

RAI Volume 2, Chapter 2.1.1.7, Sixth Set, Number 1: Supplemental Question:

A follow-up clarification call for RAI Volume 2 – Chapter 2.1.1.7, Sets 5 and 6 was held on June 30, 2009. For RAI 2.2.1.1.7-6-001, the NRC asked if DOE had used the western regional data instead of the national data for the loss of offsite power frequency, then would any component reliability requirements or categorization of any event sequence have changed.

1. SUPPLEMENTAL RESPONSE

The preclosure safety analysis used a loss of offsite power frequency derived from the national data from NUREG/CR-6890, *Reevaluation of Station Blackout Risk at Nuclear Power Plants* (Eide et al. 2005). Use of national data is more representative of future performance than western regional data. However, if western regional data had been used in the preclosure safety analysis, no change would occur in any component reliability requirements or categorization of any event sequence.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

4. REFERENCES

Eide, S.A.; Gentillon, C.D.; Wierman, T.E.; and Rasmuson, D.M. 2005. *Analysis of Loss of Offsite Power Events: 1986-2004*. Volume 1 of *Reevaluation of Station Blackout Risk at Nuclear Power Plants*. NUREG/CR-6890. Washington, D.C.: U.S. Nuclear Regulatory Commission. ACC: MOL.20071114.0164.

RAI Volume 2, Chapter 2.1.1.7, Sixth Set, Number 2: Supplemental Question:

A follow-up clarification call for RAI Volume 2 – Chapter 2.1.1.7, Sets 5 and 6 was held on June 30, 2009. DOE's response to RAI 2.2.1.1.7-6-002 stated that the criteria to determine the set-points for degraded voltage relays would be in accordance with IEEE Std 741-1997 as applied to important to safety, rather than Class 1E, equipment. The NRC requested DOE to clarify applying IEEE Std 741-1997 to important to safety equipment rather than to Class 1E equipment.

1. SUPPLEMENTAL RESPONSE

The onsite important to safety (ITS) power subsystem is designed in accordance with IEEE Std 308-2001, *Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*, and the guidance provided in Regulatory Guide 1.6, *Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems*. In addition, the ITS electric power equipment is protected in accordance with IEEE Std 741-1997, *IEEE Standard Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations*. The use of the above IEEE standards is limited to features that are applicable to the repository.

The definition of Class 1E from Section 3 of IEEE Std 308-2001 and IEEE Std 741-1997, states:

The safety classification of the electric equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or are otherwise essential in preventing significant release of radioactive material to the environment.

Footnote: Users of this standard are advised that "Class 1E" is a functional term. Equipment and systems are to be classified Class 1E only if they fulfill the functions listed in the definition. Identification of systems or equipment as Class 1E based on anything other than their function is an improper use of the term and should be avoided.

Applying the Class 1E functions defined above to the repository limits the Class 1E designation to electric equipment and systems essential to preventing a significant release of radioactive material to the environment. A function of an ITS structure, system, or component is to prevent or mitigate an event sequence that leads to a release of radioactive material to the environment. Therefore, applying IEEE Std 308-2001 and IEEE Std 741-1997 to ITS electrical equipment is equivalent to applying the standards to Class 1E equipment.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

4. REFERENCES

IEEE Std 308-2001. 2002. *IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*. New York, New York: Institute of Electrical and Electronics Engineers. TIC: 252746.

IEEE Std 741-1997. 2002. *IEEE Standard Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations*. New York, New York: Institute of Electrical and Electronics Engineers. TIC: 255428.

Regulatory Guide 1.6, Rev. 0. 1971. *Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems*. Washington, D.C.: U.S. Nuclear Regulatory Commission. TIC: 239115.

RAI Volume 2, Chapter 2.1.1.7, Sixth Set, Number 3: Supplemental Question:

A follow-up clarification call for RAI Volume 2 – Chapter 2.1.1.7, Sets 5 and 6 was held on June 30, 2009. The NRC requested that the non-important to safety (non-ITS) electrical loads connected to the ITS power subsystem be specifically identified.

1. SUPPLEMENTAL RESPONSE

Table 1 identifies the not important to safety (non-ITS) loads connected to an ITS bus within the geological repository operations area. Electrical isolation for each non-ITS load connected to an ITS bus is in accordance with IEEE Std 308-2001, *Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*, IEEE Std 384-1992, *Standard Criteria for Independence of Class 1E Equipment and Circuits*, and IEEE Std 603-1998, *IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations*. Electrical loads connected to an ITS bus and not shown in Table 1 are ITS.

Table 1. Non-ITS Loads Supplied from an ITS Bus

SAR Figure	Non-ITS Load Served
1.4.1-10	Circuit 8 to Receipt Facility Train A
1.4.1-11	Circuit 8 to Receipt Facility Train B
1.4.1-12 (sheet 2 of 2)	Circuit 9 to Lighting Panel
1.4.1-13 (sheet 2 of 2)	Circuit 9 to Lighting Panel
1.4.1-14 (sheet 2 of 2)	Circuit 10 to Lighting Panel
1.4.1-15 (sheet 2 of 2)	Circuit 10 to Lighting Panel
1.4.1-16	Circuit 2 to Lighting Panel
1.4.1-17	Circuit 2 to Lighting Panel

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

4. REFERENCES

IEEE Std 308-2001. 2002. *IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*. New York, New York: Institute of Electrical and Electronic Engineers. TIC: 252746.

IEEE Std 384-1992. 1998. *Standard Criteria for Independence of Class 1E Equipment and Circuits*. New York, New York: Institute of Electrical and Electronics Engineers. TIC: 258693.

ENCLOSURE 3

Response Tracking Number: 00348-01-00

RAI: 2.2.1.1.7-6-003

IEEE Std 603-1998. *IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations*. New York, New York: The Institute of Electrical and Electronics Engineers.
TIC: 242993.

RAI Volume 2, Chapter 2.1.1.7, Sixth Set, Number 5: Supplemental Question:

A follow-up clarification call for RAI Volume 2 – Chapter 2.1.1.7, Sets 5 and 6 was held on June 30, 2009. NRC requested DOE to provide where the performance requirement is located for the important to safety (ITS) electrical power supplies, which provide power to portions of surface non-confinement heating, ventilation, and air conditioning (HVAC) system designed to cool and ventilate electrical and battery rooms in the Emergency Diesel Generator Facility (EDGF).

1. SUPPLEMENTAL RESPONSE

The design bases for the ITS portion of the EDGF surface non-confinement HVAC system are provided in SAR Tables 1.9-3 and 1.9-4 for the controlling parameters VN.CR.01 and VN.WH.01. The design bases in Table 1.9-3 and 1.9-4 for the ITS portions of the EDGF non-confinement HVAC system are repeated in SAR Table 1.4.1-1 as safety functions (performance requirements) for support systems to ensure the required reliability of ITS electrical power, should loss of off-site power occur.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

RAI Volume 2, Chapter 2.1.1.7, Sixth Set, Number 6: Supplemental Question:

A follow-up clarification call for RAI Volume 2 – Chapter 2.1.1.7, Sets 5 and 6 was held on June 30, 2009. NRC requested DOE to provide clarification on what important to safety (ITS) functions require ITS electrical power in the Receipt Facility (RF). In addition, provide clarification whether that the term “train” designates a structure, systems and component (SSC) as ITS or non-ITS.

1. SUPPLEMENTAL RESPONSE

The preclosure safety analysis for the Receipt Facility (RF) takes no credit for electrical power to prevent (reduce the frequency of) or mitigate (reduce the consequences of) any event sequence. Therefore, the preclosure nuclear safety design bases for the RF shown in SAR Table 1.9-5 identifies no important to safety (ITS) functions within the RF requiring ITS electrical power. The non-ITS electrical loads within the RF are isolated from the ITS electrical power subsystem by the use of ITS electrical isolation devices, 26D-EEE0-JS-0001 and 26D-EEE0-JS-0002, shown in SAR Figures 1.4.1-10 and 1.4.1-11. ITS electrical isolation devices are designed in accordance with IEEE Std 308-2001, *Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*; IEEE Std 384-1992, *Standard Criteria for Independence of Class 1E Equipment and Circuits*; and IEEE Std 603-1998, *IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations*.

The use of the term “train” does not classify or designate a structure, system, or component as ITS or non-ITS. The classification of structures, systems, and components is determined by the preclosure safety analysis process described in SAR Section 1.9 and shown in SAR Figure 1.9-1. The ITS SSCs are identified at a structure, system, or major component level in SAR Table 1.9-1.

2. COMMITMENTS TO NRC

None.

3. DESCRIPTION OF PROPOSED LA CHANGE

None.

4. REFERENCES

IEEE Std 308-2001. 2002. *IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations*. New York, New York: Institute of Electrical and Electronic Engineers. TIC: 252746.

IEEE Std 384-1992. 1998. *Standard Criteria for Independence of Class 1E Equipment and Circuits*. New York, New York: Institute of Electrical and Electronics Engineers. TIC: 258693.

IEEE Std 603-1998. *IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations*. New York, New York: The Institute of Electrical and Electronics Engineers. TIC: 242993.