adequacy, and compliance of the QA program;
- A description of the instruction provided to personnel responsible for performing activities affecting quality pertaining to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures;
- A description of the training and qualifications of personnel verifying activities affecting quality in the principles, techniques, and requirements of the activity being performed;
- For formal training and qualification programs, documentation includes the objectives and content of the program, attendees, and date of attendance;
- A description of the self-assessment program to confirm that activities affecting quality comply with the QA program;
- A commitment that persons performing self-assessment activities are not to have direct responsibilities in the area they are assessing;
- A description of the organizational responsibilities for ensuring that activities affecting quality are (a) prescribed by documented instructions, procedures, and drawings; and (b) accomplished through implementation of these documents; and

- A description of the procedures to ensure that instructions, procedures, and drawings include quantitative acceptance criteria (such as those pertaining to dimensions, tolerances, and operating limits) and qualitative acceptance criteria (such as workmanship samples) for determining that important activities have been satisfactorily performed.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the description of the QA program. Licensees are encouraged to submit the information in electronic format.

17.6.3 DOCUMENT CONTROL

The purpose of the review of the licensee's description of how QA program documents are issued and amended is to ensure that adequate control is exercised over the development, issuance and revision of the documents.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii),40.28(b)(3), 70.22(f), 70.38(g)(4)(ii), and 72.54(g)(6)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to understand how the licensee will develop, issue and revise documents associated with the QA program. The staff's review should verify that the following information is included in the description of the QA document control program:

- A summary of the types of QA documents included in the program; and
- A description of how the licensee develops, issues, revises and retires QA documents.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the QA document control program. The staff should verify that the scope of the document control program is described, and the types of

controlled documents are identified. As a minimum, controlled documents include (1) quality assurance and quality control manuals and quality-affecting procedures, and (2) technical reports. The staff should verify that procedures for the review, approval, and issuance of documents and changes will be established and described to ensure technical adequacy and inclusion of appropriate quality requirements before implementation. The staff should verify that procedures will be established to ensure that changes to documents are reviewed and approved by the same organizations as those that performed the initial review and approval or by other qualified responsible organizations delegated by the applicant. The staff should verify that procedures will be established to ensure that documents are available at the location where the activity will be performed prior to commencing work. The staff should verify that procedures will be established to ensure that obsolete or superseded documents are removed and replaced by applicable revisions in work areas in a timely manner. Licensees are encouraged to submit the information in electronic format.

17.6.4 CONTROL OF MEASURING AND TEST EQUIPMENT

The purpose of the review of the description of the test and measurement equipment calibration program is to verify that the licensee has a program to ensure that equipment used to support decommissioning activities is properly controlled, calibrated, and maintained.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii), 40.28(b)(3), 70.22(f), 70.38(g)(4)(ii), and 72.54(g)(6)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the methods and procedures that the licensee will use to ensure that only accurate and calibrated test and measurement equipment will be used during the decommissioning project. The staff's review should verify that the following information is included in the description of the test and measurement equipment QA program:

- A summary of the test and measurement equipment used in the program;
- A description of how and at what frequency the equipment will be calibrated;
- A description of the daily calibration checks that will be performed on each piece of test or measurement equipment; and
- A description of the documentation that will be maintained to demonstrate that only properly calibrated and maintained equipment was used during the decommissioning.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the test and measurement equipment program. The staff should verify that the scope of the program for the control of measuring and test equipment is described and the types of equipment to be controlled are established. The staff should verify that QA and other organizations' responsibilities are described for establishing, implementing, and ensuring effectiveness of the calibration and adjustment program. The staff should verify that procedures will be established for calibration (technique and frequency), maintenance, and control of the measuring and test equipment. The staff should also verify that the review of and documented concurrence in these procedures are described, and the organization responsible for these functions is identified. The staff should further verify that measuring and test equipment are identified and traceable to the calibration test data. The staff should verify that measuring and test equipment will be labeled or tagged or "otherwise controlled" to indicate due date of the next calibration. The method to "otherwise control" equipment should be described. The staff should verify that measuring and test equipment will be calibrated at specified intervals on the basis of the required accuracy, purpose, degree of usage, stability characteristics, and other conditions affecting the measurement.

17.6.5 CORRECTIVE ACTION

The staff will review the licensee's QA program to ensure that measures have been established to assure that conditions adverse to quality are promptly identified and corrected.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii),40.28(b)(3), 70.22(f), 70.38(g)(4)(ii), and 72.54(g)(6)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether adequate procedures and controls are in place to identify and correct conditions that will

adversely affect quality. The staff's review should verify that the following information is included in the description of the corrective action program portion of the QA program:

- A description of the corrective action procedures for the facility, including a description of how the corrective action is determined to be adequate; and
- A description of the documentation maintained for each corrective action and any follow-up activities by the QA organization, after the corrective action is implemented.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the corrective action. The staff should verify that procedures will be established for a corrective action program and that the QA organization reviews and documents concurrence in the procedures. The staff should verify that corrective action will be documented and initiated following the determination of a condition adverse to quality (such as nonconformance, failure, malfunction, deficiency, deviation, and defective material and equipment) to preclude recurrence. The staff should verify that the QA organization will be included in the concurrence chain regarding the adequacy of the corrective action. The staff should verify that follow-up action will be taken by the QA organization to verify the proper implementation of corrective action and to close out the corrective action in a timely manner. The staff should verify that significant conditions adverse to quality, the cause of the conditions, and the corrective action taken to preclude repetition will be documented and reported to immediate management and upper levels of management for review and assessment.

17.6.6 QUALITY ASSURANCE RECORDS

The purpose of the review of the QA records program is to verify that the licensee has procedures and facilities in place to adequately maintain and store the QA program records.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii),40.28(b)(3), 70.22(f), 70.38(g)(4)(ii), and 72.54(g)(6)

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand the types of procedures that will be in place to manage the QA program records. The staff should verify that the following information is included in the description of the QA records program:

- A description of the manner in which the QA records will be managed;
- A description of the responsibilities of the QA organization as well as all other units involved in the decommissioning to implement and maintain QA records; and
- A description of the QA records storage facility.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the QA records program. The staff should verify that the QA records program is described, and includes results of reviews, inspections, tests, audits, and material analyses; monitoring records of work performance; and records on the qualification of personnel, procedures, and equipment. The staff should verify that QA and other organizations are identified and their responsibilities are described for the definition and implementation of activities related to QA records. The staff should verify that suitable facilities for the storage of records are described and satisfy the requirements of ANSI/ASME NQA-1. Alternatives to the fire protection rating provisions are acceptable if record storage facilities conform to National Fire Protection Association Standard NFPA 232, Class 1, for permanent records and if the 2-hour fire-rating requirement contained in proposed ANSI N45.2.9 is met by the applicant in any one of the following three ways: (1) a 2-hour-rated vault meeting NFPA 232, (2) 2-hour-rated file containers meeting NFPA 232 (Class B), or (3) a 2-hour-rated fire resistant file room meeting NFPA 232.

17.6.7 AUDITS AND SURVEILLANCE

The purpose of the staff's review of the licensee's description of audits and surveillances is to ensure that the licensee has a comprehensive system of audits planned to verify compliance with all aspects of the QA program, and to determine the effectiveness of the QA program.

ACCEPTANCE CRITERIA

Regulatory Requirements

10 CFR 30.36(g)(4)(ii), 40.42(g)(4)(ii),40.28(b)(3), 70.22(f), 70.38(g)(4)(ii), and 72.54(g)(6)

Information Criteria

The information supplied by the licensee's should be sufficient to allow the staff to determine if the of audit and surveillance program is adequate to ensure that a comprehensive system of audits planned to verify compliance with all aspects of the QA program is in place to determine the effectiveness of the QA program. The following information should be included in the description of the audit program:

- A description of the audit program, including the procedures for conducting the audits or surveillances;
- A description of the records and documentation generated during the audits and the manner in which the documents are managed;
- A description of all followup activities associated with audits or surveillances; and
- A description of the trending/tracking that will be performed on the results of audits and surveillances.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of the audits program for the facility. The staff should verify that audits and surveillances will be performed in accordance with pre-established written procedures or checklists and conducted by trained personnel not having direct responsibilities for the achievement of quality in the areas being audited. The staff should verify that audit and surveillance results will be documented and then reviewed with management having responsibility in the area audited. The staff should verify that provisions exist such that appropriate follow-up corrective action to audit and surveillance reports will be undertaken by responsible management and that auditing organizations schedule and conduct appropriate follow-up to assure that the corrective action is effectively accomplished. The staff should verify that both technical and QA programmatic audits and surveillances will be performed to provide a comprehensive independent verification and evaluation of procedures and activities affecting quality. The staff should verify that audits and surveillances objectively assess the effectiveness and proper implementation of the QA program and address the technical adequacy of the activities being conducted. The staff should verify that provisions will be provided such that

audits and surveillances are required to be performed in all areas where the requirements of the QA program are applicable. The staff should verify that audit and surveillance deficiency data are analyzed and trended. The staff should verify that reports that indicating quality trends and the effectiveness of the QA programs will be given to management for review, assessment, corrective action, and follow up.

17.7 RESTRICTED USE AND ALTERNATE CRITERIA

17.7.1 OVERVIEW

The staff will review the information supplied by the licensee to determine if the description of the activities undertaken by the licensee is adequate to allow the staff to conclude that the licensee has complied with the applicable requirements of 10 CFR 20.1403, or 10 CFR 20.1404 for those licensees that intend to request termination of their radioactive materials licenses using either the restricted use or alternate criteria provisions of Subpart E.

If the licensee is requesting license termination under restricted use this information should include: a demonstration that the licensee qualifies for license termination under 10 CFR 20.1403(a); a description of the institutional controls the licensee has instituted or plans to institute at the site; a description of the activities undertaken by the licensee to obtain advice from the public on the proposed institutional controls and the results of these activities; a demonstration that the potential doses from residual radioactive material at the site will not exceed the limits in 10 CFR 20.1403 and are ALARA; and a description of the financial assurance mechanism required under 10 CFR 20.1403 (c).

If the licensee is requesting license termination using the alternate criteria provisions of 10 CFR 20.1404, the information should include: a description of the institutional controls the licensee has instituted or plans to institute at the site; a demonstration that doses from residual radioactive material at the site will not exceed the limits in 10 CFR 20.1404(a)(1); a description of the restrictions on site use the licensee has provided to comply with 10 CFR 20.1404(a)(2); a demonstration that the potential doses are ALARA; a description of the activities undertaken by licensee to obtain advice from the public and the results of these activities[16]; and a description of the financial assurance mechanism required under 10 CFR 20.1403(c).

[16] 110 CFR 20.1403 requires that licensees or responsible parties obtain advice from institutions and individuals that may be affected by the decommissioning on specific issues related to institutional controls and financial assurance. However, 10 CFR 20.1404 provides for a much broader discussion of the issues associated with the use of alternate criteria and, as such, licensees must obtain advice on essentially any issue associated with the use of alternate criteria.

17.7.2 REVIEW PROCEDURES

Acceptance Review

The staff will ensure that the decommissioning plan contains the information summarized under "Areas of Review," above. Staff will review the licensee's or responsible party's descriptions of the 10 CFR 20.1403 or 10 CFR 20.1404 compliance activities without assessing the technical accuracy or completeness of the information contained therein. The adequacy of this information will be assessed during the detailed review. Staff will review the decommissioning plan table of contents and the individual descriptions under "Areas of Review," above, to ensure that the licensee has included this information in the decommissioning plan and to determine if the level of detail of the information appears to be adequate for the staff to perform a detailed technical review.

Safety Evaluation

The material to be reviewed is both informational and technical in nature. The staff will make a qualitative assessment as to whether the licensee's or responsible party's eligibility demonstration, description of institutional controls, description of financial assurance, and description of activities undertaken to obtain advice from the public on the proposed institutional controls and the results of these activities are adequate to allow the staff to conclude that the licensee has complied with the requirements of 10 CFR 20.1403 or 10 CFR 20.1404. The staff will make a quantitative evaluation of the licensee's or responsible party's dose calculations and ALARA demonstrations.

17.7.3 RESTRICTED USE

17.7.3.1 ELIGIBILITY DEMONSTRATION

The purpose of the review of the licensee's or responsible party's demonstration that it is eligible to request release of the site under the provisions of 10 CFR 20.1403 is to verify that the licensee has demonstrated that further reductions in residual radioactivity at the site to meet the unrestricted release criteria in 10 CFR 20.1402 would: (1) result in net public or environmental harm; or (2) are not being undertaken because the residual radioactivity levels are ALARA.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand how the licensee has concluded that reducing radioactivity to the unrestricted use levels in 10 CFR 20.1402 would result in net public or environmental harm or are not being undertaken because the residual radioactivity levels are ALARA. The staff's review should verify that the following information is included in the licensee's or responsible party's demonstration that it is eligible for requesting license termination under the provisions of 10 CFR 20.1403:

- A demonstration that the benefits of dose reduction are less than the cost of doses, injuries and fatalities (see Section 7 of the SRP); or
- A demonstration that the proposed residual radioactivity levels at the site are ALARA.

EVALUATION FINDINGS

Evaluation Criteria

If the licensee has concluded that further reductions in residual radioactivity levels would result in net public or environmental harm, the staff should verify that the licensee has accurately calculated the benefits vs. costs of further remediation using the guidance in Section 7 of the SRP. In considering the net public and environmental harm a licensee's evaluation should consider the radiological and non-radiological impacts of decommissioning on person that may be impacted, as well as the potential impact on ecological systems from decommissioning activities (see Section B.3.2. of the "Statements of Consideration" for the License Termination Rule, 62 FR 39069).

If the licensee has concluded that further reductions in residual radioactivity levels are not required because they are ALARA, the staff should verify that the licensee has considered all of the applicable benefits and costs of further reduction of residual radioactivity and accurately calculated the benefits and costs using the methodology described in Section 7 of the SRP.

17.7.3.2 INSTITUTIONAL CONTROLS

The purpose of the review of the description of the institutional controls the licensee has provided for the site is to determine if the licensee has made provisions for legally enforceable institutional controls that will limit the dose to the average member of the critical group to less than 0.25 mSv/yr (25 mrem/yr).

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what institutional controls the licensee plans to use or has provided for the site and the manner in which these institutional controls will limit doses to the average member of the critical group to 0.25 mSv/yr (25 mrem/yr). The staff's review should verify that the following information is included in the description of institutional controls that the licensee plans to use or has provided for the site:

- A description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- A description of any detriments associated with the maintenance of the institutional control(s);
- A description of the restrictions on present and future landowners;
- A description of the entities enforcing, and their authority to enforce, the institutional control(s);
- A discussion of the durability[17] of the institutional control(s);
- A description of the activities that the entity with the authority to enforce the institutional controls may undertake to enforce the institutional control(s);

[17] The Commission has stated (see Section B3.3 of the "Statements of Consideration" for 10 CFR Part 20, Subpart E "Radiological Criteria for License Termination") that stringent institutional controls would be needed for sites involving large quantities of uranium and thorium contamination. Typically, these would involve legally enforceable deed restrictions backed up by State and local government control or ownership, engineered barriers, and as appropriate, Federal ownership.

- The manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s) (this may not be needed for Federal or State entities);
- A description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s) and the activities that will be undertaken to end the institutional control(s);
- A description of the plans for corrective actions that may be undertaken in the event the institutional control(s) fail; and
- A description of the records pertaining to the institutional controls, how and where will they will be maintained, and how the public will have access to the records.

EVALUATION FINDINGS

Evaluation Criteria

The staff should determine whether the information summarized under "Information to be Submitted," above satisfies the criteria summarized below. The application of the criteria below is dependent on the circumstances of the case. In each case, the staff should consult with the Office of the General Counsel on the application of the criteria and the sufficiency of the licensee or responsible party's proposal.

A. For legally enforceable institutional controls on privately owned land

Proprietary institutional controls on privately owned land should:

- Be enforceable against any owner of the affected property and any person that subsequently acquires the property or acquires any rights to use the property;
- Be enforceable by entities, other than the landowner, that have the legal authority to enforce the restriction;
- Be developed based on considerations of how durable the controls need to be;
- Include provisions to replace the entity with authority to enforce the restriction;
- Indicate actions the entity with authority to enforce the restrictions may take;
- Remain in place for the duration of the time they are needed;
- Have appropriate funds set aside if funds are necessary;
- Be appropriately recorded, including in the deed and in land records, as appropriate;

- Include a legal opinion by an attorney specializing in real estate law who is knowledgeable in the particular State and local land use laws that:
  - — The property law of the particular State and locality in which the land is located ensures that the particular instrument selected will accomplish its intended purpose;
  - — The restrictions have been reviewed and their validity affirmed for the locality;
  - — The owner of the affected property (i.e., the possessor of the land) can be compelled to abide by the terms of the use restriction; and,
  - — The restrictions are binding on future owners (possessors) of the land (i.e., they should "run with the land").
- Include a legal opinion that the entity with the right to restrict the land's use and the responsibility to enforce the restriction has the legal authority to do so and is someone other than the owner or possessor of the land in question;
- Include a demonstration that the entity (or entities) with authority to enforce the restrictions have the knowledge, capability, and willingness to do so, and are appropriate for the specific situation;
- Include a demonstration that the institutional control is durable enough to provide an adequate level of protection of public health and safety and the environment for the amount of residual radioactivity remaining on the site;
- Include a provision to replace the entity with authority to enforce the restriction if that entity is no longer willing or able to enforce the restriction;
- Clearly state the actions that the parties with authority to enforce the restrictions may take to keep the restrictions functioning (e.g., monitoring of deed compliance, control and maintenance of physical barriers);
- Include a demonstration that the restrictions will remain in place for the duration that they are needed, including periodic re-recording of the restrictions;
- If restrictions will end, the conditions that would end the restriction must be clearly stated, and the procedures for canceling or amending the restriction should be readily available. There should be no provisions in the restriction or in the land use law of the local jurisdiction that would cause the restrictions to end while they are still needed to protect the public;
- Identify corrective actions to be taken in case the restrictions need to be broken. For example, a no-excavation restriction may need to be broken if a water main under the site bursts and must be repaired;

- Include a demonstration that the information about restrictions is recorded on the deed and on land records and will contain:
  - — A legal description of the property affected;
  - — The name or names of the current owner or owners of the property as reflected in public land records;
  - — Identification of the parties that can enforce the restriction (i.e., own the rights to restrict use of the land);
  - — The reason for the restriction, the nature of the radiation hazard, including the estimated dose if institutional controls fail, and that this restriction is established as a condition of license termination by the NRC pursuant to 10 CFR 20.1403;
  - — A statement describing the nature of the restriction, limitation, or control created by the restriction;
  - — The duration of the restriction;
  - — Permission to install and maintain physical controls, if any are used; and,
  - — The location of a copy of the final radiation status survey report for the facility at license termination.

B. For legally enforceable institutional controls on government owned land:

The NRC may accept government ownership of land as a method to enforce controls on land use and to meet the legally enforceable institutional control requirements in 10 CFR 20.1403(b) and (e). Government ownership will generally be acceptable when the dose to an average member of the critical group could exceed 100 mrem (1 mSv) per year (but be less than 500 mrem (5 mSv) per year) if the institutional controls were no longer in effect. In reviewing restrictions involving government ownership of land the NRC staff should ensure that the restriction will remain in place for the entire time they are needed and that the nature of the controls and restrictions on the land are clearly stated in a publicly available legal record. Depending on the government entity involved, consider as appropriate the items under #A, above.

C. For institutional controls based on sovereign or police powers:

Institutional controls that are based on sovereign or police powers generally consist of zoning or other restrictive requirements. The permissibility and effectiveness of governmental controls at a particular site will depend on the applicable State and local law.

Institutional controls based on sovereign or police powers should:

- Include a legal opinion by an attorney specializing in real estate law who is knowledgeable in the particular State and local land use laws that:
  - — Zoning and other restrictive requirements have been reviewed and their validity affirmed; and,
  - — They are binding on present and future owners of the land.
  - — Include a demonstration that the government agency imposing the zoning or restriction will assume responsibility for enforcing the restriction;
  - — Include a demonstration that the restrictions will remain in place for the entire time that they are needed or the conditions that can cause them to be changed;
  - — Include a demonstration that the restrictions or zoning requirements are clear to current and future owners of the land, local and State governments, and others, as appropriate, through public documents, notification, placement in land records, etc. Such documentation should include an indication of the activities allowable and the residual radioactivity remaining on site.

17.7.3.3 SITE MAINTENANCE

The purpose of the review of the information about the license's site maintenance program is to ensure that adequate arrangements have been made to ensure that the site will be maintained in accordance with the institutional controls described above and that the licensee has an adequate arrangement to ensure that an independent third party can assume and carry out responsibilities for any necessary control and maintenance of the site after the NRC has terminated the license. Criteria for evaluating the licensee's or responsible parties' mechanism to ensure that sufficient funds are available to allow an independent third party to assume and carry out responsibilities for any necessary control and maintenance of the site after the NRC has terminated the license are addressed in Section 15 of the SRP.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to fully understand what arrangements for site maintenance have been provided by the licensee or responsible party. This should include descriptions of how the site maintenance arrangements will ensure that the site will be managed per the institutional controls described above and how an independent third party will assume and carry out responsibilities for any necessary control

and maintenance of the site after the NRC has terminated the license. The staff's review should verify that the following information is included in the discussion of the site maintenance program in the facility decommissioning plan:

- A demonstration that an appropriately qualified entity has been provided to control and maintain the site;
- A description of the site maintenance and control program and the basis for concluding that the program is adequate to control and maintain the site;
- A description of the arrangement or contract with the entity charged with carrying out the actions necessary to maintain control at the site;
- A demonstration that the contract or arrangement will remain in effect for as long as feasible, and include provisions for renewing or replacing the contract;
- A description of the manner in which independent oversight of the entity charged with maintaining the site will be conducted and what entity will conduct the oversight;
- A demonstration that the entity providing the oversight has the authority to replace the entity charged with maintaining the site;
- A description of the authority granted to the third party to perform, or have performed, any necessary maintenance activities;
- Unless the entity is a government entity, a demonstration that the third party is not the entity holding the financial assurance mechanism;
- A demonstration that sufficient records evidencing to official actions and financial payments made by the third party are open to public inspection;
- A description of the periodic site inspections that will be performed by the third party, including the frequency of the inspections.

EVALUATION FINDINGS

Evaluation Criteria

The staff should determine whether that the information summarized under "Information to be Submitted," above satisfies the criteria summarized below. The application of the criteria below is dependent on the circumstances of the case. In each case the staff should consult with the Office of the General Counsel on the application of the criteria and the sufficiency of the licensee or responsible party's proposal.

- The entity to control and maintain the site may be the former licensee, the landowner, a governmental agency, an organization, a corporation or company, or occasionally a private individual. Control and maintenance of a site does not necessarily have to be carried out by an independent third party. The entity should be capable of carrying out its responsibilities

and should be appropriate given the nature of the restrictions in place. The entity could be a contractor to the entity that holds the rights to restrict use of the property. Note that Government control and/or ownership is generally appropriate for sites involving large quantities of uranium and thorium contamination and for those site where the potential dose to the public could exceed 1 mSv/yr (100 mrem/yr) if institutional controls fail;

- The maintenance and control program includes detailed descriptions of: the repair/replacement and maintenance program for the site; if appropriate, an environmental monitoring program, including the duration of the monitoring, who will be informed of the results, action levels and what action will be taken if the action levels are exceeded; and the mechanism to detect and mitigate the loss of site controls; the mechanism to, if necessary, inform local emergency responders of the loss of controls;
- An arrangement or contract is in place to carry out any actions necessary to maintain the controls so that the annual dose to the average member of the critical group does not exceed 0.25 mSv (25 mrem). The arrangement or contract should be for as long a time as is feasible, and there should be provisions for renewing or replacing the contract to be consistent with the duration of the restrictions. The arrangement may include oversight of the entity by a government entity or the courts;
- A mechanism is in place to replace the entity controlling/maintaining the site if that becomes necessary. Replacement may be specified in the agreement with the conditions under which a government, the courts, or other entity can replace the entity;
- The entity is authorized to either perform the necessary work to maintain the controls or to contract for the performance of the work. The entity would need the authority to contract for the necessary work, review and approve the adequacy of the work performed, replace contractors if necessary, and authorize payment for the work;
- The entity performing the site control and maintenance should not hold the funds itself [i.e., the entity should not serve as the provider of financial assurance (e.g., escrow agent, trustee, issuer of letter of credit)]. However, if the entity is a government, the licensee may elect to allow the government to hold the funds;
- A demonstration that sufficient records evidencing the official actions of and financial payments made by the entity are open to public inspection;
- The entity has the responsibility to perform periodic checks of the site no less frequently than every 5 years (if required by 10 CFR 20.1403(e)(2)(iii)) to ensure that the institutional controls continue to function. The periodic checks should include an onsite inspection to verify that prohibited activities are not being conducted and that markers notices, and other physical controls remain in place. A review of the deed to ensure that the deed restrictions are still in place is not usually necessary, but the review should be performed if there is any cause to believe that the restrictions are not still properly part of the deed.

17.7.3.4 OBTAINING PUBLIC ADVICE

The purpose of the review of the license's description of activities undertaken to obtain advice from the public on institutional controls is to determine if the advice of individuals and institutions in the community that may be affected by the decommissioning has been sought, evaluated, and as appropriate, incorporated into the licensee's or responsible party's decisions following an analysis of the advice.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether the licensee has adequately sought, managed, and, as appropriate, incorporated, advice from individuals and institutions that may be affected by the decommissioning alternative proposed by the licensee or responsible party.

10 CFR 20.1403(d)(1) requires that licensees proposing to decommission a site by restricting use of the site shall seek advice from affected parties on whether:

- The provisions for institutional controls will provide reasonable assurance that the total effective dose equivalent distinguishable from background radiation will not exceed 0.25 mSv/yr (25 mrem/yr);
- The provisions for institutional controls will be enforceable;
- The provisions for institutional controls will not impose an undue burden on the community or other affected parties; and,
- Sufficient financial assurance has been provided to allow an independent third party to carry out any necessary control and maintenance activities at the site after license termination.

The staff's review should verify that the following information is included in the discussion of how advice was sought, obtained, evaluated, and as appropriate, incorporated for each[18] of the issues identified above:

- A description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- A description of the manner in which the licensee obtained advice from these individuals or institutions;
- A description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;
- A description of how the licensee provided for a comprehensive, collective discussion of the issues by the participants represented;

[18] Note that each of the issues do not need to be addressed separately as long as the information required under the bullets is included for each issue.

- A copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants;
- A description of how this summary has been made available to the public; and
- A description of how the licensee evaluated the advice, and the rationale for incorporating, or not incorporating, the advice from affected members of the community into the decommissioning plan.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the licensee's description of how advice was solicited, obtained, evaluated and as appropriate, incorporated into the licensee's or responsible party's decisions and decommissioning plan. The staff should verify that the manner in which advice was sought and obtained and the activities associated with obtaining this advice are consistent with the criteria in Section 17.8 of this NUREG.

17.7.3.5 DOSE MODELING AND ALARA DEMONSTRATION

The purpose of the review of the licensee's estimates of doses from the site after termination of the license to verify that the dose to the average member of the critical group will not exceed 25 mrem/yr with the institutional controls in place and that the doses are as low as reasonably achievable. The staff's review will also verify that, if institutional controls are no longer in place, there is reasonable assurance that the dose to the average member of the critical group from residual radioactive material at the site will not exceed 100 mrem/yr, or 500 mrem/yr provided that the licensee or responsible party:

- Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/yr requirement are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;
- Makes provisions for durable institutional controls (See footnote 15); and,
- Provides sufficient financial assurance to allow an independent third party to carry out rechecks at the site no less frequently than every 5 years and to assume and carry out responsibilities for any necessary control and maintenance of the controls at the site.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether the residual radioactive material at the site will not result in a TEDE that exceeds 25 mrem/yr with institutional controls in place and is ALARA, or that if institutional controls are no longer in place that there is reasonable assurance that the TEDE to the average member of the critical group will not exceed either 100 mrem/yr or 500 mrem/yr, with conditions. The information should also demonstrate that the financial assurance mechanism(s) are adequate for the site. Finally the information should be adequate to allow the staff to determine if the institutional controls and site maintenance activities are adequate.

The staff's review should verify that the following information is included in the dose modeling/ALARA demonstration subsection of the restricted use section of the decommissioning plan:

- A summary of the dose to the average member of the critical group when radionuclide levels are at the DCGL with institutional controls in place, as well as the estimated doses if they are no longer in place;
- A summary of the evaluation performed pursuant to Section 7 of the SRP demonstrating that these doses are ALARA;
- If the estimated dose to the average member of the critical group could exceed 100 mrem/yr (but would be less than 500 mrem/yr) when the radionuclide levels are at the DCGL, a demonstration that:
- Further reductions in residual radioactivity necessary to comply with the 100 mrem/yr requirement are not technically achievable, would be prohibitively expensive or would result in net public or environmental harm;
- Provisions for durable institutional controls are in place; and,
- Sufficient financial assurance to allow an independent third party to carry out rechecks at the site no less frequently than every 5 years and to assume and carry out responsibilities for any necessary control and maintenance of the controls at the site has been provided.

EVALUATION FINDINGS

Evaluation Criteria

The staff should verify that the information summarized under "Information to be Submitted," above, is included in the dose modeling/ALARA demonstration subsection of the restricted use section of the decommissioning plan. The staff should verify that the dose to the average member of the critical group when the radionuclide levels are at the DCGL does not exceed 25 mrem/yr with institutional controls in place and that the license estimated the dose in accordance with Section 5 of the SRP. The staff should verify that these doses are ALARA and that the licensee has made this evaluation in accordance with the criteria in Section 7 of the SRP. The staff should verify that the dose to the average member of the critical group will not exceed 100 mrem/yr when the radionuclide levels are at the DCGL , without institutional controls, and that the licensee has estimated the dose in accordance with Section 5 of the SRP.

If the dose to the average member of the critical group could exceed 100 mrem/yr., without institutional controls, the staff should verify that the dose will not exceed 500 mrem/yr and that the licensee has estimated the dose in accordance with Section 5 of the SRP. The staff should also verify that the licensee has determined that further reductions in residual radioactivity necessary to comply with the 100 mrem/yr requirement are not technically achievable, would be prohibitively expensive or would result in net public or environmental harm in accordance with SRP 7. The staff should verify that the institutional controls provided by the licensee meet the criteria for a durable institutional controls (i.e., government ownership or responsibility as the third party). The staff should verify that the licensee has provided sufficient financial assurance to allow an independent third party to carry out rechecks at the site at no less than every 5 years. The staff should verify that the amount of financial assurance is sufficient to assume and carry out responsibilities for any necessary control and maintenance of the controls at the site in accordance with Section 15 of the SRP.

17.7.4 ALTERNATE CRITERIA

For certain difficult sites with unique decommissioning problems, 10 CFR 20.1404 includes a provision by which the NRC may terminate a license using alternative dose criteria. The NRC expects the use of alternative criteria to be confined to rare situations. This provision was included in 10 CFR 20.1404 because the NRC believed that it is preferable to codify provisions for these difficult sites in the rule rather than require licensees to seek an exemption outside the rule. Under 10 CFR 20.1404, the NRC may consider terminating a license under alternative criteria that are greater than 0.25 mSv/yr (25 mrem/yr) (but less than 1 mSv (100 mrem/yr)), but the NRC limits the conditions under which a licensee could apply to the NRC for, or be granted use of, alternative criteria to unusual site-specific circumstances.

The purpose of the review of the licensee's discussion of why it is requesting license termination under the Alternate Criteria provisions of 10 CFR 20.1404 is to determine if the licensee can demonstrate that the estimated doses to the public from all man-made sources other than medical will be less than 1 mSv/yr (100 mrem/yr) and are ALARA, that appropriate restrictions are in place at the site and that the licensee has sought, obtained, evaluated and, as appropriate addressed, advice from individuals and institutions that may be affected by the decommissioning in accordance with the criteria in 10 CFR 20.1404.

ACCEPTANCE CRITERIA

Information to be Submitted

The information supplied by the licensee should be sufficient to allow the staff to determine whether the residual radioactive material at the site will result in a dose that exceeds 0.25 mSv/yr (25 mrem/yr), but will not exceed 1 mSv/yr (100 mrem/yr) (considering all man-made sources other than medical), when the radionuclide levels are at the DCGL and is ALARA. The information should also demonstrate that the financial assurance mechanism(s) are adequate for the site. Finally, the information should be adequate to allow the staff to determine if the institutional controls, site maintenance activities and the manner in which advice from individuals or institutions that could be affected by the decommissioning was sought, obtained, evaluated, and, as appropriate, addressed in accordance with NRC requirements. The staff should verify that the following information is included in the discussion of why the licensee is requesting license termination under the provisions of 10 CFR 20.1404:

- A summary of the dose in TEDE(s) to the average member of the critical group when the radionuclide levels are at the DCGL (considering all man-made sources other than medical);
- A summary of the evaluation performed pursuant to Section 7 of the SRP demonstrating that these doses are ALARA;
- An analysis of all possible sources of exposure to radiation at the site and a discussion of why it is unlikely that the doses from all man-made sources, other than medical, will be more than 1 mSv/yr (100 mrem/yr);
- A description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- A description of any detriments associated with the maintenance of the institutional control(s);
- A description of the restrictions on present and future landowners;
- A description of the entities enforcing and their authority to enforce the institutional control(s);

- A discussion of the durability[19] of the institutional control(s);
- A description of the activities that the party with the authority to enforce the institutional controls will undertake to enforce the institutional control(s)
- The manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s)
- A description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s) and the activities that will be undertaken to end the institutional control(s);
- A description of the corrective actions that will be undertaken in the event the institutional control(s) fail; and
- A description of the records pertaining to the institutional controls, how and where they will be maintained, and how the public will have access to the records.
- A description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- A description of the manner in which the licensee obtained advice from affected individuals or institutions;
- A description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;
- A description of how the licensee provided for a comprehensive, collective discussion on the issues by the participants represented;
- A copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants;
- A description of how this summary has been made available to the public; and
- A description of how the licensee evaluated advice from individuals and institutions that could be affected by the decommissioning and the manner in which the advice was addressed.

[19] See Footnote 16.

EVALUATION FINDINGS

Evaluation Criteria

The staff should determine whether the information summarized under "Information to be Submitted," above, is included in the discussion of why the licensee is requesting license termination under the provisions of 10 CFR 20.1404. The application of the criteria is dependent on the circumstances of the case. In each case the staff should consult with the Office of the General Counsel on the application of the criteria and the sufficiency of the licensee or responsible party's proposal.

Review of the manner in which doses to the public should be estimated is addressed in Section 5 of the SRP and the staff should refer to Section 5 of the SRP to determine if the dose estimates developed by the licensee are acceptable. The evaluation of these doses to determine if they are ALARA is addressed in Section 7 of the SRP and the staff should refer to Section 7 of the SRP to review the licensee's or responsible party's demonstration that the doses are ALARA. The evaluation of the licensee's or responsible party's financial assurance mechanism(s) is addressed above and in Section 15 of the SRP and the staff should refer to these sections to review the financial assurance mechanisms. The evaluation of institutional controls, site maintenance activities, and obtaining advice from individual and institutions that could be affected by the decommissioning are addressed in Sections 17.7.3.2, 17.7.3.3. and 17.7.3.4 above.

17.8 OBTAINING PUBLIC ADVICE ON INSTITUTIONAL CONTROLS

Subpart E of 10 CFR Part 20 requires that public input on the institutional controls proposed by the licensee be sought during the decommissioning process. Licensees, as part of their planning for restricted use, are required by 10 CFR 20.1403(d) to seek advice from individuals and institutions in the community that may be affected by the decommissioning. The rationale for this requirement is that the licensee's direct involvement regarding diverse community concerns and interests can be useful in developing effective institutional controls, and this information should be considered and incorporated as appropriate into the decommissioning plan or License Termination Plan (LTP) before it is submitted to the NRC for review. This appendix provides guidance on complying with 10 CFR 20.1403(d).

Once the decommissioning plan or LTP is submitted to the NRC, the NRC reviews the licensee's plans for license termination, including the institutional controls proposed to restrict site use. As part of NRC's review process, under 10 CFR 20.1405, the NRC must notify and solicit comments from the public regarding the proposed licensee action. Significant and appropriate public involvement in NRC's review process will take place at this time. Because it is the NRC's, not the licensee's, responsibility to carry out this action, this appendix does not provide guidance to licensees in this area.

To comply with 10 CFR 20.1403(d), and to ensure that the fundamental performance objectives of institutional controls are met, licensees who plan to release a site under restricted conditions must:

- Seek advice on whether the provisions for institutional controls will:
  - — provide reasonable assurance that annual doses will not exceed 0.25 mSv/yr (25 mrem/yr);
  - — be enforceable; and
  - — not impose undue burdens on the community;
- Seek advice from representatives of a broad cross-section of individuals and institutions in the community that may be affected by the decommissioning (affected parties);
- Provide an opportunity for a comprehensive, collective discussion on the issues;
- Provide a publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues; and
- Describe, in the decommissioning plan or LTP, how advice from the affected parties has been sought and incorporated, as appropriate, following analysis of that advice.

As required by 10 CFR 20.1403(d)(1), the advice to be sought is whether the institutional controls proposed by the licensee will:

- Provide reasonable assurance that the total effective dose equivalent from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 0.25 mSv/yr (25 mrem/yr);
- Be enforceable;
- Not impose undue burdens on the local community or other affected parties; and,
- Be backed by sufficient financial assurance for any necessary control and maintenance of the site by an independent third party.

The licensee should first identify the affected parties. According to 10 CFR 20.1403(d)(2), the licensee must provide for participation by representatives of a broad cross-section of community interests who may be affected by the decommissioning. Affected parties may include:

- Any State, local, or Federal government agency, other than the NRC, that has jurisdiction or responsibilities with respect to the site to be decommissioned;
- Local community, civic, labor, or environmental organizations with an interest in the decommissioning, and whose members would be affected by the decommissioning;

- Adjacent landowners whose properties abut the site or portions of the site to be released under restricted conditions; and/or
- Any Indian tribe or other indigenous people who have relevant treaty or statutory rights that may be affected by the decommissioning of the site.

The licensee should establish a method for seeking advice, from the affected parties, on the adequacy of the institutional controls and the sufficiency of financial assurance. It is desirable for the licensee to meet with the NRC staff to describe its intended methods for seeking advice from affected parties prior to beginning this activity in order to ensure that the proposed method will be acceptable to the NRC staff.

In obtaining input from affected parties, licensees should convene a site-specific advisory board (SSAB) (i.e., a group representing a broad cross-section of the community that may be affected by the decommissioning). If creation of an SSAB is not appropriate for a particular situation, the licensee may consider satisfying the requirements of 10 CFR 20.1403 by seeking advice directly from the affected parties, without the use of an SSAB.

In general, the NRC considers that convening an SSAB should be the starting point in providing for public involvement because an SSAB is the most effective way to ensure that the licensee considers the diversity of views in the community. Small group discussions can be a more effective mechanism than written comments or large public meetings for articulating the exact nature of community concerns, determining how much agreement or disagreement there is on a particular issue, and facilitating the development of acceptable solutions to issues. Also, the type of close interaction resulting from a small group discussion could help in developing a credible relationship with the community in which it is operating.

It is important to note that the SSAB does not have to be a new group formed specifically for the decommissioning. Any group that can perform the functions of an SSAB may be considered to be an SSAB. Thus, if an existing or established group in the community has enough participation by the affected parties and can effectively perform the functions of the SSAB, that group may be used by the licensee as the SSAB.

The use of an SSAB may not be appropriate in all situations, for example, if a broad cross-section of the community clearly has insufficient interest or wishes to defer its involvement to a State or local governing body. If the licensee does not plan to convene an SSAB, it is desirable for the licensee to meet with the NRC staff to justify why an SSAB is not being convened and to describe its intended method for obtaining public input to satisfy the performance objectives. Such a meeting should take place prior to beginning this effort in order to ensure the proposed method will be acceptable to the NRC.

Licensees should use the following guidance in establishing and convening an SSAB:

- The licensee should solicit members to serve on the SSAB. Membership should reflect the full range of the affected parties' interests by selecting representatives from the affected parties to present the views of the organization or interest that they represent. Government agencies and other organizations should be able to nominate their own representatives to the SSAB. Invited participants should be informed of the objectives of the SSAB. The SSAB normally consists of about 8 to 10 members;
- Members of the SSAB should agree to meet their responsibilities as a condition of membership. In general, NRC regulations require that the decommissioning plan be submitted within 12 months after notifying the NRC that the site will be decommissioned. The licensee is responsible for meeting this requirement. Therefore, the licensee is responsible for ensuring that the SSAB is meeting a schedule that will allow the licensee to submit the plan within the required time. If the board does not meet its responsibilities, the licensee should evaluate and discuss with the SSAB any problem and how to resolve it;
- The SSAB members should be selected as soon as practical after the licensee notifies the NRC of its intention to decommission and terminate the license;
- The licensee should provide reasonable administrative support for SSAB activities and access to licensee studies and analyses that are pertinent to the proposed decommissioning;
- To avoid the appearance of a conflict of interest, members of the SSAB usually are not paid by the licensee. However, reimbursement for expenses incurred is acceptable;
- The licensee should establish a schedule for the work of the SSAB that allows the licensee to obtain advice from the SSAB, incorporate the advice into the decommissioning plan or LTP as appropriate, and submit the decommissioning plan or LTP within the time required by NRC regulations. The schedule should include submittal of the SSAB's advice, allowing sufficient time for the licensee to analyze the advice and describe in the decommissioning plan or LTP how the advice was incorporated, as appropriate;
- The licensee should propose a charter and operating procedures for the SSAB's consideration. The charter and operating procedures should address the advice to be sought and the characteristics of an SSAB;
- The SSAB should:
  - — Select a chairperson;
  - — Adopt a charter and operating procedures;
  - — Work with the licensee to identify and obtain information needed in its evaluation process;
  - — Hold meetings open to the public, provide for a comprehensive, collective discussion of the issues, and allow the opportunity for public comment at the meetings;

  - — Respond to concerns and questions raised by the public, making the results publicly available;
  - — Provide advice to the licensee on the topics listed above and on any other topics the licensee wants discussed;
  - — To the extent feasible, abide by the schedule established by the licensee to meet NRC requirements; and
  - — Ensure that a publicly available summary of the results of all discussions, including descriptions of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues, is developed to support the meeting.

- SSAB meetings should be open to the public with adequate public notice (at least two weeks in advance) of the location, time, date, and agenda for the meetings. Consideration should be given to print, electronic, and web site notification methods. The licensee should inform the NRC of SSAB meetings and distribution of information made at SSAB meetings because these meetings and distributions may cause the public to contact the NRC; and
- A summary of the results of all collective discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues, should be made publicly available.

If a licensee determines that an SSAB is not appropriate or feasible and an SSAB is not convened, the licensee is still required by 10 CFR 20.1403(d) to seek advice from representatives of a broad cross-section of community interests, including governmental institutions with jurisdiction and responsibilities, that may be affected by the decommissioning (i.e., affected parties). The licensee must also conduct a comprehensive collective discussion of the issues. The method used for interacting directly with the public and seeking such public advice should have the following characteristics:

- The affected parties should be informed of the decommissioning and informed that their advice is being sought. The methods and efforts that can be used initially to inform the public can include, as appropriate for the specific site:
  - — Information in mass media, for example, articles, advertisements, and public service announcements in newspapers, television, and radio;
  - — Web sites or other related technologies;
  - — Flyers distributed in the neighborhood or mailings to individual residents close to the site;
  - — Letters or telephone contacts with government agencies and local community, civic, and labor organizations; or
  - — Presentations at public meetings.

- The licensee should clearly state, to the affected parties, the matters on which advice is being sought with sufficient clarity to obtain meaningful input.
- The initial information provided to interested affected parties should describe the decommissioning process, characterize in basic terms the nature and extent of residual radioactivity at the site, and provide pertinent information about the licensee's request for license termination under restricted conditions. Information should be provided early enough to allow sufficient time for review by the affected parties. The initial information and any subsequent long, complex studies should be provided at least 30 days before the meeting. Although there should be as much time provided as practical, it is acceptable for short simple supplemental information to be provided with very little time for review.
- The licensee should establish a method for receiving advice from the affected parties. There should always be a method to receive written comments. The licensee should also hold public meetings to obtain oral comments. There may also be a method to obtain comments electronically, such as by e-mail or through a web site. Comments received should be available for public inspection.
- The licensee should hold at least three public meetings for discussion of the issues. The licensee should inform the NRC of public meetings and the information distributed at the meetings, because these meetings and distributions may cause the public to contact the NRC.
- A summary of the results of all collective discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues, is to be made publicly available.

18 DECOMMISSIONING PLANS: MODIFICATIONS

As the radiological contamination at a facility is reduced, the potential doses to workers and the public from the residual radioactive material is also generally reduced. Therefore, in some cases, it may be appropriate to allow licensees to revise their decommissioning programs and procedures to address this reduced threat. If a licensee wishes to revise its program without prior NRC review and approval, the decommissioning program description needs to be a detailed description of how the licensee will review and re-evaluate its program as conditions at the facility change and, as appropriate, modify its procedures to meet the reduced risk. If the staff is satisfied with the licensee's methodology for changes to its programs and procedures, the NRC may approve a decommissioning plan that allows revisions to programs and procedures without prior NRC approval, subject to the following conditions:

a. The change does not conflict with requirements specifically stated in the license or impair the licensee's or responsible party's ability to meet all applicable NRC regulations;

b. There is no degradation in safety or environmental commitments addressed in the NRC-approved decommissioning plan;

c. There are no significant adverse effects on the quality of the work, the remediation objectives, or health and safety;

d. The change is consistent with the conclusions of actions analyzed in the Environmental Assessment, Environmental Impact Statement and Safety Evaluation Report developed for the decommissioning project; and

e. Licensees may not change programs and procedures related to dose modeling, final radiological surveys or restricted use/alternative criteria without prior NRC approval.

The purpose of the staff's review of the licensee's procedures for modifying its decommissioning program is to evaluate the licensee's or responsible party's description of its methodology to modify its programs and procedures as decommissioning progresses with the removal of the residual radioactive material from the facility. In addition, the staff's review should determine if the licensee can demonstrate that it can adequately evaluate, revise, and monitor any future revisions in its programs so as to ensure that the level of protection afforded by the revisions are commensurate with the potential risk from residual radioactive material remaining at the site and with the provisions of 10 CFR Parts 19 and 20.

Because modifying decommissioning programs/procedures could be applicable to any of the previous sections on decommissioning plan guidance, as well as the guidance in Volumes 2 and 3, a discussion of the minimum information that should be included in a decommissioning plan for these modifications is included here in lieu of in each section. In some instances, additional information may be required to support the modification of specific programs or procedures. NRC staff will need to work with licensees to identify this information and include it in the decommissioning plan for that licensee.

DECOMMISSIONING PLANS: MODIFICATIONS

The following information should be included in the licensee's description of how modifications to decommissioning programs/procedures will be managed:

- A description of how the licensee will evaluate the radiological conditions, including surface and soil contamination and determination of the potential doses to workers performing decommissioning activities and how the licensee will determine that the existing requirements are no longer necessary;
- A description of the method by which the licensee will use this information to develop the revised modifications to its program and how the licensee will compare and evaluate any revised procedures with the radiological conditions at the site;
- A demonstration that the modification and approval review process is as rigorous as the review and approval process for Radiation Work Permits, includes approval from the same level of licensee management as revisions to the RWP, as well as review by all appropriate internal decommissioning organizations (including, but not limited to, the health and safety organization and the remediation organization). The review process will include an assessment relative to items a-e, above;
- A description of how the various decommissioning organizations will monitor the implementation of the modifications to ensure that all personnel are following the revised procedures;
- A description of the immediate and long-term actions that will be taken in the event the revised procedures are found not to provide the same level of protection afforded by the existing procedures;
- A description of the periodic review of the procedures to ensure that the revisions are current and continue to be appropriate;
- A description of how the licensee will document each change to the procedures, and where it will be stored onsite, so it will be available for periodic review by NRC inspectors. This documentation should include: a description of each change, the technical justification for each change, when it became effective, how it was implemented, and who in management approved the change; and
- A commitment to report all changes to NRC within 30 days of the change.

The staff will ensure that the licensee's proposed methodology:

- Evaluates the radiological conditions against the existing programs/procedures prior to developing the proposed programs/procedures;
- Develops the proposed modifications to the programs/procedures such that the level of protection is commensurate with the risk from the residual radioactive material at the facility;

- Obtains the appropriate level of review and approval within the individual decommissioning unit and overall decommissioning management organization, including an assessment of the change relative to items a-e, above;
- Monitors the implementation of the modifications to the programs/procedures;
- Includes provisions to respond to situations where the revised procedures are found to be inadequate;
- Periodically reviews the revised programs/procedures to ensure that the revisions are current and continue to be appropriate;
- Properly documents the revisions to the programs/procedures and their implementation; and
- Includes a commitment to report the changes to NRC within 30 days of the change. This report must include a description of the changes, a summary of the safety and environmental evaluations performed for each change, and the revised decommissioning plan pages reflecting the changes.

A licensee may replace a Radiation Safety Officer (RSO) without prior approval from NRC, as long as: 1) the new RSO meets the criteria listed in Section 17.2.1 of this guidance; 2) the licensee or responsible party maintains the documentation that the individual meets the criteria listed in Section 17.2.1 of this guidance and makes it available during inspections; and, 3) the licensee informs NRC, in writing, within 30 days of the date of the change. The procedure for replacing the RSO should be included in the licensee's description of how modifications to decommissioning programs/procedures will be managed.

Appendix A

U.S. Nuclear Regulatory Commission Form 314

NRC FORM 314 (MM-YYYY)
10 CFR 30.36(c)(1)(iv)
10 CFR 40.42(c)(1)(iv)
10 CFR 70.38(c)(1)(iv)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0028 EXPIRES: MM/DD/YYYY

Estimated burden per response to comply with this mandatory information collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility has been cleared of radioactive material before the facility is released for unrestricted use. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0028), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

CERTIFICATE OF DISPOSITION OF MATERIALS

INSTRUCTIONS: ALL ITEMS MUST BE COMPLETED – PRINT OR TYPE
SEND THE COMPLETED CERTIFICATE TO THE NRC OFFICE SPECIFIED ON THE REVERSE

LICENSEE NAME AND ADDRESS	LICENSE NUMBER
	LICENSE EXPIRATION DATE

A. MATERIALS DATA *(Check one and complete as necessary)*

THE LICENSEE OR ANY INDIVIDUAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE LICENSEE CERTIFIES THAT:
(Check and/or complete the appropriate item(s) below.)

☐ 1. NO MATERIALS HAVE EVER BEEN PROCURED OR POSSESSED BY THE LICENSEE UNDER THIS LICENSE.

OR

☐ 2. ALL ACTIVITIES AUTHORIZED BY THE LICENSE HAVE CEASED AND ALL MATERIALS PROCURED AND/OR POSSESSED BY THE LICENSEE UNDER THE LICENSE NUMBER CITED ABOVE HAVE BEEN DISPOSED OF IN THE FOLLOWING MANNER. *(If additional space is needed, use the reverse side or provide attachments.)*

Describe specific material transfer actions and, if there were radioactive wastes generated in terminating this license, the disposal actions including the disposition of low-level radioactive waste, mixed waste, Greater-than-Class-C waste, and sealed sources, if applicable.

For transfers, specify the date of the transfer, the name of the licensed recipient, and the recipient's NRC license number or Agreement State name and license number.

If materials were disposed of directly by the licensee rather than transferred to another licensee, licensed disposal site or waste contractor, describe the specific disposal procedures *(e.g., decay in storage)*.

B. OTHER DATA

☐ 1. OUR LICENSE HAS NOT YET EXPIRED; PLEASE TERMINATE IT.

2. A RADIATION SURVEY WAS CONDUCTED BY THE LICENSEE TO CONFIRM THE ABSENCE OF LICENSED RADIOACTIVE MATERIALS AND TO DETERMINE WHETHER ANY CONTAMINATION REMAINS ON THE PREMISES COVERED BY THE LICENSE. *(Check one)*

- ☐ NO *(Attach explanation)*
- ☐ YES, THE RESULTS *(Check one)*
  - ☐ ARE ATTACHED, or
  - ☐ WERE FORWARDED TO NRC ON *(Date)*

3. THE PERSON TO BE CONTACTED REGARDING THE INFORMATION PROVIDED ON THIS FORM	NAME	TELEPHONE NUMBER *(Include Area Code)*

4. MAIL ALL FUTURE CORRESPONDENCE REGARDING THIS LICENSE TO

CERTIFYING OFFICIAL

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT

PRINTED NAME AND TITLE	SIGNATURE	DATE

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTIONS.

NRC FORM 314 (MM-YYYY) PRINTED ON RECYCLED PAPER

Appendix B

Screening Values

Table B.1 Acceptable License Termination Screening Values of Common Radionuclides for Building-Surface Contamination

Radionuclide	Symbol	Acceptable Screening Levels[1] for Unrestricted Release (dpm/100 cm^2)[2]
Hydrogen-3 (Tritium)	3H	1.2E+08
Carbon-14	14C	3.7E+06
Sodium-22	22Na	9.5E+03
Sulfur -35	35S	1.3E+07
Chlorine-36	36Cl	5.0E+05
Manganese-54	54Mn	3.2E+04
Iron-55	55Fe	4.5E+06
Cobalt-60	60Co	7.1E+03
Nickel-63	63Ni	1.8E+06
Strontium-90	90Sr	8.7E+03
Technetium-99	99Tc	1.3E+06
Iodine-129	129I	3.5E+04
Cesium-137	137Cs	2.8E+04
Iridium-192	192Ir	7.4E+04

1 Screening levels are based on the assumption that the fraction of removable surface contamination is equal to 0.1. For cases when the fraction of removable contamination is undetermined or higher than 0.1, users may assume, for screening purposes, that 100 percent of surface contamination is removable, and therefore the screening levels should be decreased by a factor of 10. Alternatively, users having site-specific data on the fraction of removable contamination, based on site-specific resuspension factors (e.g., within 10 percent to 100 percent range), may calculate site-specific screening levels using DandD Version 2.

2 Units are disintegrations per minute (dpm) per 100 square centimeters (dpm/100 cm2). One dpm is equivalent to 0.0167 becquerel (Bq). Therefore, to convert to units of Bq/m2, multiply each value by 1.67. The screening values represent surface concentrations of individual radionuclides that would be deemed in compliance with the 0.25 mSv/yr (25 mrem/yr) unrestricted release dose limit in 10 CFR 20.1402. For radionuclides in a mixture, the "sum of fractions" rule applies; see Part 20, Appendix B, Note 4.

Table B.2 Interim Screening Values[1] (pCi/g) of Common Radionuclides for Soil Surface Contamination Levels

Radionuclide	Symbol	Surface Soil Screening Values[2]
Hydrogen-3	3H	1.1 E+02
Carbon-14	14C	1.2 E+01
Sodium-22	22Na	4.3 E+00
Sulfur-35	35S	2.7 E+02
Chlorine-36	36Cl	3.6 E-01
Calcium-45	45Ca	5.7 E+01
Scandium-46	46Sc	1.5 E+01
Manganese-54	54Mn	1.5 E+01
Iron-55	55Fe	1.0 E+04
Cobalt-57	57Co	1.5 E+02
Cobalt-60	60Co	3.8 E+00
Nickel-59	59Ni	5.5 E+03
Nickel-63	63Ni	2.1 E+03
Strontium-90	90Sr	1.7 E+00
Niobium-94	94Nb	5.8 E+00
Technetium-99	99Tc	1.9 E+01
Iodine-129	129I	5.0 E-01
Cesium-134	134Cs	5.7 E+00
Cesium-137	137Cs	1.1 E+01
Europium-152	152Eu	8.7 E+00
Europium-154	154Eu	8.0 E+00
Iridium-192	192Ir	4.1 E+01
Lead-210	210Pb	9.0 E-01
Radium-226	226Ra	7.0 E-01
Radium-226 + C3	226Ra + C	6.0 E-01
Actinium-227	227Ac	5.0 E-01

Table B.2 Interim Screening Values[1] (pCi/g) of Common Radionuclides for Soil Surface Contamination Levels (continued)

Radionuclide	Symbol	Surface Soil Screening Values[2]
Actinium-227 + C	227Ac + C	5.0 E-01
Thorium-228	228Th	4.7 E+00
Thorium-228 + C[3]	228Th + C	4.7 E+00
Thorium-230	230Th	1.8 E+00
Thorium-230 + C	230Th + C	6.0 E-01
Thorium-232	232Th	1.1 E+00
Thorium-232 + C	232Th + C	1.1 E+00
Protactinium-231	231Pa	3.0 E-01
Protactinium-231 + C	231Pa + C	3.0 E-01
Uranium-234	234U	1.3 E+01
Uranium-235	235U	8.0 E+00
Uranium-235 + C	235U + C	2.9 E-01
Uranium-238	238U	1.4 E+01
Uranium-238 + C	238U + C	5.0 E-01
Plutonium-238	238Pu	2.5 E+00
Plutonium-239	239Pu	2.3 E+00
Plutonium-241	241Pu	7.2 E+01
Americium-241	241Am	2.1 E+00
Curium-242	242Cm	1.6 E+02
Curium-243	243Cm	3.2 E+00

1 These values represent surficial surface soil concentrations of individual radionuclides that would be deemed in compliance with the 25 mrem/y (0.25 mSv/y) unrestricted release dose limit in 10 CFR 20.1402. For radionuclides in a mixture, the "sum of fractions" rule applies; see Part 20, Appendix B, Note 4.

2 Screening values are in units of (pCi/g) equivalent to 25 mrem/y (0.25 mSv/y). To convert from pCi/g to units of becquerel per kilogram (Bq/kg), divide each value by 0.027. These values were derived using DandD screening methodology (NUREG/CR-5512, Volume 3). They were derived based on selection of the 90th percentile of the output dose distribution *for each specific radionuclide* (or radionuclide with the specific decay chain). Behavioral parameters were set at the mean of the distribution of the assumed critical

group. The metabolic parameters were set at "Standard Man" or at the mean of the distribution for an average man.

3 "Plus Chain (+C) " indicates a value for a radionuclide with its decay progeny present in equilibrium. The values are concentrations of the parent radionuclide, but account for contributions from the complete chain of progeny in equilibrium with the parent radionuclide (NUREG/CR-5512 Volumes 1, 2, and 3).

B.1 DERIVED CONCENTRATION GUIDELINE LEVELS (DCGLs)

The $DCGL_W$ is the concentration of a radionuclide which, if distributed uniformly across a survey unit, would result in an estimated dose equal to the applicable dose limit. The $DCGL_{EMC}$ is the concentration of a radionuclide which, if distributed uniformly across a smaller limited area within a survey unit, would result in an estimated dose equal to the applicable dose limit.

Two approaches are possible for developing DCGLs: screening and site-specific analysis. Site-specific DCGLs are discussed in Volume 2 of this guidance.

B.2 SCREENING DCGLs

NRC has published radionuclide-specific screening DCGLs in the *Federal Register* for residual building-surface radioactivity and residual surface-soil radioactivity. The DCGLs in the *Federal Register* are $DCGL_W$s, in that they are intended to be concentrations which, if distributed uniformly across a building or soil surface, would individually result in a dose equal to the dose criterion. The licensee may adopt these screening DCGLs without additional dose modeling, if the site is suitable for screening analysis (see Chapter 2 of this document). Alternatively, the licensee may use the DandD computer code to develop screening DCGLs. The licensee would use the code to determine the dose attributable to a unit concentration of a radionuclide and scale the result to determine the DCGL for the radionuclide. Either of these methods for identifying screening DCGLs requires only that: (1) the licensee identify the radionuclides of concern for the site; and (2) the licensee demonstrate that the source term and model screening assumptions are satisfied. Thus, this approach requires essentially no source-term abstraction. The screening process and the source-term screening assumptions are discussed in detail in Chapter 2 of this document.

Before designing a final status survey, the licensee will likely need to identify a $DCGL_{EMC}$ for each radionuclide over a range of smaller limited areas. Since the conservative screening models of DandD are not appropriate for modeling small limited areas of contamination, use of the DandD screening code would likely result in $DCGL_{EMC}$ values that are overly conservative. Therefore, licensees will likely use other codes or approaches to develop $DCGL_{EMC}$ values. These would be considered "site-specific" analyses in that they would not be using the DandD code with the default screening values.

B.3 SCREENING ANALYSES

In the case of screening, the decisions involved in identifying the appropriate scenario and critical group, with their corresponding exposure pathways, have already been made. Scenario descriptions acceptable to NRC for use in generic screening are developed and contained in NUREG/CR-5512, Volume 1. It and NUREG-1549 provide the rationale for applicability of the generic scenarios, critical groups, and pathways at a site; the rationale and assumptions for

scenarios and pathways included (and excluded); and the associated parameter values or ranges. A summary of the scenarios is in Table B.3. The latest version of the DandD computer code should contain the latest default data values for the critical group's habits and characteristics.

Table B.3 Pathways for Generic Scenarios

BUILDING OCCUPANCY SCENARIO

This scenario accounts for exposure to fixed and removable residual radioactivity on the walls, floor, and ceiling of a decommissioned facility. It assumes that the building will be used for commercial or light industrial activities (e.g., an office building or warehouse).

Pathways include:

- External exposure from building surfaces;
- Inhalation of (re)suspended removable residual radioactivity; and
- Inadvertent ingestion of removable residual radioactivity.

RESIDENT FARMER SCENARIO

This scenario accounts for exposure involving residual radioactivity that is initially in the surficial soil. A farmer moves onto the site and grows some of his or her diet and uses water tapped from the aquifer under the site.

Pathways include:

- External exposure from soil;
- Inhalation to (re)suspended soil;
- Ingestion of soil;
- Ingestion of drinking water from aquifer;
- Ingestion of plant products grown in contaminated soil and using aquifer to supply irrigation needs;
- Ingestion of animal products grown onsite (using feed and water derived from potentially contaminated sources); and
- Ingestion of fish from a pond filled with water from the aquifer.

B.4 SCREENING

An acceptable dose assessment analysis need not incorporate all the physical, chemical, and biological processes at the site. The scope of the analysis, and accordingly the level of sophistication needed in the conceptual model, should be based on the overall objective of the analysis. A performance assessment conceptual model can be simple if it still provides satisfactory confidence in site performance. For an initial screening analysis, little may be known about the site from which to develop a conceptual model. Computer codes used for screening analyses are generally intended to provide a generic and conservative representation of processes and conditions expected for a wide array of sites. Accordingly, the generic conceptual model in such codes may not provide a close representation of conditions and processes at a specific site. Such a generic representation is still acceptable as long as it provides a conservative assessment of the performance of the site.

The DandD code has two default land-use scenarios: a building occupancy and a resident farmer scenario. The building occupancy scenario is intended to account for exposure to both fixed and removable residual radioactive contamination within a building. Exposure pathways included in the building occupancy scenario include: external exposure to penetrating radiation, inhalation of resuspended surface contamination, and inadvertent ingestion of surface contamination. The resident farmer scenario is intended to account for exposure to residual radioactive contamination in soil. Exposure pathways included in the resident farmer scenario include: external exposure to penetrating radiation; inhalation exposure to resuspended soil; ingestion of soil; and ingestion of contaminated drinking water, plant products, animal products, and fish. The predefined conceptual models within DandD are geared at assessing releases of radioactivity, transport to, and exposure along, these pathways. Technical details of the conceptual model for applying the screening criteria are contained in Volume 2 of this guidance.

In general, the conceptual models within DandD are expected to provide a conservative representation of site features and conditions. Therefore, for screening analyses, NRC will consider such generic conceptual models to be acceptable provided it is acceptable to assume that the initial radioactivity is contained in the top layer (building surface or soil) and the remainder of the unsaturated zone and ground water are initially free of contamination. In using DandD for site-specific analyses, it is important to ensure that a more realistic representation of the site that is consistent with what is known about the site would not lead to higher doses. Some site features and conditions that may be incompatible with the generic conceptual models within DandD are listed in Table B.4.

Table B.4 Site Features and Conditions That May Be Incompatible with Those Assumed in DandD

SITE FEATURES
• Sites with highly heterogeneous radioactivity;
• Sites with wastes other than soils (e.g., slags and equipment);
• Sites that have multiple source areas;
• Sites that have radionuclides that may generate gases (e.g., 3H and 14C);
• Sites that have contaminated zones thicker than 15 cm (6 in.);
• Sites with chemicals or a chemical environment that could facilitate radionuclide releases (e.g., colloids);
• Sites with soils that have preferential flow conditions that could lead to enhanced infiltration;
• Sites with a perched water table, surface ponding, or no unsaturated zone;
• Sites where the groundwater discharges to springs or surface seeps;
• Sites with existing ground water contamination;
• Sites where the potential ground water use is not expected to be located immediately below the contaminated zone;
• Sites with significant transient flow conditions;
• Sites with significant heterogeneity in subsurface properties;
• Sites with fractured or karst formations;
• Sites where the ground water dilution would be less than 2000 m3 (70,000 ft3);
• Sites where overland transport of contaminants is of potential concern; and,
• Sites with stacks or other features that could transport radionuclides off the site at a higher concentration than onsite.

For any site where it is known that one or more of these conditions or features are present, the licensee should provide an appropriate rationale on why the use of the DandD will not result in an underestimation of potential doses at the specific site.

As an example, it may be possible to demonstrate the acceptable use of DandD for analyzing sites that contain 3H and 14C, although both radionuclides may occur as a gas. The following approach can be used to demonstrate the acceptable use of DandD for analyzing sites that contain either 3H or 14C (Haaker, 1999): (1) determine the area of the contaminated zone;

(2) run DandD for the site with only 3H or 14C; (3) read the associated activity ratio factor for the given area from Figure C5.4 of NUREG-1727; and (4) estimate the potential missed dose by multiplying the inhalation dose calculated from DandD by the activity ratio factor.

B.5 SCREENING ANALYSIS VERSUS SITE-SPECIFIC ANALYSES

A licensee may perform a screening analysis to demonstrate compliance with the radiological criteria for license termination specified in Part 20, Subpart E. The screening analysis described in Chapter 2 of this document requires that the licensee either: (1) refer to radionuclide-specific screening values listed in the *Federal Register* (63 FR 64132 and 64 FR 68395); or (2) use the DandD computer code. A licensee pursuing the screening option may find that implementation of the DandD code is necessary if radionuclides not included in the *Federal Register* listings must be considered.

The staff should ensure that a licensee performing a screening analysis using the DandD code limit parameter modification to identifying radionuclides of interest and specifying the radionuclide concentrations. The staff should verify that the licensee has not modified any other input parameter values. The output file generated by DandD identifies all parameter values that have been modified. Modifying any input parameter value from a default value will constitute a site-specific analysis. The default "screening" input parameter data for DandD are provided for reference in Section 7.3. Modification of the default parameter set for site-specific analysis is discussed in Section 7.4.

B.6 DEFAULT VALUES VERSUS SITE-SPECIFIC VALUES

DandD and many other computer codes used for dose assessment provide the user with default values for the input parameters. Often, the user only needs to select radionuclides to execute the code. This allows the user to quickly obtain results with very little time expended in developing input data sets.

This has several obvious and significant drawbacks. A typical user of a computer code gains an understanding and appreciation of the conceptual and numerical modeling approaches of a code through the process of developing data input sets. If default parameter values are not available, the user must address each and every input parameter, determine what characteristics of the modeled system the parameter represents and how the parameter is used in the code, and develop a value for the input parameter that is reasonable and appropriate for both the system being modeled and for the conceptual and numerical models implemented by the code. The availability of default values for input parameters could result in the user performing a "site-specific" analysis to modify values for parameters for which site data are readily available and accept the default values as appropriate for the remaining parameters, without an adequate understanding of the parameters and the implications of accepting the default values.

On the other hand, using default values that have been reviewed by the NRC staff and considered appropriate for dose assessments supporting decommissioning: (1) promotes consistency among analyses (where appropriate); (2) focuses licensee and NRC staff resources on parameters considered significant with respect to the dose assessment results; and (3) facilitates review of the licensee's dose assessment by the NRC staff.

To benefit from the advantages while minimizing the disadvantages, the staff should ensure that the licensee employs default parameter values in a manner consistent with the guidance provided in this Appendix and Volume 2.

Appendix C

Notification Checklist

C.1 CHECKLIST OF ACTIONS TO BE COMPLETED BY NRC STAFF UPON RECEIPT OF LICENSED FACILITIES NOTIFICATION OF INTENT TO CEASE LICENSED OPERATIONS

Facility Information

Facility Name: _____

Address: _____

License No.: _____

Docket No.: _____

Project Manager: _____

Date of Notification: _____

❑ Decommissioning Group determined.

—Refer to Chapters 8 through 14 of the Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process*.

❑ Licensee has complied with NRC's notification requirements.

—Refer to Chapter 5 of the Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process* and 10 CFR 30.36(d), 40.42(d), 70.38(d), or 72.54(d).

❑ Technical Assistance Control (TAC) number for the decommissioning action assigned, if warranted.

❑ Notification is placed in the licensee's docket file and in ADAMS.

❑ Written acknowledgment of the notification sent to licensee.

❑ Decommissioning of the facility, including the subjects outlined below, discussed with the licensee and documentation placed in docket.

—The decommissioning process – refer to Chapter 7 of the of Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process*.

—For Groups 1 and 2, the acceptable methods for demonstrating the suitability of the site for unrestricted use described in Chapters 8 and 9 of the Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process*.

—For Groups 3 through 7, the information to be included in decommissioning plans provided as described in Chapters 10 through 14 of the Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process*.

—Any additional information NRC will require to support the licensee's request to terminate the license.

—The NRC requirements for providing the public with the opportunity to observe meetings between the staff and licensees, as well as any potential hearing or public meeting requirements applicable to the decommissioning of the facility.

—Decommissioning schedule – refer to Chapter 5 of the Consolidated NMSS Decommissioning Guidance, Volume 1, *Decommissioning Process* and NRC's regulations in 10 CFR 30.36(d-h), 40.42(d-h), 70.38(d-h), or 72.54(d-j).

- ❑ Contact made with other State or Federal regulatory authorities or other groups that have an interest in the decommissioning of the facility.

- ❑ External distribution list for documents pertaining to the decommissioning developed.

- ❑ Need to notice the licensee's proposed action in the FR determined and a notice prepared in accordance with 10 CFR Parts 2.102-2.108, as appropriate.

C.2 CRITERIA FOR DETERMINING DECOMMISSIONING GROUPS

The types of licensees for each of the seven Groups is shown below:

Group 1 Licensees

- ❑ Licensees that possessed and used only sealed sources and whose most recent leak tests are current and demonstrate that the sealed sources did not leak while in the licensee's possession.

- ❑ Licensees that possessed and used relatively short-lived radioactive material (i.e., $T_{1/2}$ less than or equal to 120 days) in an unsealed form, the maximum activity authorized under the license has decayed to less than the quantity specified in 10 CFR Part 20, Appendix C, and the licensee's survey performed in accordance with 10 CFR Part 30.36 does not identify any residual levels of radiological contamination greater than decommissioning screening criteria.

- ❑ Licensees decommissioning under Group 1 would not be required to develop a DP.

Group 2 Licensees

- ❑ Licensees that can demonstrate compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use) using the screening methodology.
- ❑ Licensees that possess and use only sealed sources that cannot demonstrate current leak tight integrity.
- ❑ Licensees who only possess radioactive material with half-lives of less than 120 days but fail the Group 1 criteria.
- ❑ Licensees decommissioning under Group 2 would not be required to develop a DP.

Group 3 Licensees

- ❑ Same provisions as for Group 2, except licensee must submit a simplified DP.

Group 4 Licensees

- ❑ Facilities decommissioned under Group 4 used licensed material in a manner that resulted in its release into the environment, activated adjacent materials, or resulted in persistent contamination of work areas, but did not result in contamination of ground water.
- ❑ These licensees cannot meet, or chooses not to use, screening criteria so they must demonstrate that any residual radioactive material remaining at their site is within the levels specified in NRC's criteria for unrestricted use by applying a comprehensive dose analysis.
- ❑ DP is required for Group 4.

Group 5 Licensees

- ❑ Facilities that decommission under Group 5 have used licensed material in a manner that resulted in its release into the environment, activated adjacent materials or resulted in persistent contamination of work areas, and resulted in contamination of ground water.
- ❑ Group 5 decommissioning includes licensees that intend to decommission their facilities in accordance with the NRC's criteria for unrestricted use as described in 10 CFR 20.1402.
- ❑ DP is required.

Group 6 Licensees

- Facilities that decommission under Group 6 have used licensed material in a manner that resulted in releases to the environment, activated adjacent materials, or resulted in persistent contamination of work areas or ground water.
- Group 6 decommissioning includes licensees that intend to decommission its facility in accordance with the NRC's criteria for restricted use as described in 10 CFR 20.1403.
- DP is required.

Group 7 Licensees

- Facilities that have residual radiological contamination present in building surfaces, soils, and possibly ground water.
- These licensees intend to decommission their facilities such that residual radioactive material remaining at their site is in excess of the levels specified in NRC's criteria for unrestricted use.
- The licensees will apply site-specific criteria in a comprehensive dose analysis in accordance with alternate criteria for license termination (10 CFR 20.1404).
- A site decommissioning plan that identifies the land use, exposure pathways, institutional controls, and critical group for the dose analysis is required.
- These sites require extensive NRC review and are handled on a case-by-case basis with license termination specifically approved by a vote of the NRC Commissioners.

Appendix D

DP Evaluation Checklist

D.1 ROADMAP GUIDELINE OF DP CHECKLIST

Introduction

The following table maps the application of the Decommissioning Plan Checklist to the various decommissioning groups. In general, larger group numbers require more information in the DP. The applicable boxes are color/shade-coded and contain a number which indicates the relative amount of information normally expected in each DP section.

Due to the diverse conditions found at decommissioning sites, even when categorized by group, it is not useful to attempt to indicate the expected length of each section of the DP. Additionally, any such estimate would necessarily make assumptions about the brevity and style of the DP authors. Therefore, a qualitative approach is taken, as described below. For complex sites, the actual DP roadmap should be developed through coordination with the NRC, using this Roadmap Guideline and DP checklist.

Qualitative Approach

The first qualifier is the site group determination. The licensee's proposed group selection is confirmed by NRC during document reviews. The group determination provides broad expectation of the content and detail needed in a DP. The table below provides the broad expectation.

In order to establish site-specific DP content expectations, the licensee should initiate a historical site assessment. This preliminary assessment should be of sufficient depth and quality to identify:

- Potential, likely, and known sources of radioactive material and contamination, within the existing or historical site boundaries,
- Any current or historical site conditions, operations, facilities, or improvements that could result in accumulation or migration of contaminants, and
- Any potential threat to human health or the environment.

The level of detail must be sufficient to allow NRC staff to review the data and independently confirm the licensee's conclusions. The amount of information and data required to meet this burden will vary significantly from site to site, based on the complexity of the site history, site contamination, and the associated risks to human health and the environment.

The level of detail required for the remaining required portions of a DP (program organization, decommissioning procedures, inspections, surveys, dose calculations, et. al.) must be sufficient to address the concerns raised in the historical site assessment. The burden is to ensure that the

information about contaminants, their potential locations, and public health and safety concerns contained in the site assessment are addressed, and the licensee's programs, methods and conclusions are able to be independently verified by NRC staff. Additionally, in cases where the historical site assessment does not provide a clear understanding of site conditions, the other elements of the DP demonstrate how the licensee will fill in the information gaps. The integrated result should provide a robust, confirmable understanding of what is at the site, how it will be remediated, and how the site cleanup will be verified safely. For complex sites, establishing the qualitative standard will require prior coordination between the licensee and NRC staff. The first step for a complex decommissioning site is to meet with the NRC staff and establish the scope and contents anticipated in the DP.

Table D.1 reflects that site conditions for simpler sites do not require as detailed information to support NRC analysis. The table is to be used as a guide, with the Appendix D.2 DP Checklist, to assist licensee and NRC staff in developing the expected DP contents and scope at the beginning of the decommissioning process. For the blocks labeled with 1's, only a minimal amount of information is normally expected; this information is usually in existing documentation. For blocks marked with 2's, additional information would normally be needed to allow NRC staff to complete their independent assessment - some specific data and short analysis may be required. For blocks marked with 3's, a complete discussion is needed to explain the topic–significant data and analysis may be required. Such information is obtained through detailed site characterization and planning for remediation.

For Decommissioning Groups 1 and 2, the basic qualitative approach for required information is the same, but a formal DP is not required. A list of the information required for Groups 1 and 2 is provided in Chapters 8 and 9, respectively.

Table D.1 Application of Checklist to Decommissioning Groups

Checklist Sect. / Group	3	4	5	6	7
EXECUTIVE SUMMARY	*1*	*1*	*2*	*3*	*3*
FACILITY OPERATING HISTORY					
License Number/Status/Authorized Activities	*1*	*1*	*2*	*3*	*3*
License History	*1*	*1*	*2*	*3*	*3*
Previous Decommissioning Activities	*1*	*1*	*2*	*3*	*3*
Spills	*1*	*1*	*2*	*3*	*3*
Prior On-Site Burials	*1*	*1*	*2*	*3*	*3*

Table D.1 Application of Checklist to Decommissioning Groups (continued)

Checklist Sect. / Group	3	4	5	6	7
FACILITY DESCRIPTION					
Site Location and Description	*1*	*2*	*2*	*3*	*3*
Population Distribution	*1*	*1*	*2*	*3*	*3*
Current/Future Land Use	*1*	*1*	*2*	*3*	*3*
Metrology and Climatology	*1*	*1*	*2*	*3*	*3*
Geology and Seismology	*1*	*1*	*3*	*3*	*3*
Surface Water Hydrology	*1*	*1*	*3*	*3*	*3*
Ground Water Hydrology	*1*	*1*	*3*	*3*	*3*
Natural Resources	*1*	*2*	*3*	*3*	*3*
RADIOLOGICAL STATUS OF FACILITY					
Contaminated Structures	*2*	*2*	*2*	*3*	*3*
Contaminated Systems and Equipment	*2*	*2*	*2*	*3*	*3*
Surface Soil Contamination	*1*	*1*	*3*	*3*	*3*
Subsurface Soil Contamination	*N/A*	*N/A*	*3*	*3*	*3*
Surface Water	*1*	*1*	*3*	*3*	*3*
Ground water	*1*	*1*	*3*	*3*	*3*

Table D.1 Application of Checklist to Decommissioning Groups (continued)

Checklist Sect. / Group	3	4	5	6	7
DOSE MODELING					
Unrestricted Release Using Screening Criteria	2	3	N/A	N/A	N/A
Unrestricted release using screening criteria for building surface residual radioactivity:	2	3	N/A	N/A	N/A
Unrestricted release using screening criteria for surface soil residual radioactivity:	2	3	N/A	N/A	N/A
Unrestricted Release Using Site-Specific Information	N/A	N/A	3	N/A	N/A
Restricted Release Using Site-Specific Information	N/A	N/A	N/A	3	3
ALARA ANALYSIS	1	1	2	3	3
PLANNED DECOMMISSIONING ACTIVITIES					
Contaminated Structures	1	2	2	3	3
Contaminated Systems and Equipment	1	2	2	3	3
Soil	1	2	3	3	3
Surface and Ground Water	N/A	N/A	2	3	3
Schedules	1	2	2	3	3
PROJECT MANAGEMENT AND ORGANIZATION					
Decommissioning Management Organization	1	1	2	3	3
Decommissioning Task Management	1	1	2	3	3
Decommissioning Management Positions and Qualifications	1	1	2	3	3
Radiation Safety Officer	1	1	2	3	3
Training	1	1	2	3	3
Contractor Support	1	1	2	3	3

Table D.1 Application of Checklist to Decommissioning Groups (continued)

Checklist Sect. / Group	3	4	5	6	7
HEALTH AND SAFETY PROGRAM DURING DECOMMISSIONING					
Radiation Safety Controls and Monitoring for Workers	2	2	2	3	3
Air Sampling Program	2	2	2	3	3
Respiratory Protection Program	2	2	2	3	3
Internal Exposure Determination	2	2	2	3	3
External Exposure Determination	2	2	2	3	3
Summation of Internal and External Exposures	2	2	2	3	3
Contamination Control Program	2	2	2	3	3
Instrumentation Program	2	3	3	3	3
Nuclear Criticality Safety (if applicable)	2/3	2/3	2/3	2/3	2/3
Health Physics Audits, Inspections, and Recordkeeping Program	2	2	2	3	3
ENVIRONMENTAL MONITORING AND CONTROL PROGRAM					
Environmental ALARA Evaluation Program	1	1	2	3	3
Effluent Monitoring Program	1	1	2	3	3
Effluent Control Program	1	1	2	3	3
RADIOACTIVE WASTE MANAGEMENT PROGRAM					
Solid Radwaste	1	2	2	3	3
Liquid Radwaste	1	2	2	3	3
Mixed Waste	1	2	2	3	3

Table D.1 Application of Checklist to Decommissioning Groups (continued)

Checklist Sect. / Group	3	4	5	6	7
QUALITY ASSURANCE PROGRAM					
Organization	1	2	2	3	3
Quality Assurance Program	1	2	2	3	3
Document Control	1	2	2	3	3
Control of Measuring and Test Equipment	1	2	2	3	3
Corrective Action	1	2	2	3	3
Quality Assurance Records	1	2	2	3	3
Audits and Surveillances	1	2	2	3	3
FACILITY RADIATION SURVEYS					
Release Criteria	1	2	2	3	3
Characterization Surveys	1	2	2	3	3
In-Process Surveys	1	2	2	3	3
Final Status Survey Design	1	2	2	3	3
Final Status Survey Report	1	2	2	3	3
FINANCIAL ASSURANCE					
Cost Estimate	1	2	2	3	3
Certification Statement	1	2	2	3	3
Financial Mechanism	1	2	2	3	3

Table D.1 Application of Checklist to Decommissioning Groups (continued)

Checklist Sect. / Group	3	4	5	6	7
RESTRICTED USE/ALTERNATE CRITERIA					
Restricted Use	*N/A*	*N/A*	*N/A*	*3*	*3*
Eligibility Demonstration	*N/A*	*N/A*	*N/A*	*3*	*3*
Institutional Controls	*N/A*	*N/A*	*N/A*	*3*	*3*
Site Maintenance and Financial Assurance	*N/A*	*N/A*	*N/A*	*3*	*3*
Obtaining Public Advice	*N/A*	*N/A*	*N/A*	*3*	*3*
Dose Modeling and ALARA Demonstration	*N/A*	*N/A*	*N/A*	*3*	*3*
Alternate Criteria	*N/A*	*N/A*	*N/A*	*N/A*	*3*

D.2 DP CHECKLIST

Licensee Name: _____

License Number: _____ Docket Number: _____

Facility: _____

Decommissioning Plan Dated/Version: _____

For the acceptance review, NRC staff will use this checklist to review the decommissioning plan without assessing the technical accuracy or completeness of the information contained therein. The technical review assesses the technical adequacy and completeness of the information.

Staff should use the checklist first during the initial meeting with the licensee to discuss the scope and content of the decommissioning plan. In most cases, licensees will not be required to submit all of the information in this checklist. The staff, in conjunction with the licensee, should determine what information should be submitted for the site, based on the uses of radioactive material at the site, the extent and types of radioactive material contamination, the manner in which the licensee intends to decommissioning the facility, and other factors affecting the potential for increased risk to the public or workers from the decommissioning operations. This information should be documented by modifying the acceptance review checklist. Copies of the modified checklist should be provided to the licensee and maintained by the NRC Project Manager. When the decommissioning plan is submitted, the Project Manager should use the modified checklist to perform the acceptance review.

During the acceptance review, the staff will review the decommissioning plan table of contents and the individual decommissioning plan chapters or sections to ensure that the licensee has included this information in the decommissioning plan. In addition, the staff may use Chapter 16 of this guidance to determine if the level of detail of the information appears to be adequate for the staff to perform a detailed technical review. Staff should recognize that failure to supply an item included in the checklist does not necessarily constitute grounds for rejecting the decommissioning plan. Rather, the staff should determine if the licensee can supply the information in a timely manner and, if so, communicate the additional information needs to the licensee in a deficiency letter. Only in those cases where a detailed technical review cannot begin without the required information should the decommissioning plan be rejected. For example, if the licensee is requesting restricted release and has not obtained the appropriate input from community interests who could be affected by the decommissioning, the decommissioning plan should be rejected during the acceptance review. Questions regarding whether to reject a decommissioning plan based on the results of the acceptance review should be forwarded to the Decommissioning Branch, Division of Waste Management.

For the detailed technical review, staff should assess the technical accuracy and completeness of the information using the modified checklist.

EXECUTIVE SUMMARY

- ❒ The name and address of the licensee or owner of the site;
- ❒ The location and address of the site;
- ❒ A brief description of the site and immediate environs;
- ❒ A summary of the licensed activities that occurred at the site;
- ❒ The nature and extent of contamination at the site;
- ❒ The decommissioning objective proposed by the licensee (i.e., restricted or unrestricted use);
- ❒ The DCGLs for the site, the corresponding doses from these DCGLs, and the method that was use to determine the DCGLs;
- ❒ A summary of the ALARA evaluations performed to support the decommissioning;
- ❒ If the licensee or responsible party requests license termination under restricted conditions, the restrictions the licensee intends to use to limit doses as required in 10 CFR Part 20.1403 or 20.1404, and a summary of institutional controls and financial assurance;
- ❒ If the licensee requests license termination under restricted conditions or using alternate criteria, a summary of the public participation activities undertaken by the licensee to comply with 10 CFR Part 20.1403(d) or 20.1404(a)(4);
- ❒ The proposed initiation and completion dates of decommissioning;
- ❒ Any post-remediation activities (such as ground water monitoring) that the licensee proposes to undertake prior to requesting license termination;
- ❒ A statement that the licensee is requesting that its license be amended to incorporate the decommissioning plan.

FACILITY OPERATING HISTORY

License Number/Status/Authorized Activities

- ❒ The radionuclides and maximum activities of radionuclides authorized and used under the current license;
- ❒ The chemical forms of the radionuclides authorized and used under the current license;
- ❒ A detailed description of how the radionuclides are currently being used at the site;
- ❒ The location(s) of use and storage of the various radionuclides authorized under current licenses;
- ❒ A scale drawing or map of the building or site and environs showing the current locations of radionuclide use at the site;

- ❒ A list of amendments to the license since the last license renewal.

License History

- ❒ The radionuclides and maximum activities of radionuclides authorized and used under all previous licenses;
- ❒ The chemical forms of the radionuclides authorized and used under all previous licenses;
- ❒ A detailed description of how the radionuclides were used at the site;
- ❒ The location(s) of use and storage of the various radionuclides authorized under all previous licenses;
- ❒ A scale drawing or map of the site, facilities, and environs showing previous locations of radionuclide use at the site.

Previous Decommissioning Activities

- ❒ A list or summary of areas at the site that were remediated in the past;
- ❒ A summary of the types, forms, activities, and concentrations of radionuclides that were present in previously remediated areas;
- ❒ The activities that caused the areas to become contaminated;
- ❒ The procedures used to remediate the areas, and the disposition of radioactive material generated during the remediation;
- ❒ A summary of the results of the final radiological evaluation of the previously remediated area;
- ❒ A scale drawing or map of the site, facilities, and environs showing the locations of previous remedial activity.

Spills

- ❒ A summary of areas at the site where spills (or uncontrolled releases) of radioactive material occurred in the past;
- ❒ The types, forms, activities, and concentrations of radionuclides involved in the spill or uncontrolled release;
- ❒ A scale drawing or map of the site, facilities, and environs showing the locations of spills.

Prior On-Site Burials

- ❒ A summary of areas at the site where radioactive material has been buried in the past;
- ❒ The types, forms, activities and concentrations of waste and radionuclides in the former burial;
- ❒ A scale drawing or map of the site, facilities, and environs showing the locations of former burials.

FACILITY DESCRIPTION

Site Location and Description

- ❒ The size of the site in acres or square meters;
- ❒ The State and county in which the site is located;
- ❒ The names and distances to nearby communities, towns, and cities;
- ❒ A description of the contours and features of the site;
- ❒ The elevation of the site;
- ❒ A description of property surrounding the site, including the location of all off-site wells used by nearby communities or individuals;
- ❒ The location of the site relative to prominent features such as rivers and lakes;
- ❒ A map that shows the detailed topography of the site using a contour interval;
- ❒ The location of the nearest residences and all significant facilities or activities near the site;
- ❒ A description of the facilities (buildings, parking lots, fixed equipment, etc.) at the site.

Population Distribution

- ❒ A summary of the current population in and around the site, by compass vectors;
- ❒ A summary of the projected population in and around the site by compass vectors.

Current/Future Land Use

- ❒ A description of the current land uses in and around the site;
- ❒ A summary of anticipated land uses.

Metrology and Climatology

- ❒ A description of the general climate of the region;
- ❒ Seasonal and annual frequencies of severe weather phenomena;
- ❒ Weather-related radionuclide transmission parameters;
- ❒ Routine weather-related site deterioration parameters;
- ❒ Extreme weather-related site deterioration parameters;
- ❒ A description of the local (site) meteorology;
- ❒ The National Ambient Air Quality Standards Category of the area in which the facility is located and, if the facility is not in a Category 1 zone, the closest and first downwind Category 1 Zone.

Geology and Seismology

- ❒ A detailed description of the geologic characteristics of the site and the region around the site;
- ❒ A discussion of the tectonic history of the region, regional geomorphology, physiography, stratigraphy, and geochronology;
- ❒ A regional tectonic map showing the site location and its proximity to tectonic structures;
- ❒ A description of the structural geology of the region and its relationship to the site geologic structure;
- ❒ A description of any crustal tilting, subsidence, karst terrain, landsliding, and erosion;
- ❒ A description of the surface and subsurface geologic characteristics of the site and its vicinity;
- ❒ A description of the geomorphology of the site;
- ❒ A description of the location, attitude, and geometry of all known or inferred faults in the site and vicinity;
- ❒ A discussion of the nature and rates of deformation;
- ❒ A description of any man-made geologic features such as mines or quarries;
- ❒ A description of the seismicity of the site and region;
- ❒ A complete list of all historical earthquakes that have a magnitude of 3 or more, or a modified Mercalli intensity of IV or more within 200 miles of the site.

Surface Water Hydrology

- ❒ A description of site drainage and surrounding watershed fluvial features;
- ❒ Water resource data including maps, hydrographs, and stream records from other agencies (e.g., U.S. Geological Survey and U.S. Army Corps of Engineers);
- ❒ Topographic maps of the site that show natural drainages and man-made features;
- ❒ A description of the surface water bodies at the site and surrounding areas;
- ❒ A description of existing and proposed water control structures and diversions (both upstream and downstream) that may influence the site;
- ❒ Flow-duration data that indicate minimum, maximum, and average historical observations for surface water bodies in the site areas;
- ❒ Aerial photography and maps of the site and adjacent drainage areas identifying features such as drainage areas, surface gradients, and areas of flooding;
- ❒ An inventory of all existing and planned surface water users, whose intakes could be adversely affected by migration of radionuclides from the site;
- ❒ Topographic and/or aerial photographs that delineate the 100-year floodplain at the site;
- ❒ A description of any man-made changes to the surface water hydrologic system that may influence the potential for flooding at the site.

Ground Water Hydrology

- ❒ A description of the saturated zone;
- ❒ Descriptions of monitoring wells;
- ❒ Physical parameters;
- ❒ A description of ground water flow directions and velocities;
- ❒ A description of the unsaturated zone;
- ❒ Information on all monitor stations including location and depth;
- ❒ A description of physical parameters;
- ❒ A description of the numerical analyses techniques used to characterize the unsaturated and saturated zones;
- ❒ The distribution coefficients of the radionuclides of interest at the site.

Natural Resources

- ❒ A description of the natural resources occurring at or near the site;
- ❒ A description of potable, agricultural, or industrial ground or surface waters;
- ❒ A description of economic, marginally economic, or subeconomic known or identified natural resources as defined in U.S. Geological Survey Circular 831.
- ❒ Mineral, fuel, and hydrocarbon resources near and surrounding the site which, if exploited, would effect the licensee's or responsible party's dose estimates.

RADIOLOGICAL STATUS OF FACILITY

Contaminated Structures

- ❒ A list or description of all structures at the facility where licensed activities occurred that contain residual radioactive material in excess of site background levels;
- ❒ A summary of the structures and locations at the facility that the licensee or responsible party has concluded have not been impacted by licensed operations and the rationale for the conclusion;
- ❒ A list or description of each room or work area within each of these structures;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A summary of the locations of contamination in each room or work area;
- ❒ A summary of the radionuclides present at each location, the maximum and average radionulide activities in dpm/100cm^2, and, if multiple radionuclides are present, the radionuclide ratios;
- ❒ The mode of contamination for each surface (i.e., whether the radioactive material is present only on the surface of the material or if it has penetrated the material);
- ❒ The maximum and average radiation levels in mrem/hr in each room or work area;
- ❒ A scale drawing or map of the rooms or work areas showing the locations of radionuclide material contamination.

Contaminated Systems and Equipment

- ❒ A list or description and the location of all systems or equipment at the facility that contain residual radioactive material in excess of site background levels;
- ❒ A summary of the radionuclides present in each system or on the equipment at each location, the maximum and average radionulide activities in dpm/100cm^2, and, if multiple radionuclides are present, the radionuclide ratios;

- ❒ The maximum and average radiation levels in mrem/hr at the surface of each piece of equipment;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A scale drawing or map of the rooms or work areas showing the locations of the contaminated systems or equipment.

Surface Soil Contamination

- ❒ A list or description of all locations at the facility where surface soil contains residual radioactive material in excess of site background levels;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A summary of the radionuclides present at each location, the maximum and average radionuclide activities in pCi/gm, and, if multiple radionuclides are present, the radionuclide ratios;
- ❒ The maximum and average radiation levels in mrem/hr at each location;
- ❒ A scale drawing or map of the site showing the locations of radionuclide material contamination in surface soil.

Subsurface Soil Contamination

- ❒ A list or description of all locations at the facility where subsurface soil contains residual radioactive material in excess of site background levels;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A summary of the radionuclides present at each location, the maximum and average radionulide activities in pCi/gm, and, if multiple radionuclides are present, the radionuclide ratios;
- ❒ The depth of the subsurface soil contamination at each location;
- ❒ A scale drawing or map of the site showing the locations of subsurface soil contamination.

Surface Water

- ❒ A list or description of all surface water bodies at the facility that contain residual radioactive material in excess of site background levels;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A summary of the radionuclides present in each surface water body and the maximum and average radionuclide activities in pCi/l.

Ground water

- ❒ A summary of the aquifer(s) at the facility that contain residual radioactive material in excess of site background levels;
- ❒ A summary of the background levels used during scoping or characterization surveys;
- ❒ A summary of the radionuclides present in each aquifer and the maximum and average radionulide activities in pCi/l.

DOSE MODELING

Unrestricted Release Using Screening Criteria

Unrestricted Release using Screening Criteria for Building Surface Residual Radioactivity:

- ❒ The general conceptual model (for both the source term and the building environment) of the site;
- ❒ A summary of the screening method (i.e., running DandD or using the look-up tables) used in the decommissioning plan.

Unrestricted Release Using Screening Criteria for Surface Soil Residual Radioactivity:

- ❒ Justification on the appropriateness of using the screening approach (for both the source term and the environment) at the site;
- ❒ A summary of the screening method (i.e., running DandD or using the look-up tables) used in the decommissioning plan.

Unrestricted Release Using Site-Specific Information:

- ❒ Source term information including nuclides of interest, configuration of the source, areal variability of the source, etc.;
- ❒ Description of the exposure scenario including a description of the critical group;
- ❒ Description of the conceptual model of the site including the source term, physical features important to modeling the transport pathways, and the critical group;
- ❒ Identification/description of the mathematical model used (e.g., hand calculations, DandD Screen v1.0, RESRAD v5.81, etc.);
- ❒ Description of the parameters used in the analysis;
- ❒ Discussion about the effect of uncertainty on the results;
- ❒ Input and output files or printouts, if a computer program was used.

Restricted Release Using Site-Specific Information:

- ❒ Source term information including nuclides of interest, configuration of the source, areal variability of the source, and chemical forms;
- ❒ A description of the exposure scenarios, including a description of the critical group for each scenario;
- ❒ A description of the conceptual model(s) of the site that includes the source term, physical features important to modeling the transport pathways, and the critical group for each scenario;
- ❒ Identification/description of the mathematical model(s) used (e.g., hand calculations, RESRAD v5.81, etc.);
- ❒ A summary of parameters used in the analysis;
- ❒ A discussion about the effect of uncertainty on the results;
- ❒ Input and output files or printouts, if a computer program was used.

Release Involving Alternate Criteria:

- ❒ Source term information including nuclides of interest, configuration of the source, areal variability of the source, and chemical forms;
- ❒ A description of the exposure scenarios, including a description of the critical group for each scenario;
- ❒ A description of the conceptual model(s) of the site that includes the source term, physical features important to modeling the transport pathways, and the critical group for each scenario;
- ❒ Identification/description of the mathematical model(s) used (e.g., hand calculations, RESRAD v5.81, etc.);
- ❒ A summary of parameters used in the analysis;
- ❒ A discussion about the effect of uncertainty on the results;
- ❒ Input and output files or printouts, if a computer program was used.

ENVIRONMENTAL INFORMATION

- ❒ Environmental information described in NUREG-1748;
- ❒ For an EIS, the environmental information is reviewed by the EPAB EIS project manager.

ALARA ANALYSIS

- ❒ A description of how the licensee or responsible party will achieve a decommissioning goal below the dose limit;
- ❒ A quantitative cost benefit analysis;
- ❒ A description of how costs were estimated;
- ❒ A demonstration that the doses to the average member of the critical group are ALARA.

PLANNED DECOMMISSIONING ACTIVITIES

Contaminated Structures

- ❒ A summary of the remediation tasks planned for each room or area in the contaminated structure, in the order in which they will occur;
- ❒ A description of the remediation techniques that will be employed in each room or area of the contaminated structure;
- ❒ A summary of the radiation protection methods and control procedures that will be employed in each room or area;
- ❒ A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- ❒ A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- ❒ A summary of any unique safety or remediation issues associated with remediating the room or area;
- ❒ For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

Contaminated Systems and Equipment

- ❒ A summary of the remediation tasks planned for each system in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- ❒ A description of the techniques that will be employed to remediate each system in the facility or site;
- ❒ A description of the radiation protection methods and control procedures that will be employed while remediating each system;

- ❒ A summary of the equipment that will be removed or decontaminated and how the decontamination will be accomplished;
- ❒ A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- ❒ A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- ❒ A summary of any unique safety or remediation issues associated with remediating any system or piece of equipment;
- ❒ For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

Soil

- ❒ A summary of the removal/remediation tasks planned for surface and subsurface soil at the site in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- ❒ A description the techniques that will be employed to remove or remediate surface and subsurface soil at the site;
- ❒ A description of the radiation protection methods and control procedures that will be employed during soil removal/remediation;
- ❒ A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- ❒ A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- ❒ A summary of any unique safety or removal/remediation issues associated with remediating the soil;
- ❒ For Part 70 licensees, a summary of how the licensee will ensure that the risks addressed in the facility's Integrated Safety Analysis will be addressed during decommissioning.

Surface and Ground Water

- ❒ A summary of the remediation tasks planned for ground and surface water in the order in which they will occur, including which activities will be conducted by licensee staff and which will be performed by a contractor;
- ❒ A description of the remediation techniques that will be employed to remediate the ground or surface water;

- ❒ A description of the radiation protection methods and control procedures that will be employed during ground or surface water remediation;
- ❒ A summary of the procedures already authorized under the existing license and those for which approval is being requested in the decommissioning plan;
- ❒ A commitment to conduct decommissioning activities in accordance with written, approved procedures;
- ❒ A summary of any unique safety or remediation issues associated with remediating the ground or surface water.

Schedules

- ❒ A Gantt or PERT chart detailing the proposed remediation tasks in the order in which they will occur;
- ❒ A statement acknowledging that the dates in the schedule are contingent upon NRC approval of the decommissioning plan;
- ❒ A statement acknowledging that circumstances can change during decommissioning, and, if the licensee determines that the decommissioning cannot be completed as outlined in the schedule, the licensee or responsible party will provide an updated schedule to NRC;
- ❒ If the decommissioning is not expected to be completed within the time frames outlined in NRC regulations, a request for alternative schedule for completing the decommissioning.

PROJECT MANAGEMENT AND ORGANIZATION

Decommissioning Management Organization

- ❒ A description of the decommissioning organization;
- ❒ A description of the responsibilities of each of these decommissioning project units;
- ❒ A description of the reporting hierarchy within the decommissioning project management organization;
- ❒ A description of the responsibility and authority of each unit to ensure that decommissioning activities are conducted in a safe manner and in accordance with approved written procedures.

Decommissioning Task Management

- ❒ A description of the manner in which the decommissioning tasks are managed;
- ❒ A description of how individual decommissioning tasks are evaluated and how the Radiation Work Permits (RWPs) are developed for each task;

- ❒ A description of how the RWPs are reviewed and approved by the decommissioning project management organization;
- ❒ A description of how RWPs are managed throughout the decommissioning project;
- ❒ A description of how individuals performing the decommissioning tasks are informed of the procedures in the RWP.

Decommissioning Management Positions and Qualifications

- ❒ A description of the duties and responsibilities of each management position in the decommissioning organization and the reporting responsibility of the position;
- ❒ A description of the duties and responsibilities of each chemical, radiological, physical, and occupational safety-related position in the decommissioning organization and the reporting responsibility of each position;
- ❒ A description of the duties and responsibilities of each engineering, quality assurance, and waste management position in the decommissioning organization and the reporting responsibility of each position;
- ❒ The minimum qualifications for each of the positions describe above, and the qualifications of the individuals currently occupying the positions;
- ❒ A description of all decommissioning and safety committees.

Radiation Safety Officer

- ❒ A description of the health physics and radiation safety education and experience required for individuals acting as the licensee's or responsible party's RSO;
- ❒ A description of the responsibilities and duties of the RSO;
- ❒ A description of the specific authority of the RSO to implement and manage the licensee's or responsible party's radiation protection program.

Training

- ❒ A description of the radiation safety training that the licensee will provide to each employee;
- ❒ A description of any daily worker "jobside" or "tailgate" training that will be provided at the beginning of each workday or job task to familiarize workers with job-specific procedures or safety requirements;
- ❒ A description of the documentation that will be maintained to demonstrate that training commitments are being met.

Contractor Support

- ❒ A summary of decommissioning tasks that will be performed by contractors;
- ❒ A description of the management interfaces that will be in place between the licensee or responsible party's management and on-site supervisors, and contractor management and on-site supervisors;
- ❒ A description of the oversight responsibilities and authority that the licensee or responsible party will exercise over contractor personnel;
- ❒ A description of the training that will be provided to contractor personnel by the licensee or responsible party and the training that will be provided by the contractor;
- ❒ A commitment that the contractor will comply with all radiation safety and license requirements at the facility.

HEALTH AND SAFETY PROGRAM DURING DECOMMISSIONING

Radiation Safety Controls and Monitoring for Workers

Air Sampling Program:

- ❒ A description which demonstrates that the air sampling program is representative of the workers breathing zones;
- ❒ A description of the criteria which demonstrates that air samplers with appropriate sensitivities will be used, and that samples will be collected at appropriate frequencies;
- ❒ A description of the conditions under which air monitors will be used;
- ❒ A description of the criteria used to determine the frequency of calibration of the flow meters on the air samplers;
- ❒ A description of the action levels for air sampling results;
- ❒ A description of how minimum detectable activities (MDA) for each specific radionuclide that may be collected in air samples are determined.

Respiratory Protection Program:

- ❒ A description of the process controls, engineering controls, or procedures to control concentrations of radioactive materials in air;
- ❒ A description of the evaluation which will be performed when it is not practical to apply engineering controls or procedures;

- ❒ A description of the considerations used which demonstrates respiratory protection equipment is appropriate for a specific task based on the guidance on assigned protection factors;
- ❒ A description of the medical screening and fit testing required before workers will use any respirator that is assigned a protection factor;
- ❒ A description of the written procedures maintained to address all the elements of the respiratory protection program;
- ❒ A description of the use, maintenance, and storage of respiratory protection devices;
- ❒ A description of the respiratory equipment users training program;
- ❒ A description of the considerations made when selecting respiratory protection equipment.

Internal Exposure Determination:

- ❒ A description of the monitoring to be performed to determine worker exposure;
- ❒ A description of how worker intakes are determined using measurements of quantities of radionuclides excreted from, or retained in the human body;
- ❒ A description of how worker intakes are determined by measurements of the concentrations of airborne radioactive materials in the workplace;
- ❒ A description of how worker intakes for an adult, a minor, and a declared pregnant woman are determined using any combination of the measurements above, as may be necessary;
- ❒ A description of how worker intakes are converted into committed effective dose equivalent.

External Exposure Determination:

- ❒ A description of the individual-monitoring devices which will be provided to workers;
- ❒ A description of the type, range, sensitivity, and accuracy of each individual-monitoring device;
- ❒ A description of the use of extremity and whole body monitors when the external radiation field is non-uniform;
- ❒ A description of when audible-alarm dosimeters and pocket dosimeters will be provided;
- ❒ A description of how external dose from airborne radioactive material is determined;
- ❒ A description of the procedure to insure that surveys necessary to supplement personnel monitoring are performed;
- ❒ A description of the action levels for worker's external exposure, and the technical bases and actions to be taken when they are exceeded.

Summation of Internal and External Exposures:

- ❒ A description of how the internal and external monitoring results are used to calculate TODE and TEDE doses to occupational workers;
- ❒ A description of how internal doses to the embryo/fetus, which is based on the intake of an occupationally-exposed, declared pregnant woman will be determined;
- ❒ A description of the monitoring of the intake of a declared pregnant woman, if determined to be necessary;
- ❒ A description of the program for the preparation, retention, and reporting of records for occupational radiation exposures.

Contamination Control Program:

- ❒ A description of the written procedures to control access to, and stay time in, contaminated areas by workers, if they are needed;
- ❒ A description of surveys to supplement personnel monitoring for workers during routine operations, maintenance, clean-up activities, and special operations;
- ❒ A description of the surveys which will be performed to determine the baseline of background radiation levels and radioactivity from natural sources for areas where decommissioning activities will take place;
- ❒ A description in matrix or tabular form which describes contamination action limits (that is, actions taken to either decontaminate a person, place, or area, restrict access, or modify the type or frequency of radiological monitoring);
- ❒ A description (included in the matrix or table mentioned above) of proposed radiological contamination guidelines for specifying and modifying the frequency for each type of survey used to assess the reduction of total contamination;
- ❒ A description of the procedures used to test sealed sources, and to insure that sealed sources are leaked tested at appropriate intervals.

Instrumentation Program:

- ❒ A description of the instruments to be used to support the health and safety program;
- ❒ A description of instrumentation storage, calibration, and maintenance facilities for instruments used in field surveys;
- ❒ A description of the method used to estimate the MDC or MDA (at the 95% confidence level) for each type of radiation to be detected;
- ❒ A description of the instrument calibration and quality assurance procedures;

- ❒ A description of the methods used to estimate uncertainty bounds for each type of instrumental measurement;
- ❒ A description of air sampling calibration procedures or a statement that the instruments will be calibrated by an accredited laboratory.

Nuclear Criticality Safety:

- ❒ A description of how the NCS functions, including management responsibilities and technical qualifications of safety personnel, shall be maintained when needed throughout the decommissioning process;
- ❒ A description of how an awareness of procedures and other items relied on for safety shall be maintained throughout decommissioning among all personnel, with access to systems that may contain fissionable material in sufficient amounts for criticality;
- ❒ A summary of the review of NCSA's or the ISA indicating either that the process needs no new safety procedures or requirements, or that new requirements or analysis have been performed;
- ❒ A summary of any generic NCS requirements to be applied to general decommissioning, decontamination, or dismantlement operations, including those dealing with systems that may unexpectedly contain fissionable material.

Health Physics Audits, Inspections, and Recordkeeping Program:

- ❒ A general description of the annual program review conducted by executive management;
- ❒ A description of the records to be maintained of the annual program review and executive audits;
- ❒ A description of the types and frequencies of surveys and audits to be performed by the RSO and RSO staff;
- ❒ A description of the process used in evaluating and dealing with violations of NRC requirements or license commitments identified during audits;
- ❒ A description of the records maintained of RSO audits.

ENVIRONMENTAL MONITORING AND CONTROL PROGRAM

Environmental ALARA Evaluation Program

- ❒ A description of ALARA goals for effluent control;
- ❒ A description of the procedures, engineering controls, and process controls to maintain doses ALARA;
- ❒ A description of the ALARA reviews and reports to management.

Effluent Monitoring Program

- ❒ A demonstration that background and baseline concentrations of radionuclides in environmental media have been established through appropriate sampling and analysis;
- ❒ A description of the known or expected concentrations of radionuclides in effluents;
- ❒ A description of the physical and chemical characteristics of radionuclides in effluents;
- ❒ A summary or diagram of all effluent discharge locations;
- ❒ A demonstration that samples will be representative of actual releases;
- ❒ A summary of the sample collection and analysis procedures;
- ❒ A summary of the sample collection frequencies;
- ❒ A description of the environmental monitoring recording and reporting procedures;
- ❒ A description of the quality assurance program to be established and implemented for the effluent monitoring program.

Effluent Control Program

- ❒ A description of the controls that will be used to minimize releases of radioactive material to the environment;
- ❒ A summary of the action levels and a description of the actions to be taken should a limit be exceeded;
- ❒ A description of the leak detection systems for ponds, lagoons, and tanks;
- ❒ A description of the procedures to ensure that releases to sewer systems are controlled and maintained to meet the requirements of 10 CFR 20.2003;
- ❒ A summary of the estimates of doses to the public from effluents and a description of the method used to estimate public dose.

RADIOACTIVE WASTE MANAGEMENT PROGRAM

Solid Radwaste

- ❒ A summary of the types of solid radwaste that are expected to be generated during decommissioning operations;
- ❒ A summary of the estimated volume, in cubic feet, of each solid radwaste type summarized in Line 1 above;
- ❒ A summary of the radionuclides (including the estimated activity of each radionuclide) in each estimated solid radwaste type summarized in Line 1 above;
- ❒ A summary of the volumes of Class A, B, C, and Greater-than-Class-C solid radwaste that will be generated by decommissioning operations;
- ❒ A description of how and where each of the solid radwaste summarized in Line 1 above will be stored on-site prior to shipment for disposal;
- ❒ A description of how the each of the solid radwastes summarized in Line 1 above will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- ❒ If appropriate, how the licensee or responsible party intends to manage volumetrically contaminated material;
- ❒ A description of how the licensee or responsible party will prevent contaminated soil, or other loose solid radwaste, from being re-disbursed after exhumation and collection;
- ❒ The name and location of the disposal facility that the licensee intends to use for each solid radwaste type summarized in Line 1 above.

Liquid Radwaste

- ❒ A summary of the types of liquid radwaste that are expected to be generated during decommissioning operations;
- ❒ A summary of the estimated volume, in liters, of each liquid radwaste type summarized in Line 1 above;
- ❒ A summary of the radionuclides (including the estimated activity of each radionuclide) in each liquid radwaste type summarized in Line 1 above;
- ❒ A summary of the estimated volumes of Class A, B, C, and Greater-than-Class-C liquid radwaste that will be generated by decommissioning operations;
- ❒ A description of how and where each of the liquid radwastes summarized in Line 1 above will be stored on-site prior to shipment for disposal;

- ❒ A description of how the each of the liquid radwastes summarized in Line 1 above will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- ❒ The name and location of the disposal facility that the licensee intends to use for each liquid radwaste type summarized in Line 1 above.

Mixed Waste

- ❒ A summary of the types of solid and liquid mixed waste that are expected to be generated during decommissioning operations;
- ❒ A summary of the estimated volumes in cubic feet of each solid mixed waste type summarized in Line 1 above, and in liters for each liquid mixed waste;
- ❒ A summary of the radionuclides (including the estimated activity of each radionuclide) in each type of mixed waste type summarized in Line 1 above;
- ❒ A summary of the estimated volumes of Class A, B, C, and Greater-than-Class-C mixed waste that will be generated by decommissioning operations;
- ❒ A description of how and where each of the mixed wastes summarized in Line 1 above will be stored on-site prior to shipment for disposal;
- ❒ A description of how the each of the mixed wastes summarized in Line 1 above will be treated and packaged to meet disposal site acceptance criteria prior to shipment for disposal;
- ❒ The name and location of the disposal facility that the licensee intends to use for each mixed waste type summarized in Line 1 above;
- ❒ A discussion of the requirements of all other regulatory agencies having jurisdiction over the mixed waste;
- ❒ A demonstration the that the licensee possesses the appropriate EPA or State permits to generate, store, and/or treat the mixed wastes.

QUALITY ASSURANCE PROGRAM

Organization

- ❒ A description of the QA program management organization;
- ❒ A description of the duties and responsibilities of each unit within the organization and how delegation of responsibilities is managed within the decommissioning program;
- ❒ A description of how work performance is evaluated;
- ❒ A description of the authority of each unit within the QA program;
- ❒ An organization chart of the QA program organization.

Quality Assurance Program

- ❒ A commitment that activities affecting the quality of site decommissioning will be subject to the applicable controls of the QA program and activities covered by the QA program are identified on program defining documents;
- ❒ A brief summary of the company's corporate QA policies;
- ❒ A description of provisions to ensure that technical and quality assurance procedures required to implement the QA program are consistent with regulatory, licensing, and QA program requirements and are properly documented and controlled;
- ❒ A description of the management reviews, including the documentation of concurrence in these quality-affecting procedures;
- ❒ A description of the quality-affecting procedural controls of the principal contractors;
- ❒ A description of how NRC will be notified of changes: (a) for review and acceptance in the accepted description of the QA program as presented or referenced in the DP before implementation; and (b) in organizational elements within 30 days after the announcement of the changes;
- ❒ A description is provided of how management regularly assesses the scope, status, adequacy, and compliance of the QA program;
- ❒ A description of the instruction provided to personnel responsible for performing activities affecting quality;
- ❒ A description of the training and qualifications of personnel verifying activities;
- ❒ For formal training and qualification programs, documentation includes the objectives and content of the program, attendees, and date of attendance;
- ❒ A description of the self-assessment program to confirm that activities affecting quality comply with the QA program;
- ❒ A commitment that persons performing self-assessment activities are not to have direct responsibilities in the area they are assessing;
- ❒ A description of the organizational responsibilities for ensuring that activities affecting quality are: (a) prescribed by documented instructions, procedures, and drawings; and (b) accomplished through implementation of these documents;
- ❒ A description of the procedures to ensure that instructions, procedures, and drawings include quantitative acceptance criteria and qualitative acceptance criteria for determining that important activities have been satisfactorily performed.

Document Control

- ❒ A summary of the types of QA documents that are included in the program;
- ❒ A description of how the licensee or responsible party develops, issues, revises, and retires QA documents.

Control of Measuring and Test Equipment

- ❒ A summary of the test and measurement equipment used in the program;
- ❒ A description of how and at what frequency the equipment will be calibrated;
- ❒ A description of the daily calibration checks that will be performed on each piece of test or measurement equipment;
- ❒ A description of the documentation that will be maintained to demonstrate that only properly calibrated and maintained equipment was used during the decommissioning.

Corrective Action

- ❒ A description of the corrective action procedures for the facility, including a description of how the corrective action is determined to be adequate;
- ❒ A description of the documentation maintained for each corrective action and any follow-up activities by the QA organization after the corrective action is implemented.

Quality Assurance Records

- ❒ A description of the manner in which the QA records will be managed.
- ❒ A description of the responsibilities of the QA organization.
- ❒ A description of the QA records storage facility.

Audits and Surveillances

- ❒ A description of the audit program;
- ❒ A description of the records and documentation generated during the audits and the manner in which the documents are managed;
- ❒ A description of all follow-up activities associated with audits or surveillances;
- ❒ A description of the trending/tracking that will be performed on the results of audits and surveillances.

FACILITY RADIATION SURVEYS

Release Criteria

- ❒ A summary table or list of the $DCGL_W$ for each radionuclide and impacted media of concern;
- ❒ If Class 1 survey units are present, a summary table or list of area factors that will be used for determining a $DCGL_{EMC}$ for each radionuclide and media of concern;
- ❒ If Class 1 survey units are present, the $DCGL_{EMCs}$ for each radionuclide and medium of concern;
- ❒ If multiple radionuclides are present, the appropriate $DCGL_W$ for the survey method to be used.

Characterization Surveys

- ❒ A description and justification of the survey measurements for impacted media;
- ❒ A description of the field instruments and methods that were used for measuring concentrations and the sensitivities of those instruments and methods;
- ❒ A description of the laboratory instruments and methods that were used for measuring concentrations and the sensitivities of those instruments and methods;
- ❒ The survey results, including tables or charts of the concentrations of residual radioactivity measured;
- ❒ Maps or drawings of the site, area, or building, showing areas classified as non-impacted or impacted;
- ❒ Justification for considering areas to be non-impacted;
- ❒ A discussion of why the licensee considers the characterization survey to be adequate to demonstrate that it is unlikely that significant quantities of residual radioactivity have gone undetected;
- ❒ For areas and surfaces that are inaccessible or not readily accessible, a discussion of how they were surveyed or why they did not need to be surveyed;
- ❒ For sites, areas, or buildings with multiple radionuclides, a discussion justifying the ratios of radionuclides that will be assumed in the final status survey or an indication that no fixed ratio exists and each radionuclide will be measured separately.

In-Process Surveys

- ❒ A description of field screening methods and instrumentation;

- ❒ A demonstration that field screening should be capable of detecting residual radioactivity at the DCGL.

Final Status Survey Design

- ❒ A brief overview describing the final status survey design;
- ❒ A description and map or drawing of impacted areas of the site, area, or building classified by residual radioactivity levels (Class 1, 2, or 3) and divided into survey units with an explanation of the basis for division into survey units;
- ❒ A description of the background reference areas and materials, if they will be used, and a justification for their selection;
- ❒ A summary of the statistical tests that will be used to evaluate the survey results;
- ❒ A description of scanning instruments, methods, calibration, operational checks, coverage, and sensitivity for each media and radionuclide;
- ❒ For in-situ sample measurements made by field instruments, a description of the instruments, calibration, operational checks, sensitivity, and sampling methods, with a demonstration that the instruments and methods have adequate sensitivity;
- ❒ A description of the analytical instruments for measuring samples in the laboratory, as well as calibration, sensitivity, and methods with a demonstration that the instruments and methods have adequate sensitivity;
- ❒ A description of how the samples to be analyzed in the laboratory will be collected, controlled, and handled;
- ❒ A description of the final status survey investigation levels and how they were determined;
- ❒ A summary of any significant additional residual radioactivity that was not accounted for during site characterization;
- ❒ A summary of direct measurement results and/or soil concentration levels in units that are comparable to the DCGL, and if data is used to estimate or update the survey unit;
- ❒ A summary of the direct measurements or sample data used to both evaluate the success of remediation and to estimate the survey unit variance.

Final Status Survey Report

- ❒ An overview of the results of the final status survey;
- ❒ A discussion of any changes that were made in the final status survey from what was proposed in the Decommissioning Plan or other prior submittals;
- ❒ A description of the method by which the number of samples was determined for each survey unit;

- ❒ A summary of the values used to determine the number of samples and a justification for these values;
- ❒ The survey results for each survey unit include:
  - ❒ The number of samples taken for the survey unit;
  - ❒ A map or drawing of the survey unit showing the reference system and random start systematic sample locations for Class 1 and 2 survey units and random locations shown for Class 3 survey units and reference areas;
  - ❒ The measured sample concentrations;
  - ❒ The statistical evaluation of the measured concentrations;
  - ❒ Judgmental and miscellaneous sample data sets reported separately from those samples collected for performing the statistical evaluation;
  - ❒ A discussion of anomalous data, including any areas of elevated direct radiation detected during scanning that exceeded the investigation level or measurement locations in excess of $DCGL_w$;
  - ❒ A statement that a given survey unit satisfied the $DCGL_w$ and the elevated measurement comparison if any sample points exceeded the $DCGL_w$.
- ❒ A description of any changes in initial survey unit assumptions relative to the extent of residual radioactivity;
- ❒ If a survey unit fails, a description of the investigation conducted to ascertain the reason for the failure and a discussion of the impact that the failure has on the conclusion that the facility is ready for final radiological surveys;
- ❒ If a survey unit fails, a discussion of the impact that the reason for the failure has on other survey unit information.

FINANCIAL ASSURANCE

Cost Estimate

- ❒ A cost estimate that appears to be based on documented and reasonable assumptions.

Certification Statement

- ❒ The certification statement is based on the licensed possession limits and the applicable quantities specified in 10 CFR 30.35, 40.36, or 70.25;
- ❒ The licensee is eligible to use a certification of financial assurance and, if eligible, that the certification amount is appropriate.

Financial Mechanism

- ❒ The financial assurance mechanism supplied by the licensee or responsible party consists of one or more of the following instruments:
  - ❒ Trust fund;
  - ❒ Escrow account;
  - ❒ Government fund;
  - ❒ Certificate of deposit;
  - ❒ Deposit of government securities;
  - ❒ Surety bond;
  - ❒ Letter of credit;
  - ❒ Line of credit;
  - ❒ Insurance policy;
  - ❒ Parent company guarantee;
  - ❒ Self guarantee;
  - ❒ External sinking fund;
  - ❒ Statement of intent; or
  - ❒ By special arrangements with a government entity assuming custody or ownership of the site.
- ❒ The financial assurance mechanism is an originally signed duplicate;
- ❒ The wording of the financial assurance mechanism is identical to the recommended wording provided in Appendix F of this document;
- ❒ For a licensee regulated under 10 CFR Part 72, a means is identified in the decommissioning plan for adjusting the financial assurance funding level over any storage and surveillance period;
- ❒ The amount of financial assurance coverage provided by the licensee for site control and maintenance is at least as great as that calculated using the formula provided in this SRP.

RESTRICTED USE/ALTERNATE CRITERIA

Restricted Use

Eligibility Demonstration:

- ❒ A demonstration that the benefits of dose reduction are less than the cost of doses, injuries, and fatalities;
- ❒ A demonstration that the proposed residual radioactivity levels at the site are ALARA.

Institutional Controls:

- ❒ A description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- ❒ A description of any detriments associated with the maintenance of the institutional control(s);
- ❒ A description of the restrictions on present and future landowners;
- ❒ A description of the entities enforcing, and their authority to enforce, the institutional control(s);
- ❒ A discussion of the durability of the institutional control(s);
- ❒ A description of the activities that the entity with the authority to enforce the institutional controls may undertake to enforce the institutional control(s);
- ❒ The manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s) (this may not be needed for Federal or State entities);
- ❒ A description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s), and the activities that will be undertaken to end the institutional control(s);
- ❒ A description of the plans for corrective actions that may be undertaken in the event the institutional control(s) fail;
- ❒ A description of the records pertaining to the institutional controls, how and where will they will be maintained, and how the public will have access to the records.

FsSite Maintenance and Financial Assurance:

- ❒ A demonstration that an appropriately qualified entity has been provided to control and maintain the site;
- ❒ A description of the site maintenance and control program and the basis for concluding that the program is adequate to control and maintain the site;
- ❒ A description of the arrangement or contract with the entity charged with carrying out the actions necessary to maintain control at the site;
- ❒ A demonstration that the contract or arrangement will remain in effect for as long as feasible, and include provisions for renewing or replacing the contract;
- ❒ A description of the manner in which independent oversight of the entity charged with maintaining the site will be conducted and what entity will conduct the oversight;
- ❒ A demonstration that the entity providing the oversight has the authority to replace the entity charged with maintaining the site;
- ❒ A description of the authority granted to the third party to perform, or have performed, any necessary maintenance activities;
- ❒ Unless the entity is a government entity, a demonstration that the third party is not the entity holding the financial assurance mechanism;
- ❒ A demonstration that sufficient records evidencing to official actions and financial payments made by the third party are open to public inspection;
- ❒ A description of the periodic site inspections that will be performed by the third party, including the frequency of the inspections;
- ❒ A copy of the financial assurance mechanism provided by the licensee or responsible party;
- ❒ A demonstration that the amount of financial assurance provided is sufficient to allow an independent third party to carry out any necessary control and maintenance activities.

Obtaining Public Advice

- ❒ A description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- ❒ A description of the manner in which the licensee obtained advice from these individuals or institutions;
- ❒ A description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;

- ❒ A description of how the licensee provided for a comprehensive, collective discussion on the issues by the participants represented;
- ❒ A copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues, and the extent of agreement and disagreement among the participants;
- ❒ A description of how this summary has been made available to the public;
- ❒ A description of how the licensee evaluated the advice, and the rationale for incorporating or not incorporating the advice from affected members of the community into the decommissioning plan.

Dose Modeling and ALARA Demonstration

- ❒ A summary of the dose to the average member of the critical group when radionuclide levels are at the DCGL with institutional controls in place, as well as the estimated doses if they are no longer in place;
- ❒ A summary of the evaluation performed pursuant to Section 7 of this SRP, demonstrating that these doses are ALARA;
- ❒ If the estimated dose to the average member of the critical group could exceed 100 mrem/yr (but would be less than 500 mrem/yr) when the radionuclide levels are at the DCGL, a demonstration that the criteria in 10 CFR 20.1403(e) have been met.

Alternate Criteria

- ❒ A summary of the dose in TEDE(s) to the average member of the critical group when the radionuclide levels are at the DCGL (considering all man-made sources other than medical);
- ❒ A summary of the evaluation performed pursuant to Section 7 of this SRP demonstrating that these doses are ALARA;
- ❒ An analysis of all possible sources of exposure to radiation at the site and a discussion of why it is unlikely that the doses from all man-made sources, other than medical, will be more than 1 mSv/yr (100 mrem/yr);
- ❒ A description of the legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;
- ❒ A description of any detriments associated with the maintenance of the institutional control(s);
- ❒ A description of the restrictions on present and future landowners;
- ❒ A description of the entities enforcing and their authority to enforce the institutional control(s);

- ❒ A discussion of the durability of the institutional control(s);
- ❒ A description of the activities that the party with the authority to enforce the institutional controls will undertake to enforce the institutional control(s);
- ❒ A description of the manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s);
- ❒ A description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s), and the activities that will be undertaken to end the institutional control(s);
- ❒ A description of the corrective actions that will be undertaken in the event the institutional control(s) fail;
- ❒ A description of the records pertaining to the institutional controls, how and where they will be maintained, and how the public will have access to the records;
- ❒ A description of how individuals and institutions that may be affected by the decommissioning were identified and informed of the opportunity to provide advice to the licensee or responsible party;
- ❒ A description of the manner in which the licensee obtained advice from affected individuals or institutions;
- ❒ A description of how the licensee provided for participation by a broad cross-section of community interests in obtaining the advice;
- ❒ A description of how the licensee provided for a comprehensive, collective discussion on the issues by the participants represented;
- ❒ A copy of the publicly available summary of the results of discussions, including individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants;
- ❒ A description of how this summary has been made available to the public;
- ❒ A description of how the licensee evaluated advice from individuals and institutions that could be affected by the decommissioning and the manner in which the advice was addressed.

Appendix E

Checklist for Use of Generic EIS for License Termination and Sample EA for Sites that Use Screening Criteria

E.1 License Termination Rule - GEIS Reference Facilities[20,21] Checklist

The GEIS reference facilities were developed to broadly and generically represent categories of licensee facilities. Specific facilities will not exactly match the descriptions of the reference facilities. The primary purpose of comparing a specific facility to the reference facility with regard to dose assessment is to determine whether the specific facility has important contaminants, potential scenarios, or pathways that were not analyzed for the reference facilities or which may be sufficiently different from those in the GEIS to change conclusions regarding environmental impacts. In general, if a specific facility has contaminants, concentrations, and spacial distributions less than or generally equivalent to those used for the reference facilities, the GEIS should be applicable. Potential limitations of the GEIS dose assessments, as well as a summary of the characteristics of the reference facilities, are shown below.

1. GEIS Dose Assessment Scenarios: Potential Limitations

0.1 Building Occupancy (structures)

1.1 Structures are assumed to have a 70-year life span following license termination. A shorter expected life span is acceptable. Expected life spans significantly longer than 70 years may require additional analysis if long-lived radionuclides are involved.

1.2 Contamination significantly more extensive than that analyzed in the GEIS should be evaluated on a site-specific basis. Areas and concentrations analyzed in the GEIS are shown in the tables in the following sections.

1.3 Radionuclides present on the site that contribute significantly to dose but which were not analyzed in the GEIS for the subject facility type will need to be evaluated separately.

Checklist for Structures

Yes	No	
❑	❑	Additional analysis required due to expected >70 year building lifespan following decommissioning and long-lived contaminants
❑	❑	Contamination significantly more extensive than that shown in Tables 1 through 6 in the following sections

[20] Overview from NUREG-1496, Volume 1, Section 3

[21] Note: The GEIS does not apply to uranium mills or tailings, low level waste, or high level waste.

❑ ❑ Radionuclides present that contribute significantly to dose, were not analyzed in the GEIS, and could change the conclusions in the GEIS regarding environmental impacts

0.2 Residual (soil)

1.1 Assumes people live and work on site over a 1,000 year period.

1.2 If the site is subject to weather or other events (tornadoes, flash floods, etc) that could result in extensive redistribution or mass movement of contaminates, additional analysis may be required.

1.3 Pre-existing contamination of ground water must be evaluated on a site-specific basis.

1.4 10 CFR 20.302/20.2002 or other burials or disposal areas may need additional site-specific evaluation.

Checklist for Soil

Yes No

❑ ❑ Site subject to weather or other events that could redistribute contaminants in ways not analyzed in the GEIS

❑ ❑ Contaminated groundwater present

❑ ❑ On-site burials or disposal areas

2. Example fuel cycle facilities: power, test, and research reactors; uranium fuel fabrication; uranium hexafluoride conversion facilities; and independent spent fuel storage installations (ISFSI).

The power, test, and research reactors, and the ISFSI have been consolidated into a single analysis in the GEIS based on common radionuclide contaminants (^{60}Co and ^{137}Cs), and are represented by the analysis for the power reactor.

The uranium fabrication facility is used as the reference for both the fabrication and hexafluoride facilities.

Table E.1 Facility Characteristics Applicable to Dose Modeling.

1. Soil Surface Activities for the Radionuclides of Interest[1]	
Radionuclide	Surface Concentration (pCi/g)
Co-60	60
Cs-137	20
Uranium	1,000

1. From NUREG-1496, Table C.7.1.2

2. Total and Contaminated Surface Areas for Structures and Soils at Reference Sites(1)							
Reference Facility	Structures Radionuclide Activity(2), dpm/100 cm^2	Structures Surface Areas				Soil Surface Area, ft^2	
		ft^2		% Contaminated			
		Floor	Wall	Floor	Wall	Total Site	Contaminated
PWR	7.5 x 10^6 Co60 2.4 x 10^6 Cs137	250,000	300,000	10	2	50 x 10^6	3,000
Uranium Fuel Fab	18,000	240,000	240,000	50	5	4.7 x 10^6	100,000

1. The estimated surface areas listed above (reproduced from NUREG-1496, Appendix C are based on limited information and in many cases represent an engineering judgment based on the size of the building structural facilities and types of operation. These estimates are considered to be conservatively large, i.e., they probably overestimate the actual areas involved.

2. Radionuclide activity shown is for building surfaces. Radionuclide activity for soil surfaces is given below.

3. Contamination Distribution Used in the GEIS[1]					
Reference Facility	Soil Area	Soil Depth	Soil Volume	Below-Building Soil Depth	Below-Building Soil Volume
	ft^2	cm	m^3	cm	m^3
Nuclear Power Plant	3,000	4 - 100	12 - 250	3 - 21	15 - 100
Uranium Fuel Fabrication	100,000	44 - 300	4,000 - 28,000	18 - 29	82 - 129

1 From NUREG-1496, Table C.1.10 and C.2.6

Example Non-Fuel-Cycle facilities: universities; medical institutions; sealed source manufactures; industrial users of radioisotopes; research and development laboratories; and rare metal refineries.

The sealed source manufactures and R&D laboratories are consolidated into a single analysis. The analysis of the rare metals processing facility is used to represent all other non-fuel-cycle facilities with low to medium to significant contamination.

Materials licensees who use only sealed sources or short-lived radioactive materials are not expected to require decontamination of buildings or soil, and therefore the impacts and costs of decommissioning are expected to be minimal. The GEIS does not include a detailed analysis of these licensees. If a licensee in this category does require more extensive analysis, the applicability of the GEIS should be evaluated by comparison to the other non-fuel-cycle reference facilities based on the radioisotopes and contamination levels involved.

Table E.1 Facility Characteristics Applicable to Dose Modeling (continued)

4. Total and Contaminated Surface Areas for Structures and Soils at Reference Sites[1]

Reference Facility	Structures Radionuclide Activity[2], dpm/100 cm^2	Structures Surface Areas				Soil Surface Area, ft^2	
		ft^2		% Contaminated			
		Floor	Wall	Floor	Wall	Total Site	Contaminated
Sealed Source Manufacturer	102,000 Co60 33,300 Cs137	6,000	4,600	10	5	40,000	5,000
Rare Metal Extraction	18,000 Thorium	150,000	180,000	40	10	740,000	100,000

1 The estimated surface areas listed above (reproduced from NUREG-1496, Appendix C) are based on limited information and in many cases represent an engineering judgment based on the size of the building structural facilities and types of operation. These estimates are considered to be conservatively large, i.e., they probably overestimate the actual areas involved.

2 Radionuclide activity shown is for building surfaces. Radionuclide activity for soil surfaces is shown below.

5. Soil Surface Activities for the Radionuclides of Interest[1]

Radionuclide	Surface Concentration (pCi/g)
Co-60	60
Cs-137	20
Thorium	200

1. From NUREG-1496, Table C.7.1.2

6. Contamination Distribution Used in the GEIS[1]

Reference Facility	Soil Area	Soil Depth	Soil Volume	Below-Building Soil Depth	Below-Building Soil Volume
	ft^2	cm	m^3	cm	m^3
Sealed Source	5,000	4 - 90	20 - 425	3 - 21	0 - 2
Rare Metals Extraction	100,000	10 - 60	1,000 - 5,700	0 - 2	0 - 6
	Slag Pile Volume: 7,000 m^3				

1. From NUREG-1496, Table C.3.6 and C.4.6

E.2 Sample Environmental Assessment for Relying on the License Termination Rule Generic EIS to Satisfy NEPA Obligations for Sites that Use Screening Criteria

NUCLEAR REGULATORY COMMISSION

Docket No. 030-XXXX

XYZ Facility, Anytown, State: License Amendment

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice Of Intent to Amend Byproduct Materials License for the XYZ Facility in Anytown, State: Environmental Assessment, Finding of No Significant Impact, and Opportunity for Hearing.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) proposes to approve ABC Corporation's (ABC's or the licensee's) decommissioning plan for its Anytown site. The XYZ facility is operated by ABC in Anytown, State. ABC was authorized by the NRC from 1973 to 1998 to use radioactive materials for nuclear medicine purposes at the site. In 1998, ABC ceased operations at the XYZ facility and requested that NRC terminate its license. ABC has conducted characterization surveys of the facilities and identified carbon-14 (14C) and tritium (3H) contamination in the XYZ nuclear medicine facilities. The NRC staff has evaluated ABC's request and has developed an environmental assessment (EA) to support the review of ABC's proposed decommissioning plan and license amendment request, in accordance with the requirements of 10 CFR Part 51. Based on the staff evaluation, the conclusion of the EA is a Finding of No Significant Impact (FONSI) on human health and the environment for the porposed licensing action.

Introduction

Briefly characterize the location and contamination and reference the decommissioning plan or license termination request.

The XYZ facility incorporates 10 buildings on 40 acres located at 123 East Main Street in Anytown. ABC conducted a characterization survey of the affected areas and developed a decommissioning plan. The survey confirmed the presence of 3H contamination in portions of the facility and was used as the basis for development of the decommissioning plan. The affected area of the XYZ facility consists of the former nuclear medicine laboratory and associated rooms in the basement of one building, identified as Building One. ABC proposed to use the screening values developed by NRC as the derived concentration guideline levels (DCGLs) for

decommissioning and as the basis for demonstrating that the site meets the NRC's radiological cleanup criteria.

Purpose and Need for the Proposed Action

The purpose of the proposed action is to reduce residual radioactivity at the XYZ facility to a level that permits release of the property for unrestricted use and termination of the license. NRC is fulfilling its responsibilities under the Atomic Energy Act to make a decision on a proposed license amendment for decommissioning that ensures protection of the public health and safety and environment.

The Proposed Action

Briefly summarize the remediation activities and reference the decommissioning plan or license termination request for a more thorough description.

The proposed action is to amend NRC Radioactive Materials License Number 31-XXXX to incorporate appropriate and acceptable DCGLs into the license. The licensee's objective for the decommissioning project, as stated in the decommissioning plan, is to decontaminate and remediate the affected areas of Building One sufficiently to enable unrestricted use, while ensuring exposures to occupational workers and the public during the decommissioning are maintained as low as reasonably achievable (ALARA). ABC's decommissioning plan for the XYZ facility proposes to use DCGLs that are screening values developed by NRC (65FR37186, June 13, 2000) to demonstrate compliance with the radiological criteria for license termination in 10 CFR 20.1402. The DCGLs will define the maximum amount of residual contamination on building surfaces, equipment and materials and in soils, that will satisfy the NRC requirements of Subpart E, 10 CFR Part 20, Radiological Criteria for License Termination. The DCGLs proposed to be incorporated into the license are as follows:

Radionuclide	Release of equipment & materials (surfaces)	Building surfaces	Soil
14C			
3H			

Alternatives to the Proposed Action

The only alternative to the proposed action of allowing decommissioning of the site is no action. The no-action alternative is not acceptable because it will result in violation of NRC's Timeliness Rule (10 CFR 30.36), which requires licensees to decommission their facilities when licensed activities cease, and to request termination of their radioactive materials license.

The Affected Environment and Environmental Impacts

NRC staff has evaluated information on the affected environment and found there are no site-specific impacts that are not covered in the GEIS. *Briefly summarize special environmental or cultural issues that may be associated with a decommissioning action and may require a particular analysis.*

The NRC staff has reviewed the decommissioning plan for the XYZ facility and examined the impacts of decommissioning. Based on its review, the staff has determined that the environmental impacts associated with the decommissioning of the XYZ facility are bounded by the impacts evaluated by the "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities" (NUREG-1496). The staff also finds that the proposed decommissioning of the XYZ facility is in compliance with 10 CFR 20.1402, the radiological criteria for unrestricted use.

Since ceasing operations, the XYZ site has been stabilized to prevent contamination from spreading beyond its current locations. Access to the contaminated areas is controlled to assure the health and safety of workers and the public. No ongoing licensed activities are occurring in the facilities.

Contamination controls will be implemented during decommissioning to prevent airborne and surface contamination from escaping the remediation work areas, and therefore no release of airborne contamination is anticipated. However, the potential will exist for generating airborne radioactive material during decontamination, removal and handling of contaminated materials. If produced, any effluent from the proposed decommissioning activities will be limited in accordance with NRC requirements in 10 CFR Part 20 or contained onsite or treated to reduce contamination to acceptable levels before release, and shall be maintained ALARA. Release of contaminated liquid effluents are not expected to occur during the work.

ABC and subcontractors will perform the remediation under the XYZ license, with ABC overseeing the activities and maintaining primary responsibility. The XYZ facility has adequate radiation protection procedures and capabilities, and will implement an acceptable program to keep exposure to radioactive materials as low as reasonably achievable (ALARA). As noted above, ABC has prepared a decommissioning plan describing the work to be performed, and work activities are not anticipated to result in a dose to workers or the public in excess of the 10 CFR Part 20 limits. Past experiences with decommissioning activities at sites similar to the XYZ facility indicate that public and worker exposure will be far below the limits found in 10 CFR Part 20.

Agencies and Persons Consulted

This EA was prepared by NRC staff and coordinated with the following agencies: State Department of Environmental Quality, State Office of Historical Preservation, State Fish and Wildlife Service, and the U.S. Fish and Wildlife Service.

Conclusion

Decommissioning of the site to the DCGLs proposed for this action will result in reduced residual contamination levels in the facility, enabling release of the facility for unrestricted use and termination of the radioactive materials license. No radiologically contaminated effluents are expected during the decommissioning. Occupational doses to decommissioning workers are expected to be low and well within the limits of 10 CFR Part 20. No radiation exposure to any member of the public is expected, and public exposure will therefore also be less than the applicable public exposure limits of 10 CFR Part 20. Therefore, the environmental impacts from the proposed action are expected to be insignificant.

Finding of No Significant Impact

NRC has prepared this EA in support of the proposed license amendment to incorporate appropriate and acceptable DCGLs and to use the proposed DCGLs for the planned decommissioning by the licensee at the XYZ facility. On the basis of the EA, NRC has concluded that this licensing action will not significantly affect the quality of the human environment and has determined not to prepare an environmental impact statement for the proposed action.

The above documents related to this proposed action are available for public inspection and copying at the Commission's Public Document Room at the Gelman Building, 2120 L Street NW, Washington, DC.

Opportunity for a Hearing

The NRC hereby provides notice that this is a proceeding on an application for a license amendment falling within the scope of Subpart L, Informal Hearing Procedures for Adjudications in Materials Licensing Proceedings, of NRC's rules and practice for domestic licensing proceedings in 10 CFR Part 2. Pursuant to 10 CFR 2.1205(a), any person whose interest may be affected by this proceeding may file a request for a hearing in accordance with 10 CFR 2.1205(d). A request for a hearing must be filed within thirty (30) days of the date of publication of the Federal Register Notice.

The request for a hearing must be filed with the Office of the Secretary either:

1. By delivery to the Docketing and Service Branch of the Office of the Secretary at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852-2738; or
2. By mail or telegram addressed to the Secretary, U. S. Nuclear Regulatory Commission, Washington, DC 20555. Attention: Docketing and Service Branch.

In addition to meeting other applicable requirements of 10 CFR Part 2 of the NRC's regulations, a request for a hearing filed by a person other than the applicant must describe in detail:

1. The interest of the requestor in the proceeding;
2. How that interest may be affected by the results of the proceeding, including the reasons why the requestor should be permitted a hearing, with particular reference to the factors set out in 10 CFR 2.1205(h);
3. The requestor's areas of concern about the licensing activity that is the subject matter of the proceeding; and
4. The circumstances establishing that the request for a hearing is timely in accordance with 10 CFR 2.1205(d).

In accordance with 10 CFR 2.1205(f), each request for a hearing must also be served, by delivering it personally or by mail, to:

1. The licensee, Mr. James Smith, Chief, Engineering Services, XYZ Facility in Anytown, and
2. The NRC staff, by delivery to the Executive Director for Operations, One White Flint North, 11555 Rockville Pike, Rockville, MD, 20852, or by mail, addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

FOR FURTHER INFORMATION CONTACT: Supporting documentation for the proposed action is available for inspection at:

1. NRC's Public Electronic Reading Room at http::://www.nrc.gov/NRC/ADAMS/index.html, and
2. At the Commission's Public Document Room, 2120 L Street NW, Washington, D.C. 20555.

Any questions with respect to this action should be referred to Alan Jones, Decommissioning Branch, Division of Waste Management at (301) 415-XXXX.

Dated at Rockville, Maryland this 21st day of August 2000.

For the US Nuclear Regulatory Commission.

Sue Smith, Director, Decommissioning Branch, Division of Waste Management

Appendix F

Master Inspection Plan

NRC will develop a Master Inspection Plan utilizing the inspection procedures listed below. The NRC Inspection Manual Chapters (MCs), Inspection Procedures (IPs), and Temporary Instructions (TIs) listed below are especially applicable and are recommended to be used for inspections at sites undergoing decommissioning. These documents should be used as guidelines for inspectors in determining the inspection requirements for decommissioning and radiological safety aspects of various types of licensee activities. Recommended core chapters and procedures for the decommissioning inspection program are starred (*).

Document No.	**Title – Subject Area Applicable to Decommissioning**
	(these documents are available through the NRC Web Site)
MC 0610	"Inspection Reports" – Documentation of inspections.
MC 2600*	"Fuel Cycle Facility Operational Safety and Safeguards Inspection Program" – Program requirements applicable to decommissioning: Sections 2600-01 through 2600-07; Appendix A, Parts I and IV.
MC 2602*	"Decommissioning Inspection Program for Fuel Cycle Facilities and Material Licenses"
MC 2605*	"Decommissioning Procedures for Fuel Cycle and Materials Licenses"
MC 2681*	"Physical Protection and Transport of SNM and Irradiated Fuel Inspection of Fuel Facilities" – Safeguards and physical security of the site including: Sections 2681-01 through 2681-03; the physical protection inspection programs in Exhibits 1 through 6; and the material control and accounting inspection program in Exhibit 8.
MC 2800*	"Materials Inspection Program" - Program requirements applicable to decommissioning: All sections, for licensee activities and NRC inspections that carry over from licensee operations.
IP 36100	"10 CFR Part 21 Inspection at Nuclear Power Reactors" – Inspection of equipment used during decommissioning.
IP 83822*	"Radiation Protection" – Radiation protection.
IP 83890*	"Closeout Inspection and Survey" – Confirmatory surveys.
IP 83895	"Radiation Protection - Follow up on Expired Licenses" – Radiation protection.
IP 84850*	"Radioactive Waste Management – Inspection of Waste Generator Requirements of 10 CFR 20 and 10 CFR 61" - Waste management.
IP 84900	"Low-Level Radioactive Waste Storage" – Waste storage.
IP 86740*	"Inspection of Transportation Activities" – Transportation of waste.
IP 87103	"Inspection of Materials Licensees Involved in an Incident or Bankruptcy Filing" – Response to incidents or bankruptcy.

IP 87104*	"Decommissioning Inspection Procedure for Materials Licensees"
IP 88005*	"Management Organization and Controls" – Quality assurance program; records control; internal review and audit; procedure control; safety committee.
IP 88015*	"Headquarters Nuclear Criticality Safety Program" – Criticality for fuel cycle facilities.
IP 88020 &	"Regional Criticality Safey Inspection Program" and "Maintenance and Surveillance
IP 88025	Testing" – Surveillance testing and safety limits.
IP 88035*	"Radioactive Waste Management" – Waste management.
IP 88045*	"Environmental Protection" – Releases to the environment.
IP 88050* & IP 88055*	"Emergency Preparedness" and "Fire Protection" – Emergency planning.
IP 88104*	"Decommissioning Inspection Procedure for Fuel Cycle Facilities"
IP 93001	"OSHA Interface Activities" – Interface with other agencies.
TI 2800/026	"Follow up Inspection of Formerly Licensed Sites Identified as Potentially Contaminated"

Appendix G

Safety Evaluation Report Outline and Template

G.1 OUTLINE FOR A SAFETY EVALUATION REPORT

The following outline for an SER is based on the checklist from the SRP (NUREG-1727) and shown in Appendix D of this report. The SRP shows the finding NRC must reach before a DP is approved. Note that some sections may not apply to all facilities and DP's. For example, the discussion of Institutional Controls does not apply to sites planning release for unrestricted use.

I. EXECUTIVE SUMMARY

II. FACILITY OPERATING HISTORY

1. License Number/Status/Authorized Activities
2. License History
3. Previous Decommissioning Activities
4. Spills
5. Prior On-Site Burials

III. FACILITY DESCRIPTION

1. Site Location and Description
2. Population Distribution
3. Current/Future Land Use
4. Metrology and Climatology
5. Geology and Seismology
6. Surface Water Hydrology
7. Ground Water Hydrology
8. Natural Resources

IV. RADIOLOGICAL STATUS OF FACILITY

1. Contaminated Structures
2. Contaminated Systems and Equipment
3. Surface Soil Contamination
4. Subsurface Soil Contamination

5. Surface Water
6. Ground Water

V. DOSE MODELING

1. Unrestricted Release Using Screening Criteria
2. Unrestricted release using screening criteria for building surface residual radioactivity
3. Unrestricted release using screening criteria for surface soil residual radioactivity
4. Unrestricted Release Using Site-Specific Information
5. Restricted Release Using Site-Specific Information
6. Release Involving Alternate Criteria

VI. ENVIRONMENTAL INFORMATION

VII. ALARA ANALYSIS

VIII. PLANNED DECOMMISSIONING ACTIVITIES

1. Contaminated Structures
2. Contaminated Systems and Equipment
3. Soil
4. Surface and Ground Water
5. Schedules

IX. PROJECT MANAGEMENT AND ORGANIZATION

1. Decommissioning Management Organization
2. Decommissioning Task Management
3. Decommissioning Management Positions and Qualifications
4. Radiation Safety Officer
5. Training
6. Contractor Support

X. HEALTH AND SAFETY PROGRAM DURING DECOMMISSIONING

1. Radiation Safety Controls and Monitoring for Workers
2. Air Sampling Program
3. Respiratory Protection Program
4. Internal Exposure Determination
5. External Exposure Determination
6. Summation of Internal and External Exposures
7. Contamination Control Program
8. Instrumentation Program
9. Nuclear Criticality Safety (if applicable)
10. Health Physics Audits, Inspections, and Recordkeeping Program

XI. ENVIRONMENTAL MONITORING AND CONTROL PROGRAM

1.Environmental ALARA Evaluation Program

2.Effluent Monitoring Program

3.Effluent Control Program

XII. RADIOACTIVE WASTE MANAGEMENT PROGRAM

1. Solid Radwaste
2. Liquid Radwaste
3. Mixed Waste

XIII. QUALITY ASSURANCE PROGRAM

1. Organization
2. Quality Assurance Program
3. Document Control
4. Control of Measuring and Test Equipment

5. Corrective Action
6. Quality Assurance Records
7. Audits and Surveillances

XIV FACILITY RADIATION SURVEYS

1. Release Criteria
2. Characterization Surveys
3. In-Process Surveys
4. Final Status Survey Design
5. Final Status Survey Report

XV. FINANCIAL ASSURANCE

1. Cost Estimate
2. Certification Statement
3. Financial Mechanism

XVI. RESTRICTED USE/ALTERNATE CRITERIA

1. Restricted Use
2. Eligibility Demonstration
3. Institutional Controls
4. Site Maintenance and Financial Assurance
5. Obtaining Public Advice
6. Dose Modeling and ALARA Demonstration
7. Alternate Criteria

G.2 TEMPLATE FOR A SAFETY EVALUATION REPORT

The template and data file below demonstrate the correct format and language for SERs. This template and a sample data file contain the areas of review and the findings required before approval of the DP can be issued. They are available to NRC staff electronically as SER1.dat and SER-1.frm (in WordPerfect 8 format) on the shared network drive. These electronic files are combined using the WP merge function to generate the outline of a site-specific SER.

1.0 Executive Summary

2.0 Facility Operating History

2.1 License Number/Status/Authorized Activities

The NRC staff has reviewed the information in the "Facility Operating History" section of the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 2 ("Facility Operating History"). Based on this review, the NRC staff has determined that the licensee lic nam has provided sufficient information to aid the NRC staff in evaluating the licensee's determination of the radiological status of the facility and the licensee's planned decommissioning activities, to ensure that the decommissioning can be conducted in accordance with NRC requirements. *(Note to reviewers - this finding incorporates the results of the staff's assessment under Sections 2.2, 2.3, 2.4, and 2.5, below)*

2.2 License History

2.3 Previous Decommissioning Activities

2.4 Spills

2.5 Prior On-site Burials

3.0 Facility Description

3.1 Site Location and Description

3.2 Population Distribution

3.3 Current/Future Land Use

3.4 Metrology and Climatology

3.5 Geology and Seismology

3.6 Surface Water Hydrology

3.7 Groundwater Hydrology

3.8 Natural Resources

3.9 Ecology/Endangered Species

4.0 Radiological Status of Facility

4.1 Contaminated Structures

The staff may combine the evaluation finding for the licensee's or responsible party's description of contaminated structures with the findings for the remaining areas in this section of the SRP as follows: The NRC staff has reviewed the information in the "Facility Radiological Status" section of the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 4 ("Radiological Status of Facility"). Based on this review, the NRC staff has determined that the licensee lic nam has described the types and activity of radioactive material contamination at its facility sufficiently to allow the NRC staff to evaluate the potential safety issues associated with remediating the facility, whether the remediation activities and radiation control measures proposed by the licensee or responsible party are appropriate for the type of radioactive material present at the facility, whether the licensee's or responsible party's waste management practices are appropriate, and whether the licensee's or responsible party's cost estimates are plausible, given the amount of contaminated material that will need to be removed or remediated.

4.2 Contaminated Systems and Equipment

4.3 Surface Soil Contamination

4.4 Subsurface Soil Contamination

4.5 Surface Water

4.6 Groundwater

5.0 Dose Modeling Evaluations

Introduction

5.1 Unrestricted Release using Screening Criteria

5.1.1 Building Surfaces

The staff has reviewed the dose modeling analyses for *[identifier/name of decommissioning option]* as part of the review of the lic nam 's decommissioning plan, using Standard Review Plan 5.1.1.

The staff concludes that the dose estimate calculated using the default screening analysis is appropriate for the decommissioning option and exposure scenario assumed. In addition, this dose estimate provides reasonable assurance that the dose criterion in 10 CFR 20.1402 will be

met. This conclusion is based on the modeling effort performed by the staff in initially developing the default screening analysis.

In determining the dose to the average member of the critical group, the licensee has used the assumptions inherent in the screening analysis and the parameter uncertainties have been previously evaluated on a generic basis by the staff as part of establishing the default screening analysis.

5.1.2 Surface Soil

The staff has reviewed the dose modeling analyses for *[identifier/name of decommissioning option]* as part of the review of the lic nam 's decommissioning plan, using Standard Review Plan 5.1.2.

The staff concludes that the dose estimate calculated using the default screening analysis is appropriate for the decommissioning option and exposure scenario assumed. In addition, this dose estimate provides reasonable assurance that the dose criterion in 10 CFR 20.1402 will be met. This conclusion is based on the modeling effort performed by the staff in initially developing the default screening analysis.

In determining the dose to the average member of the critical group, the licensee has used the assumptions inherent in the screening analysis and the parameter uncertainties have been previously evaluated on a generic basis by the staff as part of establishing the default screening analysis.

5.2 Unrestricted Release using Site-Specific Information

The staff has reviewed the dose modeling analyses for *[identifier/name of decommissioning option]* as part of the review of the lic nam 's decommissioning plan, using Standard Review Plan 5.2.

The staff concludes that the dose estimate calculated using the default screening analysis is appropriate for the decommissioning option and exposure scenario assumed. In addition, this dose estimate provides reasonable assurance that the dose criterion in 10 CFR 20.1402 will be met. This conclusion is based on the modeling effort performed by the staff in initially developing the default screening analysis.

In determining the dose to the average member of the critical group, the licensee has used the assumptions inherent in the screening analysis and the parameter uncertainties have been previously evaluated on a generic basis by the staff as part of establishing the default screening analysis.

5.3 Restricted Release using Site-Specific Information

The staff has reviewed the dose modeling analyses for *[identifier/name of decommissioning option]* as part of the review of the lic nam 's decommissioning plan, using Standard Review Plan 5.3.

The staff concludes that the dose modeling completed for *[option description]* is reasonable and is appropriate for the exposure scenarios under consideration. The dose estimates provide reasonable assurance that if the restrictions work as proposed, the dose to the average member of the critical group is not likely to exceed the 0.25-mSv (25-mrem) annual dose limit in 10 CFR 20.1403(b), and if they fail, the dose to the average member of the critical group is not likely to exceed the annual dose limit in 10 CFR 20.1403(e). This conclusion is based on the modeling effort performed by the licensee and the independent analyses and review performed by the staff.

In determining the dose, the licensee has used a combination of the conceptual model(s), exposure scenarios, mathematical model(s), and input parameters to calculate a reasonable estimate of dose. The licensee has adequately considered the uncertainties inherent in the modeling analysis.

[The staff's technical evaluation report should include: (1) a brief summary of the exposure scenarios used to evaluate compliance with 10 CFR 20.1403; (2) a brief summary of any independent analyses conducted by the staff; (3) reference to the mathematical method(s) used; and (4) a comparison of the dose value(s) computed by the staff with those of the licensee.]

5.4 Release Involving Alternate Criteria

The staff has reviewed the dose modeling analyses for *[identifier/name of decommissioning option]* as part of the review of the lic nam 's decommissioning plan, using Standard Review Plan 5.4.

The staff concludes that the dose modeling completed for *[option description]* is reasonable and is appropriate for the exposure scenarios under consideration. This conclusion is based on the modeling effort performed by the licensee and the independent analyses and review performed by the staff.

In determining the dose, the licensee has used a combination of the conceptual model(s), exposure scenarios, mathematical model(s), and input parameters to calculate a reasonable estimate of dose. The licensee has adequately considered the uncertainties inherent in the modeling analysis.

[The staff's technical evaluation report should include: (1) a brief summary of the exposure scenarios used; (2) a brief summary of any independent analyses conducted by the staff; (3) reference to the mathematical method(s) used; and (4) a comparison of the dose value(s) computed by the staff with those of the licensee.]

6.0 Alternatives Considered and Rationale for Chosen Alternative

6.1 Alternatives Considered

The NRC staff has reviewed the information in the evaluation of the Decommissioning Alternatives in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 6 ("Alternatives Considered and Rationale for Chosen Alternative"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has adequately described the impacts of all reasonable alternatives to the decommissioning alternative described in the decommissioning plan.

6.2 Rationale for Chosen Alternative

The NRC staff has reviewed the rationale for selecting the decommissioning alternative in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 6 ("Alternatives Considered and Rationale for Chosen Alternative"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has adequately evaluated the impacts of all reasonable decommissioning alternatives.

7.0 ALARA Analysis

The staff has reviewed the information submitted by lic nam to demonstrate that the preferred decommissioning option is ALARA as required in 10 CFR Part 20, Subpart E, in accordance with the criteria in the NMSS Decommissioning Standard Review Plan, Section 7.0 ("ALARA Analysis"). Based on this review the staff concludes that the preferred option provides reasonable assurance that the remediation will result in residual radioactivity levels that are ALARA. The licensee has committed to showing compliance during remediation by [meeting the concentration limits established in the decommissioning plan/setting appropriate remediation goals' and establishing a protocol to optimize the remediation activities during decommissioning].

8.0 Planned Decommissioning Activities

8.1 Contaminated Structures

[The staff may combine the evaluation finding for the licensee's or responsible party's description of the planned decommissioning activities with the findings for the remaining areas in this section of the SRP as follows:]

The NRC staff has reviewed the decommissioning activities described in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 8 (Planned Decommissioning Activities). Based on this review the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to allow the NRC staff to evaluate the licensee's planned decommissioning activities to ensure that the decommissioning can be conducted in accordance with NRC requirements.

8.2 Contaminated Systems and Equipment

8.3 Soil

8.4 Surface and Groundwater

8.5 Schedules

9.0 Project Management and Organization

9.1 Decommissioning Management Organization

The NRC staff has reviewed the description of the decommissioning project management organization, position descriptions, management and safety position qualification requirements and the manner in which the licensee [licensee name], license number 040-0xxxx will use contractors during the decommissioning of its facility located at [insert location of facility] according to the NMSS Decommissioning Standard Review Plan, Section 9 ("Decommissioning Management Organization"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to allow the NRC staff to evaluate the licensee's decommissioning project management organization and structure to determine if the decommissioning can be conducted safely and in accordance with NRC requirements. *(Note that this finding incorporates the results of the staff's assessment under Sections 9.2 - 9.5, below).*

9.2 Decommissioning Task Management

9.3 Decommissioning Management Positions and Qualifications

9.3.1 Radiation Safety Officer

9.4 Training

9.5 Contractor Support

10.0 Radiation Safety and Health Program

10.1 Radiation Safety Controls and Monitoring for Workers

10.1.1 WorkplaceAir Sampling Program

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.1 (Air Sampling Program). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information on when air samples will be taken in work areas, the types of air sample equipment to be used and where they will be located in work areas, calibration of flow meters, minimum detectable activities (MDA) of equipment to be used for analyses of radionuclides collected during air sampling, action levels for airborne radioactivity (and corrective actions to be taken when these levels are exceeded) to allow the NRC staff to conclude that the licensee's air sampling program will comply with 10 CFR 20.1204, 20.1501(a)-(b), 20.1502(b), 20.1703(a)(3)(I)-(ii), and Regulatory Guide 8.25.

10.1.2 Respiratory Protection Program

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.2 (Respiratory Protection Program). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to implement an acceptable respiratory protection program so as to allow the NRC staff to conclude that the licensee's program will comply with 10 CFR 20.1101(b), and 10 CFR 20.1701 to 20.1704 and Appendix A of 10 CFR Part 20.

10.1.3 Internal Exposure Determination

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.3 ("Internal Exposure Determination"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information on methods to calculate internal dose of a worker based upon measurements from air samples or bioassay samples to allow the NRC staff to conclude that the licensee's program to determine internal exposure will comply with 10 CFR 20.1101(b), 20.1201(a)(1), (d) and (e), 20.1204 and 20.1502(b).

10.1.4 External Exposure Determination

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.4 ("External Exposure Determination"). Based upon this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information on methods to measure or calculate the external dose of a worker to allow the NRC staff to conclude that the licensee's program to determine external exposure will comply with the requirements of 10 CFR 20.1101(b), 20.1201(c), 20.1203, 20.1501(a)(2)(i) and (c), 20.1502(a), and 20.1601.

10.1.5 Summation of Internal and External Exposures

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.5 ("Summation of Internal and External Exposures"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to conclude that the licensee's program for summation of internal and external exposures will comply with 10 CFR 20.1202 and 20.1208(c)(1) and (2), and 20.2106.

10.1.6 Contamination Control Program

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.6 ("Summation of Internal and External Exposures"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to control contamination on skin, on protective and personal clothing, on fixed and removable contamination on work surfaces, on transport vehicles, on equipment (including ventilation hoods), and on packages to allow the NRC staff to conclude that the licensee's contamination control program will comply with 20.1501(a), 20.1702, 20.1906 (b), (d); and (f) of 10 CFR Part 20. The staff has verified that the information summarized under "Evaluation Criteria" above is included in the licensee's description of the methodology used to control contamination at the facility.

10.1.7 Instrumentation Program

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 10.1.7 ("Summation of Internal and External

Exposures"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information on the sensitivity and the calibration of instruments and equipment to be used to make quantitative measurements of ionizing radiation during surveys to allow the NRC staff to conclude that the licensee's instrumentation program will comply with 10 CFR 20.1501(b) and (c).

10.2 Nuclear Criticality Safety

The results of staff's review of the licensee's submittal should be stated in the form of findings of fact and acceptability for compliance with the regulations as guided by this SRP. In particular, the evaluation should make findings as to the acceptability and adequacy of the items addressed by this SRP to provide reasonable assurance of protection of public health and safety from the risk of nuclear criticalities during decommissioning.

10.3 Health Physics Audits and Record-Keeping Program

The NRC staff has reviewed the description of the licensee's, [facility name], license number 040-0xxxx audit and record keeping program which the licensee will utilize during the decommissioning of its facility located at [insert location of facility] according to the NMSS Decommissioning Standard Review Plan, Section 10.3 ("Health Physics Audit, Inspection and Record-Keeping Program"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information to allow the NRC staff to evaluate the licensee's executive management and RSO audit and record keeping program to determine if the decommissioning can be conducted safely and in accordance with NRC requirements.

11.0 Environmental Monitoring Program

11.1 Environmental ALARA Evaluation Program

The NRC staff has reviewed the information in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 11 ("Environmental Monitoring and Control Program"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has provided sufficient information on the staff to conclude that the licensee's program will comply with 10 CFR Part 20.

Note that the results from the staff's evaluation of the Environmental ALARA, Environmental Monitoring, and Effluent Control programs should be combined in this finding.

11.2 Effluent Monitoring Program

11.3 Effluent Control Program

12.0 Radioactive Waste Management Program

12.1 Solid Radioactive Waste

The staff may combine the evaluation finding for the licensee's or responsible party's description of solid radioactive waste management programs with the findings for the remaining areas in this section of the SRP, as follows:

The NRC staff has reviewed the licensee's descriptions of the radioactive waste management program for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 12("Radioactive Waste Management Program"). Based on this review, the NRC staff has determined that the licensee's, [licensee name], programs for the management of radioactive waste generated during decommissioning operations ensure that the waste will be managed in accordance with NRC requirements and in a manner that is protective of the public health and safety.

12.2 Liquid Radioactive Waste

12.3 Mixed Waste

13.0 Quality Assurance Program

13.1 Organization

The NRC staff has reviewed the Quality Assurance Program for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 13 ("QA Program"). Based on this review, the NRC staff has determined that the licensee's, [licensee name], QA program is sufficient to ensure that information submitted to support the decommissioning of its facility should be of sufficient quality to allow the staff to determine if the licensee's planned decommissioning activities can be conducted in accordance with NRC requirements. *(Note that this finding incorporates the results of the staff's assessment of the entire QA program as described in the following subsections of Section 13).*

13.2 Quality Assurance Program

13.3 Document Control

13.4 Control of Measuring and Test Equipment

13.5 Corrective Action

13.6 Quality Assurance Records

13.7 Audits and Surveillances

14.0 Facility Radiation Surveys

14.1 Release Criteria

The NRC staff has reviewed the information in the Decommissioning Plan *(or the Final Status Survey Report)* for the [facility name], license number 040-0xxxx according to the NMSS Standard Review Plan, Section 14.1 ("Release Criteria"). Based on this review, the NRC staff have determined that lic nam has summarized the DCGL(s) and area factors used for survey design and for demonstrating compliance with the radiological criteria for license termination.

14.2 Characterization Surveys

The NRC staff has reviewed the information in the Decommissioning Plan (or Final Status Survey Report) for the [facility name], license number 040-0xxxx according to the NMSS Standard Review Plan, Section 14.2 ("Characterization Surveys"). This review has determined that the radiological characterization of the site, area, or building is adequate to permit planning for a remediation that will be effective and will not endanger the remediation workers, to demonstrate that it is unlikely that significant quantities of residual radioactivity has not gone undetected, and to provide information that will be used to design the final status survey.

14.3 Remedial Action Support Surveys

The staff should combine the findings from section 14.3 with those from sections 14.1 and 14.2.

14.4 Final Status Survey Design

The NRC staff has reviewed the information in the Decommissioning Plan (or the Final Status Survey Report) for the [facility name], license number 040-0xxxx according the NMSS Standard Review Plan, Section 14.3. Based on this review, the NRC staff has determined that lic nam final status survey design is adequate to demonstrate compliance with radiological criteria for license termination.

14.5 Final Status Survey Report

The NRC staff has reviewed the final status survey results for the [facility name], license number 040-0xxxx according the NMSS Standard Review Plan, Section 14.5 ("Final Status Survey Report"). Based on this review, the NRC staff has determined that lic nam has demonstrated that the licensee's site (or area or building) meets the radiological criteria for license termination.

15.0 Financial Assurance

Introduction

15.1 Cost Estimate

15.1.1 Evaluation Criteria Applicable to all Cost Estimates For Restricted or Unrestricted Use

15.1.2 Additional Information Criteria Applicable to Cost Estimates for Restricted Use

The NRC staff has reviewed the cost estimate for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 15 (Financial Assurance for Decommissioning). Based on this review, the NRC staff has determined that the cost estimate submitted by the licensee adequately reflects the costs to carry out all required decommissioning activities prior to license termination and, if the license is being terminated under restricted conditions, to enable an independent third party to assume and carry out responsibilities for any necessary control and maintenance of the site.

15.2 Certification Statement

The NRC staff has reviewed the certification statement for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 15 (Financial Assurance for Decommissioning). Based on this review, the NRC staff has determined that the certification statement submitted by the licensee specifies the appropriate information and level of financial assurance coverage.

15.3 Financial Assurance Mechanism

15.3.3 Evaluation Criteria for Specific Financial Assurance Mechanisms (Unrestricted and Restricted Use)

15.3.3.1 Trust Funds

15.3.3.2 Escrow Accounts

15.3.3.3 Government Funds

15.3.3.4 Certificates of Deposit

15.3.3.5 Deposits of Government Securities

15.3.3.6 Surety Bonds

15.3.3.7 Letters of Credit

15.3.3.8 Lines of Credit

15.3.3.9 Insurance Policies

15.3.3.10 Parent Company Guarantees

15.3.3.11 Self Guarantees

15.3.3.12 External Sinking Funds

15.3.3.13 Statements of Intent

15.3.3.14 Special Arrangements with a Government Entity

15.3.3.15 Standby Trust Funds

The NRC staff has reviewed the financial assurance mechanism(s) for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 15 ("Financial Assurance for Decommissioning"). Based on this review, the NRC staff has determined that the financial assurance mechanism(s) submitted by the licensee is *(are)* adequate to ensure that sufficient funds will be available to carry out all required decommissioning activities prior to license termination and, if the license is being terminated under restricted conditions, to enable an independent third party to assume and carry out responsibilities for any necessary control and maintenance of the site.

16.0 Restricted Use/Alternate Criteria

16.1 Restricted Use

16.1.1 Eligibility Demonstration

The NRC staff has reviewed the licensee's justification for requesting license termination under restricted conditions in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 ("Restricted Use/Alternate Criteria").

Based on this review, the NRC staff has determined that the licensee [insert name and license number] has adequately demonstrated that *[insert one] [the benefits of dose reduction are less than the cost of doses, injuries and fatalities]* or *[further reductions in radioactivity levels at the site are unnecessary because they are ALARA]*.

16.1.2 Institutional Controls

The NRC staff has reviewed the description of the institutional controls in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 (Restricted Use/Alternate Criteria) and considered public comments made pursuant to 10 CFR 20.1405. The NRC staff has determined that the licensee, [licensee name], has adequately demonstrated that institutional controls are enforceable, durable and should ensure that doses to the public comply with the

criteria in 10 CFR 20.1403. In addition, the licensee or responsible party has made adequate provisions to replace the entity charged with enforcing the institutional control in the event that the entity is no longer willing or able to enforce the institutional control and has made provisions to address corrective actions at the site.

16.1.3 Site Maintenance

The NRC staff has reviewed the information regarding site maintenance and financial assurance in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 (Restricted Use/Alternate Criteria). Based on this review, the NRC staff has determined that the licensee, [licensee name], has adequately demonstrated that the site maintenance arrangements and financial assurance mechanism are adequate to ensure that the site will be maintained in accordance with the institutional controls described in the decommissioning plan and that sufficient funds are available to allow an independent third party to assume and carry out responsibilities for any necessary control and maintenance of the site after the NRC has terminated the license.

16.1.4 Obtaining Public Advice

The NRC staff has reviewed the information regarding how advice from individuals and institutions that may be affected by the decommissioning was obtained and summarized in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 ("Restricted Use/Alternate Criteria"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has demonstrated that advice from individuals and institutions that may be affected by the decommissioning was sought, obtained, evaluated, and, as appropriate, incorporated into the licensee's plans for decommissioning its facility, in accordance with NRC requirements at 10 CFR 20.1403(d).

16.1.5 Dose Modeling and ALARA Demonstration

The NRC staff has reviewed the information regarding compliance with 10 CFR 20.1403(e) summarized in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 ("Restricted Use/Alternate Criteria"). Based on this review, the NRC staff has determined that the licensee, [licensee name], has demonstrated that doses to the public from residual radioactive material after the license is terminated should not exceed 0.25 mSv/yr (25 mrem/yr), with restriction in place or [insert one: 1 mSv/yr (100 mrem/yr) if restrictions are removed, or 5 mSv/yr (500 mrem/yr), with conditions, if restrictions are removed].

If doses are estimated to be in excess of 1mSv/yr (100 mrem/yr), but less than 5 mSv/yr (500 mrem/yr) with institutional controls removed, insert the following:

In addition the licensee, [licensee name], has demonstrated that further reductions in residual radioactivity necessary to comply with the 1 mSv/yr (100 mrem/yr requirement) *[select as appropriate:* are not technically achievable, are prohibitively expensive, or result in net public or environmental harm]. The licensee has also established durable institutional controls for the site. Finally, the licensee has provided sufficient financial assurance to allow an independent third party to carry out rechecks at the site at no less than every 5 years and the amount of financial assurance is sufficient to assume and carry out responsibilities for any necessary control and maintenance of the controls at the site.

16.2 Alternate Criteria

The NRC staff has reviewed the information regarding the licensee's, [licensee name], request to decommission its facility pursuant to 10 CFR 20.1404, summarized in the Decommissioning Plan for the [facility name], license number 040-0xxxx located at [facility location] according to the NMSS Decommissioning Standard Review Plan, Section 16 ("Restricted Use/Alternate Criteria") and considered public comments made pursuant to 10 CFR 20.1405. Based on this review, the NRC staff has determined that the licensee, [licensee name], has demonstrated that doses to the public from residual radioactive material after the license is terminated should be less than the NRC limits of 1 mSv/yr (100 mrem/yr) and are ALARA. In addition, the licensee has adequately demonstrated that it has provided appropriate restrictions according to the provisions of 10 CFR 20.1403 and has adequately sought, managed and addressed advice from individuals and institutions that may be affected by the decommissioning.

Appendix H

Sample Federal Register Notices

[Federal Register: January 4, 2002 (Volume 67, Number 3)]

[Notices]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr04ja02-92]

NUCLEAR REGULATORY COMMISSION

[Docket No. 040-08794

Notice of Consideration of Amendment Request for Molycorp, Inc.,

York, PA, Site and Opportunity for a Hearing

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of a license amendment to Source Materials License SMB-1408 issued to Molycorp, Inc., (Molycorp), to defer the second round of sampling groundwater monitoring wells in 2001 at the Molycorp, York, PA, site until the completion of its decommissioning activities in 2002. Molycorp's license requires that samples are to be drawn from designated wells biannually. One round of groundwater sampling results was submitted to NRC in March 2001, with the reported data below levels of concern. Molycorp then plugged and abandoned all existing groundwater wells on site in order to proceed with decommissioning. Due to the increased volume of contaminated soil encountered during the decommissioning of the York facility, and the extension of decommissioning activities, Molycorp will not be able to reinstall and sample the monitoring wells in 2001. Prior to installing the new wells, Molycorp has committed to confer with both NRC and the Pennsylvania

Department of Environmental Protection to ensure that the new well locations are satisfactory. Molycorp shall install the new wells following the completion of decommissioning activities in 2002, and will sample the new wells on a biannual basis until its license is terminated. Molycorp's request is contained in a letter to NRC dated November 19, 2001.

If the NRC approves this request, the approval will be documented in a license amendment to NRC License SMB-1408. However, before approving the proposed amendment, the NRC will need to make the findings required by the Atomic Energy Act of 1954, as amended, and NRC's regulations. These findings will be documented in a safety evaluation report and an environmental assessment.

NRC hereby provides notice that this is a proceeding on an application for an amendment of a license falling within the scope of Subpart L, "Informal Hearing Procedures for Adjudication in Materials Licensing Proceedings," of NRC's rules of practice for domestic licensing proceedings in 10 CFR part 2. Pursuant to Sec. 2.1205(a), any person whose interest may be affected by this proceeding may file a request for ahearing in accordance with Sec. 2.1205(d). A request for a hearing must be filed within thirty (30) days of the date of publication of this Federal Register notice.

The request for a hearing must be filed with the Office of the Secretary by mail or facsimile (301-415-1101) addressed to: The Rulemaking and Adjudications Staff of the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Attention: Rulemakings and Adjudications Staff.

In accordance with 10 CFR 2.1205(f), each request for a hearing must also be served, by delivering it personally, or by mail, to:

1. The applicant, Molycorp, Inc., 300 Caldwell Avenue, Washington,PA 15301, Attention: George Dawes, and,

2. The NRC staff, General Counsel, by mail, addressed to the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. In addition to meeting other applicable requirements of 10 CFR part 2 of NRC's regulations, a request for a hearing filed by a person other than an applicant must describe in detail:

    1. The interest of the requester in the proceeding;

    2. How that interest may be affected by the results of the proceeding, including the reasons why the requester should be permitted a hearing, with particular reference to the factors set out in Sec. 2.1205(h);

    3. The requester's areas of concern about the licensing activity that is the subject matter of the proceeding; and,

3. The circumstance establishing that the request for a hearing is timely in accordance with Sec. 2.1205(d).

FOR FURTHER INFORMATION CONTACT: The application for the license amendment and supporting documentation are available for inspection at NRC's Public Electronic Reading Room at http://www.nrc.gov/NRC/ADAMS/index.html. Any questions with respect to this action should be referred to Tom McLaughlin, Decommissioning Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Telephone: (301) 415-5869. Fax: (301) 415-5398.

Dated at Rockville, Maryland, this 27th day of December 2001.

For the Nuclear Regulatory Commission.

Tom McLaughlin,Project Manager, Facilities Decommissioning Section, Decommissioning Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards.

[FR Doc. 02-230 Filed 1-3-02; 8:45 am]

BILLING CODE 7590-01-P

APPENDIX H

Federal Register: August 8, 2000 (Volume 65, Number 153)]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr08au00-93]

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NUCLEAR REGULATORY COMMISSION

[Docket No. 040-08778]

Finding of No Significant Impact Related to Amendment of Source

Materials License SMB-1393 Molycorp. Inc., Washington, PA, Facility

The U.S. Nuclear Regulatory Commission (NRC) is considering issuing an amendment to Source Materials License No. SMB-1393 issued to Molycorp, Inc. (Molycorp or licensee), to authorize decommissioning of its facility in Washington, Pennsylvania. In preparation for cleanup of the site, Molycorp submitted its initial decommissioning plan (DP) to the NRC in July 1995. The DP has been supplemented twice: (1) First on June 30, 1999, (DP Part 1) to reflect the licensee's intent to decommission a portion of the site using cleanup criteria contained in NRC's "Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites" (SDMP Action Plan) (57 Federal Register 13389); and (2) on July 14, 2000, (DP part 2) for that portion of the site intended to meet the requirements of the License Termination Rule (LTR) in 10 CFR part 20, Subpart E, "Radiological Criteria for License Termination," published in July 1997 (62 Federal Register 39057).

Environmental Assessment Summary

This Environmental Assessment (EA) addresses only the part 1 decommissioning. Part 2 will be the subject of a separate evaluation. Under the Part 1 DP (hereafter, decommissioning plan) Molycorp, Inc., will remediate contaminated soils on the main facility grounds and at a separate location where slag materials have been concentrated by past operations (i.e., slag pile) to unrestricted release levels. The decision to dispose of the materials on site will be addressed in part 2.

This EA reviews the environmental impacts of the decommissioning actions proposed by Molycorp, Inc. in the decommissioning plan (part 1) for its facility located in Washington, Pennsylvania. In connection with the review of plans for the proposed action, NRC staff is preparing a safety evaluation report (SER), that evaluates compliance of the proposed action

with NRC regulations. On issuance, the SER will be available in NRC's Electronic Reading Room, on NRC's Web site http://www.nrc.gov/adams/index.html.

Proposed Action

The decommissioning activities proposed by Molycorp include:

Identify the location, depth, and thickness of areas containing greater than 10 picoCuries per gram (0.37 Becquerels per gram) total thorium.

Mobilize equipment, set up decontamination facilities, and implement erosion control measures in preparation for excavation activities.

Survey the site area to establish spatial coordinates of contaminated areas identified from site characterization radiological surveys.

Excavate clean overburden and stockpile onsite.

Excavate all soil and slag containing average contamination levels in excess of the unrestricted use criteria.

Stockpile excavated material in preparation for loading onto transports. Stockpiling duration is estimated at two weeks.

Excavation and stockpiling of waste will not occur until NRC has approved a disposal location for the waste.

Sample excavated material to be transported consistent with requirements of the NRC-approved disposal location.

Transporting the material containing average contamination levels in excess of the unrestricted use criteria to a NRC-approved location.

Conduct final surveys on excavated areas to demonstrate compliance with the unrestricted use limits.

Survey the stockpiled clean overburden.

Backfill excavated areas that meet the unrestricted use criteria with the clean overburden.

Need for Proposed Action

The proposed action is necessary to allow Molycorp to remove radioactive material attributable to licensed operations, to levels that permit unrestricted-use of that portion of the site.

Environmental Impacts of the Proposed Action

NRC staff reviewed the levels of contamination, the proposed remediation and decommissioning methods, and the radiological release criteria that will be used during the remediation. The radiological criteria are specified so that decommissioning activities will meet the 10 CFR Part 20 radiation protection requirements. Worker and public doses will be limited so that exposures will not exceed Part 20 requirements and are as low as is reasonably achievable.

Molycorp will perform remediation to achieve the unrestricted release criteria approved by the Commission in the SDMP Action Plan and will transport radioactive waste to a NRC-approved disposal facility.

The EA include: a description of the facility and its operating history; a description of the radiological status of the facility; an evaluation of the proposed methods for decontamination and dismantlement of structures, buildings, and equipment; an evaluation of the proposed methods for decontamination of outdoor areas; a review of the licensee's radiation protection program; and a summary of the radiological release criteria.

The EA assesses radiological impacts to: workers from planned decommissioning activities; members of the public from planned decommissioning activities; and workers and members of the public from transportation of low-level radioactive waste. The EA also includes a radiological accident analysis.

Non-radiological impacts addressed in the EA include: non-radiological releases; economic impact; transportation; air quality; noise; environmental justice; and endangered species.

Alternatives to the Proposed Action

The following alternatives, and the associated impacts and conclusions, are discussed in the EA:--No action--Proposed action--On-site disposal at the Washington, Pennsylvania site--On-site storage of the excavated soil at the Washington, Pennsylvania, site.

Conclusions

Based on the NRC staff evaluation of the Part 1 DP for the Washington, Pennsylvania, facility, as documented in the EA, the staff has determined that the proposed decommissioning can be accomplished in compliance with NRC's public and occupational dose limits, effluent release limits, and residual radioactive material limits. In addition, the approval of the decommissioning plan will not result in a significant adverse impact on the public health and safety or the environment.

Agencies and Individuals Contacted

NRC staff consulted with the Pennsylvania Department of Environmental Protection (PADEP) in the preparation of this EA. PADEP provided comments on the draft EA in a letter dated July 14, 2000. NRC responded to these comments on July 27, 2000. The final EA reflects the staff's resolution as documented in its July 27, 2000, response. In addition, the Pennsylvania Bureau of Wildlife Management of the Pennsylvania Game Commission was consulted and noted that no endangered species have been documented as occurring on or near the site.

Similarly, the National Register of Historic Places was consulted and indicated that no historic properties are listed for the Molycorp, Inc., Washington site. Also, the Pennsylvania Historical and Museum Commission indicated there are no archeological sites of significance in the facility area.

Finding of No Significant Impact

Based upon the analysis documented in the EA, the Commission concludes that the proposed action will not have a significant impact on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

Additional Information

The EA is available for review at NRC's Electronic Reading Room, on the NRC's Web site at http://www.nrc.gov/adams/index.html. The accession [file] number for this document is ML003735909. The NRC Project Manager for this action is Mr. LeRoy Person. Mr. Person can be reached at (301) 415-6701.

Dated at Rockville, Maryland, this 2nd day of August 2000.

For the Nuclear Regulatory Commission.

Larry W. Camper,

Chief, Decommissioning Branch, Division of Waste Management, Office of

Nuclear Material Safety and Safeguards.

[FR Doc. 00-20013 Filed 8-7-00; 8:45 am]

BILLING CODE 7590-01-P

Appendix I

Using the Internet to Obtain Copies of NRC Documents and Other Information

In an effort to make NRC documents and information readily available to licensees and the general public, NRC is placing documents and information on its Internet web site.

Many of the reference sections of the NUREG refer to a world wide web address on the Internet (e.g., <http://www.nrc.gov>). Applicants and licensees who have Internet access may use the referenced address to find more information on a topic, the referenced document, or information on obtaining the referenced document.

To access the referenced site, type the address into the location box of the Internet browser software and press the enter key. Sometimes the given address does not go directly to the necessary page; however, the addressed page will have links to the information referenced in this NUREG. Generally, links appear either as blue text or as a picture in the document. To use a link, place the pointer on the blue text or picture. The pointer will change from an arrow to a hand with the index finger extended. By double-clicking the mouse on the blue text or picture, the Internet browser will go to the selected page. For example, to review the definitions in 10 CFR Part 20, type <http://www.nrc.gov> in the location box of your browser and press the enter key. After the NRC homepage comes up, place the pointer on the reference library icon. The arrow will change to a hand with the index finger extended. Double-click the pointing device button. Next, place the pointer on the blue text, "Title 10 of the Code of Federal Regulations" and double-click the mouse. Place the pointer on the blue text "20" and double-click. Finally, place the pointer on the blue text "Definitions" and double-click.

This appendix will be revised in the final version of this document as NRC's Web site is updated.

Appendix J

Sample Licenses

NRC FORM 374

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Fuel Renovation, Inc.	3. License Number SNM-XXX, Amendment 27
2. 1205 Flag Road Paul, BL XXXXX-XXXX	4. Expiration Date July 31, 2009
	5. Docket No. 70-XXX Reference No.

6. Byproduct Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum amount that Licensee May Possess at Any One Time Under This License
A. Uranium enriched up to 100 w/% in the U235 isotope which may contain up to 10^{-6} grams plutonium per gram of uranium, 0.25 millicuries of fission products per gram of uranium, and 1.5×10^{-5} grams transuranic materials (including plutonium), per gram of uranium, as contaminants.	A. As described in Appendix B to Chapter 1 of the FR license application, excluding pyrophoric forms	A. 7000 kgs U235
B. Uranium enriched up to 100 w/% in the U233 isotope	B.1 Any form, but only as residual contamination from previous operations	B.1 One kg U233
	B.2 Any form, as received for analysis and/or for input into development studies	B.2 250 grams U233
C. Plutonium	C.1 As counting and	C.1 10 millicuries

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	2
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX
	Docket or Reference Number 70-XX
	Amendment 27

	calibration standards	
	C.2 As residual contamination and holdup from previous operations.	C.2 As described in the license application and an FR report to the NRC transmitted by letter dated January 21, XXXX (FR Document No. 28G94-001), and FR report dated October 17, 1988 (FR Document No. 28G88-007)
	C.3 As received for analysis or for input into development studies, any form except pyrophoric	C.3 200 grams
	C.4 As waste resulting from decontamination and volume reduction of equipment received from other organizations, any form except pyrophoric	C.4 200 grams
D. Transuranic Isotopes	D. As waste resulting from processing enriched uranium	D. 20 grams
E. Fission Products	E. As waste resulting from processing enriched uranium	E. 50 Curies each isotope, total not to exceed 500 Curies, Cs-137 not to exceed 5 Curies, Co-60 not to exceed 5 Curies, H-3 not to exceed 15 Curies, I-129 not to exceed 100 millicuries.

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	3
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX
	Docket or Reference Number 70-XX
	Amendment 27

9. Authorized place of use: The licensee's existing facilities in Uncommon County, Bliss, as described in the referenced application.

10. This license shall be deemed to contain two sections: Safety Conditions and Safeguards Conditions. These sections are part of the license, and the licensee is subject to compliance with all listed conditions in each section.

FOR THE NUCLEAR REGULATORY COMMISSION

Date: _____ By: _____, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety
and Safeguards
Washington, DC 20555

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	4
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX
	Docket or Reference Number 70-XX
	Amendment 27

SAFETY CONDITIONS

S-1: For use in accordance with the statements, representations, and conditions in Chapters 1 through 8 of the application submitted by letter dated July 24, XXXX, and supplements dated May 9 and November 14, XXXX; March 13, March 25, June 23, July 23, August 7, August 14, August 28, September 4, September 11, September 15, September 25, September 28, October 19, October 21, October 22, October 23, November 6, November 13, November 16, November 20, November 24, December 18, and December 21, XXXX; January 29, February 4, February 10, February 16, February 24, April 20, April 23, May 21, July 30 (FR No. 21G-99-0058), July 30 (FR No. 21G-99-0093), August 13, December 10, December 21, and December 29, XXXX; and January 25, March 31, July 6, August 18, August 23, September 1, November 3, December 5, December 8, December 14, December 20, December 27, XXXX; and January 11, January 12, March 30, and May 11, XXXX.

S-2: FR shall not operate the fuel manufacturing processes described in Sections xx.1 and x.x of the license application until an Integrated Safety Analysis (ISA) has been performed, including the appropriate nuclear criticality safety evaluations. A summary of the ISA shall be submitted to the NRC, in addition to an application for amendment to the license, at least 90 days prior to the FR planned restart of operations.

S-3: Deleted by Amendment 5, dated May XXXX.

S-4: FR shall not operate the LEU recovery facility described in Section xx.4 of the license application until an ISA has been performed, including the appropriate nuclear criticality safety evaluations. A summary of the ISA shall be submitted to the NRC, in addition to an application for amendment to the license, at least 90 days prior to the FR planned restart of operations.

S-5: FR shall not operate the 300 complex incinerator system described in Section xx.4 of the license application until an ISA has been performed, including the appropriate nuclear criticality safety evaluations. A summary of the ISA shall be submitted to the NRC, in addition to an application for amendment to the license, at least 90 days prior to the FR planned restart of operations.

S-6: Deleted by Amendment 2, dated February XXXX.

S-7: Deleted by Amendment 2, dated February XXXX.

S-8: FR shall conduct quarterly NCS audits of selected plant activities involving SNM such that SNM processing or storage areas are audited biennially. The purpose of the audits is to determine that: (a) site operations are conducted in compliance with license conditions, operating procedures, and posted limits, (b) administrative controls and postings are consistent with NCSE, (c) equipment and operations comply with NCSE, and (d) corrective actions relative to findings of NCS inspections are adequate.

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	5
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX
	Docket or Reference Number 70-XX
	Amendment 27

S-9: Subcritical parameter values based on experiments, unless they are from the ANSI/ANS series 8 standards, shall be not less than that corresponding to k_{eff} of 0.98 or, alternatively, the factors in Section x.x.x.x of the license application may be applied for uranium-water systems.

S-10: Notwithstanding the description of setting failure limits in Section x.x.x. of the application, when determining subcriticality based on computer code calculations the failure limit shall be no greater than the value corresponding to: k_{eff} = .95 for systems containing uranium enriched in ^{235}U above 20%, k_{eff} = .95 for systems above 10% but below 20% enrichment that are not highly moderated, k_{eff} = .97 for systems above 10% but below 20% enrichment that are highly moderated, and k_{eff} = .97 for systems containing uranium enriched in ^{235}U less than 10%. As one acceptable method, the margin may be based on a validation against applicable benchmark experiments using a one-sided 95% tolerance limit at a 95% confidence level less an additional 0.015 Δk_{eff}. The k_{eff} values of .95 and .97 above are exact limit values, and do not imply that compliance need only be shown to 2 significant figures. Compliance with them shall allow for purely calculational inaccuracies, such as Monte Carlo variance, by meeting the limit with a margin in the conservative direction of at least two standard deviations. Any rounding shall be in the conservative direction.

S-11: Notwithstanding Section x.x..x of the application, for situations in which it is credible, and not unlikely, that critical masses or concentrations may accumulate in a solution confined to a favorable geometry or poisoned vessel, and then be released to vessels of unfavorable geometry, transfer shall be controlled by one of the following three general provisions for double contingency:

(1) multiple engineered hardware controls capable of preventing unsafe transfer; or

(2) at least one engineered hardware control capable of preventing unsafe transfer plus a determination of safe conditions and actuation of transfer by an individual; or

(3) a design requiring independent actions by two individuals before transfer is possible, each action supported by independent measurements of material to be transferred, and a determination of safe conditions. In this case, physical impediments should be included in the system design which will prohibit either individual from performing both of the actions intended to be performed independently.

S-12: Prior to August 15, XXXX, FR will implement fire protection procedures to minimize the threat of fire, explosions, or related perils to process control and safety systems which could lead to an unacceptable release of hazardous material related to SNM or radiation that would threaten workers, the public health and safety, or the environment, as committed to in Section x.x of the license application.

S-13: Deleted by Amendment No. 4, March XXXX.

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	6
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX
	Docket or Reference Number 70-XX
	Amendment 27

S-14: The 200 and 300 Complex vaults will be protected by barriers with an equivalent two hour fire resistance rating.

S-15: Active and administrative controls for flammable liquids and gasses must be operable in the fire area where flammable liquids and gases are present during CARP processing.

S-16: Prior to August 15, XXXX, CARP Process fire walls will be upgraded to meet FHA recommendations, as described in FR Document No. 21G-98-0198, *FR Response to Request for Additional Fire Safety Information for the CARP Process*, dated December 8, XXXX.

S-17: Prior to December 31, XXXX, FR shall protect CARP process areas and special nuclear material vaults from lightning by installing a lightning protection system in accordance with the standard "Lightning Protection Code," NFPA 780.

S-18: Prior to August 15, XXXX, fixed combustible gas detectors in the 600 and 800 Areas shall be capable of alarming locally and at a constantly manned location.

S-19: Prior to December 31, XXXX, FR will upgrade all process area sprinkler systems to alarm at a constantly manned location.

S-20: Deleted by Amendment 24, April XXXX.

S-21: FR will maintain an industrial fire brigade in accordance with industry standards (NFPA 600). FR will have a proceduralized method for the rapid response of external firefighting resources when sufficient fire brigade staffing is unavailable.

S-22: FR shall perform the following steps as detailed in the FR Bulk Chemical Tank Analysis (FR Document 21G-99-0207).

A. By July 31, XXXX for 330-TANKXX-002 (sulfuric acid tank), FR shall:
   1. Perform a 100 percent visual internal tank inspection.
   2. Provide details of internal nozzle penetrations and welds, add these details to drawing, then recalculate estimated service life.
   3. Conduct liquid penetrant examinations of floor-to-shell welds.
   4. Perform a magnetic flux leakage inspection of 100 percent of the tank bottom to detect underside corrosion and pitting.

B. By September 1, XXXX, FR shall provide a written plan that details the continued inspection and testing of bulk chemical storage tanks that will provide a documented safety basis for bulk storage tanks.

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	7
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX Docket or Reference Number 70-XX Amendment 27

C. Prior to December 31, XXXX, FR shall conduct a second set of ultrasonic thickness tests for 312-TANKXX-013 (nitric acid), T-306-7 (ammonium hydroxide), T306-6 (ammonium hydroxide). These readings will provide data that will allow the corrosion rate and tank wall thickness to be determined. The nitric acid tank, 312-TANKXX-013, shall also have an internal inspection and a liquid penetrant examination of the floor-to-shell welds.

D. As required by code, each tank shall have a permanent nameplate attached specifying tank operating conditions. The American Society of Mechanical Engineers, "Boiler and Pressure Vessel Code," Section VII, "Markings," lists necessary information for nameplates.

S-23: FR shall inform the NRC within 30 days of receipt of a violation notice from the State of Bliss Division of Air Pollution or Water Pollution Control, or receipt of modified requirements of the state-issued National Pollutant Discharge Elimination System (NPDES) permit.

S-24: The licensee shall maintain and execute the response measures in the Emergency Plan, Revision 4, dated September 27, XXXX, or as further revised by the licensee consistent with 10 CFR 70.32(i).

S-25 FR may make changes (modifications, additions, or removals) to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel without license amendment, provided that the proposed change does not involve:

(1) the creation of new types of accident sequences that, unless mitigated or prevented, would exceed the performance requirements of 10 CFR 70.61 and have not previously been described in the ISA summary;
(2) the usage of new processes, technologies, or controls for which FR has no prior experience;
(3) the removal, without at least an equivalent replacement of the safety function, of an item relied on for safety that is listed in the ISA summary;
(4) the alteration of any item relied on for safety, listed in the ISA summary, that is the sole item preventing or mitigating an accident sequence that exceeds the performance requirements of 10 CFR 70.61; and
(5) a change to the conditions of this license or Part I of the license application.

Proposed changes not meeting all of the above criteria shall be deemed to require NRC approval by amendment. As part of the application for amendment, FR shall perform an ISA for the change and submit either an ISA summary or applicable changes to a prior existing ISA summary. FR shall also provide any necessary revisions to its environmental report.

Proposed changes requiring revision of applicable safety or environmental bases, but not requiring an amendment to the license in accordance with the above criteria, shall be reviewed and approved by the FR safety review committee. The internally authorized change documentation shall provide the basis for determining that the change will be consistent with the criteria (1) through (5) above.

NRC FORM 374A U.S. NUCLEAR REGULATORY COMMISSION	8
MATERIALS LICENSE **SUPPLEMENTARY SHEET**	License Number SNM-XXX Docket or Reference Number 70-XX Amendment 27

For any internally authorized change implemented by FR without NRC approval pursuant to this license condition, FR shall submit annually to the NRC applicable changes to the ISA summary of a prior existing ISA. In addition, FR will submit annually a brief summary of all internally authorized changes not requiring prior NRC approval. FR will submit by January 30th of each calendar year the revisions to the ISA summary and the summary of all internally authorized changes not requiring NRC approval.

S-26: Prior to engaging in the decommissioning activities specified in Section c.c.c of the license application dated November 16, XXXX, FR must determine the status of the procedures and activities planned with respect to 10 CFR 70.38(g)(1). If required, FR must submit a decommissioning plan to the NRC for review and approval prior to initiating such actions.

S-27: At not more than 1-year intervals from the issuance date of this license, the licensee shall update the demonstration sections of the license application to reflect the licensee's current operations and evaluations. The updates shall, as a minimum, include information for the health and safety section of the application as required by 10 CFR 70.22(a) through 70.22(f) and 70.22(i) and operational data or environmental releases as required by 70.21.

S-28: By May 1, XXXX, FR shall submit an evaluation of available seismology data for the facility site and specify the maximum earthquake magnitude, the peak ground acceleration, and the return period for an earthquake occurrence with a likelihood of one in 1,000 years.

S-29: By February 1, XXXX, FR shall provide design information (e.g., applicable building codes; other construction standards) pertinent to understanding the resistance of the CARP process facility, structures, and equipment to failures caused by external events.

S-30: By November 1, XXXX, FR shall improve the process descriptions in the ISA Summary Document to focus on the safety aspects of the CARP process and to facilitate an understanding of the results of the ISA and the selection of items relied on for safety. The process descriptions should identify and describe, at each point in the process, the significant hazards that are present, the design features of the process equipment that are relevant to protecting against these hazards, and the safety systems that have been implemented to prevent accidents or mitigate their consequences.

S-31: By August 1, XXXX, FR shall fully and explicitly identify, in the ISA Summary Document, the information it considers to be "process safety information" for the CARP process and shall commit to maintaining such information current and accurate utilizing the configuration management system.

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S-32: By August 1, XXXX, FR shall state in its Safety Program Description that its ISA team for the CARP process shall have expertise in fire safety, and that the team shall address in the ISA potential accident sequences resulting from fires.

S-33: By August 1, XXXX, FR shall describe, in the ISA Summary Document for the CARP process, its approach for hazard identification and for evaluating the adequacy of items relied on for safety.

S-34: By August 1, XXXX, FR shall improve the ISA Summary Document for the CARP process to clearly identify and describe the potential accident sequences, including the initiating and subsequent events that result in the accident, the specific controls (i.e., items relied on for safety) that are used to prevent or mitigate such accidents, and the specific process materials that may be released during the accident.

S-35: By November 1, XXXX, FR shall identify specific values ((e.g., OSHA Permissible Exposure Limits (PELs), Emergency Response Planning Guidelines (ERPGs), Acute Exposure Guideline Levels (ERPGs), Threshold Limiting Values (TLVs), or the Immediately Dangerous to Life and Health values (IDLH)), used, in the ISA Summary Document for the CARP process, to define both intermediate and high consequence chemical accidents. If alternate values are used, FR shall provide justification for their choice. Also, FR shall include the environmental criterion, "a 24-hour averaged release of radioactive material outside the restricted area in concentrations exceeding 5000 times the values in Table 2 of Appendix B to 10 CFR Part 20," as a threshold for an intermediate consequence accident.

S-36: By August 1, XXXX, FR shall improve the ISA Summary Document for the CARP process to demonstrate that the potential effect on radiological safety resulting from accidental exposure of workers to hazardous chemicals is taken into account and that appropriate measures are taken to prevent or mitigate the consequences of such exposure.

S-37: By August 1, XXXX, FR shall, for each postulated accident sequence having (uncontrolled) intermediate or high consequences, identify in the ISA Summary Document for the CARP process the method(s) used to determine the consequences of the accident.

S-38: By November 1, XXXX, FR shall define in its ISA Summary Document for the CARP process, as part of FR safety program requirements: (1) qualitative or quantitative criteria for determining acceptable likelihoods for high and intermediate consequence accidents, and (2) methods used to determine compliance with these criteria for each potential accident. These criteria shall be consistent with an expectation that no high consequence accident would occur at the facility in 100 years. By November 1, 2003, FR shall apply these methods to each high and intermediate consequence accident sequence defined in the ISA, and shall determine that each meets the likelihood acceptance criteria.

S-39: For individual fire areas in the XXX Building area which contain more than 350g ^{235}U, FR shall complete a nuclear criticality safety analysis demonstrating that a criticality accident resulting from a

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credible fire, analyzed in the Fire Hazards Analysis, or from the consequences of fire-suppression activities, is highly unlikely. This may be done by: (i) demonstrating that a criticality resulting from an accident sequence initiated by a major fire would be highly unlikely, or (ii) demonstrating that a major fire is highly unlikely. FR shall also review all NCSAs potentially affected by the installation of automatic fire suppression systems and associated facility modifications to determine their effect on the safety basis. For the analyses specified by this safety condition, a major fire is defined as one which would affect two or more process Areas in Building XXX.

S-40: By December 31, XXXX, for CARP process structures and equipment, FR shall classify all items relied on for nuclear criticality safety as either safety-related or configuration-controlled equipment. Safety-related equipment (SRE) is defined as active or passive engineered-controls that are relied on to prevent nuclear criticality in accordance with the double contingency principle, and whose operation can change with time such that the equipment might not perform its function. Configuration-controlled equipment (CCE) is defined as structures, systems, or components for which either:

(i) some characteristic is relied on for double contingency, which characteristic will not change with time as a result of accidents identified in the ISA, or
(ii) the control is supplemented by one or more controls as one leg of the double contingency principle.

For SRE items, maintenance, calibration, testing, and/or inspection shall be performed in accordance with written, approved procedures to assure continued reliability and functional performance. SRE that has undergone maintenance will be functionally tested, calibrated, or inspected (as applicable) prior to restart.
CCE will be functionally tested, maintained, calibrated, and/or inspected periodically in accordance with written, approved procedures, with the following exceptions:
CCE that has no credible mechanism to fail beyond the conditions assumed in the bounding normal case does not require functional testing, calibration, or preventive maintenance.
CCE that is tested by every use and that is used with sufficient frequency to ensure adequate reliability does not require functional testing or preventive maintenance, unless it contains parts that degrade over time.

CCE items will be inspected after initial installation, replacement, and by periodic NCS audits.

S-41: FR shall provide an automatic fire suppression system to suppress and contain a fire involving extraction solvent (i.e., combustible liquids) of the uranium recovery process in Building XXX no later than June 30, XXXX. Until such time that an automatic fire suppression system has been provided, the compensatory measures described below shall be required. In addition, the duration of compensatory measures required for operating uranium recovery process Area E (column dissolvers), Area F and Area H (process involving extraction solvent), or Area G (uranyl nitrate solution evaporators) shall not exceed June 30, XXXX. Prior to June 30, XXXX, operations involving using

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extraction solvent shall be terminated and all extraction solvent safely removed from Building XXX unless by June 30, XXXX, the automatic fire suppression system is operational.

1. During CARP processing, a continuously manned fire watch of at least 2 trained personnel will be located in the XXX Building. These may be operators who are suitably trained to extinguish Class B fires. Once HEU is entered into the recovery process (Areas D thru J), a continuously manned fire watch of at least 4 trained personnel must be located in the 300 Complex, 2 of the 4 must be located in the XXX Building. Fire watch personnel need to be suitably trained in the use of self-contained breathing apparatus (SCBA), and extinguishing Class B fires utilizing portable handheld extinguishers and Aqueous-Film Forming Foam (AFFF) extinguishers units. Operators may be utilized as fire watch personnel, if suitability trained. Non-moderating agents shall be used as a first recourse to extinguish a fire. Fire hoses should be used as a last resort, when all alternatives are not successful and the overall risk to personnel is minimized.

2. Within the xxx Building, portable fire extinguisher size and placement shall meet Class B Extra (High) Hazard Classification as specified in NFPA 10. Two extra AFFF extinguisher units, with a minimum UL Classification of 160B, shall be provided for immediate use at two separate locations outside the XXX Building doorways. SCBAs shall be co-located with the AFFF extinguisher units.

3. When the fire brigade is unavailable and the XXX Building smoke detection system annunciates, the fire department shall be immediately requested. If the smoke detectors are inoperable; solvent extraction process, furnace, and calciner operations shall be suspended.

4. Firefighters who may have to use fire hoses shall be trained in nuclear criticality safety to a level equivalent to that received by a general fissile material worker. This training shall be sufficient to acquaint these personnel with the criticality hazards in the facility and the credible effects of water in areas containing SNM. Personnel shall be trained in practices which minimize the potential for criticality to the extent practicable.

5. FR shall provide the following prior to operating uranium recovery process involving Area E (column dissolvers), Area F and Area H (process involving extraction solvent), or Area G (uranyl nitrate solution evaporators) in Building XXX:

   A. Two firefighters (professional firefighters or plant fire brigade members with enhance firefighting training) shall be stationed in or immediately outside of Building XXX. These individuals must be trained in interior structural firefighting to successfully perform fire fighting operations with a high assurance in mitigating a combustible liquid fire during the early stages of fire development in Building XXX. They shall be capable of responding with required personal protective equipment and self-contained breathing apparatus to begin firefighting operations in Building XXX within 2 minutes after detection of a fire. During the course of a work-shift, only one of the two firefighters may be temporarily relieved at any given time by

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another firefighter or a trained fire watch fuel manufacturing operator for authorized activities such as lunch, rest, or other breaks. In those occasions where the individual providing relief is fire watch trained but not a trained firefighter, the firefighter on authorized leave from his or her duty station shall be capable of responding within 2 minutes after detection of a fire to begin firefighting operations in Building XXX. The licensee shall minimize the use of fire watch trained individuals to relief firefighters. In addition, FR shall ensure that plant fire brigade staffing is adequate during operations described above to ensure that the two dedicated firefighters would not be called upon for emergency response to plant emergencies outside of Building XXX.

B. A dedicated fire watch shall be stationed in Building XXX. The individual must be trained as a fire watch and the only duty perform is that of a fire watch during the operations of the processes described above. A firefighter may serve as the fire watch.

C. A nuclear criticality safety engineer shall be available in the 300 Complex with capability of responding to technically assist the on-scene incident commander or the emergency control director within 1 minute upon notification of a fire.

D. Combustible containers of fissile material (greater than contamination levels) in Building XXX may only be stored in ventilated process containment or in metal sleeved storage racks, birdcages, and carts that have been demonstrated to meet the nuclear criticality double contingency principles in the event of a fire.

6. The following conditions shall be met when uranium recovery process Area E (column dissolvers), Area F and Area H (process involving extraction solvent), or Area G (uranyl nitrate solution evaporators) is not in operation.

   A. No operations shall be conducted in Areas F and H involving the use or transfer of extraction solvent.

   B. Area G (uranyl nitrate solution evaporators) and Area E (column dissolvers) shall not be heated.

   C. Valves that isolate columns and tanks containing extraction solvent shall be closed.

S-42: Deleted by Amendment 5, dated April XXXX.

S-43: Deleted by Amendment 22, dated March XXXX.

S-44: Deleted by Amendment 22, dated March XXXX.

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S-45: Prior to placing water in the Building XXX pre-action sprinkler system (except under fire emergency conditions):

1. FR shall submit the detailed design of any safety features installed to prevent nuclear criticality in the event of a fire or activation of the fire suppression system, including the drainage rates from enclosures and equipment in which an unsafe depth of fissile material could accumulate, sprinkler spray patterns, and any other pertinent design information related to the sprinkler system which affects criticality safety, for NRC review and approval.

2. FR shall install and functionally test rigid and passive engineered barriers to prevent moderator intrusion across the boundary of moderation control areas. These barriers shall be composed of fire resistant materials.

3. FR shall ensure that all enclosures in areas not restricted by these moderation barriers have at least two drain holes of sufficient size and separation to ensure that a safe depth will not be exceeded.

4. FR shall ensure that there are no unfavorable geometry collection points where liquid water may accumulate. In the sump pit of Area 600, and in any other such areas where fissile material is handled, engineered measures, such as raschig rings, shall be used to ensure the enclosure volume remains subcritical or that liquid water from firefighting activities cannot intrude.

5. Firewater pipes and other pipes carrying moderating materials shall be prohibited from being routed over moderation control areas, unless they are double sleeved with a means provided to detect failure of the inner containment.

6. Enclosures in moderation control areas shall be analyzed to be safe under conditions of mist intrusion, unless demonstrated airtight under fire conditions.

7. Extraneous combustible materials (those not part of the materials of construction or explicitly considered in the S-39 NCS analysis) shall be prohibited from the operating floor. A fire watch shall be established if extraneous materials are introduced.

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S-46: By August 1, XXXX, FR shall submit a Criticality Safety Upgrade Program (CSUP) Plan to NRC for review and approval. This CSUP shall address the following elements, at a minimum:

1. All Nuclear Criticality Safety Analyses (NCSAs) performed or revised after May 1, XXXX shall be upgraded as follows:

   A. the criticality safety basis shall be consolidated in a single integrated and self-consistent document;
   B. all engineered structures, systems, and components and operator actions relied on to meet the double contingency principle shall be clearly identified for each accident sequence leading to criticality;
   C. the basis for double contingency shall be clearly documented, including technical documentation of the independence and unlikelihood of control failure;
   D. normal and credible abnormal operating conditions shall be clearly identified; and all assumptions credited for criticality safety shall be supported by documentation consisting of a technical demonstration of the adequacy of the assumptions rather than reliance on engineering judgement or historical practices.

2. By August 1, XXXX, management procedures defining the criticality safety program shall be upgraded to the following standards:

   A. the NCSAs consist of self-contained safety basis documents, sufficiently detailed to permit independent reconstruction of results by a knowledgeable criticality safety specialist without reliance on additional site-specific or historical knowledge;

   B. the standard technical practices used in designing calculational models are specified in sufficient detail to ensure that the resulting NCSAs are uniform with respect to modeling reflection, determining the optimal range of moderation, treating interactions, accounting for dimensional tolerances, and any bounding approximations in models;

   C. evaluation of accident sequences take potential interaction between fire and chemical safety and criticality safety into account;

   D. the scope, conduct, and documentation of independent reviews of NCSAs are specified;

   E. the applicability of code validation(s) to the specific cases being modeled is evaluated, including a determination of the adequacy of the subcritical margin;

   F. engineered as opposed to administrative controls are used as the preferred method of ensuring criticality safety, wherever practicable.

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H. the basis for using administrative instead of engineered controls is documented as part of the NCSA; and

I. a problem reporting and corrective action program is established to ensure the effectiveness of the criticality safety program and criticality controls, and to ensure that effective corrective actions and lessons learned are flowed down into appropriate implementing documents. This program shall include the re-evaluation of the unlikelihood of control failure, as part of the double contingency safety basis, as control failure data is generated.

S-47: By June 29, XXXX, FR shall submit to NRC for approval the following information related to the North Site Decommissioning Plan:

(a) area factors for volumetrically-contaminated soils and the technical basis for those area factors,
(b) actual Minimum Detectable Concentrations (MDCs) for the NaI detector and the technical basis for those MDCs,
(c) appropriate investigation levels (ILs) for static and scan survey measurements that will be performed in impacted areas.

SAFEGUARDS CONDITIONS

Section-x.0 -- ABRUPT LOSS DETECTION (For SSNM Only):

SG-1.1. Notwithstanding the requirement of 10 CFR 74.53(b)(1) to have a process detection capability for each unit process, the process units listed in Section x.x.x.x of the Plan identified in Condition SG-5.1 shall be exempt from such detection capability, and the licensee's process monitoring system shall be comprised of the control units described in Section x.x (and all sub-sections therein) of the above mentioned Plan.

Section-x.0 -- ITEM MONITORING (For SSNM Only):

SG-2.1. Notwithstanding the requirement of 10 CFR 74.55(b) for item monitoring tests for all item categories except those identified by 10 CFR 74.55(c), and notwithstanding statement #8 of Section x.x.3 of the Plan identified in Condition SG-5.1, the licensee is exempt from applying item monitoring tests on NDA calibration and control standards which are two liters or more in size and contain less than 0.10 formula kilogram. Such standards are not, however, exempted from physical inventory requirements.

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Section-x.0 -- ALARM RESOLUTION

SG-3.1. The licensee is authorized to continue material processing operations in Control Units 1, 3, 4, 5, and 15 under process monitoring alarm conditions. During the continuation of processing operations, the measures contained in Section x.1.1 of the Plan identified in Condition SG-5.1 shall be implemented.

Section-x.0 -- QUALITY ASSURANCE (SSNM & LEU):

SG-4.1. Notwithstanding the requirements of 10 CFR 74.31(c)(2) for LEU and 10 CFR 74.59(d)(1) for SSNM to maintain a system of measurements to substantiate both the element and fissile isotope content of all SNM received, inventoried, shipped or discarded, SNM measured by the licensee for U-233, U-235, or Pu-239 by non-destructive assay techniques need not be measured for total element if the calculated element content is based on the measured isotope content which, in turn, is traceable to an isotopic abundance measurement at the area of generation.

SG-4.2. Notwithstanding the requirement of 10 CFR 74.59(e)(8) to establish and maintain control limits at the 0.05 and 0.001 levels of significance for all HEU related measurements, the licensee may use one and two scale divisions as being equivalent to the 0.05 and 0.001 control levels, respectively, for mass measurements.

SG-4.3 Notwithstanding Section x.x.x of the Plan identified in Condition SG-5.1, which states that a physical inventory of SSNM is conducted at an interval of at least every six calendar months with no more than 185 days elapsing between any two consecutive inventories, the licensee is granted an extension of time from April 3, XXXX, to June 2, XXXX, for conducting its SSNM physical inventory. This condition automatically expires on June 5, XXXX.

SG-4.4. Notwithstanding the requirement of 10 CFR 74.59(f)(2)(viii) to remeasure, at the time of physical inventory, any in-process SSNM for which the validity of a prior measurement has not been assured by tamper-safing, the licensee may book for HEU physical inventory purposes:

(1.) XXX XXX and Building XXX/XXX process holdup quantities determined by NDA measurements performed prior to the start of an inventory, in accordance with the controls described in Sections x.x.x.x.x and x.x.x.x.x of the Plan identified in Condition SG-5.1;

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(2.) pre-listed feed material to the Building XXX/XXX process that is introduced into process prior to the start of an inventory, in accordance with the controls described in Section x.x.x.x.x of the Plan identified in Condition SG-5.1; and

(3.) Building XXX holdup quantities determined by the most recent NDA measurements, in accordance with the controls described in Section x.x.x.x.x of the Plan identified in Condition SG-5.1.

SG-4.5. Notwithstanding the requirements of 10 CFR 74.59(f)(1) and 74.59(f)(2)(viii) to measure and inventory all SSNM, the licensee may determine process exhaust ventilation system inventory quantities in accordance with Section x.x.x.x of the Plan identified in Condition SG-5.1.

SG-4.6. The restriction of 10 CFR 74.51(d)(2) is hereby removed, and based on process monitoring performance in MBA-6 acceptable to the NRC, the licensee is authorized to conduct HEU physical inventories in accordance with the requirements of 10 CFR 74.59(f)(1), provided HEU scrap recovery operations in MBA-5 are restricted to the last 60 calendar days of each physical inventory period.

SG-4.7. Notwithstanding the requirement of 10 CFR 74.59(d)(1) to substantiate the uranium and U-235 content of SSNM transferred between areas of custodial responsibility, the licensee may transfer scrap materials from MBA-6 to MBA-5 on estimated values provided (1) such estimates are based on historical factors (with a unique factor for each scrap category) which are updated at least once every six months, and (2) that the estimated transfer values are corrected upon obtaining "first dissolution plus residue" measurements.

SG-4.8. The SNM content of liquid waste discarded from collection tanks shall be analyzed and recorded at measured values. The measurement methods must have a greater sensitivity than the concentration of the sample aliquot analyzed, except when the quantity discarded does not exceed 50 grams U-235 per month from Plant I (HEU) and does not exceed 10 grams U-235 per month from MBA-4 (LEU) through those discard batches where the sample aliquot concentration is less than the sensitivity of the method.

SG-4.9. Notwithstanding the statement in Section .x, of the Plan identified in Condition SG-5.2, pertaining to bias corrections to inventory difference (ID) values, the licensee shall comply with Section x.x.x of such Plan with respect to determining any bias corrections to IDs.

SG-4.10. Notwithstanding the requirements of 10 CFR 74.59(e)(8) relative to actions to be taken when replicate measurement data exceed a 0.001 control limit, the licensee shall comply with Section x.x.x.x.x.4 of the Plan identified in Condition SG-5.1.

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SG-4.11. Notwithstanding the requirement of 10 CFR 74.59(e)(4) that allows the pooling of data which has been shown to be not significantly different on the basis of appropriate statistical tests, the licensee may pool data from equivalent scales without testing.

SG-4.12. Notwithstanding the requirement of 10 CFR 74.59(e)(5) to evaluate all program data to establish random error variances, limits for systematic error, etc., the licensee may randomly select a partial quantity of bulk measurement program data, as described in Section 1.1.1(3) of the Plan identified in Condition SG-5.1, provided the partial data set is not statistically different from the total data population whenever the impact on SEID is greater than 1.0 percent.

SG-4.13. Notwithstanding the requirement of 10 CFR 74.59(f)(1)(i) to calculate the SEID associated with each HEU inventory difference (ID) value, the licensee need not determine such SEID for MBA-7 whenever its ID is less than 300 grams U-235.

SG-4.14. Notwithstanding the requirement of 10 CFR 74.31(c)(3) and of 74.59(e)(3)(i) to measure control standards for all measurement systems for the purpose of determining bias, and notwithstanding the requirement of 10 CFR 74.31(c)(4) and of 74.59(e)(8) to maintain a statistical control system to monitor such control standard measurements, the licensee need not measure nor monitor such control standards for point calibrated, bias-free, systems. To be regarded as bias-free, a measurement system must be calibrated by one or more measurements of a representative standard(s) each time process unknowns are measured, and the measurement value assigned to a given unknown is based on the associated calibration.

SG-4.15. All SNM not in transit shall be physically located within an MBA or ICA, except as specified in Condition SG-4.15.1.

SG-4.15.1. The requirement of Condition SG-4.15 shall not apply to HEU or LEU contained in, or precipitated from, measured liquid or gaseous waste discards.

SG-4.16. Solutions generated from the use of sinks, eye washers, safety showers, drinking fountains, etc., located within HEU MAAs shall be collected and measured prior to discarding.

SG-4.17. All HEU-bearing liquid effluents that are routed to the Waste Water Treatment Facility (WWTF) shall be measured for total uranium in the WWTF prior to commingling with LEU. Each WWTF HEU input batch measurement shall serve as an overcheck to the corresponding summation of accountability values. If for any material balance period, the WWTF total cumulative HEU over-check value does not agree within 500 grams HEU of the corresponding accountability value, an investigation shall be conducted and documented as to the cause and corrective action taken, and the appropriate NRC safeguards licensing authority shall be notified within 30 days after the

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start of the associated physical inventory. The WWTF input overcheck measurement system shall be subject to all appropriate requirements of the Measurement Control Program as specified in Section 4.4 of the Plan identified in Condition SG-5.1.

SG-4.18. Notwithstanding the requirement of 10 CFR 74.15 to include limit of error data on DOE/NRC Form-741 for all SNM shipments, the licensee is exempt from including such data on 741 Forms associated with waste burial shipments.

SG-4.19. Whenever a SNM Material Superintendent or designated SNM Custodian is summoned to an MAA exit point to assist in resolving whether an item or container should be allowed to exit to the protected Area, in accordance with the currently approved "Physical Safeguards Plan," the Superintendent or Custodian shall document the basis for any decision allowing the item or container to leave the area.

SG-4.20. The licensee is exempted from calculating the standard error of inventory difference (SEID) and measurement system biases associated with LEU physical inventories provided that the calculated inventory difference does not exceed 1,000 grams U-235.

SG-4.21. Notwithstanding Section x.x of the Plan identified in Condition SG-5.2, which states that "confirmatory measurements of scrap receipts are performed after the scrap is dissolved," the term *"scrap receipts"* shall not apply to receipt materials whose SNM content can be determined on the as-received-material by weighing, sampling and analyses with a measurement uncertainty (at the 95% C.L.) of less than 2.00 percent (based on a single sample).

SG-4.22. Notwithstanding the heading "Typical MC&A Procedures" for Table c.c of the Plan identified in Condition SG-5.2, all procedures listed in Table 3.5 shall be officially designated as

"Critical MC&A Procedures", and any revisions to these procedures shall be subject to the same review and approval requirements (as specified in Section.x of the Plan) that applied to the original procedures.

SG-4.23. Notwithstanding statements contained in Section c.c.c of the Plan identified in Condition SG-5.2, if the normal minimum number of control standard measurements per week, day, or shift of system use (depending on type of measurement system) does not generate at least 25 control standard measurements for a given LEU measurement system during any inventory period in which the active inventory is greater than 9,000 grams U-235, the licensee shall nevertheless generate at least 16 control standard measurements for each key measurement system utilized during the inventory period.

SG-4.24. Deleted by Amendment 3, March XXXX. This Condition expired May 15, XXXX.

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SG-4.25. Deleted by Amendment 16, January XXXX. This Condition expired July 8, XXXX.

SG-4.26. Deleted by Amendment 21, March XXXX. This Condition expired February 11, XXXX.

SG-4.27 Notwithstanding the requirement of 10 CFR 74.17(c) and the commitments of Section x.x.x of the Fundamental Nuclear Material Control (FNMC) Plan identified in Condition SG-5.1, to submit a completed Special Nuclear Material Physical Inventory Summary Report on NRC Form 327, not later than 45 days from the start of the physical inventory, the licensee is exempted from the above stated requirements and shall have 18 additional days to complete the February 9, XXXX, physical inventory report. This exemption automatically expires on April 14, XXXX.

Section x.0 --- PLANS AND SPECIAL ISSUES IN PLAN APPENDICES:

SG-5.1. In order to achieve the performance objectives of 10 CFR 74.51(a) and maintain the system capabilities identified in 10 CFR 74.51(b), the licensee shall follow its "Fundamental Nuclear Material Control Plan" with respect to all activities involving strategic special nuclear material, except as noted in Condition SG-5.5. This Plan, as currently revised and approved, consists of:

General Discussion ---------- Rev. 6 (dated February XXXX)
Sec. 1 -- Process Monitoring ---------- Rev. 6 (dated February XXXX)
Sec. 2 -- Item Monitoring ---------- Rev. 3 (dated August XXXX)
Sec. 3 -- Alarm Resolution ---------- Rev. 3 (dated August XXXX)
Sec. 4 -- QA & Accounting ---------- Rev. 8 (dated February XXXX)
Annex A ---------- Rev. 3 (dated August XXXX)
Annex B ---------- Rev. 1 (dated August XXXX)
Annex C ---------- Rev. 1 (dated August XXXX)
Annex D ---------- Rev. 1 (dated February XXXX)
Appendix G -- Pu Decommissioning --- Rev. 137 (dated April XXXX)

Revisions to this Plan shall be made only in accordance with, and pursuant to, either 10 CFR 70.32(c) or 70.34.

SG-5.2. In order to achieve the performance objectives of 10 CFR 74.31(a) and maintain the system capabilities identified in 10 CFR 74.31(c), the licensee shall follow its "Fundamental Nuclear Material Control Plan for SNM of Low Enriched Uranium" with respect to all activities involving SNM of low strategic significance. The Plan, as currently revised and approved, consists of:

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Sections x and x ----------	Both labeled as Revision 3, and dated April XXXX
Sections x, and x through x -----	All labeled as Revision 2, and dated April XXXX
Sections x through x ----------	All labeled as Revision 1, and dated February XXXX
Annex ----------	Labeled as Revision 3, and dated April XXXX

Revisions to this Plan shall be made only in accordance with, and pursuant to, either 10 CFR 70.32(c) or 70.34.

SG-5.3. Notwithstanding the requirement of 10 CFR 74.59(f)(1)(i) to estimate the standard error associated with SSNM inventory difference values, and notwithstanding the requirements of 10 CFR 74.59(e)(3) through (e)(8), the licensee may, in lieu of said requirements, follow Appendix G of the Plan identified in SG-Condition 5.1 with respect to plutonium measurements and measurement control associated with the plutonium decommissioning project.

SG-5.3.1. With regard to the plutonium decommissioning project (described in Appendix G of the Plan identified in Condition SG-5.1), the licensee shall comply with the following:

(a) For plutonium accountability measurements, the maximum measurement uncertainty (at the 95% confidence level) of measurement values equal to or greater than 100 grams Pu shall not exceed plus or minus 10.0%. For measurement values less than 100 grams Pu, but equal to or greater than 25 grams Pu, the maximum measurement uncertainty shall not exceed plus or minus 20.0% (at the 95% C.L.).

(b) For net weight measurements utilized for establishing "nanocuries Pu per gram waste" values (which in turn are used for establishing the category of waste), the maximum measurement uncertainty (at the 95% C.L.) shall not exceed plus or minus 2.00%.

(c) Sufficient control measurements shall be generated and documented so as to demonstrate compliance with 5.3.1(a) and (b) above.

(d) For each inventory period during which plutonium decommissioning activities are conducted, the measurement uncertainty associated with the total quantity of plutonium in item form generated and measured during the period shall be derived from all relevant measurement control data generated during that inventory period.

(e) For each inventory period during which plutonium decommissioning activities are conducted, plutonium "additions to" and "removals from material in process" (ATP and RFP) shall be calculated. Any measured Pu quantity, in item form, which is generated from existing residual holdup shall be regarded as an ATP at the time of its generation. Any measured Pu

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quantity, in item form, which is tamper-safe sealed and which will not undergo any additional processing (such as washing, compaction, etc.) prior to shipment off site shall be regarded as an RFP upon obtaining such status. The limit for total plutonium measurement uncertainty for each inventory period shall be the larger of (1) 250 grams plutonium or (2) 10.0 percent of the larger of ATP or RFP.

(f) The licensee shall investigate any non-zero inventory difference, since a non-zero ID will be (for this operation) indicative of an item(s) discrepancy.

SG-5.3.2. Storage of plutonium items generated during plutonium decommissioning activities shall be in accordance with the commitments contained in the licensee's Plan identified in Condition SG-6.1.

SG-5.4. Operations involving special nuclear material which are not described in the appropriate Plan identified by either Condition SG-5.1 or SG-5.2 shall not be initiated until an appropriate safeguards plan (describing all new and/or modified security and MC&A measures to be implemented) has been approved by the appropriate NRC safeguards licensing authority.

SG-5.5. Notwithstanding the requirements of 10 CFR 74.51(b) and (d), 74.53, and 74.59(d)(3), during periods of curtailed SSNM activities limited to (1) use of less than five (5.000) formula kilograms of SSNM contained in encapsulated or tamper-safe sealed standards; (2) use of less than five (5.000) formula kilograms of SSNM contained in materials associated with R&D activities and/or laboratory services; (3) vault storage of HEU oxides in item form except for samples utilized for independent receipt measurement; (4) storage of low level waste materials destined for ofFRite disposal; and (5) decontamination and decommissioning operations involving residual holdup and site remediation; the licensee is exempt from the above mentioned regulations and shall, in lieu of these regulations, follow sections 1.0 through 4.0 of its "Fundamental Nuclear Material Control Plan Applicable for Periods of Limited HEU Processing Activities." This Plan, as currently revised and approved, consists of:

General Discussion --- Revision 1 (dated October XXXX)
Section 1 ---------- Revision 1 (dated October XXXX)
Section 2 ---------- Revision 1 (dated October XXXX)
Section 3 ---------- Revision 1 (dated October XXXX)
Section 4 ---------- Revision 0 (dated February XXXX)

During such periods of limited HEU processing, the licensee need not follow the Plan identified in Condition SG-5.1. Whenever the possession and use limitations defined above in this condition are not applicable, the Plan identified herein shall be regarded as null and void, and the SG-5.1 Plan shall be in full force.

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Section-x.0 -- PHYSICAL PROTECTION REQUIREMENTS FOR STRATEGIC SPECIAL NUCLEAR MATERIAL

SG-6.1. The licensee shall follow the measures described in the physical protection plan entitled "FR Physical Safeguards Plan, Paul Plant, Revision x," dated October 27, XXXX, with replacement pages dated January 4, XXXX, and as it may be further revised in accordance with the provisions of 10 CFR 70.32(e).

SG-6.2. The licensee shall follow the safeguards contingency plan titled "FR Safeguards Contingency Plan, Revision 0," dated August 8, XXXX; and as may be further revised in accordance with the provisions of 10 CFR 70.32(g).

SG-6.3. The licensee shall follow the guard training and qualification plan titled "FR Site Security Training Plan, Revision 15," dated September XXXX; and as may be further revised in accordance with the provisions of 10 CFR 70.32(e).

SG-6.4. Notwithstanding the above Safeguards License Conditions (SG-6.1, SG-6.2, SG-6.3), upon possession of less than Category I levels of special nuclear material, the licensee shall follow the measures described in the physical protection plan titled "Physical Security Plan for the Protection of Special Nuclear Material of Moderate Strategic Significance, Revision 5" dated June 23, XXXX (letter dated June 22, XXXX), and Revision XX, dated February 6, XXXX, and as it may be further revised in accordance with the provisions of 10 CFR 70.32(e).

TRANSPORTATION CONDITIONS

Section-1.0 -- TRANSPORTATION SECURITY MEASURES:

TR-1.1. The licensee shall follow the measures described in the physical security plan titled "Physical Security Plan for the Protection of Special Nuclear Material of Moderate Strategic Significance, Revision 4," dated October XXXX (letter dated December 20, XXXX), and as it may be further revised in accordance with the provisions of 10 CFR 70.32 (e).

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Amendment No. 23

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MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. BCLDP Institute 2. 505 Queen Avenue Dayton, OH 40000	In accordance with the letter dated January 28, 2000 3. License number SNM-X is amended in its entirety as follows: 4. Expiration date December 31, 2005 5. Docket No. 070-000XX Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium (as defined in 10 CFR Part 150.11)	A. Any (residual material containing Special Nuclear, source, and byproduct materials)	A. As described in letter dated February 5, 1999 (*Clarification of License Possession Limits*)
B. Plutonium (as defined in 10 CFR Part 150.11)	B. Any (residual material containing Special Nuclear, source, and byproduct materials)	B. As described in letter dated February 5, 1999 (*Clarification of License Possession Limits*)

(I) Authorized places of Use:

A. and B. Possession incident to radiological survey, Storage of waste awaiting disposal, decontamination and remediation of buildings, equipment, and materials, and outdoor areas, as described in Decommissioning Plan, BCLDP Institute, DX-92-18, Revision 4, August 3, 2000.

CONDITIONS

10 Licensed material shall be possessed and processed at the licensee's facilities located at the BCLDP Institute's, East Adam Site, 1135 Plain City-Georgeville Road, State Route 113, Adams, Ohio.

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11. The Radiation Safety Officer for this license is John G. Jensen. May B. Chance, Associate Radiation Safety Officer, may assist the Radiation Safety Officer in the management of the day-to-day oversight of the Radiation Safety Program and may act during absences of the Radiation Safety Officer.

12. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

    A. Application dated June 14, 2000.

    B. Three letters dated August 22, 2000 with the following documents attached:
        1. Response to Request for Information, *Renewal Application License SNM-X, Docket No. 070-00XX,*
        2. Response to NRC Staff Review Comments, BCLDP Decommissioning Plan dated May 30, 2000, Revision 1.
        3. Decommissioning Plan, BCLDP Institute, DX-93-18, Revvision 4, August 8, 2000.
        4. Radiation Protection Program Plan, BCLDP Institute, DX-90-03, Revision 4, August 8, 2000.

    E. Letter dated February 5, 1999 (containing *Clarification of License Possession Limits*), with XP-AP-36.0, Revision 1, *Control of Revisions to Radiation Protection Documents*, and QD-XP-7.2, Revision 10, *Document Control,* attached.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date _____ By _____

George M. McCann
Materials Licensing Branch
Region III

Appendix K

Policy and Guidance Directive FC 94-02, Licensing Site Remediation Contractors for Work at Temporary Job Sites

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 21 1994

MEMORANDUM FOR: Those on Attached List

FROM: Carl J. Paperiello, Director
Division of Industrial and
Medical Nuclear Safety, NMSS

SUBJECT: POLICY AND GUIDANCE DIRECTIVE FC 94-02, LICENSING SITE REMEDIATION CONTRACTORS FOR WORK AT TEMPORARY JOB SITES

The final policy and guidance directive on licensing site remediation contractors for work at temporary job sites is enclosed for your use. Regional comments have been incorporated as appropriate. We have clarified that the guidance is intended for site remediation service contractors. We have also clarified our position that a site owner remains responsible for eventual release of a site regardless of who the owner hires to perform specific activities. The final guidance allows contractors to possess calibration sources, reference standards, and contaminated equipment owned by the contractor, and it increases the advance notification requirement to 14 days before initiating activities at a temporary job site. In addition, the emergency response conditions were revised to clearly authorize reasonable emergency response actions that depart from conditions in the license if NRC is notified immediately after such action is taken.

Please note that we have requested OMB clearance for the reporting and recordkeeping requirements in this directive, but OMB approval is still pending. Any licensing actions involving this directive should be submitted to Headquarters for concurrence until OMB approval is received.

If you have any questions, please contact Kevin Ramsey at (301) 504-2534.

Carl J. Paperiello

Carl J. Paperiello, Director
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: As stated

POLICY AND GUIDANCE DIRECTIVE

FC 94-02

LICENSING SITE REMEDIATION CONTRACTORS
FOR WORK AT TEMPORARY JOB SITES

LICENSING SITE REMEDIATION CONTRACTORS
FOR WORK AT TEMPORARY JOB SITES

1. Purpose:

The purpose of this directive is to establish the policy and guidance for authorizing service contractors to perform site remediation work under their own license at temporary job sites. This directive applies to temporary job sites owned/operated by other NRC licensees, as well as non-licensees. This directive may be used on a case-by-case basis with HQ concurrence to license other types of service contractors. However, this directive does not apply to the installation and maintenance of devices.

2. Policy:

Site owners/operators may not have radiation safety programs in place that are adequate to ensure the safety of activities to be performed by a service contractor. Therefore, it is appropriate for contractors to operate under their own license at temporary job sites when they are providing the radiation safety programs under which the work is being performed. This ensures that site owners/operators do not supervise activities with which they have no experience. It also allows the NRC to authorize work without issuing a new license or amending an existing license, and it allows enforcement actions directly against contractors when violations are associated with their radiation safety programs. However, the site owner remains responsible for decommissioning financial assurance (if a licensee) and eventual release of the site regardless of who the owner hires to perform specific activities.

3. General Guidance:

In general, applications for site remediation service licenses should be made in accordance with the regulations and guidance applicable to the authorized

use requested. For example, an application for broad authorization to handle a wide variety of radioactive materials during site remediation should be in accordance with 10 CFR Part 33 and Regulatory Guide 10.5, Applications for Type A Licenses of Broad Scope. In addition to the existing regulations and guidance, the specific provisions provided below should be addressed.

4. Specific Guidance:

4.1 A site remediation service license may authorize the use of licensed material only at temporary job sites in the United States where NRC maintains jurisdiction. Possession or use of materials at the service contractor's facilities must be authorized under a separate license. In addition, possession should be authorized only to the extent that licensed material originating from the site must be transferred to an authorized recipient or left at the site. Possession (at the temporary job site) of calibration sources, reference standards, and contaminated equipment owned by the licensee may be authorized under the service license. See example license condition 1 in the appendix.

4.2 The licensee should be required to notify the Administrator of the region issuing the license at least 14 days before initiating activities at a temporary job site. See example license condition 2 in the appendix.

4.3 If the site owner/operator (i.e., the customer) also holds a license issued by the NRC or an Agreement State, the service licensee should be required to establish a written agreement between the licensee and the customer specifying which licensee activities will be performed under the customer's license and supervision, and which licensee activities will be performed under the licensee's supervision pursuant to the service license. This agreement should include commitments by both licensees to ensure safety and it should specify whether there are any commitments by the service licensee to help the customer clean up the temporary job site if there is an accident. See example license condition 3 in the appendix.

4.4 The service licensee should maintain records of information important to decommissioning a temporary job site at the site pursuant to 10 CFR 30.35(g), 40.36(f), and 70.25(g). Customers should have access to decommissioning records throughout the decommissioning process. The service licensee should transfer these records to the customer when activities at a temporary job site are complete. See example license condition 4 in the appendix.

4.5 A service licensee may be exempted from the requirements in 10 CFR 30.35, 40.36, and 70.25 to establish decommissioning financial assurance. NMSS has made a finding that this exemption will not endanger life, or property, or the common defense and security, and is otherwise in the public interest. This exemption is based on the provision stated above in 4.1 that the service licensee is not allowed to retain possession of any licensed material originating from a temporary job site. The site owner remains responsible for eventual release of the site regardless of who monitors and supervises specific work activities. If the site owner is a licensee that has established decommissioning financial assurance or other license commitments, the site owner is responsible for ensuring that its contractors comply with those commitments. See example license condition 5 in the appendix.

4.6 An application for a service license is not required to contain an emergency plan even if the application requests authorization to use licensed material in quantities exceeding the threshold for an emergency plan. Service licensees are not in a position to establish all of the site-specific response measures necessary to execute an effective emergency plan for a temporary job site. Before handling licensed material at any one site in quantities requiring an emergency plan, the service licensee must either obtain NRC approval of an evaluation demonstrating that an emergency plan is not required, or submit written confirmation that licensee personnel have been trained and will follow an existing emergency plan for the temporary job site. See example license condition 6 in the appendix.

4.7 It is in the public interest to have site remediation service licensees who can provide immediate services in the event of a release or other incident involving uncontrolled radioactive material. However, license conditions require service licensees to establish written agreements and provide advance notification before providing services. Service licensees may be authorized to take reasonable action in an emergency that departs from conditions in the license when the action is immediately needed to protect public health and safety and no action consistent with all license conditions that can provide adequate or equivalent protection is immediately apparent. The licensee should notify the NRC before, if practicable, and in any case immediately after taking such emergency action. See example license condition 7 in the appendix.

4.8 Within 30 days of completing activities at each temporary job site, the service licensee must notify its licensing region. The notification should include the status of the temporary job site and the disposition of the material used by the service licensee. See example license condition 8 in the appendix.

4.9 Service licenses are not temporary licenses that are only in effect while work at a temporary job site is in progress. The applicant must make a clear commitment to maintain all radiation safety programs in an active status even between jobs. Service licensees may not suspend radiation programs and then attempt to re-establish them when another customer is found. This commitment should provide reasonable assurance that the licensee will remain competent to use licensed material and undertake authorized activities. This commitment should include the following:

A. Maintaining qualified personnel in key positions (i.e., RSO, etc.).
B. Holding required safety committee meetings.
C. Performing regular maintenance and calibration of safety equipment.
D. Completing required training (including periodic retraining).

Appendix

EXAMPLE LICENSE CONDITIONS FOR SERVICE LICENSES

1. Licensed materials shall be used only at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material. Except for calibration sources, reference standards, and radioactively contaminated equipment owned by the licensee, possession of licensed material at each temporary job site shall be limited to material originating from each site. This material must either be transferred to an authorized recipient or remain at the site after licensee activities are completed.

2. The licensee shall notify the Regional Administrator, NRC Region ___ in writing at least 14 days before initiating activities under this license at a temporary job site. This notification shall include:

   A. The estimated type, quantity, and physical/chemical forms of licensed material to be used,
   B. The specific site location,
   C. A description of planned activities including waste management and disposition,
   D. The estimated start date and completion date for the job, and
   E. The name and title of a point of contact for the job, including information on how to contact the individual.

3. This license does not authorize the use of licensed material at temporary job sites for uses already specifically authorized by a customer's license. If a customer also holds a license issued by the NRC or an Agreement State, the licensee shall establish a written agreement between the licensee and the customer specifying which licensee activities shall be performed under the customer's license and supervision, and which licensee activities shall be performed under the licensee's supervision pursuant to this license. The agreement shall include a commitment by the licensee and the customer to ensure safety, and any commitments by the licensee to help the customer clean up the temporary job site if there is an accident. A copy of this agreement shall be included in the notification required by license condition [example 2 above].

4. The licensee shall maintain records of information important to decommissioning each temporary job site at the applicable job site pursuant to 10 CFR 30.35(g), 40.36(f), and 70.25(g). The records shall be made available to the customer upon request. At the completion of activities at a temporary job site, the licensee shall transfer these records to the customer for retention.

5. Pursuant to 10 CFR 30.11, 40.14, 70.14, and license condition [example 1 above], the licensee is exempted from the requirements of 10 CFR 30.35, 40.36, and 70.25 to establish decommissioning financial assurance.

6. Notwithstanding the requirements in 10 CFR 30.32(i), 40.31(j), and 70.22(i), the licensee is not required to establish an emergency plan. Before taking possession of licensed material at a temporary job site in quantities requiring an emergency plan the licensee shall either --

   A. Obtain NRC approval of an evaluation demonstrating that an emergency plan is not required pursuant to 10 CFR 30.32(i), 40.31(j), and 70.22(i), or

   B. Submit written confirmation to the Regional Administrator, NRC Region ___, that licensee personnel have been trained and will follow the provisions of an existing emergency plan approved by the NRC or an Agreement State for the temporary job site.

7. If approved by a Radiation Safety Officer specifically identified in this license, the licensee may take reasonable action in an emergency that departs from conditions in this license when the action is immediately needed to protect public health and safety and no action consistent with all license conditions that can provide adequate or equivalent protection is immediately apparent. The licensee shall notify the NRC before, if practicable, and in any case immediately after taking such emergency action using the reporting procedure specified in 10 CFR 30.50(c).

8. Within 30 days of completing activities at each job site location, the licensee shall notify the Regional Administrator, Region ___, in writing of the temporary job site status and the disposition of any licensed material used.

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Appendix L

Decommissioning Process Checklists

The following pages contain the in-process checklists for decommissioning Groups 2-7. The Group 1 checklist is in Chapter 8 because it is the sole basis for documenting decommissioning for this group. The purpose of these checklists is to provide a statement of actions to be accomplished by the licensee and by the staff during the decommissioning process.

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LICENSEE NAME: _____

LICENSE NUMBER: _____ DOCKET NUMBER: _____

FACILITY: _____

1. **Group 2 includes the following licensees: (check if applicable)**

❑ Licensees that can demonstrate compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use) using the screening methodology discussed in Section 1.4

❑ Licensees that possessed and used only sealed sources but cannot demonstrate current leak tight integrity.

❑ Licensees who only possessed radioactive material with half-lives of less than 120 days but has not decayed to less than the quantity specified in 10 CFR Part 20, Appendix C.

NOTE: Group 2 licensees do not need a DP

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Licensed material disposed of in accordance with NRC requirements and cleanup performed as necessary.

❑ Obtain most recent leak tests for all sealed sources, including those no longer in licensee's possession.

❑ Decommissioning records transferred as appropriate, or affirmed that they are not required to be retained or have transferred records.

❑ NRC Form 314, submitted or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets NRC's criteria for unrestricted use by using the dose screening methodology.

3. **NRC Actions**

❑ Disposition of licensed material verified.

❑ Leak test results, the type and number of sources on the license and NRC Form 314 are in agreement and the most recent leak test results are current.

❑ Determined if Technical Assistance Control number for the decommissioning action required.

❑ Technical Assistance Control obtained, if required.

❑ EA prepared. Consider relying on the license termination rule Generic EIS, as described in Section 15.7.3 of Volume 1.

❑ Licensee contacted (via telephone/writing) to ascertain decommissioning schedule, and its compliance with Timeliness Rule.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In-Process or Close Out Inspection is required.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is suitable for unrestricted use. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after the suitability of licensee's facility for unrestricted use verified.

❑ Amendment placed in the license docket file and ADAMS, and records retired in accordance with current records management guidance (e.g., RMG 92-01 and 93-03).

LICENSEE NAME: _____

LICENSE NUMBER: _____ **DOCKET NUMBER:** _____

FACILITY: _____

1. **Group 3** (similar to site condition for Group 2)

❑ Licensee can demonstrate compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use) using the screening methodology discussed in Section 1.4

❑ Licensees that possess and use only sealed sources but cannot demonstrate current leak tight integrity.

❑ Licensees who only possess radioactive material with half-lives of less than 120 days but fail the Group 1 criteria.

NOTE: Group 3 licensees do need a DP.

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Submit a License Amendment request with DP attached. DP addresses the program areas discussed in Section 10.2 (may reference programmatic areas already contained in the license).

❑ Licensed material disposed of in accordance with NRC requirements and cleanup performed as necessary.

❑ Most recent leak tests for all sealed sources, including those no longer in licensee's possession, demonstrate there has been no leakage.

❑ Decommissioning records transferred as appropriate, or affirmed that they are not required to be retained or have transferred records.

❑ NRC Form 314 submitted, or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets NRC's criteria for unrestricted use by using the dose screening methodology.

3. **NRC Actions**

❑ Issue *Federal Register* Notice of receipt of application.

❑ Disposition of licensed material verified.

❑ Leak test results, the type and number of sources on the license and NRC Form 314 are in agreement, and the most recent leak test results are current and indicate that the sources did not leak.

❑ Technical Assistance Control obtained, if required.

❑ EA prepared. Consider relying on the license termination rule Generic EIS, as described in Section 15.7.3 of Volume 1.

❑ License amendment for decommissioning issued after the review of licensee's DP determined to be acceptable

OR

❑ DP deficiency letter transmitted to licensee.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In-Process or Close Out Inspections are required.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is in compliance with approved criteria. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after compliance verified.

❑ Amendment placed in the license docket file, and ADAMS, and records retired in accordance with current management directives (e.g., RMG 92-01 and 93-03).

LICENSEE NAME: _____

LICENSE NUMBER: _____ **DOCKET NUMBER:** _____

FACILITY: _____

1. **Group 4 includes the following licensees: (check if applicable)**

❑ Licensees that can demonstrate compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use).

❑ Ground water contamination does not exist.

❑ Have demonstrated residual contamination is ALARA.

NOTE: Group 4 licensees do need a DP.

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Submit a License Amendment request with DP attached. Guidance on the contents of a DP is contained in Chapters 16-18 and the checklist in Appendix D of this NUREG, and in the Standard Review Plan (NUREG-1727).

❑ Licensed material disposed of in accordance with NRC requirements.

❑ Decommissioning records transferred as appropriate, or affirmed that they are not required to be retained or have transferred records.

❑ NRC Form 314 and DOE/NRC Form 741 (if applicable) submitted, or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets criteria approved by the Commission.

3. **NRC Actions**

❑ Issue *Federal Register* Notice of receipt of application.

❑ Technical Assistance Control obtained, if required.

❑ EA as described in NUREG-1748 completed. Consider relying on the license termination rule Generic EIS, as described in section 15.7.3 of Volume 1.

❑ Licensee contacted (via telephone/writing) to ascertain decommissioning schedule and its compliance with Timeliness Rule.

❑ Issue license amendment authorizing implementation of DP after the review of licensee's DP determined to be acceptable

OR

❑ DP deficiency letter transmitted to licensee.

❑ Comply with requirements of Atomic Safety and Licensing Board, if there is a hearing.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In Process or Close Out Inspections are required.

❑ Disposition of licensed material and NMMSS update (if applicable) verified.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is in compliance with approved criteria. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after compliance verified.

❑ Amendment placed in the license docket file and ADAMS, and records retired in accordance with current management directives (e.g., RMG 92-01 and 93-03).

LICENSEE NAME: _____

LICENSE NUMBER: _____ **DOCKET NUMBER:** _____

FACILITY: _____

1. **Group 5[22] includes the following licensees (check if applicable):**

❑ Licensees that can demonstrate compliance with 10 CFR Part 20.1402 (Radiological criteria for unrestricted use).

❑ Ground water contamination exists.

❑ Have demonstrated residual contamination is ALARA.

NOTE: Group 5 licensees do need a DP.

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Submit a License Amendment request with DP attached. Guidance on the contents of a DP is contained in Chapters 16-18 and the checklist in Appendix D of this NUREG, and in the Standard Review Plan (NUREG-1727).

❑ Licensed material disposed of in accordance with NRC requirements.

❑ Decommissioning records transferred as appropriate, or affirmed that they are not required to be retained or have transferred records.

❑ NRC Form 314 and DOE/NRC Form 741 (if applicable) submitted, or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets criteria approved by the Commission.

3. **NRC Actions**

❑ Issue *Federal Register* Notice of receipt of application.

❑ Technical Assistance Control obtained, if required.

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[22] In general, lead office responsibility for Group 5 sites will be transferred from the NRC Regional office to NRC Headquarters. Regional staff and management should discuss the decommissioning with NRC Headquarters to determine which office will assume the lead for management of the decommissioning.

❑ EA as described in NUREG-1748 completed. If ground water is contaminated and a FONSI cannot be determined, an EIS may be necessary. See section 15.7.

❑ Licensee contacted (via telephone/writing) to ascertain decommissioning schedule and its compliance with Timeliness Rule.

❑ Issue license amendment authorizing implementation of DP after the review of licensee's DP determined to be acceptable.

OR

❑ DP deficiency letter transmitted to licensee.

❑ Comply with requirements of Atomic Safety and Licensing Board, if there is a hearing.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In Process or Close Out Inspections are required.

❑ Disposition of licensed material and NMMSS update (if applicable) verified.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is in compliance with approved criteria. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after compliance verified.

❑ Amendment placed in the license docket file and ADAMS, and records retired in accordance with current management directives (e.g., RMG 92-01 and 93-03).

LICENSEE NAME: _____

LICENSE NUMBER: _____ **DOCKET NUMBER:** _____

FACILITY: _____

1. **Group 6 includes the following licensees (check if applicable):**

❑ Licensees that can demonstrate compliance with 10 CFR Part 20.1403 (Radiological criteria for restricted use).

❑ Have demonstrated residual contamination is ALARA.

❑ Sites where Institutional Controls are required to limit dose to the public.

NOTE: Group 6 licensees do need a DP.

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Submit a License Amendment request with DP attached. Guidance on the contents of a DP is contained in Chapters 16-19 and the checklist in Appendix D of this NUREG, and in the Standard Review Plan (NUREG-1727).

❑ Develop institutional controls, acquire a competent agent to implement them, and provide financial assurance to provide adequate protection of public health and safety.

❑ Obtain input from interested and affected parties, concerning the adequacy of financial assurance and institutional controls, as described in §20.1403(d). Guidance on seeking public advice is contained in Appendix J of the Standard Review Plan (NUREG-1727) and section 17.8 of this guidance.

❑ Licensed material disposed of in accordance with NRC requirements.

❑ Decommissioning records transferred as appropriate, or affirmed that they are not required to be retained or have transferred records.

❑ NRC Form 314 and DOE/NRC Form 741 (if applicable) submitted, or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets criteria approved by the Commission.

3. **NRC Actions**

❑ Issue *Federal Register* Notice of receipt of application.

❑ Technical Assistance Control obtained, if required.

❑ Site-specific EIS (because the licensee plans to limit future land uses at the site) completed. See section 15.7.4 of Volume 1.

❑ Licensee contacted (via telephone/writing) to ascertain decommissioning schedule and its compliance with Timeliness Rule.

❑ Issue license amendment authorizing implementation of DP after the review of licensee's DP determined to be acceptable

OR

❑ DP deficiency letter transmitted to licensee.

❑ Comply with requirements of Atomic Safety and Licensing Board, if there is a hearing.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In Process or Close Out Inspections are required.

❑ Disposition of licensed material and NMMSS update (if applicable) verified.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is in compliance with approved criteria. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after compliance verified.

❑ Amendment placed in the license docket file, and ADAMS, and records retired in accordance with current management directives (e.g., RMG 92-01 and 93-03).

LICENSEE NAME: _____

LICENSE NUMBER: _____ **DOCKET NUMBER:** _____

FACILITY: _____

1. **Group 7 includes the following licensees (check if applicable):**

❑ Licensees that cannot demonstrate compliance with 10 CFR Part 20.1403 (Radiological criteria for restricted use).

❑ Have demonstrated residual contamination is ALARA.

❑ Have demonstrated it is unlikely dose to an average member of the critical group will exceed 100 mrem/yr.

NOTE: Group 7 licensees do need a DP.

2. **Licensee Actions**

❑ NRC notified as required by 10 CFR 30.36(d), 40.42(d), and 70.38(d).

❑ Submit a decommissioning plan. Guidance on the contents of a DP is contained in Chapters 16-19 and the checklist in Appendix D of this NUREG, and in the Standard Review Plan (NUREG-1727).

❑ Develop institutional controls, acquire a competent agent to implement them, and provide financial assurance to provide adequate protection of public health and safety.

❑ Obtain input from interested and affected parties, as described in §20.1404(4). Guidance on seeking public advice is contained in Appendix J of the Standard Review Plan (NUREG-1727) and section 17.8 of this guidance.

❑ Obtain approval from the Commission on the proposed residual contamination and doses.

❑ Licensed material disposed of in accordance with NRC requirements.

❑ Decommissioning records transferred as appropriate, or affirmed that are not required to be retained or have transferred records.

❑ NRC Form 314 and DOE/NRC Form 741 (if applicable) submitted, or equivalent information provided. Written confirmation from the recipient listed on NRC Form 314 that material has been transferred to them attached.

❑ Final Status Survey submitted demonstrating that the facility, or portion of the facility, meets criteria approved by the Commission.

3. **NRC Actions**

❑ Issue *Federal Register* Notice of receipt of application.

❑ Obtain recommendations from EPA, State and Tribal Parties, and other affected parties.

❑ Submit recommendation on proposed remediation criteria to the Commission.

❑ Technical Assistance Control obtained, if required.

❑ Site-specific EIS, as described in Section 15.7.4 of Vol. 1, completed.

❑ Licensee contacted (via telephone/writing) to ascertain decommissioning schedule, and its compliance with Timeliness Rule.

❑ Issue license amendment authorizing implementation of DP after the review of licensee's DP determined to be acceptable

OR

❑ DP deficiency letter transmitted to licensee.

❑ Comply with requirements of Atomic Safety and Licensing Board, if there is a hearing.

❑ Based on Licensee decommissioning schedule and scope of work, determine if In Process or Close Out Inspections are required.

❑ Disposition of licensed material and NMMSS update (if applicable) verified.

❑ FSSR reviewed to ensure that it adequately demonstrates that the facility is in compliance with approved criteria. See Section 15.3 for a list of FSSR requirements.

❑ License terminated by amendment after compliance verified.

❑ Amendment placed in the license docket file and ADAMS, and records retired in accordance with current management directives (e.g., RMG 92-01 and 93-03).

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11. ABSTRACT *(200 words or less)*

As part of its redesign of the materials license program, the U.S. Nuclear Regulatory Commission (NRC), Office of Nuclear Material Safety and Safeguards (NMSS) is consolidating and updating numerous decommissioning guidance documents into a three-volume NUREG. Specifically, the three volumes address the: (1) Decommissioning Process; (2) Characterization, Survey, and Determination of Radiological Criteria; and (3) Financial Assurance, Recordkeeping, and Timeliness. Volume 1 of this NUREG series, entitled "Consolidated NMSS Decommissioning Guidance: Decommissioning Process," is the first of the three volumes and is intended for use by NRC licensees and staff. It will also be available to Agreement States. The NRC is issuing, for public comment, a draft of volume 1. This document provides guidance for planning and implementing the termination of licenses issued through NMSS's licensing programs. The NRC is seeking public comment in order to receive feedback from the widest range of interested parties and to ensure that all information relevant to developing the document is available to the NRC staff. This draft document is being issued for comment only and is not intended for interim use.

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