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Security Notice
This letter forwards Security-Related information in accordance with 10 CFR 2.390. Upon removal of Enclosure 3, the balance of this letter may be considered non-Security-Related.

MFN 07-048
Supplement 2

Docket No. 52-010

October 10, 2008

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 218 – Related to ESBWR Design Certification Application – Radiation Protection - RAI Number 12.4-24 S02**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to a portion of the U.S. Nuclear Regulatory Commission Request for Additional Information (RAI) sent by NRC Letter 218 (Reference 1). The GEH response to RAI Numbers 12.4-24 S02 is addressed in Enclosure 1.

RAI 12.4-24 was received from the NRC on September 18, 2006 (Reference 2). The GEH response to 12.4-24 was transmitted to the NRC on May 25, 2007 (Reference 3). RAI 12.4-24 S01 was received from the NRC on December 27, 2007 (Reference 4), and the GEH response was transmitted to the NRC on April 25, 2008 (Reference 5).

Enclosure 2 contains DCD Tier 2 Markups that are not security-related.

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Enclosure 3 contains Security-Related DCD Figures identified by the designation "{{{Security-Related Information - Withhold Under 10 CFR 2.390}}}." GEH hereby requests this information be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390. No public version of these security-related DCD Markups is provided in these RAI responses since they would be blank pages with only figure titles and figure numbers; however, DCD Tier 2, Revision 6 will contain public versions of these figures.

If you have any questions about the information provided here, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 08-221, *Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, Request for Additional Information Letter No. 218, Related To ESBWR Design Certification Application*, dated July 1, 2008
2. MFN 06-342, *Letter from the U.S. Nuclear Regulatory Commission to David Hinds, Request for Additional Information Letter No. 60, Related To ESBWR Design Certification Application*, dated September 18, 2006
3. MFN 07-048, *Response to Portion of NRC Request for Additional Information Letter No. 60 Related to ESBWR Design Certification Application - Radiation Protection - RAI Number 12.4-24,* dated May 25, 2007
4. MFN 07-715, *Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, Request for Additional Information Letter No. 130, Related To ESBWR Design Certification Application*, dated December 27, 2007
5. MFN 07-048, Supplement 1, *Response to Portion of NRC Request for Additional Information Letter No. 130 Related to ESBWR Design Certification Application - Radiation Protection - RAI Number 12.4-24 S01,* dated April 25, 2008

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection – RAI Number 12.4-24 S02
2. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection – RAI Number 12.4-24 S02 – DCD Markups
3. Response to Portion of NRC Request for Additional Information Letter No. 218 - Related to ESBWR Design Certification Application – Radiation Protection – RAI Number 12.4-24 S02 – DCD Markups

cc:

AE Cubbage	USNRC (with enclosures)
RE Brown	GEH/Wilmington (with enclosures)
DH Hinds	GEH/Wilmington (with enclosures)
eDRF	0000-0089-6421

Enclosure 1

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Response to Portion of NRC Request for

Additional Information Letters No. 218

Related to ESBWR Design Certification Application

Radiation Protection

RAI Number 12.4-24 S02

Enclosure 1

For historical purposes, the original text of RAI 12.4-24, and 12.4-24 S01 and the GEH response are included. These responses do not include any attachments or DCD mark-ups.

NRC RAI 12.4-24

NRC Summary:

Indicate location and maximum radiation source term in the filter or adsorption media, of Reactor Building, Radwaste Building, and Fuel Building filtration units.

NRC Full Text:

Indicate the location of the filtration units for the Reactor Building, the Radwaste Building, and the Fuel Building, on plant layout drawings. Describe the maximum radiation source term in the filter or adsorption media, for each and give associated radiation dose rates in adjacent areas. Describe design features to ensure that the radiation exposures resulting from maintenance (filter change out) of these systems is ALARA.

GEH Response

1. Location of the Filters

   The filtration units for the Reactor Building, the Radwaste Building, and the Fuel Building are located as follows:

   Reactor Building
   - RWCU demineralizers: Rooms 1251, 1252, 1261 and 1262 at elevation -6400.

   Fuel Building
   - FAPCS demineralizers: Rooms 2251 and 2261 at elevation -6400.

   Radwaste Building
   - Radwaste stream demineralizers. These demineralizers have not been considered because they are included in the mobile station and details will be available at a later stage of the project.

   The attached Figure 2 shows the location of the filters on the plant layout drawing.

Enclosure 1

2. Radiation source term in the filters.

   The radiation source term in the RWCU demineralizers is shown in DCD Table 12.2-7.

   The radiation source term in the FAPCS demineralizers is shown in DCD Table 12.2-8a.

3. Associated radiation dose rates in adjacent areas. The areas adjacent to the RWCU demineralizers and their dose contributions are as follows

   - 1130 HCU Room B 1 μSv/hr
   - 1196 Interior Stairwell B <1 μSv/hr
   - 1206 Lower Drywell Equipment Hatch Access Room <1 μSv/hr
   - 1230 Division III Battery Room <1 μSv/hr
   - 1152 RWCU Cooling Pump Room A (lower room) 6 μSv/hr
   - 1106 Process Sampling Monitoring Room (lower room) 6 μSv/hr
   - 1306 Filter/Demineralizer Access Room (upper room) 65 μSv/hr

   The areas adjacent to the FAPCS demineralizers and their dose contributions are as follows:

   - 2200 Control Rod Drive Maintenance Equipment Room <1 μSv/hr
   - 2191 Commodity Chase 3 μSv/hr
   - 2150 FAPCS Pump/HX Room A (lower room) 9 μSv/hr
   - 2301 Filter/Demineralizer Access Room (upper room) 3 μSv/hr

   Figures 1 through 3 show the areas adjacent to the RWCU and the FAPC demineralizer rooms.

Provisions to Ensure ALARA

The following design features and provisions are included in the design to ensure that the radiation exposures resulting from maintenance (filter change out) of these systems is ALARA:

- The demineralizer filling, draining, backwashing, and resin transfer operations are automated. These operations are controlled and monitored from a local control panel located outside the demineralizer room.
- Each demineralizer is located in a separate room, which contains only the demineralizer and piping. Other system equipment, valves and controls are arranged on the outside of a shielding wall so that all operations except maintenance may be conducted from outside via a local control panel.

- In order to maintain the exposure from filter maintenance ALARA, the shielding wall thickness between filter cubicles is dimensioned so that the dose contribution in any cubicle from the filter in the adjacent one does not exceed 250 μSv/hr.
- The thickness of the upper and lower slabs of the RWCU filter cubicles have also been dimensioned so that the radiation doses from the filters do not exceed the values shown above.

DCD Impact

These figures will be reflected in Revision 4 to the Tier 2 DCD.

Enclosure 1

NRC RAI 12.4-24 S01

NRC Summary:

In DCD Tier 2, Revision 4, 12.3

a) *Add the ALARA design features described in response to RAI 12.4-24 to Section 12.3.1.4.1 and 12.3.1.4.2 of the DCD*

b) *Add a new COL Item in Section 12.3 to have the COL applicant describe the location and dose rates of the filtration units in the Radwste Building*

NRC Full Text:

The following RAI, which contains two separate parts, is based on the applicant's response to the staff's RAI 12.4-24 concerning the location and associated dose rates of the filtration units for the Reactor Building, Fuel Building, and Radwaste Building.

a) *In DCD Tier 2, Rev. 4, references to figures and tables were added to Sections 12.3.1.4.1 and 12.3.1.4.2 in response to RAI 12.4-24 concerning maximum dose rates from filtration units in the Reactor and Fuel Buildings. In the response to RAI 12.4-24, the applicant listed several ALARA design features and provisions associated with these filtration units to ensure that radiation exposures resulting from maintenance of these systems are ALARA. Modify the text in Sections 12.3.1.4.1 and 12.3.1.4.2 to include a listing of those ALARA design features to have the COL applicant describe the location and dose rates of the filtration units in the Radwaste Building (specifically the ALARA features described by the third and fourth bullets), which are not currently described in these sections.*

b) *In the applicant's response to RAI 12.4-24, the applicant stated that information concerning the location of and the maximum dose rates from the filtration units (radwaste stream demineralizers) in the Radwaste Building would be available at a later stage of the project because these demineralizers will be included in the skid mounted station. Describe the COL applicant's responsibility to address the staff's concern with respect to the location of and the maximum dose rates from the filtration units in the Radwaste Building when this information becomes available.*

GEH Response

The ALARA design features and provisions associated with filtration units in the Radwaste Building are summarized as follows:

In order to maintain exposure to Radwaste Building operations personnel ALARA:

- Provisions are made for remote operation of many routine radioactive waste management system functions from the Radwaste Building Control Room. These provisions include permanently installed waste supply and distribution piping equipped with valves capable of remote actuation from the Control Room. Limited close-proximity access to radwaste filtration units will be required to reposition valves or otherwise support normal waste processing following initial process system setup.
- Modular liquid and wet solid waste processing equipment to be located in the process systems area (see DCD Figure 12.3-41) will incorporate local shielding to ensure local radiation levels at accessible surfaces of the equipment does not exceed 10 mSv/hr during normal operation.
- Radiation levels during filter media or high integrity container transfer operations may exceed normal operating levels, but systems will be equipped with remote handling features that limit average worker radiation dose rates to less than 150 µSv/hr during these operations.
- The Process Systems Area of the Radwaste Building is designed to accommodate movable shield walls to further limit access and reduce radiation levels from waste processing equipment skids in limited access areas. During normal waste processing operations, radiation levels in limited access areas are maintained below 50 µSv/hr.

New text will be added to DCD Subsection 12.3.1.5 to address Item a. The new text includes a listing of ALARA design features and provisions associated with filtration units in the Radwaste Building. A revised DCD Figure 12.3-21 is also included as part of this response to update room and zone descriptions provided in the "Room Identification List' and "Drawing Notes" areas of the figure to match recent DCD Section 11.2 and 11.4 updates.

Item b of this RAI is addressed by radwaste process system dose rate information provided in new Subsection 12.3.1.4.5. The COL applicant has no further responsibility based upon this new subsection.

Enclosure 1

DCD Impact

New text will be added to DCD Subsection 12.3.1.4.5 to include a listing of ALARA design features and provisions associated with filtration units in the Radwaste Building in response to this RAI. The new text will include new DCD Subsection 12.3.1.4.5, Radwaste Building Structure. A revised DCD Figure 12.3-21 is also included as part of this response.

Enclosure 1

NRC RAI 12.4-24 S02

NRC Summary:

Clarify the response to RAI 12.4-24 S01 and correlate the doses provided in response to this RAI with the estimated doses provided in the section 12.4 dose assessment.

NRC Full Text:

1. *In GEH's response to RAI 12.4-24 S01, part a) of the staff's RAI differs from the wording of the RAI sent to GEH on December 27, 2007. The RAI text for part a) in GEH's current response has some extraneous text ("to have the COL applicant describe the location and dose rates of the filtration units in the Radwaste Building") which makes part a) of the RAI confusing. Part a) of RAI 12.4-24 S01 requests that the applicable portions of ESBWR DCD Sections 12.3.1.4.1 and 12.3.1.4.2 be modified to include a description of those ALARA design features (specifically the ALARA features described by the third and fourth bullets) mentioned in GEH's initial response to RAI 12.4-24 (MFN 07-048). These changes to DCD Sections 12.3.1.4.1 and 12.3.1.4.2 have not been made in GEH's response to RAI 12.4-24 S01 (MFN 07-048 Supplement 1).*

2. *In the second bullet of GEH response, GEH states that "the process systems area will incorporate local shielding to ensure that local radiation levels at accessible surfaces of the equipment does not exceed 10 mSv/hr during normal operation." In the proposed revision to Table 12.4-4 (Occupational Dose Estimates During Waste Processing), the estimated average dose rates listed for various areas in the Radwaste Building range from 8 to 150 μSv/hr. Justify the apparent discrepancy between these dose rates shown in Table 12.4-4 for various areas of the Radwaste Building and the higher dose rate associated with the process systems area in the Radwaste Building mentioned in the response to RAI 12.4-24. Show that the higher dose rates associated with the process systems area have been considered in the overall dose assessment performed for the dose estimates for waste processing.*

3. *The fourth bullet of GEH response to this RAI states that, during normal waste processing operations, radiation levels in limited access areas are maintained below 50 μSv/hr. This information should be included in GEH's proposed revision of DCD Section 12.3.1.4.5.*

Enclosure 1

GEH Response

Item 1:

GEH agrees the cited text included in part a) of RAI 12.4-24 S01 ("to have the COL applicant describe the location and dose rates of the filtration units in the Radwaste Building") is confusing and incomplete in response to part a) of RAI 12.4-24 S01 (MFN 07-048, Supplement 1). A complete response is provided below.

The third and fourth bullets of the response to RAI 12.4-24 (MFN 07-048) stated shielding thickness for walls between filter cubicles and the upper and lower slabs are sufficient to limit dose rates in adjacent areas consistent with design dose rate information provided in the RAI response. RWCU and FAPC demineralizer unit activity source terms are presented in Tables 12.2-7 and 12.2-8a, respectively. Shielding geometry for the filter cubicles is presented in DCD Table 12.3-8. Design dose rates for rooms adjacent to the RWCU and FAPC demineralizer units are provided in DCD Figures 12.3-1 through 12.3-3. The shielding design features associated with the RWCU and FAPC demineralizer units are fully described in Revision 5 of the DCD without any further changes to Subsection 12.3.1.4.1 or 12.3.1.4.2. However, changes described below are necessary to make the DCD consistent with the response to RAI 12.4-24 (MFN 07-048).

The third bullet of the response to RAI 12.4-24 (MFN 07-048) states shielding wall thickness between filter cubicles is sufficient to limit dose contribution in any adjacent cubicle to less than 250 mSv/hr. Revision 5 DCD Subsection 12.3.2.2.3, Plant Shielding Description, indicates the dose rate in the adjoining demineralizer cubicle is less than 60 mSv/hr. DCD Subsection 12.3.2.2.3 will be revised to be consistent with the RAI 12.4-24 (MFN 07-048) response. DCD Subsection 12.3.2.2.3 will also be revised to: a) improve the description of shielding design features by adding a reference to the Table 12.3-8 shielding geometry summary, and b) change "is via a labyrinth entryway" to "is via shielded hatches" to ensure consistency with the Reactor Building shielding design description provided in DCD Subsection 12.3.1.4.1 and the building layout depicted in DCD Figure 12.3-2.

The fourth bullet of the response to RAI 12.4-24 (MFN 07-048) states the thickness of the upper and lower slabs of the RWCU filter cubicles are sufficient to limit radiation doses from filters to less than 65 mSv/hr for room 1306 (upper room), and less than 6 mSv/hr for rooms 1152 and 1106 (lower rooms). Revision 5 DCD Figures 12.3-1 and 12.3-3 present dose rates for these rooms as follows:

- Room 1152 dose rates < 1 mSv/hr and < 250 mSv/hr for normal operation and plant shutdown conditions, respectively
- Room 1106 dose rate < 50 mSv/hr for normal operation
- Room 1306 dose rates < 50 mSv/hr and < 10 mSv/hr for normal operation and plant shutdown conditions, respectively

Enclosure 1

Dose rates presented in Revision 5 DCD Figure 12.3-1 for rooms 1152 and 1106 are consistent with the RAI 12.4-24 response. However, dose rates presented in Revision 5 DCD Figure 12.3-3 for room 1306 are lower than stated in the RAI 12.4-24 response. DCD Figure 12.3-3 will be revised to make it consistent with the RAI 12.4-24 (MFN 07-048) response.

Item 2:

The apparent discrepancy between the dose rates shown in Table 12.4-4 for various areas of the Radwaste Building and the higher 10 mSv/hr dose rate mentioned in the response to RAI 12.4-24 (MFN 07-048) is explained by examining what each respective dose rate value is intended to represent and how each is used in subsequent design or dose assessment activities:

- The 10 mSv/hr value corresponds to the maximum radiation zone dose rate value presented in DCD Figure 12.3-21 for the process system areas while process equipment is in operation and is representative of the maximum accessible surface dose rate for process equipment to be operated in that area. However, dose rates in process areas will vary significantly with proximity to process equipment and location relative to local component shielding. The maximum design dose rate would be expected to occur late in process media operational life and only in very close proximity to unshielded process component surfaces (e.g., upper surfaces of process vessels equipped with full-height shielding over radial surfaces only). Worker access to such high dose rate surfaces is not typically required during routine operations or maintenance of liquid and solid radioactive waste processing systems currently used in the industry.
- The 8 to 150 μSv/hr dose rate range presented in the Revision 5 DCD Table 12.4-4 corresponds to estimated "average" dose rates assumed for the purposes of worker collective dose evaluations. The 8 to 150 μSv/hr range of average dose rates are representative of liquid and solid radioactive waste processing systems currently used in the industry. This average dose rate range accounts for the type and frequency of the various operations typically required to support process system operations, including operations required in relatively close proximity to process equipment. However, the effect of local shielding and other worker dose rate reduction features inherent in the design of waste processing systems currently used in the industry is also accounted for in the basis for the range of dose rates used in the worker collective dose evaluations.

Thus, the 8 to 150 μSv/hr range of average dose rates used for the purpose of worker collective dose evaluations does include consideration of all activities, including those occurring in high dose rate process systems areas.

Item 3:

The waste processing limited access area radiation dose rate information has been included in Revision 5 DCD Subsection 12.3.1.4.5. DCD Figure 12.3-21 was revised consistent with the RAI 12.4-24 S01 response (MFN 07-048, Supplement 1). The 50 μSv/hr design dose rate for Radwaste Building waste processing limited access areas is presented in Revision 5 DCD Figure 12.3-21 (areas behind movable shield walls separating controlled and limited access areas from infrequent access areas in Room 6381). Since DCD Figure 12.3-21 provides the Radwaste Building waste processing limited access area dose rate information in question, no additional changes to DCD Subsection 12.3.1.4.5 are necessary.

DCD Impact

DCD subsection 12.3.2.2.3 will also be revised to add a reference to the Table 12.3-8 shielding geometry summary.

DCD subsection 12.3.2.2.3 will be revised to change the 60 mSv/hr (6 mrem/hr) dose rate value for adjoining demineralizer cubicles to 250 mSv/hr (25 mrem/hr), and DCD Figure 12.3-3 will be revised to change the radiation zone designation for Room 1306 from C (< 50 mSv/hr)/B (< 10 mSv/hr) to D (< 250 mSv/hr)/C (< 50 mSv/hr) consistent with the RAI 12.4-24 (MFN 07-048) response.

DCD subsection 12.3.2.2.3 will change "a labyrinth entryway" to "shielded hatches" to ensure consistency with the Reactor Building shielding design description provided in DCD Subsection 12.3.1.4.1.

Enclosure 2

MFN 07-048
Supplement 2

Response to Portion of NRC Request for

Additional Information Letters No. 218

Related to ESBWR Design Certification Application

Radiation Protection

RAI Number 12.4-24 S02

DCD Tier 2 Markups – Non-Security-Related

equation. The more conservative material buildup coefficients are selected for laminated shield configuration to ensure conservative results.

For combined gamma and neutron shielding situations, discrete ordinates techniques (DORT) are applied.

The shielding thicknesses are selected to reduce the aggregate dose rate from significant radiation sources in surrounding areas to values below the upper limit of the radiation zone specified in the zone maps in Subsection 12.3.1.3. By maintaining dose rates in these areas at less than the upper limit values specified in the zone maps, sufficient access to the plant areas is allowed for maintenance and operational requirements.

Where shielded entries to high-radiation areas such as labyrinths are required, a gamma ray scattering code (GGG) is used to confirm the adequacy of the labyrinth design. The labyrinths are designed to reduce the scattered as well as the direct contribution to the aggregate dose rate outside the entry, such that the radiation zone designated for the area is not violated.

12.3.2.2.3 Plant Shielding Description

Plant shielding geometry associated with major sources is summarized in Table 12.3-8. The general description of the shielding is provided below:

Containment - The major shielding structures located in the drywell area consist of the reactor shield wall and the drywell wall. The reactor shield wall in general consists of 16 cm of steel plate. The primary function served by the reactor shield wall is the reduction of radiation levels in the drywell due to the reactor to equipment such that service life is not limited. In addition, the reactor shield wall reduces gamma heating effects on the drywell wall, as well as providing for low radiation levels in the drywell during reactor shutdown. The drywell is an F radiation zone during full power reactor operation and is not accessible during this period.

The containment (drywell) outside wall is a 2 m thick reinforced concrete cylinder that totally surrounds the drywell. A 2.4 m thick reinforced concrete containment top slab covers the drywell. The drywell wall attenuates radiation from the reactor and other radiation sources in the drywell to allow occupancy of the reactor building during full power reactor operation.

The ESBWR plant includes all necessary shielding provisions in the upper drywell in order to reduce the dose ALARA during transfer of irradiate spent fuel assemblies. The ESBWR plant includes all applicable shielding design provisions to minimize dose rates in case of fuel handling mishap resulting in dropping a fuel assembly across the reactor flange.

Reactor Building - In general, the shielding for the reactor building is designed to maintain open areas at dose rates less than 6 μSv/hr (0.6 mrem /hr).

Penetrations of the containment wall are shielded to reduce radiation streaming. Localized dose rates outside these penetrations are limited to less than 50 μSv/hr (5 mrem/hr). The penetrations through interior shield walls of the reactor building are shielded using a lead-loaded silicone sleeve to reduce the radiation streaming. Penetrations are also located so as to minimize the consequences of radiation streaming into surrounding areas.

The components of the RWCU/SDC are located in the reactor building. Both the RWCU regenerative and nonregenerative heat exchangers are located in shielded cubicles separated from the other components of the system. Neither cubicle needs to be entered for system operation.

Process piping between the heat exchangers and the demineralizers is routed through shielded areas or embedded in concrete to reduce the dose rate in surrounding areas. The RWCU/SDC demineralizers are located in separate shielded cubicles. This arrangement allows maintenance of one unit while operating the other. The dose rate in the adjoining demineralizer cubicle from the operating unit is less than ~~60~~ 250 μSv/hr (~~6~~ 25 mrem/hr). Entry into the demineralizer cubicle, which is required infrequently, is via ~~a labyrinth entryway~~shielded hatches. The bulk of the piping and valves for the filter demineralizers is located in an adjacent shielded valve gallery. Backfilling and resin application of the filter demineralizers are controlled from an area where dose rates are less than 10 μSv/hr (1 mrem/hr).

The ESBWR employs a passive cooling system in addition to the RWCU/SDC for cooling the core and vessel. Access into the cubicles is not required to operate the systems. All such components that could become contaminated in the event of an accident are located in the containment except those components that would be used as part of the RWCU/SDC.

Fuel Storage - The fuel storage pool is designed to ensure the dose rate around the pool area is less than 25 μSv/hr (2.5 mrem/hr). In the event of an anticipated operational occurrence where the fuel sustains significant damage, such as a fuel drop accident, airborne dose rates in the pool area could significantly exceed this dose rate.

Control Room - The dose rate in the control room is limited to 6 μSv/hr during normal reactor operating conditions. The outer walls of the Control Building are designed to attenuate radiation from radioactive materials contained within the Reactor Building and from possible airborne radiation surrounding the Control Building following a LOCA. The walls provide sufficient shielding to limit the direct-shine exposure of control room personnel following a LOCA to a fraction of the 5 rem limit as is required by 10 CFR 50 Appendix A, GDC 19.

Main steam tunnel - The main steam tunnel extends from the primary containment boundary in the Reactor Building up to the turbine stop valves. The primary purpose of the steam tunnel is to shield the plant complex from N-16 gamma shine in the main steam lines. The tunnel walls provide sufficient shielding to limit the direct-shine exposure from the main steam lines in any point that may be inhabited during normal operations.

12.3.3 Ventilation

The HVAC systems for the various buildings in the plant are discussed in Section 9.4, including the design bases, system descriptions, and evaluations with regard to the heating, cooling, and ventilating capabilities of the systems. This Subsection discusses the radiation control aspects of the HVAC systems.

12.3.3.1 Design Objectives

The following design objectives apply to all building ventilation systems:

- The systems shall be designed to make airborne radiation exposures to plant personnel and releases to the environment ALARA. To achieve this objective, the guidance provided in Regulatory Guide 8.8 is followed.
- The concentration of radionuclides in the air in areas accessible to personnel for normal plant surveillance and maintenance is below the concentrations that define an airborne radioactivity area in 10 CFR 20 during normal power operation. This is accomplished by