KHNPDCDRAIsPEm Resource

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Subject: APR1400 Design Certification Application RAI 116-8054 (14.03.08 - Radiation Protection Inspections, Tests, Analyses, and Acceptance Criteria)
Attachments: APR1400 DC RAI 116 RPAC 8054.pdf; image001.jpg

KHNP

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. However, KHNP requests, and we grant, the following days to respond to the RAI's questions. We may adjust the schedule accordingly.

14.03.08-1: 60 days
14.03.08-2: 60 days
14.03.08-3: 30 days
14.03.08-4: 60 days
14.03.08-5: 45 days
14.03.08-6: 60 days
14.03.08-7: 60 days
14.03.08-8: 60 days
14.03.08-9: 60 days
14.03.08-10: 60 days
14.03.08-11: 60 days

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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Issue Date: 07/27/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 14.03.08 - Radiation Protection Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: Tier 1, Various Sections

QUESTIONS

14.03.08-1

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

SRP Section 14.3.8 also indicates that the criteria in Tier 1 should ensure that the radiation shielding design (as provided by the plant structures or by permanent or temporary shielding included in the design) is adequate so that the maximum radiation levels in plant areas are commensurate with the areas' access requirements; that adequate shielding is provided for those plant areas that may require occupancy to permit an operator to aid in the mitigation of or the recovery from an accident; and that the contribution of gamma shine to the radiation dose to a member of the public (off site) will be a small fraction of the U.S. Environmental Protection Agency's dose limits in found at 40 CFR Part 190.

Tier 1, Table 2.8-2, "Radiation Protection ITAAC," item 1, is associated with radiation shielding. The acceptance criteria indicates that a report exists which verifies that radiation levels are within those levels specified in Tier 1, Table 2.8-1. Table 2.8-1 only provides the dose rate range for each zone designation and does not provide the specific zoning for any of the rooms in the plant. Therefore, there is no way for anyone to verify that this ITAAC has been completed during facility construction. In addition, Tier 1, Table 2.8-2, item 1, indicates that the plant will be built and then a report will be completed to determine that radiation zoning requirements are met. Therefore, Tier 1, Table 2.8-2, Item 1, is written as a design acceptance criteria (DAC), instead of an ITAAC. It is unclear why a DAC would be needed for radiation shielding when Tier 2 already provides minimum radiation shielding thicknesses for radiation sources large enough to require shielding.

Therefore, Tier 1, Table 2.8-2, item 1 is unacceptable. To provide appropriate ITAAC for radiation shielding, staff suggests the following:

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1. The applicant should modify or replace Tier 1, Table 2.8-2, item 1 with an ITAAC to verify that minimum shielding requirements are met for significant radiation sources which require radiation shielding. Using this approach, Tier 1, Section 2.8 and item 1 in Table 2.8-2 should provide the shielding material for each room (for example, concrete) as well as the thickness of each shield, for significant sources which require shielding.

2. If shielding material other than concrete or steel is being relied upon for limiting radiation exposure to workers or members of the public, or for limiting exposure to equipment in the equipment qualification program, the applicant should discuss the material used in Tier 1 and Tier 2 of the application and include an ITAAC to verify that the shield material maintains its integrity during normal operation and accident conditions, as appropriate.

3. Provide figures of the general arrangement of the plant in Tier 1, which should also be referenced in the shielding ITAAC, making it clear what areas of the plant are being shielded and where the major radiation sources are located.

4. Finally, if any doors are required to provide radiation shielding from significant plant sources Tier 1 should discuss the radiation attenuation capabilities of those doors and ITAAC should be provided to verify the attenuation capabilities. The ITAAC should verify that the doors provide equal or greater attenuation than that of the wall to which they are installed.

14.03.08-2

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

RG 1.13 states that the minimum depth for shielding over fuel assemblies stored in the SFP is 10 feet. There should be no drains, piping, or other systems installed that would allow coolant levels to drain below the adequate shielding depth of 10 feet. It also indicates that gates and weirs that isolate the spent fuel storage pool from the adjacent fuel-handling areas should be designed to prevent coolant inventory from being drained to levels less than 10 feet above the top of the fuel assemblies in the event of a failure of the seals of a single gate.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

Tier 2 Section 9.1.2.2.2 indicates that there will be no piping penetrations in the spent fuel pool lower than 10 feet above the top of the fuel assemblies. It also states that the bottom of the gates that lead from the SFP to the fuel transfer canal and the spent fuel cask loading pit are above the top of the stored fuel assemblies. Neither Section 9.1.2.2.2 nor 9.1.3.3.3, which discusses spent fuel pool dewatering, indicate if water will remain 10 feet above the stored fuel if one of the gates fails.

1. Please provide information demonstrating that, in the event of a failure of any one of the gates that lead from the SFP to the fuel transfer canal and the spent fuel cask loading pit, there will be at least 10 feet of water above fuel stored in the racks. Update Tier 2 of the FSAR to include this information, as appropriate.

2. Provide an ITAAC to verify that there will be no piping penetrations in the SFP lower than 10 feet over the top of fuel assemblies stored in the pool.

3. Provide an ITAAC which verifies the minimum distance between the top of the fuel assemblies and any other openings in the spent fuel pool, besides piping penetrations.

4. Provide an ITAAC that verifies that, in the event of a failure of the gate between the SFP and the fuel transfer canal or the gate between the SFP the spent fuel cask loading pit, the water level in the pool remains 10 feet above the top of fuel assemblies. It may be appropriate for this ITAAC to include the maximum volume of water that could be transferred to the fuel transfer canal and spent fuel cask loading pit, in the event of a single failure of a gate.

14.03.08-3

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

ANSI/ANS-57.1-1992, which is referenced by the applicant, indicates that fuel handling equipment shall be designed so that the operator will not be exposed to greater than 2.5 mrem/hour from an irradiated fuel unit, control component, or both, elevated to the up position interlock with the pool at normal operating water level.

The staff cannot find any ITAAC in Tier 1 to verify that a facility referencing the design certification will be built and operated to ensure that the refueling machine and spent fuel machine will be designed to ensure that the 2.5 mrem/hour limit is not exceeded. Therefore, please provide an ITAAC to verify that the refueling machine and spent fuel machine are provided with an interlock which will prevent raising an irradiated fuel assembly or control component high enough that the dose to an operator on the refueling bridge exceeds 2.5 mrem/hour with the pool at its normal operating water level.

14.03.08-4

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

10 CFR 50, GDC 63, requires that appropriate systems shall be provided in fuel storage and radioactive waste systems and associated handling areas (1) to detect conditions that may result in loss of residual heat removal capability and excessive radiation levels and (2) to initiate appropriate safety actions.

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SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

Staff has the following questions related to Area Radiation monitors as they relate to Tier 1 Section 2.7.6.5.

1. A review of Tier 1, Table 2.7.6.5-1, reveals numerous inconsistencies between Tier 1 Table 2.7.6.5-1 and Tier 2 Table 12.3-6 (which both provide information on area radiation monitors). For example, Tier 1 Table 2.7.6.5-1 lists monitors RE-241A and 242B as non-nuclear safety and seismic category 2, while Tier 2 Table 12.3-6 lists them as safety class 3 and seismic category 1. The information associated with monitor RE-236 is also inconsistent between the two tables. Ensure that all information for all monitors listed in these two tables is consistent and accurate, including tag numbers, safety class, seismic category, electrical class, ranges, etc.

2. The following information in Tier 1, Table 2.7.6.5-1 appears incomplete and is confusing. Please explain or correct this information:

    a. It is unclear why the fuel handling and high range monitors are grouped together in Tier 1, Table 2.7.6.5-1. They are not grouped together in Tier 2, Table 12.3-6.
    b. There is missing information associated with monitors RE-233A and RE-234B in Tier 1, Table 2.7.6.5-1. Please include this missing information.
    c. It is unclear which monitors in Tier 1, Table 2.7.6.5-1 provide the engineered safety features provided in Tier 1, Table 2.7.6.5-2. Please clarify to make this information in these tables consistent with each other.

3. While area radiation monitors RE-321, RE-322, RE-323, RE-324, and RE-325 are listed in Tier 2, Table 12.3-6, they are not listed in Tier 1, Table 2.7.6.5-1. In addition, these monitors have parentheses around them in Tier 2 Table 12.3-6. Please explain why these monitors were excluded from Tier 1, Table 2.7.6.5-1 and why they have parenthesis around them in Tier 2, Table 12.3-6.

4. Table 2.7.6.5-3, item 6, verifies that an ESF initiation signal will be sent to the ESF group control cabinet upon detection of high radiation in the containment operating area and the fuel handling area, using a radiation check source. However, it does not test to verify that the appropriate ESF actually actuates.

    RG 1.118 references IEEE standard 338-1987, IEEE 338-1987 indicates that testing from sensor to actuated equipment is the preferred method of testing. However, where this is not practical, IEEE 338-1987 indicates that the system design shall provide overlap testing capability. IEEE 338-1987 states that overlap testing consists of channel, train, or load group verification by performing individual tests on the various components and subsystems of the channel, train, or load group. The individual component and subsystem tests check common parts of adjacent subsystems, such that the entire channel, train, or load group is verified by testing of individual components or subsystems and by repetitive testing of common parts of adjacent subsystems.

    It is unclear to staff if the ITAAC testing provided for the area radiation monitors provides sufficient overlap testing from the ESF group control cabinet to initiate physical actuation of the emergency safety feature. Please provide information justifying that sufficient overlap testing is provided in accordance with IEEE 338-1987, or justify an alternative approach.

5. NUREG-0737 item II.F.1, attachment 3 specifies that the containment high range monitors be located in containment to view a large segment of the containment atmosphere in order to accurately reflect and monitor accident conditions. However, the application contains no ITAAC verifying that containment monitors are located in an unimpeded location. Please include this ITAAC or justify why it is not needed.

14.03.08-5

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

10 CFR 50, GDC 64, requires that a means be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

In reviewing Tier 1, Section 2.7.6.4 and associated Tier 2, Section 11.5, staff has the following questions related to the plant process and effluent radiation monitors and their associated Tier 1 information and ITAAC.

1. While the range and electrical class of the area radiation monitors are provided in Tier 1, Table 2.7.6.5-1, the range and electrical class are not provided for the process and effluent monitors in Table 2.7.6.4-1. Please provide this information in Tier 1 Table 2.7.6.4-1 to ensure that the appropriate range of monitor and electrical class are provided when the facility is designed or provide justification for not including this information.

2. GDC 19 requires that the dose within the main control room not exceed 5 rem during the duration of the accident. Many other applicants' main control room air intake lines monitor for particulates, iodines, and noble gas and emergency control room ventilation is initiated if high particulates, iodines, or noble gas levels are detected. Please justify why noble gas monitors alone are sufficient for main control room emergency ventilation actuation in the APR1400 design and provide information in the FSAR supporting this justification.

3. The main steam line monitors (RE-217, RE-218, RE-219, and RE-220) monitor primary to secondary leakage. For some reactor designs these monitors are safety related. Please indicate why these monitors are not safety related in the APR1400 design. Include reference to applicable information in the FSAR, as appropriate. As part of the response, indicate what instrumentation is being relied upon to detect 150 gallons per day primary to secondary leakage in accordance with technical specification 3.4.12 and if there is an ITAAC associated with that instrumentation and its leakage detection capabilities.

4. Table 2.7.6.4-3, item 5, verifies that an ESF initiation signal will be sent to the ESF group control cabinet upon detection of high radiation in the main control room intake, using a radiation check source. However, it does not test to verify that the ESF function of initiating control room emergency ventilation actually occurs.

   RG 1.118 references IEEE standard 338-1987, IEEE 338-1987 indicates that testing from sensor to actuated equipment is the preferred method of testing. However, where this is not practical, IEEE standard 338-1987 indicates that the system design shall provide overlap testing capability. IEEE 338-1987 states that overlap testing consists of channel, train, or load group verification by performing individual tests on the various components and subsystems of the channel, train, or load group. The individual component and subsystem tests check common parts of adjacent subsystems, such that the entire channel, train, or load group is verified by testing of individual components or subsystems and by repetitive testing of common parts of adjacent subsystems.

   It is unclear to staff if the ITAAC testing provided for the area radiation monitors provides sufficient overlap testing from the ESF group control cabinet to initiate physical actuation of the emergency safety feature. Please provide information justifying that sufficient overlap testing is provided in accordance with IEEE 338-1987, or justify an alternative approach.

14.03.08-6

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

RG 1.52 indicates that engineered-safety-feature (ESF) atmosphere cleanup system housings and ductwork should be tested to assure that the total leakage rate from ducting is less than the values assumed in the post-accident dose consequence design bases. However, staff cannot find any ITAAC or initial tests in the initial test program assuring that this criteria is met. Please include ITAAC and initial tests, as appropriate, to ensuring that these tests are performed and that the criteria are met or justify not including them.

14.03.08-7

10 CFR 20.1406(b) requires that applicants for standard design certifications, standard design approvals, and manufacturing licenses under part 52 of this chapter, whose applications are submitted after August 20, 1997, shall describe in the application how facility design 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.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

In reviewing Tier 1 ITAAC, staff could not find any ITAAC for design features to minimize contamination. In accordance with 10 CFR 20.1406(b), please provide ITAAC for significant design features to address leaks from high specific activity fluids (such as Reactor Coolant System water, Spent Fuel Pool coolant or concentrated liquid waste) or from high volume, low specific activity fluids (such as diluted liquid radioactive waste).

14.03.08-8

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

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In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

Tier 1 Table 2.4.7-1, item 1.e, indicates that a containment airborne particulate radioactivity monitor will be used to detect reactor coolant leakage. It is unclear to staff which monitor is being credited to do this. Please provide the monitor tag number of the monitor in Table 2.4.7-1, item 1.e, so that it is clear which monitor is being credited for detecting RCS leakage.

14.03.08-9

10 CFR 50.49 and 10 CFR 50, Appendix A, criterion 4 require that certain components important to safety be designed to withstand environmental conditions, including the effects of radiation, associated with design basis events, including normal operation, anticipated operational occurrences, and design basis accidents.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

While various ITAAC throughout Tier 1 provide ITAAC verifying that Class 1E components located in potentially harsh environmental conditions are being qualified for the harsh environmental conditions for which they are located, not all Class 1E equipment identified in the equipment qualification program in Tier 2, Section 3.11, as being located in a harsh environment, contain an ITAAC, specifying that they are being qualified to withstand harsh environmental conditions.

For example, both Tier 1, Table 2.7.6.5-1 and Tier 2, Table 3.11-3 identify containment radiation monitors (231A, 232B, 233A, and 234B) as class 1E monitors. While Tier 2, Table 3.11-3, lists these monitors as being located in harsh environmental and radiological environments, Tier 1 does not list the environmental conditions for these monitors and does not provide an ITAAC requiring that an analysis be performed to ensure the monitors can withstand the environmental conditions that they will be exposed to where they are located.

Please explain why some safety related, class 1E equipment, which are identified in Tier 2 Table 3.11-3 as being located within harsh environments, contain Tier 1 ITAAC associated with them verifying that they can withstand the environmental condition where they are located, while others do not.

14.03.08-10

10 CFR 50.48 requires that the risk of fire-induced radiological hazards to the public, environment, and personnel are minimized.

Regulatory Guide 1.189 states that the plant should maintain the ability to minimize the potential for radioactive releases to the environment in the event of a fire and that radioactive waste buildings, storage areas, and decontamination areas should be separated from other areas of the plant by fire barriers having at least 3-hour ratings.

SRP Section 14.3 indicates that the purpose of inspections, tests, analysis, and acceptance criteria (ITAAC), is to verify that a facility referencing the design certification is built and operates in accordance with the design certification and applicable regulations.

In addition, SRP Section 14.3.8 indicates that the reviewer should ensure that Tier 1 identifies and describes, commensurate with their safety significance, those SSCs that provide radiation shielding, confinement or containment of radioactivity, ventilation of airborne contamination, or radiation (or radioactivity concentration) monitoring for normal operations and during accidents.

While Tier 1 provides ITAAC associated with fire barriers, it does not appear that there are any ITAAC to verify that the plant design incorporates fire and smoke barriers to minimize the potential for radioactive releases to the environment from significant radiation sources in the plant, in the event of a fire.

Please include an ITAAC to verify that fire and smoke barriers relied on to contain radioactive material releases from significant radiation sources are installed and qualified for their intended use.

14.03.08-11

10 CFR 50, GDC 61, requires that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

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The staff has the following questions regarding items 2 and 3 in Tier 1, Table 2.8-2:

1. Item 2 in Table 2.8-2, indicates that an analysis will be performed to ensure that airflow is from areas of lower potential airborne contamination to areas with higher potential airborne contamination. The acceptance criteria states, “Analysis exists and concludes that ventilation airflows are from the lower potential airborne contamination area to the higher. The concentrations of airborne radionuclides are in the limit specified in 10 CFR Part 20, Appendix B.” Staff believes that the intent of the acceptance criteria is to say that an analysis exists and concludes that ventilation airflow in radiological controlled areas flows from areas of lower potential airborne contamination to areas of higher potential airborne contamination and that the concentrations of airborne radionuclides shall not exceed the concentrations provided in 10 CFR Part 20, Appendix B. Please revise the acceptance criteria, as appropriate.

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2. Item 3 in Tier 1, Table 2.8-2 refers to other ITAAC in Tier 1 Tables 2.7.6.4-3 and 2.7.6.5-3 and is confusing to staff. It does not appear to provide any new acceptance criteria or requirements beyond what is provided in Tier 1, Tables 2.7.6.4-3 and 2.7.6.5-3. Please explain why item 3 in Table 2.8-2 is necessary or delete it.


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