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Date: 6/11/2007 5:53:58 PM
Subject: FW: 11.2

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> From: Vail, Lance W
> Sent: Monday, May 07, 2007 3:55 PM
> To: Kincaid, Charles T; Cook, Christopher B
> Subject: 11.2
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From: Vail, Lance W
Sent: Monday, May 07, 2007 3:55 PM
To: Kincaid, Charles T; Cook, Christopher B
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Lance Vail

U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

11.2 LIQUID WASTE MANAGEMENT SYSTEM

REVIEW RESPONSIBILITIES

Primary - Organization responsible for review of effectiveness of radwaste systems.

Secondary - Organization responsible for review of radwaste system design and performance.

I. AREAS OF REVIEW

The liquid waste management system (LWMS) is designed to ensure that liquids and liquid wastes produced during normal operation, including anticipated operational occurrences, are handled, processed, stored, and released or routed to their final destination in accordance with the relevant regulations of the U.S. Nuclear Regulatory Commission (NRC). Review of the LWMS includes the design features that are necessary for collecting, handling, processing, releasing, and disposing of liquid effluents. This review encompasses, but is not limited to, piping, pumps, valves, filters, demineralizers, mobile equipment connected to permanently installed systems, and any additional equipment that may be necessary to process and treat liquid wastes and route them to the point of discharge from the system.

The review of the LWMS includes the design, design objectives, design criteria, methods of treatment, expected releases, and calculation methods and principal parameters used in calculating effluent source terms and releases of radioactive materials in liquid effluents, including system piping and instrumentation diagrams (P&IDs) and process flow diagrams showing methods of operation and factors that influence waste treatment, e.g., system interfaces and potential bypass routes to non-radioactive systems.

The specific areas of review are as follows:

1. Equipment design capacities, expected flow, source terms and radionuclide concentrations, expected decontamination factors or removal efficiencies for radionuclides, and holdup or decay time.

USNRC STANDARD REVIEW PLAN

This Standard Review Plan, NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC's regulations. The Standard Review Plan is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The standard review plan sections are numbered in accordance with corresponding sections in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of Regulatory Guide 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by email to NRR_SRP@nrc.gov.

Requests for single copies of SRP sections (which may be reproduced) should be made to the U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Reproduction and Distribution Services Section, or by fax to (301) 415-2289; or by email to DISTRIBUTION@nrc.gov. Electronic copies of this section are available through the NRC's public Web site at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/, or in the NRC's Agencywide Documents Access and Management System (ADAMS), at http://www.nrc.gov/reading-rm/adams.html, under Accession # ML063600412.

2. System design capacity relative to the design and expected input flows and the period of time the system is required to be in service to process normal waste flows.

3. Availability of standby equipment, alternate processing routes, and interconnections between subsystems in order to evaluate the overall system capability to meet anticipated demands imposed by major processing equipment downtime and waste volume surges resulting from anticipated operational occurrences.

4. Quality group classifications of piping and equipment and the bases governing the design criteria chosen in accordance with the guidelines of Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

5. Provisions to prevent, control, and collect radioactive materials in liquids from tank overflows from all plant systems and the potential for tanks located outside of the reactor containment to result in uncontrolled and unmonitored releases, and design features applied to mitigate the effects of a postulated tank failure, e.g., steel liners, sumps, drains, or walls in areas housing tanks and components, dikes for outdoor tanks, and overflow provisions.

6. Design and expected temperatures and pressures and materials of construction of the components of the LWMS.

7. Design provisions to preclude placing the components and structures of the system under adverse vacuum conditions.

8. Provisions incorporated in the equipment and facility design to reduce leakage and facilitate operation and maintenance in accordance with the guidelines of Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

9. Design features that would reduce volumes of liquid wastes to the LWMS; reduce radioactivity levels and discharges of radioactive materials in liquid effluents; minimize, to the extent practicable, contamination of the facility and environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste.

10. Special design features to reduce leakage of liquid waste or discharges of radioactive materials in liquid effluents to avoid uncontrolled and unmonitored releases to the environment.

11. Special design features, topical reports incorporated by reference, and data obtained from previous experience with similar systems as described in the safety analysis report (SAR) or other supporting documents.

12. For multiunit stations, descriptions and design features of equipment and components (included in permanently installed systems or in combination with mobile processing equipment) normally shared between interconnected processing and treatment subsystems.

13. Types and characteristics of filtration, ion-exchange resins, and adsorbent media to treat liquid process and effluent streams, including expected removal efficiencies, decontamination factors, and holdup or decay times.

14. Definition of the boundary of the LWMS beginning at the interface from plant systems provided for the collection of process streams and radioactive liquid wastes to the point of controlled discharges to the environment as defined in the Offsite Dose Calculation

Manual (ODCM), or at the point of recycling to the primary or secondary water system storage tanks in accordance with the guidance of Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

15. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). For design certification (DC) and combined license (COL) reviews, the staff reviews the applicant's proposed ITAAC associated with the structures, systems, and components (SSCs) related to this SRP section in accordance with SRP Section 14.3, "Inspections, Tests, Analyses, and Acceptance Criteria." The staff recognizes that the review of ITAAC cannot be completed until after the rest of this portion of the application has been reviewed against acceptance criteria contained in this SRP section. Furthermore, the staff reviews the ITAAC to ensure that all SSCs in this area of review are identified and addressed as appropriate in accordance with SRP Section 14.3.

16. COL Action Items and Certification Requirements and Restrictions. For a DC application, the review will also address COL action items and requirements and restrictions (e.g., interface requirements and site parameters).

    For a COL application referencing a DC, a COL applicant must address COL action items (referred to as COL license information in certain DCs) included in the referenced DC. Additionally, a COL applicant must address requirements and restrictions (e.g., interface requirements and site parameters) included in the referenced DC.

17. Early Site Permit (ESP) Application Reviews. For an ESP application, the review is limited to the information on potential radiological exposures to members of the public from liquid effluents that would be generated as a normal byproduct of nuclear power operations. The estimates on the maximum doses to the public should be based on available data for the reactor designs being considered (e.g., a certified design or a plant parameter envelope (PPE) approach), in which the bounding liquid radiological effluents are used in assessing potential exposures on the public by considering the probable pathways to individuals and populations near the proposed new unit(s). The staff should consider the following potential exposure pathways: ingestion of aquatic food; ingestion of drinking water; crop and pasture irrigation; ingestion of agricultural products; exposure to shoreline sediment, and exposure to water through boating and swimming.

Review Interfaces

Other SRP sections interface with this section as follows:

1. The review of the design provisions of the LWMS incorporated to control, sample, and monitor radioactive materials in liquid process and effluent streams is performed under SRP Section 11.5.

2. The review of the consequences of a liquid tank failure having the potential to release radioactive materials to a potable water supply is performed under SRP Branch Technical Position (BTP) 11-6, using the requirements of 10 CFR 20.1302 and Table 2, Column 2, of Appendix B to 10 CFR Part 20.

3. The review of the impacts of releases of radioactive liquids in ground or surface water and effects on existing users or likely future users of ground or surface water resources is performed under SRP Section 2.4.13, using information drawn from SRP BTP 11-6.

4. The review or conduct of independent source term and dose calculations for the purpose of assessing the performance of the LWMS against the NRC requirements of 10 CFR 20.1302; Table 2, Column 2 of Appendix B to 10 CFR Part 20; and the dose objectives of Appendix I to 10 CFR Part 50, is performed under SRP Section 11.1 and SRP Section 11.5.

5. The review of dose calculation methods and parameters of the standard radiological effluent controls (SREC), as they relate to the development of the ODCM which is reviewed in SRP Section 11.5.

6. The review of the acceptability of the design analyses, procedures, and criteria used to establish the ability of Seismic Category I structures housing the system and supporting systems to withstand the effects of natural phenomena, such as the safe-shutdown earthquake, the probable maximum flood, and tornadoes and tornado missiles is performed under SRP Sections 3.3.1, 3.3.2, 3.4.2, 3.5.3, 3.7.1 through 3.7.4, 3.8.4, and 3.8.5.

7. The review of the acceptability of the seismic and quality group classifications for system components is performed under SRP Sections 3.2.1 and 3.2.2.

8. The review of technical specifications is performed under SRP Section 16.0.

9. The review of quality assurance is performed under SRP Section 17.5 and Regulatory Guide 1.33.

10. The review of the LWMS fire protection program for storage and use of flammable liquids is performed under SRP Section 9.5.1.

11. The review of design features of the LWMS process and post-accident sampling subsystems is performed under SRP Sections 9.3.2 and 11.5.

12. The review of design features of building exhaust and ventilation systems servicing areas where radioactive materials are present (e.g., use of high efficiency particulate air and charcoal filters) is performed under SRP Sections 9.4.1 through 9.4.5 and under SRP 11.5 for instrumentation used to monitor and control radioactive effluent releases.

13. The review of design features for the protection of potable and sanitary water systems is performed under SRP Section 9.2.4.

The specific acceptance criteria and review procedures are contained in the referenced SRP sections.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations:

1. 10 CFR 20.1302, as it relates to radioactivity in liquid effluents released to unrestricted areas and doses to offsite receptors.

2. 10 CFR 20.1406, as it relates to the design and operational procedures to minimize contamination, facilitate eventual decommissioning, and minimize the generation of radioactive waste.

3. 10 CFR 50.34a, as it relates to the availability of sufficient design information to demonstrate that design objectives for equipment necessary to control releases of radioactive effluents to the environment have been met.

4. Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 60, as it relates to the ability of the LWMS design to control releases of radioactive materials to the environment.

5. GDC 61, as it relates to the ability of the LWMS design to ensure adequate safety under normal and postulated accident conditions.

6. Appendix I to 10 CFR Part 50, Sections II.A and II.D, as they relate to the numerical guides for dose design objectives and limiting conditions for operation to meet the "as low as is reasonably achievable" (ALARA) criterion.

7. 40 CFR Part 190 (the U.S. Environmental Protection Agency's (EPA) generally applicable environmental radiation standards), as implemented under 10 CFR 20.1301(e), as it relates to limits on annual doses from all sources of radioactivity and radiation from the site (with single or multiple units).

8. 10 CFR 52.47(b)(1), which requires that a DC application contain the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification, the provisions of the Atomic Energy Act, and the NRC's regulations.

9. 10 CFR 52.80(a), which requires that a COL application contain the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.

10. For an ESP application, the relevant requirement is limited to Appendix I to 10 CFR Part 50, such that the guidelines in Section II.A can be met.

<u>SRP Acceptance Criteria</u>

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations.

1. The LWMS should have the capability to meet the dose design objectives and include provisions to treat liquid radioactive wastes such that the following is true:

    A. The calculated annual total quantity of all radioactive materials released from each reactor at the site to unrestricted areas will not result in an estimated annual dose or dose commitment from liquid effluents for any individual in an unrestricted area from all pathways of exposure in excess of 0.03 millisievert

(mSv) (3 millirem (mrem)) to the total body or 0.1 mSv (10 mrem) to any organ. Regulatory Guides 1.109, 1.112, and 1.113 provide acceptable methods for performing this analysis.

B. In addition to 1.A, the LWMS should include all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit return for a favorable cost-benefit ratio, can effect reductions in doses to the population reasonably expected to be within 80 kilometers (km) (50 miles (mi)) of the reactor. Regulatory Guide 1.110 provides an acceptable method for performing this analysis.

C. The concentrations of radioactive materials in liquid effluents released to unrestricted areas should not exceed the concentration limits in Table 2, Column 2, of Appendix B, to 10 CFR Part 20.

2. The LWMS should be designed to meet the anticipated processing requirements of the plant. Adequate capacity should be provided to process liquid wastes during periods when major processing equipment may be down for maintenance (single failures) and during periods of excessive waste generation. Systems that have adequate capacity to process the anticipated wastes and that are capable of operating within the design objectives during normal operation, including anticipated operational occurrences, are acceptable. To meet these processing demands, interconnections between subsystems, redundant equipment, mobile equipment, and reserve storage capacity will be considered.

3. The seismic design of structures housing LWMS components, the quality group classification of liquid radwaste treatment equipment, and provisions to prevent and collect spills from indoor and outdoor storage tanks should conform to the guidelines of Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences. For the purpose of this SRP, the dose limit cited in Section 5 of Regulatory Guide 1.43, addressing unmitigated releases of radioactive materials, is revised to be consistent with that of 10 CFR Part 20.1301. The annual dose limit of Part 20.1301 is 100 mrem for members of the public located in unrestricted areas.

4. System designs should contain provisions to control leakage and facilitate operation and maintenance in accordance with the guidelines of Regulatory Guide 1.143 and industry standards cited in this regulatory guide for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

5. System designs should describe features that will minimize, to the extent practicable, contamination of the facility and environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste, in accordance with the guidelines of Regulatory Guide 1.143, for liquids and liquid wastes produced during normal operation and anticipated operational occurrences, and the requirements of 10 CFR 20.1406, or the DC application, update in the SAR, or the COL application, to the extent not addressed in a referenced certified design.

6. For an ESP application, the dose estimates to a hypothetical maximally exposed member of the public from liquid effluents using radiological exposure models are developed based on Regulatory Guides 1.109, 1.111, and 1.113, and appropriate computer codes, such as the LADTAP II computer code (NUREG/CR-4013) for liquid effluents.

The relevant regulatory guides and Branch Technical Position are as follows:

1. Regulatory Guide 1.110, as it relates to performing a cost-benefit analysis for reducing cumulative dose to the population by using available technology.

2. Regulatory Guide 1.112, as it relates to the use of acceptable methods for calculating annual average releases of radioactive materials in liquid effluents.

3. Regulatory Guide 1.109, as it relates to the use of acceptable methods for calculating annual doses to the maximally exposed individual in demonstrating compliance with 10 CFR Part 50, Appendix I dose objectives.

4. Regulatory Guide 1.113, as it relates to the use of acceptable methods for estimating aquatic dispersion and transport of liquid effluents in demonstrating compliance with 10 CFR Part 50, Appendix I dose objectives.

5. Regulatory Guide 1.143, as it relates to the seismic design and quality group classification of components used in the LWMS and structures housing the systems and the provisions used to control leakages of liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

6. Regulatory Guide 1.143, as it relates to the definition of the boundary of the LWMS beginning at the interface from plant systems to the point of controlled discharge to the environment, as defined in the ODCM, or at the point of recycling to the primary or secondary water system storage tanks for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

7. Branch Technical Position BTP 11-6 as it relates to the assessment of a potential release of radioactive liquids following the postulated failure of a tank and its components, located outside of containment, and impacts of the release of radioactive materials at the nearest potable water supply, located in an unrestricted area, for direct human consumption or indirectly through animals, crops, and food processing.

Technical Rationale

The technical rationale for application of these acceptance criteria to the areas of review addressed by this SRP section is discussed in the following paragraphs:

1. 10 CFR 20.1302 requires that surveys of radiation levels in unrestricted areas and radioactive materials in effluents released to unrestricted areas be performed to demonstrate system compliance with the dose limits to individual members of the public, as specified in 10 CFR 20.1301 and 10 CFR 20.1301(e).

   10 CFR 20.1302, identifies two approaches, either of which can demonstrate compliance with the dose limits of 10 CFR 20.1301 and 10 CFR 20.1301(e). The requirements for one of these approaches are as follows:

   A. Demonstrate that the annual average concentrations of radioactive materials released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the effluent concentration limits specified in Table 2, Column 2, of Appendix B to 10 CFR Part 20.

   B. Demonstrate that the annual and hourly doses from external sources to an individual continuously present in an unrestricted area will not exceed 0.5 mSv (0.05 rem) and 0.02 mSv (0.002 rem), respectively.

Meeting the above requirements provides assurance that the dose limits to individual members of the public specified in 10 CFR 20.1301 and 10 CFR 20.1301(e) will not be exceeded. Meeting the dose requirements identified above will be evaluated as part of the review in this SRP section. Meeting the requirements on gaseous effluent concentration limits in unrestricted areas is identified as an acceptance criterion in SRP Section 11.3 and will be evaluated in that SRP section as well.

2. 10 CFR 20.1406 requires that applicants describe how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste. Regulatory Guide 1.143 includes guidance for SSCs outside containment that contain radioactive liquids produced during normal operation and anticipated operational occurrences.

   Specific guidance to meet 10 CFR 20.1406 is listed below:

   A. Liquid waste processing systems (as permanently installed systems or in combination with mobile equipment) with a potential for leakage should provide means to control and contain this leakage to prevent contamination of building floors and interconnected systems (e.g., curbing, floor sloping to local drains, floor-to-floor seals over floor expansion joints, wall-to-floor joint seals, sheathed hoses, drip pans or containment boxes, backflow preventers, siphon breakers, self-sealing quick-disconnects, and operational interlocks). See guidance given in SRP Section 9.2.4, IE Bulletin No. 80-10, and IE Circulars 81-09, 77-10, 77-14, 79-07, 79-09, and 79-21.

   B. In facilitating decommissioning, designs should minimize embedding contaminated piping in concrete, to the extent practicable, consistent with maintaining radiation doses ALARA during operations and decommissioning.

   C. In minimizing the generation of waste, provisions should be provided to clean contaminated materials (e.g., system components, equipment) and regenerate or reuse resin beds as applicable (e.g., spent condensate demineralizer resin beds with some remaining ion exchange capacity when feasible).

   D. Mobile liquid waste processing systems with interconnections to permanently installed plant LWMS subsystems should include provisions that (i) avoid the contamination of nonradioactive systems, (ii) prevent uncontrolled and unmonitored releases of radioactive materials into the environment, and (iii) avoid interconnections with potable and sanitary water systems.

   E. Pressure testing of all temporary and flexible lines, system piping embedded in concrete, and effluent discharge lines or piping buried in soils should be done. See guidance provided in Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

   F. Corrosion resistant properties all system piping and valves associated with transfer lines to storage tanks and discharge piping in soils and concrete should be included, including features designed for the early detection of leaks and spills (e.g., leak detection sumps and wells).

3. Acceptance Criterion II.3 gives the technical rationale for the 10 CFR 50.34a requirement.

Meeting the requirement of 10 CFR 50.34a, as it relates to the LWMS, provides assurance that each nuclear power reactor will have the necessary design features and equipment to control releases of radioactive liquid effluents to the environment in accordance with the requirements of 10 CFR 20.1301 and 20.1302, Appendix I to 10 CFR Part 50, and GDC 60 and 61.

4. Appendix I to 10 CFR Part 50 provides numerical guidance on design objectives to meet the requirements that radiation doses caused by radioactive materials in effluents released to unrestricted areas be kept ALARA. Sections II.A and II.D of Appendix I relate to the numerical guides for dose design objectives, limiting conditions for operation, and controls to meet the ALARA criterion for liquid effluents. Regulatory Guides 1.109 and 1.113 provide acceptable methods for performing dose analyses to demonstrate that the LWMS design results in doses caused by releases of radioactive materials from each reactor comply with Appendix I dose objectives.

   Regulatory Guide 1.110 provides an acceptable method of performing cost-benefit analysis to demonstrate that the LWMS design includes all items of reasonably demonstrated technology for reducing cumulative population doses from releases of radioactive materials from each reactor to ALARA levels.

   Meeting the requirements of Sections II.A and II.D of Appendix I to 10 CFR Part 50 provides assurance that the limits for radiation doses to a maximally exposed offsite individual from liquid effluents specified in Section II.A and the acceptance criterion for cost-benefit analysis specified in Section II.D for meeting the ALARA objective will be met.

5. Compliance with GDC 60 requires that each nuclear power plant design shall include means to control releases of radioactive materials in liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences.

   GDC 60 specifies that waste management systems provide for a holdup capacity sufficient to retain the radioactive waste, particularly where unfavorable site environmental conditions may impose unusual operational limitations upon the release of effluents. The holdup capacity also provides decay time for shorter lived radionuclides before they are processed further or released to the environment. The holdup times are used in the source term calculations based on the methods described in NUREG-0016 or NUREG-0017 and Regulatory Guide 1.112.

   The review should evaluate the types and characteristics of filtration systems, ion-exchange resins, and adsorbent media proposed to treat liquid process and effluent streams, including removal efficiencies and decontamination factors, taking into account the expected physical, chemical, and radiological properties of liquid process and effluent streams. The review should determine whether performance meets or exceeds that noted in NRC guidance (NUREG-0016 or NUREG-0017), standard DCs, industry standards, and/or topical reports.

   Meeting the requirements of GDC 60 provides assurance that releases of radioactive materials in liquid effluents to unrestricted areas during normal operation of the plant and during anticipated operational occurrences will not result in offsite radiation doses in excess of the dose objectives specified in Appendix I to 10 CFR Part 50 and that concentrations of radioactive materials in liquid effluents in any unrestricted area will not exceed the limits specified in Table 2, Column 2, of Appendix B to 10 CFR Part 20.

6. Compliance with GDC 61 requires that the LWMS and other systems (as permanently installed systems or in combination with mobile systems) that may contain radioactivity shall be designed to ensure adequate safety under normal and postulated accident

conditions. This criterion specifies that such facilities shall be designed with a capability to permit inspection and testing of components important to safety and with suitable shielding for radiation protection.

Regulatory Guide 1.143 furnishes design guidance acceptable to the NRC staff related to seismic and quality group classification and quality assurance provisions for the subsystems, structures, and components of the LWMS for liquids and liquid wastes produced during normal operation and anticipated operational occurrences. For the purpose of this SRP, the dose limit cited in Section 5 of Regulatory Guide 1.143, addressing unmitigated releases of radioactive materials, is revised to be consistent with that of 10 CFR Part 20.1301. The annual dose limit of Part 20.1301 is 100 mrem for members of the public located in unrestricted areas.

Meeting the requirements of GDC 61 provides assurance that releases of radioactive materials during normal operation and anticipated operational occurrences, including adverse vacuum conditions on system components, will not result in radiation doses that exceed the limits specified in 10 CFR Part 20. In addition, meeting this requirement will help ensure that the LWMS will continue to perform its safety function(s) under postulated accident conditions.

7. The acceptance criteria require that an applicant evaluates the consequences of the release of radioactive liquids following the postulated failure of a tank and its components, located outside of containment, and impacts of radioactive materials at the nearest potable water supply, located in an unrestricted area, for direct human consumption or indirectly through animals, crops, and food processing. The analysis assumes that a tank and its components fail to meet the design bases as required by 10 CFR Part 50.34a, and General Design Criteria 60 and 61 of Appendix A to Part 50. The analysis relies on the approach presented in BTP 11-6.

   BTP 11-6 presents guidelines in defining the type of failure, assumptions used for the analysis, and approach applied in assessing the radiological impacts in providing reasonable assurance that the radiological consequences of a single failure of a tank and its components would not exceed the radionuclide concentration limits of Appendix B (Table 2, Column 2, under the unity rule) to 10 CFR Part 20 using the nearest source of potable water, in an unrestricted area, for direct or indirect human consumption by any member of the public.

8. 10 CFR 20.1301(e) requires that NRC-licensed facilities comply with the EPA generally applicable environmental radiation standards of 40 CFR Part 190 for facilities that are part of the fuel cycle. The EPA annual dose limits are 0.25 mSv (25 mrem) to the whole body, 0.75 mSv (75 mrem) to the thyroid, and 0.25 mSv (25 mrem) to any other organ.

   Meeting the requirements of 10 CFR 20.1301(e) requires the consideration of all potential sources of external radiation and radioactivity, including liquid and gaseous effluents and external radiation exposures from buildings, storage tanks, radioactive waste storage areas, and N-16 skyshine from boiling-water reactor (BWR) turbine buildings. The EPA standards apply to the entire site or facility, whether it has single or multiple units. SRP Sections 11.3 and 11.4 address the sources of radioactivity and doses associated with gaseous effluents and solid wastes, respectively. SRP Section 12.3-12.4 addresses the sources of radiation and external radiation exposures from buildings, storage tanks, radioactive waste storage areas, and N-16 skyshine from BWR turbine buildings.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified SRP acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

The NRC staff will review the information describing the design features of the LWMS provided in the SAR, the DC application, update of the FSAR, or the COL application, to the extent not addressed in a referenced certified design, including referenced parts of SRP Sections 11.1, 11.3, 11.4, 11.5, and 12.3-12.4, for completeness in accordance with Regulatory Guide 1.206.

1. The P&IDs and system process flow diagrams are reviewed to determine all sources and volumes of liquid process and effluent streams; points of collection of liquid waste; the flowpaths of liquids through the system, including all bypasses; the treatment provided expected decontamination factors or removal efficiencies for radionuclides and holdup or decay time, and points of release of liquid effluents to the environment.

   This information is used to calculate the quantity of radioactive materials released annually in liquid effluents during normal operation, including anticipated operational occurrences, using given parameters, the GALE Code, and calculation techniques given in NUREG-0016 or NUREG-0017 and Regulatory Guide 1.112. The result of this calculation will be used to determine whether the proposed treatment system design meets the acceptance criteria of SRP Acceptance Criteria Subsection 1.c of this SRP section and relevant sections of SRP Section 11.1.

   Compliance with the acceptance criteria given in SRP Acceptance Criteria Subsection 1.a concerning exposures to the total body or critical organ of an individual in an unrestricted area will be determined based on dose and source term calculations performed by NRC staff using NUREG-0016 or NUREG-0017, Regulatory Guide 1.112, and NUREG/CR-4013 (LADTAP II Code).

   Compliance with the acceptance criterion given in SRP Acceptance Criteria Subsection 1.b concerning the cost-benefit analysis will be determined based on analyses performed by NRC staff, including population cumulative dose (person-Sv (person-rem)) calculations and cost-benefit studies. Regulatory Guide 1.110 describes methods for performing such cost-benefit analyses.

2. The review of the LWMS design capacity will encompass the following major areas:

   A. The system capability to process wastes in the event of a single major equipment item failure (e.g., outage of the primary means for processing liquid wastes).

   B. The system capability to accept additional wastes during operations which result in excessive liquid waste generation.

   C. The system capability to process wastes at design-basis fission product leakage levels (i.e., from 1 percent of the fuel producing power in a pressurized-water reactor (PWR), or in a BWR consistent with a noble gas release rate of 3.7 megabecquerels per second per megawatt thermal (MBq/s per MWt) (100 microcuries (μCi)/s per MWt) measured after a 30-minute delay.

   D. Types and characteristics of filtration systems, ion-exchange resins, and adsorbent media to treat process and effluent streams, with removal efficiencies, decontamination factors, and holdup times, for example, meeting or exceeding the performance of NRC generic guidance (NUREG-0016 or NUREG-0017), standard DCs, or topical reports, taking into account the expected physical, chemical, and radiological properties of liquid process and effluent streams.

The average input flows are compared with the design flows to determine the fraction of time individual subsystems must be online to process normal waste inputs. The review includes the operational flexibility designed into the system (i.e., cross-connections between subsystems, redundant or reserve processing equipment, and reserve storage capacity). Based on the usage factors and operational flexibilities, an evaluation of the overall system capability to process wastes as related to item A, B, or C, above, is performed by comparing design flows with the potential process routes and equipment capacities.

It will be assumed that the primary means for processing liquid waste is unavailable for 2 consecutive days per week for maintenance. If 2 days of holdup capacity or a primary water processing source is not available for the process stream, it will be assumed that the waste stream is processed by an alternate method or discharged to the environment, consistent with an effluent source term developed using the guidelines of NUREG-0016 or NUREG-0017 and Regulatory Guide 1.112.

3. The LWMS is reviewed to ensure that the design includes provisions to prevent and collect leakage resulting from overflows and spillage from indoor and outdoor storage tanks containing liquids and liquid wastes produced during normal operation and anticipated operational occurrences, and is in conformance with the guidelines of Regulatory Guide 1.143 and the requirements of 10 CFR 20.1406.

   The review considers information describing design features that will minimize, to the extent practicable, contamination of the facility and environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste in accordance with the guidance of Regulatory Guide 1.143, for liquids and liquid wastes produced during normal operation and anticipated operational occurrences, and the requirements of 10 CFR 20.1406. In addition, the review may also consider the information contained in the DC application, an update in the SAR, or the COL application, to the extent not addressed in a referenced certified design. The NRC guidance includes the following:

   A. Memorandum from Larry W. Camper to David B. Matthews and Elmo E. Collins, dated October 10, 2006 (ADAMS Accession No. ML0619201830) and NUREG/CR-3587, as they relate to the design issues that need to be addressed to meet the requirements of 10 CFR 20.1406.

   B. Liquid Radioactive Release Lessons Learned Task Force, Final Report, September 1, 2006, Sections 2.0 and 3.2.2. Office of Nuclear Reactor Regulation (ML062650312).

   C. Regulatory Guide 1.11 and Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

   D. SRP Section 9.2.4.

   E. Relevant NRC bulletins and circulars (e.g., IE Bulletin No. 80-10 and IE Circulars 81-09, 77-10, 77-14, 79-07, 79-09, and 79-21).

   F. Industry standards, e.g., ANSI/ANS-55.6-1993 (1999), ANSI/ANS-40.37-1993 (200x updated draft).

4. The system design, system and building layout, equipment design, method of operation, and provisions to reduce leakage and facilitate operations and maintenance are compared to the guidelines of Regulatory Guide 1.143, for liquids and liquid wastes produced during normal operation and anticipated operational occurrences. Topical

reports on system design, including design features provided to control leakage from system components or to prevent placing or operating the system under adverse vacuum conditions, are reviewed on a case-by-case basis.

5. The SREC, ODCM, and Administrative Controls Section of the technical specifications (TS) proposed by the applicant for process and effluent controls will be evaluated as part of the review identified in SRP Sections 11.5 and 16.0. The reviewer will determine whether the content of the SREC and ODCM, calculation methods, and scope of the programs identified in the Administrative Controls Section of the TS are in agreement with the requirements identified as a result of the staff's review. The review will include the evaluation or development of appropriate controls and limiting conditions for operation and their bases as consistent with the plant design. The ODCM, SREC, and TS are reviewed with respect to the requirements of 10 CFR Part 50, 10 CFR 50.36a using Generic Letter 89-01, and guidance contained in NUREG-1301 (PWR) or NUREG-1302 (BWR) and NUREG-0133 for either type of plant. (Note: Generic Letter 89-01 is included in NUREG-1301 and NUREG-1302.).

6. BTP 11-6 describes acceptable methods to evaluate the consequences associated with the release of radioactive liquids following the postulated failure of a tank and its components, and impacts of such radioactive materials on the nearest potable water supply, located in an unrestricted area, for direct human consumption or indirectly through animals, crops, and food processing. The analysis and results proposed by the applicant will be evaluated using the guidance of BTP 11-6 and acceptance criteria. The reviewer will evaluate the type of event leading to the assumed failure of tank and its components; the assumed source term, as radionuclide concentrations and total inventory of radioactivity; process by which the radioactivity is assumed to be released in the environment from plant facilities; use of plant design features and credit assumed in mitigating the amounts of radioactivity released or duration of the release; basis for the selection of the nearest receptor; dispersion and dilution mechanisms to the nearest receptor; types of exposure pathways considered; and resulting radionuclide concentrations at the receptor location. The reviewer will determine whether the analytical approach, assumptions, and model parameters used in assessing the impacts are adequately conservative, consistent with the guidance of BTP 11-6, and confirm whether the acceptance criteria of BTP 11-6 are met at the nearest receptor. Alternatively, for plant system features and/or site characteristics incapable of meeting the acceptance criteria of BTP 11- 6, the reviewer will evaluate proposed special design features applied in mitigating the effects of a postulated tank failure and determine whether such design features are adequate and acceptable given the objectives of BTP 11-6 in protecting public health and safety and the environment.

7. In determining compliance with the EPA generally applicable environmental radiation standards of 40 CFR Part 190, as implemented under 10 CFR Part 20.1301(e), the review considers all sources of radiation and radioactivity as potential contributors to doses to members of the public from the site, whether from single or multiple units. The review focuses on sources of radioactivity, as gaseous and liquid effluents, and external radiation exposures from buildings, storage tanks, radioactive waste storage buildings, and N-16 skyshine from BWR turbine buildings. This section of the SRP evaluates the source terms and associated doses from liquid effluents, while SRP Sections 11.3 and 11.4 evaluate source terms and doses from gaseous effluents and solid wastes. In turn, SRP Section 11.5 addresses compliance with all sources of effluents. SRP Section 12.3-12.4 evaluates the doses associated with external radiation from buildings and contained sources of radioactivity.

8. For review of a DC application, the reviewer should follow the above procedures to verify that the design, including requirements and restrictions (e.g., interface requirements and site parameters), set forth in the final safety analysis report (FSAR) meets the acceptance criteria. DCs have referred to the FSAR as the design control document

(DCD). The reviewer should also consider the appropriateness of identified COL action items. The reviewer may identify additional COL action items; however, to ensure these COL action items are addressed during a COL application, they should be added to the DC FSAR.

For review of a COL application, the scope of the review is dependent on whether the COL applicant references a DC, an early site permit (ESP) or other NRC approvals (e.g., manufacturing license, site suitability report or topical report).

For review of both DC and COL applications, SRP Section 14.3 should be followed for the review of ITAAC. The review of ITAAC cannot be completed until after the completion of this section.

9. Subpart A to 10 CFR Part 52 specifies the requirements applicable to the Commission's review of an ESP application. Information required in an ESP application includes a description of the site characteristics and design parameters of the proposed site. The scope and level of detail of review of data parallel that used for a CP review.

   For an ESP application, the staff reviews the estimates of the source terms for liquid radioactive effluents and radionuclide concentration levels at the site boundary, identified points of discharge or release into the environment, and at all appropriate offsite dose receptor locations and potential exposure pathways. The estimates of the effluent source terms (Ci/yr) and effluent concentrations (uCi/ml) are evaluated to determine whether they are consistent with the proposed reactor design (or PPE) and requested thermal power level.

   In the absence of certain circumstances, such as a compliance or adequate protection issue, 10 CFR 52.39 precludes the staff from imposing new site characteristics, design parameters, or terms and conditions on the early site permit at the COL stage. Accordingly, the reviewer should ensure that all physical attributes of the site that could affect the design basis of SSCs important to safety are reflected in the site characteristics, design parameters, or terms and conditions on the early site permit.

IV. EVALUATION FINDINGS

The reviewer verifies that the applicant has provided sufficient information and that the review and calculations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report. The reviewer also states the bases for those conclusions.

The staff concludes that the LWMS (as a permanently installed system or in combination with mobile systems) includes the equipment necessary to control releases of radioactive materials in liquid effluents in accordance with GDC 60 and 61 of Appendix A to 10 CFR Part 50 and the requirements of 10 CFR 50.34a. The staff concludes that the design of the LWMS is acceptable and meets the requirements of 10 CFR 20.1301 and 20.1302, 10 CFR 20.1301(e), 10 CFR 20.1406, 10 CFR 50.34a, GDC 60 and 61, and Appendix I to 10 CFR Part 50. This conclusion is based on the following:

1. The applicant has met the requirements of Section II.A of Appendix I to 10 CFR Part 50 with respect to dose limiting objectives by proposing a LWMS that is capable of maintaining releases of radioactive materials in liquid effluents such that the calculated individual doses in an unrestricted area from all pathways of exposure are less than 0.03 mSv (3 mrem) to the total body and 0.1 mSv (10 mrem) to any organ. The staff's evaluation has considered releases of radioactive materials in liquid effluents for normal operation, including anticipated operational occurrences, based on expected radwaste inputs over the life of the plant for each reactor on the site, in accordance with SRP Section 11.1.

2. The applicant has met the requirements of Section II.D of Appendix I to 10 CFR Part 50 with respect to meeting the ALARA criterion. The staff has considered the potential effectiveness of augmenting the proposed LWMS using items of reasonably demonstrated technology and has determined that further effluent treatment will not effect reductions in cumulative population doses reasonably expected within an 80-km (50-mi) radius of the reactor at a cost of less than $1000 per man-rem or man-thyroid-rem.

3. The applicant has met the requirements of 10 CFR 20.1301 and 20.1302, as the staff has considered the potential consequences resulting from reactor operation with 1 percent of the operating fission product inventory in the core being released to the primary coolant for a PWR, or "a fission product release rate consistent with a noble gas release to the reactor coolant of 3.7 MBq/s per MWt (100 µCi/s per MWt) for 30 minute decay" for a BWR. The staff has determined that under these conditions the concentrations of radioactive materials in liquid effluents in unrestricted areas will be a small fraction of the limits specified in Table 2, Column 2, of Appendix B to 10 CFR Part 20. In making the above determination for radioiodines, however, the staff has considered TS limits for iodine-131 dose equivalent concentration in the primary coolant for PWRs, as defined in the plant TS.

4. The applicant has met the requirements of 10 CFR 20.1406 with respect to providing a description of how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste.

5. The applicant has met the requirements of GDC 60 and 61 with respect to controlling releases of radioactive materials to the environment. The staff has considered the ability of the proposed liquid radwaste treatment management system to meet the demands of the plant resulting from anticipated operational occurrences and has concluded that the system capacity and design flexibility are adequate to meet the anticipated needs of the plant. The staff has reviewed the applicant's vacuum mitigating provisions for the LWMS and found these features to be in compliance with GDC 61.

6. The staff has reviewed the applicant's quality assurance provisions for the LWMS, the quality group classifications used for system components, and the seismic design applied to structures housing these systems. The design of the systems and structures housing these systems meets the guidelines of Regulatory Guide 1.143, for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

7. The staff has reviewed the provisions incorporated in the applicant's design to control the release of radioactive materials in liquids resulting from inadvertent tank overflows, avoid the contamination of non-radioactive systems, prevent uncontrolled and unmonitored releases of radioactive materials in the environment, and avoid interconnections with potable and sanitary water systems and concludes that the measures proposed by the applicant are consistent with the requirements of GDC 60 and 61 and guidance of Regulatory Guide 1.143 for liquids and liquid wastes produced during normal operation and anticipated operational occurrences.

8. The staff has reviewed the provisions incorporated in the applicant's design in mitigating the release of radioactive materials resulting from the postulated failure of a liquid waste tank located outside of containment. The staff concludes that the analysis provided by the applicant is consistent with the guidelines of BTP-11-6 and meets the acceptance criteria defined in BTP 11- 6 for an offsite individual using the nearest source of potable water for direct human consumption or indirectly through animals, crops, and food processing. Alternatively, for plant systems and/or site characteristics not meeting the

acceptance criteria defined in BTP 11- 6, the staff has evaluated and found the proposed special design features acceptable in mitigating the effects of a postulated tank failure. In its conclusion, the staff will use the appropriate statement contained in BTP 11-6 that is consistent with the applicant's approach and the staff's evaluation and findings of reasonable assurance that the alternate approach is protective of public health and safety and environment.

For DC and COL reviews, the findings will also summarize the staff's evaluation of requirements and restrictions (e.g., interface requirements and site parameters) and COL action items relevant to this SRP section.

In addition, to the extent that the review is not discussed in other SER sections, the findings will summarize the staff's evaluation of the ITAAC, including design acceptance criteria, as applicable.

For an ESP application, the staff concludes that the applicant has provided an assessment that demonstrates its capability to comply with Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of DC applications and license applications submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52. Except when the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the staff will use the method described herein to evaluate conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications submitted six months or more after the date of issuance of this SRP section, unless superseded by a later revision.

VI. REFERENCES

1. 10 CFR 20.1301, "Dose Limits for Individual Members of the Public."

2. 10 CFR 20.1302, "Compliance with Dose Limits for Individual Members of the Public."

3. 10 CFR 20.1406, "Minimization of Contamination."

4. 10 CFR Part 20, Appendix B, "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage."

5. 10 CFR 50.34a, "Design objectives for equipment to control releases of radioactive material in effluents nuclear power reactors."

6. 10 CFR 50.36a, "Technical specifications on effluents from nuclear power reactors."

7. 10 CFR Part 50, Appendix A, GDC 60, "Control of releases of radioactive materials to the environment."

8. 10 CFR Part 50, Appendix A, GDC 61, "Fuel storage and handling and radioactivity control."

9. 10 CFR Part 50, Appendix I, “Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion ‘As Low As Is Reasonably Achievable’ for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents.”

10. Regulatory Guide 1.11, “Instrument Lines Penetrating Primary Reactor Containment.”

11. Regulatory Guide 1.70, “Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants.”

12. Regulatory Guide 1.110, “Cost Benefit Analysis for Radwaste Systems for Light-Water-Cooled Nuclear Power Reactors.”

13. Regulatory Guide 1.109, “Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I.”

14. Regulatory Guide 1.112, “Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluent from Light-Water-Cooled Power Reactors.”

15. Regulatory Guide 1.113, “Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I.”

16. Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation).”

17. Regulatory Guide 1.143, “Design Guidance for Radioactive Waste Management Systems, Structures and Components Installed in Light-Water-Cooled Nuclear Reactor Power Plants.”

18. Regulatory Guide 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition).”

19. NUREG-0016, “Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Boiling Water Reactors (BWRs) (BWR-GALE Code).”

20. NUREG-0017, “Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Pressurized Water Reactors (PWRs) (PWR-GALE Code).”

21. NUREG-0133, “Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants.”

22. NUREG-1301, “Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors.”

23. NUREG-1302, “Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors.”

24. NUREG/CR-4013, “LADTAP II - Technical Reference and User Guide.”

25. IE Bulletin No. 80-10, “Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment,” May 6, 1980.

26. IE Circular No. 77-10, “Vacuum Conditions Resulting in Damage to Liquid Process Tanks,” July 15, 1977.

27. IE Circular No. 77-14, “Separation of Contaminated Water Systems from Uncontaminated Plant Systems,” November 22, 1977.

28. IE Circular No. 79-21, “Prevention of Unplanned Releases of Radioactivity,” October 17, 1979.

29. IE Circular No. 81-09, “Containment Effluent Water that Bypasses Radioactivity Monitor,” July 10, 1981.

30. IE Information Notice No. 79-07, “Rupture of Radwaste Tanks,” March 23, 1979.

31. IE Information Notice No. 79-09, “Spill of Radioactively Contaminated Resin,” March 30, 1979.

32. Memorandum from Larry W. Camper to David B. Matthews and Elmo E. Collins, dated October 10, 2006, “List of Decommissioning Lessons Learned in Support of the Development of a Standard Review Plan for New Reactor Licensing” (ADAMS Accession No. ML0619201830) and NUREG/CR-3587, "Identification and Evaluation of Facility Techniques for Decommissioning of Light Water Reactors.”

33. Liquid Radioactive Release Lessons Learned Task Force, Final Report, September 1, 2006, Sections 2.0 and 3.2.2. Office of Nuclear Reactor Regulation (ML062650312).

34. ANSI/ANS-55.6-1993 (1999), “Liquid Radioactive Waste Processing System for Light Water Reactor Plants.” Reaffirmed in 1999.

35. ANSI/ANS-40.37-1993 (200x updated draft), “American National Standard For Mobile Low-Level Radioactive Waste Processing Systems.” Proposed 2007 draft for public comments

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

PUBLIC PROTECTION NOTIFICATION

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