PMNorthAnna3COLPEmails Resource

From: Barry Bryant [barry.bryant@dom.com]
Sent: Thursday, October 13, 2011 4:34 PM
To: Patel, Chandu
Cc: Regina Borsh; David Lippard; Diane Aitken
Subject: Comments on Draft RAIs 5785, 5786, 5972, 5976, 5977, and 5979
Attachments: Dominion Comments on Draft RAIs.pdf; Draft -- FSAR Section 1.2.1.7.2.9.pdf; Draft -- FSAR Section 10.4.8.2.1.pdf; Draft -- FSAR Section 12.1.3.pdf; Draft -- FSAR Section 12.3.1.3.pdf

Chandu,

We have reviewed draft RAIs 5785, 5786, 5972, 5976, 5977, and 5979 – a total of 30 questions. Some of the questions appear to be redundant of others, or are related to the issuance of DCD Rev. 3 and will be addressed in the upcoming COLA revision. There are also three questions in RAI 5976 that we believe should be addressed by the DCD. Our comments are described in more detail in the attached documents.

We would like to schedule a call at your convenience to clarify RAI 5972, Questions 4, 6, and 7. Please let me know when the staff is available.

The preparation of responses to some of the questions will take longer than the usual 30 days due to the need to review and potentially revise drawings/calculations and the fact that the same subject matter experts (SMEs) will be addressing many of these questions. Based on these factors, we request 90 days to respond to RAI 5977.

Thank you for the opportunity to review the draft RAIs. Please let me know if you have any questions.

Barry

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Dominion Comments on Draft RAIs

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 1	5785	10 CFR 20.1101(b) requires licensees to control external occupational exposure, and to ensure that engineering controls are used to keep occupational doses as low as is reasonably achievable (ALARA). 10 CFR Part 50 General Design Criterion (GDC) 61 requires licensees to ensure that there is adequate shielding for routine activities in the area of equipment that may contain radioactivity. The guidance contained in NUREG 0800 Standard Review Plan (SRP) Section 12.2 “Radiation Sources” and Regulatory Guide 1.206 “Combined License Applications for Nuclear Power Plants (LWR Edition),” section C.I.12.2.1 “Contained Sources,” states that the applicant is to provide the models, parameters and bases for all values used to calculate source magnitudes used as the basis for designing the radiation protection program and for shield design calculations. North Anna Power Station Unit 3 (NAPS) Departure DEP 9.2(1) “Replacement of Boron Recycle System with a Degasifier Subsystem” eliminated the reuse of reactor coolant water, so this additional waste water will need to be processed as liquid waste. Based on the information contained in the US-APWR DCD Tier 2 Revision 2 Table 12.2-73 “Parameters for the US-APWR Demineralizers” the Liquid Waste Processing System will need to process 1.4E6 gallons more Reactor Coolant each cycle. However, NAPS COL FSAR Table 12.2-73R “Parameters for the US-APWR Demineralizers” does not appear to reflect the processing of this additional water by the Waste demineralizer (Anion-bed), Waste demineralizer (Cation-bed) or the Waste demineralizer (Mixed bed), and, and therefore, the impact, if any, on the radiation area zones depicted on the maps contained in NAPS COL FSAR Figures 12.3-1 “Radiation Zones for Normal Operation/Shutdown”. Please describe the effect, if any, on the radiation zone maps contained in NAPS COL FSAR Figures 12.3-1R “Radiation Zones for Normal Operation/Shutdown” from any increases in dose rates due to additional waste water processing, as described in FSAR Table 12.2.73,, or describe an alternative approach that provides an acceptable method of complying with those rules or regulations of the Commission, or portions thereof, that underlie the corresponding SRP acceptance criteria.	This question is a subset of, and is addressed by draft RAI 5784, 12.02-***, Question No. 3.
12.03-12.04-*** Question No. 2	5785	10 CFR 20.1406 requires applicants to describe design features provided for minimizing contamination of the facility and the environment. The following design objectives summarize the guidance contained in RG 4.21, 'Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning,' (June 2008) related to the prevention and early detection of leakage, and which recommends barriers to leakage, and maintenance and monitoring of components important to the prevention of leakage. The COL Applicant is responsible for identifying the design features provided	This question is addressed by COL items 12.1(8) and 12.3(10), which were added by DCD Rev. 3 and will be included in the next COLA submission. See attached draft FSAR Sections 12.1.3 and 12.3.1.3.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
		to prevent environmental contamination, for Systems, Structures and Components provided for handling, containing or storing radioactive material that are not described in the DCD, such as: · Radioactive Waste processing equipment provided by the applicant, · Steam and Condensate system storage and transfer systems, · Overflow lines from secondary coolant tanks located outside of buildings, · Startup Steam Generator Blowdown System components located outside of buildings, · Water supplies to, steam from, and blowdown from Auxiliary Boiler steam supply systems that share makeup water sources with the plant feedwater and condensate systems, · Equipment, floor and other drain systems that are in direct contact with the environment, · Building heating, ventilating and air conditioning systems condensate drains, · Below grade piping, penetration sleeves, and trenches that are in direct contact with the environment, · Provisions for leakage testing of those portions of below grade piping that are in direct contact with the environment The examples provided are illustrative in nature, and do not portray an exhaustive review of the systems, structures, and components that should be considered to demonstrate compliance with 10 CFR 20.1406. Appendix A "Examples of Measures to Control Contamination" of RG 4.21 contains examples of measures that might be taken to address the requirements of 10 CFR 20.1406. Please revise and update the NAPS COL FSAR to include information, in the appropriate section of the NAPS COL FSAR where the system is described, that identifies the site specific design features not otherwise described in the DCD, or program elements supplementing the site specific facility design, not otherwise described in the DCD, that are directed towards minimizing facility and site contamination, (A list would be acceptable.) Include a reference to these sections in Chapter 12.3 of the NAPS COL FSAR.	

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 3	5785	10 CFR 20.1101(b) requires licensees to control external occupational exposure, and to ensure that engineering controls are used to keep occupational doses as low as is reasonably achivable (ALARA). 10 CFR Part 50 General Design Criterion (GDC) 61 requires licensees to ensure that there is adequate shielding for routine activities in the area of equipment that may contain radioactivity. The guidance contained in Regulatory Guide 1.206 “Combined License Applications for Nuclear Power Plants (LWR Edition)” section C.I.12.3.1 and NUREG 0800 Standard Review Plan (SRP) Section 12.3-12.4 “Radiation Protection Design Features” state that areas inside the plant structures should be subdivided into radiation zones, with maximum design dose rate zones and the criteria used in selecting maximum dose rates identified. The NAPS COL FSAR does not fully describe the shielding and radiation zones associated with the route of the new line added between the CVCS Hold Up Tanks and the Charging pump suctions pipes, as described in the guidance provided in RG 1.206 Section C.I.12.3.1 and SRP Section 12.3-12.4. NAPS COL FSAR Figures 9.3.4-1R “Chemical and Volume Control System Flow Diagram,” Sheets 4 and 6 of 7, show a new connection via valves VLV-351-N and Locked Closed VLV-352-N to CHARGING PUMP 4637 N0-EE10024. NAPS COL FSAR Section 9.3.4, NAPS DEP 9.2(1) and NAPS COL FSAR Chapter 12 do not discuss this connection to the Charging Pumps. US-APWR DCD Tier 2, Revision 2, Figures 12.3-1 “Radiation Zones for Normal Operation/Shutdown (Sheet 15 of 34) Auxiliary Building at Elevation -26’-4” “[the location of the CVCS HUTs in the Auxiliary Building] and Figure 12.3-1 “Radiation Zones for Normal Operation/Shutdown (Sheet 4 of 34) Reactor Building at Elevation -26’-4”””” [the location of the Charging pumps in the Reactor Building], do not show a pipe chase at Elevation -26’-4” between the Charging Pumps and the Chemical and Volume Control System (CVCS) Hold Up Tanks. Please update and revise the NAPS COL FSAR to include a description of the design features (e.g. shielding, fission/activation product removal) provided to maintain the radiation zones depicted in USAPWR DCD Tier 2 Figures 12.3-1 along the path of the CVCS line between the CVCS Hold Up Tanks and the Charging Pumps and the changes to Figures 12.3 that depict the updated radiation zones along the route of this line.	This question is addressed by draft RAI 5977, 12.03-12.04-***, Question No. 4.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 1	5786	10 CFR 20.1001(b) states in part: (b) It is the purpose of the regulations in this part to control the receipt, possession, use, transfer, and disposal of licensed material by any licensee in such a manner that the total dose to an individual (including doses resulting from licensed and unlicensed radioactive material and from radiation sources other than background radiation) does not exceed the standards for protection against radiation prescribed in the regulations in this part. . . ." Public dose is as defined in 10 CFR 20.1003, which states that it includes the dose received by a member of the public from exposure to ". . . any other source of radiation under the control of a licensee, . . ." exclusive of occupational, background, or medical administrations. The requirement of 10 CFR 20.1301(a)(1) is "The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year" while 20.1101(b) requires exposure to members of the public be as low as reasonably achievable. Regulatory Guide 1.206 "Combined License Applications for Nuclear Power Plants (LWR Edition)" Part III "Applications Referencing Certified Designs and/or Early Site Permits" Section C.I.12 "Radiation Protection" states that COL applicants referencing a certified design and an ESP should refer to Chapter 12 of Section C.III.1 for the information needed to prepare their COL applications, which states that multiunit plants provide estimated annual doses to construction workers in a new unit construction area, as a result of radiation from onsite radiation sources from the existing operating plant(s). North Anna Power Station Unit 3 (NAPS) COL FSAR Revision 3, Section 12.4.1.9 "Dose to Construction Workers" states that doses to construction workers were addressed in the Final Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna Site (FEIS), and that the 120 person-rem calculated in the North Anna Early Site Permit Application, Part 3, Environmental Report (ESP-ER) remains a conservative estimate. However, this information is not included in the NAPS COL FSAR. Consistent with the guidance provided in RG 1.206 Section C.I.12, please update and revise the NAPS COL FSAR to include the estimated exposure to construction workers along with the associated methods, models and assumptions, or describe an alternative approach that provides an acceptable method for complying the Commission's regulations in Part 20.	The requested information in referenced in FSAR 12.4.1.9 and incorporated by reference in COLA Part 3, Environmental Report. ER Chapter 1 states: "The environmental impacts of constructing and operating new nuclear units at NAPS were previously assessed in North Anna Early Site Permit Application, Part 3, Environmental Report (ESP-ER) (Reference 1), and in NUREG-1811, Final Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna Site (FEIS) (Reference 2). In accordance with 10 CFR 51.50(c)(1), this Applicants' Environmental Report - Combined License Stage incorporates by reference the assessment of environmental issues that were resolved in the ESP proceeding … "

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 8	5972	Regulatory Guide 1.206 "Combined License Applications for Nuclear Power Plants" section C.I.12.3.4 "Area Radiation and Airborne Radioactivity Monitoring Instrumentation" states that the applicant should provided information regarding the range, sensitivity, accuracy, precision, calibration methods and frequency; alarm setpoints; recording devices; locations of detectors, readouts, and alarms as well as the criteria for selection, for area radiation monitoring (ARM) instrumentation. Standard Review Plan (SRP) section 12.3-12.4 "Radiation Protection Design Features" states that if removable shielding is used for sources having radiation levels greater than 1 Gy per hour (100 rads per hour), local audible and visible alarming radiation monitors must be installed to alert personnel if temporary shielding is removed; each ARM should have a local audible alarm; and that American National Standards Institute (ANSI)/ American Nuclear Society (ANS)-6.8.1-1981, "Location and Design Criteria for Area Radiation Monitoring Systems for Light Water Nuclear Reactors," should be used to establish the ranges and locations of area radiation monitors. ANSI/ANS-HPSSC-6.8.1-1981 section 4.3 "Monitoring Range", describes the required range for radiation monitors based on the expected normal and maximum dose rates. ANSI/ANS-HPSSC-6.8.1-1981 Section 4.2 "Detector Locations" states that preference should be given to locating detectors in areas that are expected to be occupied and that can experience significant transient dose rates, and that the detectors should be located in areas that prevent inadvertent shielding by structural materials. North Anna Power Station Unit 3 (NAPS) Combined License (COL) FSAR Appendix 11AA "Interim Radwaste Storage Facility" (IRSF) does not describe the consistency of the area radiation monitoring instrument design with the guidance provided in ANSI/ANS-HPSSC-6.8.1-1981. While US-APWR Design Control Document (DCD) Tier 2 Table 12.3-4 "Area Radiation Monitors" (ARM) describes the type and nominal range each area radiation monitor detector that is part of the certified design, neither the NAPS COL FSAR for section 12.3 "Radiation Protection Design Features" nor NAPS COL FSAR Appendix 11AA "Interim Radwaste Storage Facility" include similar information for the NAPS Unit 3 site specific IRSF Area Radiation Monitor (RME-RE-120). Also, while US-APWR DCD Tier 2 Figure 12.3-1 "Radiation Zones for Normal Operation/Shutdown" depicts the location of the certified design plant area radiation monitors, neither the NAPS COL FSAR for section 12.3 "Radiation Protection Design Features" nor NAPS COL FSAR Figure 11AA-201 "IRSF Layout Plan" depict the location of the NAPS Unit 2 site specific RME-RE-120 radiation monitor. Since only one ARM is installed in the IRSF the staff is unable to determine if the shield walls preclude detection of high radiation levels in the vault area that could result from the removal of a shield plug to a very high radiation area containing waste containers. While NAPS COL FSAR Appendix 11AA states that RME-RE-120 alarms in the crane operating room and the Main Control Room (MCR), it does not indicate if a local alarm or indication is provided at the ARM in the truck bay. Please revise and update NAPS COL FSAR Appendix 11AA and NAPS COL FSAR Section 12.3 to describe the features and the associated basis of the IRSF area radiation monitoring system design that assure consistency with the guidance of SRP Section 12.3-12.4 and RG 1.206 Subsection C.I.12.3, or provide the specific alternative approaches used and the associated justification.	This question is addressed by RAI 5913, 11.04-11.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 9	5972	Regulatory Guide (RG) 1.206,"Combined License Applications for Nuclear Power Plants" Section C.I.11.5 "Process and Effluent Radiological Monitoring and Sampling Systems" and Standard Review Plan (SRP) section 11.5 "Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems," state that Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants", American National Standards Institute (ANSI) N42.18-2004, "Specification and Performance of On-Site Instrumentation for Continuously Monitoring Radioactivity in Effluents," and ANSI/ Health Physics Society (HPS) N13.1-1999, "Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities," provide guidance on the selection and design requirements of continuous radiation monitoring equipment for sampling airborne radioactive materials in nuclear facilities. This guidance ensures compliance with the requirements of Title 10 of the Code of Federal Regulations (10 CFR), Part 20, "Standards for Protection Against Radiation," Appendix B "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage". North Anna Power Station Unit 3 (NAPS) Combined License (COL) FSAR Subsection 12.3.4 "Area Radiation and Airborne Radioactivity Monitoring Instrumentation" states that the description, discussion, and locations of the area and airborne radiation monitors are provided in NAPS COL FSAR Appendix 11AA "Interim Radwaste Storage Facility". However, NAPS COL FSAR Appendix 11AA "Interim Radwaste Storage Facility" (IRSF) does not describe the consistency of the design of the airborne radiation monitoring instrument with the guidance provided in RG 1.21, RG 1.206, ANSI/HPS-N13.1-1999 or ANSI N42.18-2004 to describe the type and nominal range of particulate monitors, the features provided to ensure representative sampling of the effluent stream and the failure position of isolation dampers. While US-APWR Design Control Document (DCD) Tier 2 Table 11.5-1 "Process Gas and Particulate Monitors" describes some of these features for radiation monitors provide as part of the certified design, neither NAPS COL FSAR Section 11.5 "Process Effluent Radiation Monitoring and Sampling System" nor NAPS COL FSAR Appendix 11AA "Interim Radwaste Storage Facility" include the range, sensitivity, check source or calibration isotope information for the NAPS site specific IRSF Exhaust Fan Airborne Radiation Monitor (RME-RE-121). Also, the applicant has not described the NAPS site specific design features provided to ensure representative sampling of the IRSF ventilation system exhaust by the radiation monitor. Please revise and update NAPS COL FSAR Appendix 11AA and NAPS COL FSAR Section 11.5 to describe the features and the associated basis of the IRSF airborne activity radiation monitoring system design that assure consistency with the guidance of SRP Section 11.5 and Regulatory Guide 1.206,"Combined License Applications for Nuclear Power Plants" Section C.I.11.5, or provide the specific alternative approaches used and the associated justification.	This question is addressed by RAI 5913, 11.04-11.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 11	5972	North Anna Power Station Unit 3 (NAPS) Combined License (COL) FSAR Subsection 1.2.1.7.2.9 “Interim Radwaste Storage Facility The Interim Radwaste Storage Facility (IRSF)” states that the IRSF is designed to safely handle, store, monitor, and control Class B and C stabilized waste generated as a result of normal operation, including anticipated operational occurrences (AOO) based on the provisions of NRC Standard Review Plan (SRP) 0800, Section 11.4, “Solid Waste Management System,” Appendix 11.4-A, “Design Guidance for Temporary Storage of Low-Level Radioactive Waste,” and the guidance of NRC Generic Letter (GL) 81-38, “Storage of Low Level Radioactive Wastes at Power Reactor Sites,” and NRC Commission Paper SECY 94-98. However, the correct SECY paper reference should be SECY 94-0198 “Review of Existing Guidance Concerning the Extended Storage of Low-Level Radioactive Waste” (ML0716404620). Please revise and update NAPS COL FSAR Subsection 1.2.1.7.2.9 to list the correct document, or provide the specific alternative approaches used and the associated justification.	The typographic error has already been corrected in the “living” COLA and will be included in the next COLA submission. See attached draft FSAR Section 1.2.1.7.2.9.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 1	5976	The guidance contained in Regulatory Guide (RG) 8.8 “Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be as Low as is Reasonably Achievable” states that the applicant should estimate the quantity and isotopic composition of the radioactive material to be contained, deposited, or accumulated in station equipment. The guidance contained in Regulatory Guide (RG)1.206 ”Combined License Applications for Nuclear Power Plants” Section C.1.12.2.1 “Contained Sources,“ and Standard Review Plan (SRP) 12.2 “Radiation Sources” state that the applicant is to provide the models, parameters and bases used to calculate source magnitudes, including isotopic composition for all values. North Anna Power Station Unit 3 (NAPS) combined license (COL) FSAR Figure 12.3-1R “Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)” and NAPS COL FSAR Figure 1.2-1R “Site Plan (Sheet 1 of 2),” Legend item 37 identifies the cooling tower blowdown sump as a separate site specific structure, not described in the US-APWR Design Control Document (DCD), that is located on the NAPS Unit 3 site. NAPS COL FSAR Section 11.2 “Liquid Waste Management System” Subsection 11.2.2 “System Description” states that the treated liquid effluents released from NAPS Unit 3 are piped directly into the cooling tower blowdown sump. In addition, US-APWR DCD Tier 2, Table 11.1-9 “Realistic Source Terms”, which is based on a total primary to secondary leakage rate of 75 lbm/day (about 6% of the Technical Specifications limit for leakage from 1 steam generator), states that the activity of the Steam Generator (SG) blowdown may exceed 3 E-6 µCi/g, excluding activity from iodine isotopes and noble gases. A portion of this activity is removed from the SG blowdown fluid and concentrated in the resins contained within the SG blowdown demineralizers. NAPS COL FSAR Figure 10.4.8-2R “Steam Generator Blowdown System Flow Diagram” shows that the Steam Generator Blowdown Demineralizers backwash lines, which do not have a radiation monitor, can be directed to either the cooling tower blowdown sump. NRC staff experience with operating plants indicates that fluid used to back wash demineralizers during the transfer of spent resin to waste may contain resin fines and a portion of the radioactive material deposited in the demineralizer resin. NAPS COL FSAR Section 12.2 “Radiation Sources” does not identify the blowdown sump as a component containing radioactive material and does not describe the methods models and assumptions used to ascertain the quantity of radioactive material in this component. Please revise and update NAPS COL FSAR Section 12.2 “Radiation Sources” to describe the source term content of this structure, including sources of radioactive material, the methods, models and assumptions used as the basis for that determination, or provide the specific alternative approaches used and the associated justification.	As shown in DCD Rev. 2 Figure 10.4.8-2, the demineralizer backwash lines lead to the waste holdup tank (WHT) or the waste water system (WWS). (Note: this level of detail is not shown in DCD Rev. 3) As described in FSAR 10.4.8.1.2, the WWS for North Anna 3 is the blowdown sump. The blowdown sump is site-specific; however, the demineralizer backwash flowpath to the WWS (blowdown sump) is part of the standard plant design and is incorporated by reference. A concern regarding the potential movement of resin fines from the demineralizers to the WWS should be addressed in the DCD.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 2	5976	Title 10 of the Code of Federal Regulations (10 CFR), Part 20, “Standards for Protection Against Radiation,” 10 CFR 20.1406(b) “Minimization of contamination” requires licensees to describe design features provided to reduce contamination of the facility, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste. Guidance related to the prevention and early detection of leakage, which includes barriers to leakage, and maintenance and monitoring of components important to the prevention of leakage is provided in RG 4.21, 'Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning,' (June 2008) and in Regulatory Guide (RG) 1.206 ”Combined License Applications for Nuclear Power Plants,” Section C.I.12.5.3.4 “Contamination Control”. North Anna Power Station Unit 3 (NAPS) combined license (COL) FSAR Figure 12.3-1R “Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)” and NAPS COL FSAR Figure 1.2-1R “Site Plan (Sheet 1 of 2),” Legend item 37 identify the cooling tower blowdown sump as a separate site specific structure, not described in the US-APWR Design Control Document (DCD), that is located on the NAPS Unit 3 site. NAPS COL FSAR Section 11.2 “Liquid Waste Management System” Subsection 11.2.2 “System Description” states that the treated liquid effluents released from NAPS Unit 3 are piped directly into the cooling tower blowdown sump. In addition, NAPS COL FSAR Figure 10.4.8-2R “Steam Generator Blowdown System Flow Diagram” shows that the Steam Generator Blowdown Demineralizers backwash lines can be directed to the Blowdown Sump. NRC staff experience with operating plants indicates that fluid used to back wash demineralizers during the resin transfer operations may contain resin fines and a portion of the radioactive material deposited in the demineralizer resin. However, neither the NAPS COL FSAR Subsection 10.4.8 “Steam Generator Blowdown System,“ nor Subsection 12.3 “Radiation Protection Design Features” describe the design features to reduce contamination of the facility, facilitate eventual decommissioning, and minimize, to the extent practicable and the generation of radioactive waste from this NAPS site specific structure that is not described in the US-APWR DCD. Please revise and update NAPS COL FSAR Section 12.3 to describe the design features provided to minimize contamination of the facility and the environment, consistent with the guidance contained in RG 4.21 and the requirements of 10 CFR 20.1406, from the site specific portions of the cooling tower blowdown system, or provide the specific alternative approaches used and the associated justification.	This question is addressed by COL items 12.3(10), which was added by DCD Rev. 3 and will be included in the next COLA submission. See attached draft FSAR Sections 10.4.8.2.1 and 12.3.1.3.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 3	5976	The acceptance criteria of Standard Review Plan (SRP) Section 12.3-12.4 "Radiation Protection Design Features" are based in part on meeting 10 CFR 20.1101(b) "Radiation protection programs" and the definition of as low as is reasonably achievable (ALARA) in 10 CFR 20.1003, "Definitions", that is, making every reasonable effort to maintain exposure as low as possible. The guidance contained in Regulatory Guide 8.8 "Information Relevant for Ensuring that Occupational Radiation Exposures at Nuclear Power Stations is Reasonably Achievable," and Regulatory Guide (RG)1.206 "Combined License Applications for Nuclear Power Plants" Section C.I.12.3.1 "Facility Design Features" describe action to be taken during facility design, engineering, construction and operation, to maintain ORE ALARA and to describe the facility. North Anna Power Station Unit 3 (NAPS) combined license (COL) FSAR Figure 12.3-1R "Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)" and NAPS COL FSAR Figure 1.2-1R "Site Plan (Sheet 1 of 2)," Legend item 37 identify the cooling tower blowdown sump as a separate site specific structure, not described in the US-APWR Design Control Document (DCD), that is located on the NAPS Unit 3 site. NAPS COL FSAR Section 11.2 "Liquid Waste Management System" Subsection 11.2.2 "System Description" states that the treated liquid effluents released from NAPS Unit 3 are piped directly into the cooling tower blowdown sump. In addition, NAPS COL FSAR Figure 10.4.8-2R "Steam Generator Blowdown System Flow Diagram" shows that the Steam Generator Blowdown Demineralizers backwash lines can be directed to the Blowdown Sump. NRC staff experience with operating plants indicates that fluid used to back wash demineralizers during the resin transfer operations may contain resin fines and a portion of the radioactive material deposited in the demineralizer resin. NAPS COL FSAR Figure 12.3-1R "Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)" shows the location of the cooling tower blowdown sump, however, it does not provide radiation zone information for this structure. Please revise and update NAPS COL FSAR Figures 12.3-1R to provide radiation zone information consistent with the guidance contain in the Standard Review Plan section 12, or describe the specific alternate approaches and the associated justification.	As shown in DCD Rev. 2 Figure 10.4.8-2, the demineralizer backwash lines lead to the waste holdup tank (WHT) or the waste water system (WWS). (Note: this level of detail is not shown in DCD Rev. 3) As described in FSAR 10.4.8.1.2, the WWS for North Anna 3 is the blowdown sump. The blowdown sump is site-specific; however, the demineralizer backwash flowpath to the WWS (blowdown sump) is part of the standard plant design and is incorporated by reference. A concern regarding the potential movement of resin fines from the demineralizers to the WWS should be addressed in the DCD.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 4	5976	The acceptance criteria of Standard Review Plan (SRP) Section 12.3-12.4 "Radiation Protection Design Features" are based in part on meeting 10 CFR 20.1101(b) "Radiation protection programs" and the definition of as low as is reasonably achievable (ALARA) in 10 CFR 20.1003, "Definitions", that is, making every reasonable effort to maintain exposure as low as possible. The guidance contained in Regulatory Guide 8.8 "Information Relevant for Ensuring that Occupational Radiation Exposures at Nuclear Power Stations is Reasonably Achievable," and Regulatory Guide (RG)1.206 "Combined License Applications for Nuclear Power Plants" Section C.I.12.3.1 "Facility Design Features" describe action to be taken during facility design, engineering, construction and operation, to maintain ORE ALARA and to describe the facility. North Anna Power Station Unit 3 (NAPS) combined license (COL) FSAR Figure 12.3-1R "Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)" and NAPS COL FSAR Figure 1.2-1R "Site Plan (Sheet 1 of 2)," Legend item 37 identify the cooling tower blowdown sump as a separate site specific structure, not described in the US-APWR Design Control Document (DCD), that is located on the NAPS Unit 3 site. NAPS COL FSAR Section 11.2 "Liquid Waste Management System" Subsection 11.2.2 "System Description" states that the treated liquid effluents released from NAPS Unit 3 are piped directly into the cooling tower blowdown sump. In addition, NAPS COL FSAR Figure 10.4.8-2R "Steam Generator Blowdown System Flow Diagram" shows that the Steam Generator Blowdown Demineralizers backwash lines can be directed to the Blowdown Sump. NRC staff experience with operating plants indicates that fluid used to back wash demineralizers during the resin transfer operations may contain resin fines and a portion of the radioactive material deposited in the demineralizer resin. NAPS COL FSAR Table 1.8-1R "Significant Site-Specific Interfaces with the Standard US-APWR Design" states that Treated liquid effluent is discharged to the cooling tower blowdown sump and subsequently drained to the Waste Heat Treatment Facility (WHTF); sludge is transferred to a truck for off-site disposal. NAPS COL FSAR Section 12.3 "Radiation Protection Design Features," does not describe the site specific cooling tower blowdown sump or the design features provided to minimize Occupational Radiation Exposure to station personnel due to exposure radioactive material contained in the due to the operation, cleaning or maintenance of the blowdown sump. Please revise and update NAPS COL FSAR Section 12.3 to describe the design features provided to minimize ORE from the cooling tower blowdown sump, or describe the specific alternate approaches and the associated justification.	As shown in DCD Rev. 2 Figure 10.4.8-2, the demineralizer backwash lines lead to the waste holdup tank (WHT) or the waste water system (WWS). (Note: this level of detail is not shown in DCD Rev. 3) As described in FSAR 10.4.8.1.2, the WWS for North Anna 3 is the blowdown sump. The blowdown sump is site-specific; however, the demineralizer backwash flowpath to the WWS (blowdown sump) is part of the standard plant design and is incorporated by reference. A concern regarding the potential movement of resin fines from the demineralizers to the WWS should be addressed in the DCD.

Draft RAI Question	e-RAI	RAI Description	Dominion Comments
12.03-12.04-*** Question No. 5	5976	Title 10 of the Code of Federal Regulations (10 CFR), Part 20, “Standards for Protection Against Radiation,” 10 CFR 20.1406(b) “Minimization of contamination” requires licensees to describe design feature to reduce contamination of the facility, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste. Guidance related to the prevention and early detection of leakage, which includes barriers to leakage, and maintenance and monitoring of components important to the prevention of leakage is provided in RG 4.21, 'Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning,' (June 2008) and in Regulatory Guide (RG) 1.206 ”Combined License Applications for Nuclear Power Plants,” Section C.I.12.5.3.4 “Contamination Control”. 10 CFR 20 Subpart F “Surveys and Monitoring” requires licensees to perform those surveys necessary to evaluate concentrations and quantities of radioactive material. North Anna Power Station Unit 3 (NAPS) combined license (COL) FSAR Figure 12.3-1R “Radiation Zones for Normal Operation/Shutdown: Site (Sheet 1 of 34)” and NAPS COL FSAR Figure 1.2-1R “Site Plan (Sheet 1 of 2),” Legend item 37 identify the cooling tower blowdown sump as a separate site specific structure, not described in the US-APWR Design Control Document (DCD), that is located on the NAPS Unit 3 site. NAPS COL FSAR Section 11.2 “Liquid Waste Management System” Subsection 11.2.2 “System Description” states that the treated liquid effluents released from NAPS Unit 3 are piped directly into the cooling tower blowdown sump. The pipes leading to and from the cooling tower blowdown sump are site specific components, not described in the US-APWR Design Control Document (DCD), that are located on the NAPS Unit 3 site. However, the NAPS COL FSAR does not describe the site specific design features provided to minimize contamination of the facility or the environment from piping leading to and from this sump. Please revise and update NAPS COL FSAR Section 12.3 “Radiation Protection Design Features” to describe the design features of the pipes containing radioactive fluids leading to and from the Blowdown Sump that are provided to minimize contamination of the facility and the environment, consistent with the guidance contained in RG 4.21 and the requirements of 10 CFR 20.1406, or describe the specific alternate approaches and the associated justification.	This question is addressed by COL items 12.3(10), which was added by DCD Rev. 3 and will be included in the next COLA submission. See attached draft FSAR Sections 10.4.8.2.1 and 12.3.1.3.

from the containment to the Reactor Building. For the NA3 site, this is approximately 217.5° from true north or 142.5° counterclockwise from true north.

"Plant North" is designated as "Unit 3 North" on Figure 1.2-1R (Sheet 1 of 2).

NAPS SUP 1.2(2)

The design plant grade shown in the DCD figures is 2'-7", whereas the nominal Unit 3 plant grade elevation is 290 ft. NAVD88 (290.86 ft. NGVD29). Therefore, DCD elevations are to be increased by 287'-5" to be actual site elevations based on the NAVD88 datum. Elevations presented in tables and figures are based on NAVD88 unless noted otherwise. The equivalent NGVD 29 datum is 0.86 ft. higher than the NAVD88 datum in the power block area. The actual plant grade floor elevation varies to accommodate floor slope and layout requirements.

1.2.1.7.2.3 Power Source Fuel Storage Vault (PSFSV)

NAPS SUP 1.2(3)

Replace DCD Subsection 1.2.1.7.2.3 with the following:

The PSFSVs are partially underground structures constructed with reinforced concrete and classified as seismic Category I. The vaults contain the fuel oil tanks for the safety-related gas-turbine generators.

NAPS COL 1.8(1)

Add the following new subsections after DCD Subsection 1.2.1.7.2.7.

1.2.1.7.2.8 Ultimate Heat Sink Related Structures

The ultimate heat sink related structures (UHSRS) are seismic category I structures that connect to the essential service water pipe tunnel (ESWPT).

Each UHSRS consists of a cooling tower enclosure, UHS essential service water (ESW) pump house and a UHS basin.

Each UHS ESW pump house contains one safety-related pump and one UHS transfer pump. The UHS ESW pump house ventilation system maintains environmental conditions to UHS ESW pump house that meet the design requirements during normal, transient, and accident operating conditions, for the safe operation and orderly shutdown of the plant.

1.2.1.7.2.9 Interim Radwaste Storage Facility

The Interim Radwaste Storage Facility (IRSF) is designed to safely handle, store, monitor, and control Class B and C stabilized waste

generated as a result of normal operation, including anticipated operational occurrences (AOO) based on the provisions of NRC Standard Review Plan (SRP) 0800, Section 11.4, Solid Waste Management System, Appendix 11.4-A, *Design Guidance for Temporary Storage of Low-Level Radioactive Waste*. The IRSF design also incorporates the guidance of NRC Generic Letter (GL) 81-38, *Storage of Low Level Radioactive Wastes at Power Reactor Sites*, and NRC Commission Paper SECY-94-198.

1.2.2 Combined License Information

Replace the content of DCD Subsection 1.2.2 with the following.

STD COL 1.2(1)
NAPS COL 1.2(1)

1.2(1) ***Site-specific site plan***

This COL item is addressed in Subsections 1.2.1.6 and 1.2.1.7.1 and Figure 1.2-1R.

10.4.7.7 Water Hammer Prevention

STD COL 10.4(6)

Replace the first sentence of 6th paragraph in DCD Subsection 10.4.7.7 with the following.

The operating and maintenance procedures regarding water hammer are included in system operating procedures in Subsection 13.5.2.1. A milestone schedule for implementation of the procedures is also included in Subsection 13.5.2.1.

10.4.8.1.2 Non-safety Power Generation Design Bases

NAPS COL 10.4(2)
NAPS CDI

Add the following text before the first paragraph in DCD Subsection 10.4.8.1.2.

Throughout this subsection 10.4.8, "waste water system (WWS)" described in DCD 10.4.8 is replaced with "blowdown sump".Add the following text after the last bullet in DCD Subsection 10.4.8.1.2.

- Discharge secondary side water (after cooling) to the blowdown sump or LWMS during plant start up and abnormal chemistry conditions.
- Monitor the concentration of radioactive material in the cooled blowdown water with startup SG blowdown heat exchanger downstream radiation monitor located downstream of startup SG blowdown heat exchanger.

10.4.8.2.1 General Description

STD COL 10.4(2)

Replace the first and second paragraph in DCD Subsection 10.4.8.2.1 with the following.

The steam generator blowdown system (SGBDS) flow diagrams are shown in Figures 10.4.8-1R, 10.4.8-2R, and 10.4.8-201. Classification of equipment and components in the SGBDS is provided in Subsection 3.2.

The SGBDS equipment and piping are located in the containment, the reactor building, the auxiliary building, the turbine building (T/B), and outdoors.

Add the following text after the third paragraph in DCD Subsection 10.4.8.2.1.

The SGBDS also includes startup SG blowdown flash tank, startup blowdown heat exchanger, piping, valves and instrumentation used during plant startup and abnormal water chemistry conditions.

NAPS COL 10.4(2)
NAPS CDI

Replace the thirteenth and fourteenth paragraph in DCD Subsection 10.4.8.2.1 with the following.

During plant startup, the blowdown rate is up to approximately 3% of maximum steaming rate (MSR) at rated power. The blowdown from each SG flows to the startup SG blowdown flash tank. The blowdown lines from SGs A and B and the blowdown lines from SGs C and D are joined together before flowing to the startup SG blowdown flash tank.

The blowdown water from each SG is depressurized by a throttle valve located downstream of the isolation valves located in the startup blowdown line. The throttle valves can be manually adjusted to control the blowdown rate.

The depressurized blowdown water flows to the startup SG blowdown flash tank, where water and flashing vapor are separated. The vapor is diverted to the condenser and the water flows to the startup SG blowdown heat exchanger for cooling. The CWS cools blowdown water in this heat exchanger before discharging to the blowdown sump. After further cooling in this sump the blowdown water is discharged to Waste Heat Treatment Facility (WHTF). A radiation monitor located downstream of the startup SG blowdown heat exchanger measures radioactive level in the blowdown water. When an abnormally high radiation level is detected, the blowdown lines are isolated and the blowdown water included in the SGBDS is transferred to waste holdup tank in the LWMS. The location and other technical details of the monitor (RMS-RE-037) are described in Subsection 11.5.2.5.3 and Table 11.5-201.

The discharge line to the blowdown sump consists of the following segments and design features:

1. The piping after the startup SG blowdown heat exchanger is constructed of stainless steel up to and including the connector after the isolation valve following the radiation monitor.

2. The discharge piping that continues the discharge line from the connector is a double-walled high density polyethylene (HDPE) pipe. The HDPE piping is fusewelded in order to prevent leakage and minimize crud traps. Within the doublewalled pipe, the blowdown water flows through the inner pipe while the outer pipe serves as containment in the event of leakage. Once the pipe exits the startup SG blowdown facility, the HDPE pipe is buried and routed underground to the blowdown sump.

3. Manholes constructed of HDPE are located at specified pipe lengths along the buried pathway to facilitate the containment of leakage by means of a collection basin. This design approach minimizes unintended releases and provides accessibility to facilitate periodic testing and visual inspection to maintain pipe integrity.

4. From the blowdown sump, the blowdown water, mixed with the liquid waste effluent and the blowdown flows from the CWS and UHS cooling towers, is routed through additional piping leading to the WHTF for discharge.

The manholes provided along the buried discharge piping are watertight to prevent the intrusion of precipitation or groundwater. The double-walled HDPE piping is sloped in the direction of flow so that leakage can be collected at the next downstream manhole. The manholes each contain a collection basin equipped with level detection instrumentation in order to provide early leak detection. When liquid in the manhole collection basin reaches a predetermined setpoint, the leak detection instrumentation sends a signal to the Main Control Room (MCR) to alarm for operator action. This approach also facilitates the determination of the leaking segment of pipe. Analysis of samples of the liquid collected in the manholes can also determine if the liquid is rainwater, groundwater or leakage from the discharge piping. These design features comply with the guidance of RG 4.21 as described in Subsection 12.3.1.3.1.1.

In addition, the startup SG blowdown facility has an epoxy-coated concrete floor which is sloped to facilitate drainage to a sump for leakage collection. The sump is equipped with level detection instrumentation which alarms to the Main Control Room (MCR) for operator action. These design features of the startup SG blowdown facility comply with RG 4.21.

With abnormal water chemistry, the flow of blowdown up to approximately 3% of MSR at rated power is directed to the blowdown sump via the startup SG blowdown flash tank for processing. In this mode, flashed vapor from the startup SG blowdown flash tank flows to the deaerator.

During normal operation, blowdown rate is approximately 0.5 to 1% of MSR at rated power. At the 1% of MSR at rated power blowdown rate, both cooling trains are used.

STD COL 10.4(2)

Add the following text after last bullet of the seventeenth paragraph in DCD Subsection 10.4.8.2.1.

- High radiation signal from startup SG blowdown water radiation monitor
- High water level in the startup SG blowdown flash tank
- High pressure in the startup SG blowdown flash tank

10.4.8.2.2.4 Steam Generator Drain

NAPS COL 10.4(5)
NAPS CDI

Replace the DCD Subsection 10.4.8.2.2.4 with the following.

Pressurized nitrogen is used to send secondary side water in the steam generators under pressure to the blowdown sump or the condenser. An approximate 20 psig pressure is maintained. This pressure facilitates draining steam generators without using a pump. If the SG drain temperature exceeds the operating temperature limit of the blowdown sump prior to discharging to this sump, the SG drain is cooled in the startup SG blowdown heat exchanger.

10.4.8.2.3 Component Description

STD COL 10.4(2)

Replace the first sentence of first paragraph in DCD Subsection 10.4.8.2.3 with the following.

Component design parameters are provided in Table 10.4.8-1R.

NAPS COL 10.4(2)

Add the following text after the last paragraph in DCD Subsection 10.4.8.2.3.

(9) **Startup SG blowdown flash tank**

The startup SG blowdown flash tank is located outdoors. During plant startup operation and abnormal secondary water chemistry conditions,

management personnel who have plant operational responsibility for radiation protection, by utilizing NEI 07-08A, “Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are As Low As is Reasonably Achievable (ALARA)” (Reference 12.1-201). These are addressed in the operational radiation protection program, described in Section 12.5.

12.1.3 Operational Considerations

STD COL 12.1(3)

Replace the first and second paragraphs in DCD Subsection 12.1.3 with the following.

The operational radiation protection program for ensuring that operational radiation exposures are as low as reasonably achievable (ALARA) is discussed in Section 12.5, by utilizing of NEI 07-03A (Reference 12.1-25). The program follows the guidance of RG 8.2, 8.4, 8.6, 8.7, 8.9, 8.13, 8.15, 8.25, 8.27, 8.28, 8.29, 8.34, 8.35, 8.36, and 8.38.

STD COL 12.1(6)
STD COL 12.1(7)
STD COL 12.1(8)

Replace the last sentence of third paragraph in DCD Subsection 12.1.3 with the following.

The licensee performs periodic reviews of operational practices to ensure that operating procedures reflect the installation of new or modified equipment, personnel qualification and training are kept current, and facility personnel are following the operating procedures. In accordance with 10 CFR 50.75(g) and 10 CFR 70.25(g) as applicable, records containing facility design and construction, facility design changes, site conditions before and after construction, onsite waste disposal and contamination, and results of radiological surveys, are used to facilitate decommissioning. The guidance of RG 4.21 (Reference 12.1-27) is followed in developing and implementing operational procedures for SSCs which could be potential sources of contamination, with the objective of limiting leakage and the spread of contamination within the plant. These procedures are subject to the requirements of Subsection 13.5.2.2.

12.1.4 Combined License Information

Replace the content of DCD Subsection 12.1.4 with the following.

NAPS COL 12.1(1) *12.1(1)* ***Policy considerations regarding plant operations***

This Combined License (COL) item is addressed in Subsections 12.1.1.3.1, 12.1.1.3.2 and 12.1.1.3.3.

12.1(2) ***Deleted from the DCD.***

STD COL 12.1(3) *12.1(3)* ***Following the guidance regarding radiation protection***

This COL item is addressed in Subsection 12.1.3.

12.1(4) ***Deleted from the DCD.***

NAPS COL 12.1(5) *12.1(5)* ***Radiation protection program***

This COL item is addressed in Section 12.5 and Table 12.5-201.

STD COL 12.1(6) *12.1(6)* ***Periodic review of operational practices***

This COL item is addressed in Sections 12.1.3 and 12.3.1.3.2.

STD COL 12.1(7) *12.1(7)* ***Implementation of requirements for record retention***

This COL item is addressed in Sections 12.1.3 and 12.3.1.3.2.

STD COL 12.1(8) *12.1(8)* ***Develop and implement operational procedures for SSCs which could be potential sources of contamination, with the objective of limiting leakage and the spread of contamination within the plant.***

This COL item is addressed in Sections 12.1.3 and 12.3.1.3.2.

12.1.5 References

Add the following references after the last reference in DCD Subsection 12.1.5:

12.1-201 Nuclear Energy Institute, “Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are As Low As is Reasonably Achievable (ALARA),” 07-08A, Revision 0.

12.3.1.2.1.1 Radiation Zoning

STD COL 12.3(4)

Replace the fourth sentence of the fourth paragraph in DCD Subsection 12.3.1.2.1.1 with the following.

Site radiation zones for plant arrangement plan under normal operation/shutdown conditions are shown in Figure 12.3-1R (COL information provided on Sheet 1 of 34).

NAPS SUP 12.3(1)

Add the following after the last Sentence in the fourth paragraph in DCD subsection 12.2.1.2.1.1.

Radiation zoning maps for the Interim Radwaste Storage Facility are shown in Appendix 11AA.

NAPS COL 12.3(10)

12.3.1.3.1.1 **Design Considerations for Site Specific Design**

This section identifies the site-specific design features of systems that address RG 4.21. These systems include the Startup Steam Generator Blowdown System discharge line and the treated radioactive effluent discharge line from the LWMS. A detailed discussion of these features is provided for the Startup Steam Generator Blowdown System in Subsection 10.4.8.2.1 and for the LWMS in Subsection 11.2.2. A detailed discussion of how these design features meet the design objectives of RG 4.21 is presented in Table 12.3-201. The design features for the LWMS effluent discharge pathway should be reviewed in conjunction with DCD Table 12.3-8. Any site-specific departures regarding DCD Table 12.3-8 are provided in Table 12.3-8R.

STD COL 12.3(10)

The Ultimate Heat Sink (UHS) has an interface with essential service water system (ESWS). As discussed in DCD Table 12.3-8, the ESWS is in compliance with RG 4.21 (Reference 12.3-30), and does not normally contain any radioactivity. Therefore, the UHS has no direct interface with any radioactive system and does not require compliance with RG 4.21.

12.3.1.3.2 Operational/Programmatic Considerations

STD COL 12.1(6)
STD COL 12.1(7)
STD COL 12.1(8)
STD COL 12.3(10)

Replace the last paragraph in DCD Subsection 12.3.1.3.2 with the following.

Programs and procedures are implemented consistent with NEI 08-08A, “Generic FSAR Template Guidance for Life Cycle Minimization of

Contamination," to meet the site-specific, operational and post-construction objectives of RG 4.21 (Reference 12.3-30) and the requirements of 10 CFR 20.1406 (Reference 12.3-29). These objectives include:

- Periodically reviewing operational practices to ensure operating procedures reflect the installation of new or modified equipment, personnel qualification and training are kept current, and facility personnel are following the operating procedures;
- Facilitating decommissioning by maintaining records relating to facility design and construction, facility design changes, site conditions before and after construction, contamination events, and results of radiological surveys;
- Development of a conceptual site model (based on site characterization and facility design and construction) that aids in the understanding of the interface with environmental systems and the features that control the movement of contamination in the environment;
- Evaluating the final site configuration after construction to assist in preventing the migration of radionuclides offsite via unmonitored pathways; and
- Establishing and performing an onsite contamination monitoring program along the potential pathways from the release sources to the receptor points.

12.3.2.2.5 Auxiliary Building Shielding Design

NAPS DEP 9.2(1)

Replace the first sentence of the first paragraph with the following.

During normal operations, the major components in the A/B with potentially high radioactivity are those in the CVCS, SGBDS, GWMS, LWMS, and SWMS.

12.3.2.2.8 Spent Fuel Transfer Canal and Tube Shielding Design

STD COL 12.3(5)

Replace the last paragraph in DCD Subsection 12.3.2.2.8 with the following.

Administrative control of the fuel transfer tube inspection and the access control of the area near the seismic gap below the fuel transfer tube will be addressed in a radiation protection program, described in

12.3(2) ***Deleted from the DCD.***

12.3(3) ***Deleted from the DCD.***

STD COL 12.3(4)
NAPS COL 12.3(4)

12.3(4) ***Site radiation zones***

This COL item is addressed in Subsection 12.3.1.2.1.1 and Figure 12.3-1R (sheet 1 of 34).

STD COL 12.3(5)
NAPS COL 12.3(5)

12.3(5) ***Administrative control of the fuel transfer tube inspection***

This COL item is addressed in Subsection 12.3.2.2.8 and Section 12.5.

STD COL 12.3(6)

12.3(6) ***The radiation protection aspects of the Mobile Liquid Waste Processing System***

This COL item is addressed in Subsection 12.3.1.1.1.2.

STD COL 12.3(7)

12.3(7) ***How the system meets the requirements of 10 CFR 20.1406 and RG 4.21***

This COL item is addressed in Subsections 11.2.1.6 and 12.3.1.1.1.2.

STD COL 12.3(8)

12.3(8) ***Radiation Zones for Mobile Liquid Waste Processing System area***

This COL item is addressed in Subsection 12.3.1.1.1.2.

NAPS COL 12.3(9)
NAPS DEP 9.2(1)

12.3(9) ***Radiation Protection Program contains provisions to ensure the Degasifier Feed Filter and Demineralizer rooms do not become a VHRA.***

This COL item is addressed in Section 12.5.

STD COL 12.3(10)
NAPS COL 12.3(10)

12.3(10) ***The COL Applicant will address the site-specific design features, operational and post-construction objectives of Regulatory Guide 4.21.***

This COL item is addressed in Subsections 12.3.1.3.1.1, 12.3.1.3.2, Tables 12.3-8R and 12.3-201.