

Response to

Request for Additional Information No. 24, Revision 0

6/27/2008

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 13.03 – Emergency Planning

Application Section: 13.3

NSIR LIB (EP) Branch

Question 13.03-01:

Subject: TSC Habitability –

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101]

The Final Safety Analysis Report (FSAR) (Tier 2) section 6.4.21 states that the TSC is part of the Control Room Envelope (CRE). Section 6.4.4 states “The total effective dose equivalent (TEDE) for the MCR occupants throughout the duration of any postulated DBA does not exceed the limits of GDC 19.” Section 13.3 says “This space is within the Safeguard Building. It is also within the control room envelope (CRE) which maintains habitability during normal, off-normal and emergency conditions”

What are the assumptions of the above referenced DBA and “off-normal and emergency conditions” for the EPR?

Please identify and justify any differences in the degree of radiological protection for personnel in the TSC versus the Control Room during a DBA.

Response to Question 13.03-01:

U.S. EPR FSAR Tier 2 Section 15.0.3 describes the design basis accident (DBA) assumptions that follow the alternative source term methodology. The technical support center (TSC) and main control room (MCR) radiological habitability evaluations are identical since the two rooms are within the CRE.

Since the TSC is within the CRE, it has the same radiological and habitability protection as the MCR during all operating conditions, including accidents.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-02:

Subject: TSC Power –

[Basis 10 CFR 40.47(b)(8), NUREG-0696 section 2.8; Information Notice (IN) 2004-19]

Does the TSC have a backup source of power if the primary source of power should fail? Please provide more detail regarding the backup power capabilities of the TSC including what functions (e.g., technical data systems, HVAC, communications, etc.) would or would not have backup power. Discuss how long it would take to transfer power to the backup source and restore the function of the TSC if the primary power source is lost.

Response to Question 13.03-02:

The space allocated for the technical support center (TSC) is located within the integrated operation area, as shown in U.S. EPR FSAR Tier 2 Figure 6.4-1—Control Room Envelope Plan View 1. This area is in Safeguards Building 3 and has access to safety-related power and backup power from the emergency diesel generators (EDGs) or station blackout diesel generators (SBODGs). After a power failure is detected, the EDGs and SBODGs will start automatically, as described in U.S. EPR FSAR Tier 2 Sections 8.3.1.1.5 and 8.4.1.3, respectively. Safety-related loads are sequenced onto the EDGs over a period of approximately 1 min from the time a power failure is detected, as shown in U.S. EPR FSAR Tier 2 Tables 8.3-4 through 8.3-7. In the event of EDGs failure, the SBODGs are available for loading approximately 10 min from the time the power failure is detected, as described in U.S. EPR FSAR Tier 2 Section 8.4.2.6.3.

U.S. EPR FSAR Tier 2 Section 13.3 notes that the allocated TSC space is within the control room envelope, which maintains habitability during normal, off-normal, and emergency conditions. As discussed in U.S. EPR FSAR Tier 2 Section 9.4.1.1, the main control room (MCR) air conditioning system is safety-related and designed to meet Seismic Category I requirements. U.S. EPR FSAR Tier 2 Section 8.4.1.1 requires that SBODG power be made available to maintain MCR habitability. In the event of loss of offsite power (LOOP), MCR envelope HVAC functions are included in the automatic EDG load sequence. In the event of a station blackout (SBO), the MCR air conditioning system can be manually re-initiated within 15 min from the time that the SBODG start signal is generated.

U.S. EPR FSAR Tier 2 Section 9.5.2.1.1 quotes Part IV.E(9) of 10 CFR 50, Appendix E, which requires that emergency facilities and equipment include at least one onsite and one offsite communications system, with each system having a backup power source:

- U.S. EPR FSAR Tier 2 Section 9.5.2.1.1 identifies that the onsite system includes a portable wireless system, public address and alarm system, digital telephone system, and sound-powered system. All of these systems, except the sound-powered system, have a backup power source.
- U.S. EPR FSAR Tier 2 Section 9.5.2.1.1 identifies various offsite communications systems and describes that the required systems have backup power.

Local power requirements vary, and the U.S. EPR FSAR provides flexibility for COL applicants to make use of unique existing facilities that cannot be included in a standard design. Therefore, specific power sources used for communications are not identified at this time.

U.S. EPR FSAR Tier 2 Section 13.3 states that data communications within the TSC are provided through the process information and control system (PICS). In addition, U.S. EPR FSAR Tier 2 Section 7.5.1.3 states that the TSC contains PICS workstations that display safety parameter display system information for plant management and technical support personnel. As described in U.S. EPR FSAR Tier 2 Section 7.1.1.3, this non-safety-related digital instrumentation and controls (I&C) system is powered from the 12-hr uninterruptible power supply. In addition to its normal non-safety related source, the 12-hr uninterruptible power supply can be powered from the SBODGs or from the 12-hr batteries.

Additional details on the TSC will be provided in the site-specific emergency plan as described in U.S. EPR FSAR Tier 2 Section 13.3: "COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50 Appendix E."

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-03:

Subject: TSC Size and Staffing Levels –

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101]

The FSAR (Tier 2) section 13.3 states “Space suitable for a technical support center (TSC), which demonstrates compliance with the design requirements for staffing levels consistent with current operating practices, and Revision 1 of NUREG-0654/FEMA REP-1 (Reference 2), is provided within the integrated operations area adjacent to the main control room (MCR).... refer to Figures 6.4–1—Control Room Envelope Plan View 1 and Figure 6.4–2—Control Room Envelope Plan View 2. A detailed description of CRE habitability, including radiological protective provisions, is provided in Section 6.4”

Please identify the number of work stations by function and expected occupancy levels of the TSC. Is the TSC sized to accommodate a minimum of 25 persons, including 20 persons designated by the licensee and five NRC personnel? NUREG-0654 states on page 52 “Each licensee shall establish a Technical Support Center and an onsite operations support center (assembly area) in accordance with NUREG-0696...” Does the TSC meet all of the other acceptance criteria of section 2.4 of NUREG-0696 “Functional Criteria for Emergency Response Facilities”? These criteria are:

- Working space, without crowding, for the personnel assigned to the TSC at the maximum level of occupancy (minimum size of working space provided shall be approximately 75 sq ft/person);
- Space for the TSC data system equipment needed to acquire, process, and display data used in the TSC;
- Sufficient space to perform repair, maintenance, and service of equipment, displays, and instrumentation;
- Space for data transmission equipment needed to transmit data originating in the TSC to other locations;
- Space for personnel access to functional displays of TSC data;
- Space for unhindered access to communications equipment by all TSC personnel who need communications capabilities to perform their functions;
- Space for storage of and/or access to plant records and historical data; and
- A separate room adequate for at least three persons to be used for private NRC consultations.

If not, please justify why it is not appropriate for the TSC to meet the criteria of section 2.4 of NUREG-0696.

Response to Question 13.03-03:

At a minimum there is one process information and control system (PICS) operator workstation in the TSC. Additional workstations, such as a set of plant overview panel (POP) screens driven by another PICS workstation, may be provided at the request of the customer.

An area within the integrated operations area of at least 1875 ft² is allocated as the TSC. Thus, the TSC is large enough to provide space for 25 personnel (20 persons designated by the licensee and 5 NRC personnel) at 75 ft² per person. Additionally, the size of the TSC (1875 ft²) makes the center large enough to meet the acceptance criteria of Section 2.4 of NUREG-0696.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-04:

Subject: TSC/OSC/Decontamination Facility –

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101]

The FSAR (Tier 2) section 13.3 states “Space suitable for an operational support center (OSC), which demonstrates conformance with the design requirements for staffing levels consistent with current operating practices of NUREG-0654/FEMA REP-1 revision 1 (Reference 2), is provided within the Access Building. This building also contains a personnel decontamination area. Adequate voice communications in these facilities is provided by the plant telephone, paging and radio systems as described in Section 9.5.2.2.1 through Section 9.5.2.2.4. The Access Building is described in Section 12.3.1.6.”

Thus, Section 13.3 would seem to imply that the OSC is discussed in the Section 12.3.1.6 description of the Access Building but we were not able to find such a discussion of the OSC there. Please provide a detailed description of the OSC. Additionally, please provide a detailed description of how the decontamination facility would protect from contamination not only the personnel entering the OSC but also those personnel in the TSC given that the expected level of interaction between personnel in the TSC and OSC.

Response to Question 13.03-04:

The OSC location, staffing, and implementing procedures (including personnel decontamination process) are components of the COL Applicant’s emergency plan. The Access Building, including standard physical features which support OSC operations such as decontamination facilities, is described in U.S. EPR FSAR Tier 2 Section 12.3.1.6.

Should the COL applicant choose to utilize it, the design allocates space for an OSC comprised of a number of adjoining areas normally used as meeting rooms and offices located at elevation +39 feet in the Access Building. This space is converted from its normal uses to the OSC by the Emergency Response Organization when necessary. The assigned space exceeds 450 ft², which supports OSC staffing levels consistent with current operating practices of NUREG-0654/FEMA REP-1 Revision 1. An additional 2000 ft² of space is available in offices on the same elevation for OSC craft, briefings, and supplemental personnel staging.

Egress from potentially contaminated in-plant work locations is through the radiological control lab in the Access Building at elevation +00 ft during both emergency and non-emergency conditions. Radiation monitoring equipment and supplies are available at this location as described in the COL Applicant’s emergency plan. Personnel decontamination facilities are available adjacent to the radiological control lab. Subsequent access to the OSC or technical support center (TSC) would be only after radiological monitoring and any necessary decontamination.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-05:

Subject: Communication-

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101]

The FSAR (Tier 2) section 9.5.2.1.1 states “Offsite communication consists of at least two independent communication subsystems to provide emergency communication links from the Emergency Operation Facility (EOF) to the onsite MCR and Technical Support Center (TSC) as well as to the NRC and other federal, state, and local government agencies. A backup power source is provided for the offsite communication systems.”

Please provide a brief description of the two independent communication subsystems.

Will the TSC voice communications equipment include the following features/capabilities?:

- Hotline telephone (located in the NRC consultation room) on the NRC emergency notification system (ENS) to the NRC Operations Center;
- Dedicated telephone (located in the NRC consultation room) on the NRC health physics network (HPN);
- Dedicated telephones for management communications with direct access to the control room, the OSC, and the EOF;
- Telephones that provide access to onsite and offsite locations;
- Intercommunications systems between work areas of the TSC, if needed for the TSC functional performance or if the TSC is comprised of separate functional areas; and
- Communications to licensee mobile monitoring teams and to State and local operations centers prior to EOF activation.

If the TSC does not have these features, please justify why these features are not appropriate.

Response to Question 13.03-05:

The two independent communication subsystems that are used for offsite communications are the portable wireless communication system described in U.S. EPR FSAR Tier 2 Section 9.5.2.2.1 and the digital telephone system described in U.S. EPR FSAR Tier 2 Section 9.5.2.2.2. The portable wireless communication system can dial the digital telephone terminal extensions directly, access a paging channel, or dial to external telephone numbers. Similarly, the digital telephone system provides internal station to station communications, access to the plant paging system, and external communications to offsite stations. Each system is independent in that a failure in one subsystem does not affect the capability to communicate via the other subsystem. The communications equipment in the TSC includes the features and capabilities listed in the question above.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-06:

Subject: Technical Data and Data Systems –

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101]

In accordance with section 2.9 of NUREG-0696, will the TSC have the capability to display the following data?:

- Plant systems variables,
- In-plant radiological variables,
- Meteorological information, and
- Offsite radiological information

Will storage and recall capability for the TSC data set cover at least 2 hours of pre-event data and 12 hours of post-event data? Please provide a detailed description of the ability to display, trend and graphically manipulate the data.

If the TSC does not have any of these capabilities, please justify why these capabilities are not appropriate.

Response to Question 13.03-06:

The technical support center (TSC) is equipped with a process information and control system (PICS) workstation that provides read-only access to the same plant information provided to the main control room (MCR) operators, such as plant systems variables and in-plant radiological variables. The PICS is capable of interfacing with third-party systems that provide data, such as the offsite radiological information and meteorological information.

The PICS provides a means of storing and recalling at least 2 hours of pre-event data and 12 hours of post-event data. This data is available for retrieval and viewing from a PICS workstation. From a PICS workstation, trend curves and plant data are also available. Pre-configured bar charts and trend curves are provided. Additionally, the user is able to temporarily configure his or her own bar chart or trend curve by selecting the desired parameters and time periods.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Question 13.03-07:

Subject: Instrumentation for Monitoring Plant Conditions Following an Accident–

[Basis 10 CFR 52.81, 10 CFR 50.47, 10 CFR Append E, RG 1.206, RG 1.101, GL 82-33]

As stated in 10 CFR 52.47(a)(21), the standard design application must include proposed technical resolutions of those Unresolved Safety Issues and medium- and high-priority generic safety issues, which are identified in the version of NUREG-0933, “A Prioritization of Generic Safety Issues,” current on the date up to 6 months before the docket date of the application (current version is dated August 2004), and which are technically relevant to the design

Generic Letter 82-33, Supplement 1 to NUREG-0737, “Clarification of TMI Action Plan Requirements – Requirements for Emergency Response Capability,” provides clarification regarding post-TMI requirements for emergency response capability; including applicability of Regulatory Guide (RG) 1.97, “Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident,” Revision 4, June 2006, to emergency response facilities.

Regulatory Guide 1.97 describes acceptable methods for complying with agency regulations relating to criteria for accident monitoring instrumentation. Supplement 1 to NUREG-0737 provides requirements for emergency response facilities, including the applicability of RG 1.97 to the TSC and Emergency Operations Facility (EOF). Additional detailed design and functional criteria relating to the TSC, OSC, and EOF are provided in NUREG-0696.

Does the EPR have instrumentation for following the course of accident that meets all of the above referenced guidance for the TSC and OSC? If not, then please explain.

Since no mention is made to the EOF in the FSAR, is this considered outside the scope of the EPR design and thus left to COL applicant to specify?

Response to Question 13.03-07:

Through the process information and control system (PICS) workstation, the technical support center (TSC) has display capabilities for the post-accident monitoring variables specified in Regulatory Guide 1.97. There are no regulatory requirements to provide live data and status information in the operational support center (OSC).

The EOF is outside the scope of the U.S. EPR design certification. Details of the EOF will be provided in the site-specific emergency plan provided by the COL applicant per COL information item #13.3-1: “A COL applicant that references the U.S. EPR design certification will provide a site-specific emergency plan in accordance with 10 CFR 50.47 and 10 CFR 50 Appendix E.”

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.