Draft

Request for Additional Information No. 136 (1377), Revision 0

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U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 12.03-12.04 - Radiation Protection Design Features
Application Section: FSAR, Tier 2, Section 12.3.5.2, Postaccident Access to Radiological Vital Areas

QUESTIONS for Health Physics Branch (CHPB)

12.03-12.04-2

Personnel access to radiological vital areas under accident conditions should be demonstrated in accordance with 10 CFR 50.34(f)(2)(vii), GDC 19, and the criteria in Item II.B.2 of NUREG-0737.

1. EPR FSAR, Tier 2, Section 12.3.5.2, Postaccident Access to Radiological Vital Areas, states that Figures 12.3-64 – 12.3-71 contain postaccident radiation zone maps that encompass the following radiological vital areas:

   -MCR, technical support center, and adjoining rooms
   -Safeguard Building containment heat removal system pump rooms
   -Safeguard Building residual heat removal system pump rooms,
   -Post-LOCA sampling room in the Fuel Building
   -Post-LOCA ventilation air sampling room in the Fuel Building
   -Radiological analysis laboratory in the Nuclear Auxiliary Building
   -Diesel fuel oil delivery area.

   It is not clear from the above mentioned figures where the Containment Heat Removal System (CHRS) Pump rooms are located. Verify that the CHRS pump rooms are represented in the post accident radiation zone maps by the Medium Head Safety Injection pump rooms, or provide information on where the CHRS rooms are located.

2. Regulatory Guide 1.206, Part C.I. Section 12.3.2, Shielding, states that each COL applicant should verify that the plant shielding is sufficient to ensure adequate access to all vital areas following an accident in accordance with the requirements in 10 CFR 50.34(f)(2)(vii) and the criteria in Item II.B.2 of NUREG -0737. However, rather than relying solely on plant design to reduce dose during post accident vital area access, the EPR FSAR, Tier 2, Section 12.3.5.2, Postaccident Access to Radiological Vital Areas, states that for several radiological vital areas, mission dose was calculated assuming the use of full protective clothing, respiratory protection, temporary shielding and/or restrictions on earliest post accident access. Therefore please specify what type of procedure(s) will be used to make the determination of when personnel protection equipment (radiation protection suits, breathing gear, etc.), and/or temporary shielding will be used, what type of personnel protection equipment will be used, and when vital area access may occur after a design basis accident. Justify why this should not be identified as a COL item.

3. EPR FSAR, Tier 2, Figure 12.3-69, Safeguard Buildings 2 and 3 +0 Ft Elevation Postaccident Radiation Zones, appears to be inconsistent with Figure 12.3-70, Safeguard Buildings 2 and 3 Section Postaccident Radiation Zones. Figure 12.3-70 has designated the personnel air lock area to be a ≤ 5 rem/hr radiation zone while Figure 12.3-69 has the personnel air lock area designated as a ≤ 2.5 mrem/hr radiation area. Please provide clarification and/or corrected drawings.

4. EPR FSAR, Tier 2, Table 12.3-12, U.S. Estimated Accident Mission Dose, has 383 mrem as the dose per person for the post accident ventilation air sample mission. However, when the occupancy times and dose rates listed in Table 12.3-12 are used to calculate dose per person for this particular mission (i.e. occupancy time x dose rate = dose per person), the result is 0.627 mrem, not 383 mrem. Please clarify or correct this discrepancy.

5. Verify that Table 12.3-12, U.S. Estimated Accident Mission Dose, listed occupancy times for "access", also encompass the time needed to egress.

6. Section 12.3.5.2, Postaccident Access to Radiological Vital Areas, discusses the use of temporary shielding for processing samples in the laboratory. However, Table 12.3-12, U.S. Estimated Accident Mission Dose, lists only one dose rate for sample processing, specifically, 9.2 rem/hr.

    a. What is the dose rate and occupancy time associated with the installation of this temporary shielding, and how does it impact the total dose per person for this mission? Modify Table 12.3-12 to incorporate this information.
    b. Section 12.3.5.2 states that temporary shielding is used so that the sampling box is the only significant source the operator is exposed to. Provide a description or radiation zone map of the other sources which the operator would be exposed to without the use of temporary shielding.
    c. The occupancy time and dose rate listed for this mission in Table 12.3-12 results in a dose per person of 1.5 rem, not 1.0 rem, as indicated in the current table. If the discrepancy is due to the operator standing in a low dose area, please provide proposed location of the low dose rate area, as well the dose rate and occupancy time associated with the low dose area. If not, provide clarification or correct the information in the table.