

Request for Additional Information No. 42, Revision 0

8/07/2008

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 14.03.12 - Physical Security Hardware - Inspections, Tests, Analyses, and Acceptance Criteria

Application Section: Tier 2, FSAR Chapter 14.3 and Tier 1, Chapter 3
NSIR/DRP/RSPLB Branch

QUESTIONS

14.03.12-1

Tier 2: Provide detailed descriptions of performance requirements and specifications of all features incorporated within the scope of the EPR standard design to facilitate or enhance the implementation of physical protection of the EPR nuclear island and safety-significant structures, systems, and components. Physical protection against the Design Basis Threat (DBT) is required by *Title 10 Code of Federal Regulation (10 CFR) 73.1*. Specifically, describe the security features that have been incorporated in the design and configurations of the EPR nuclear island to provide a generic standard design for physical protection. The following are examples of security provisions or features that could or should be considered and incorporated within the scope of a standard design:

1. Minimizing the number access points into vital areas and between security areas,
2. Layout of security force protection of access points,
3. Plant layout to minimize blind spots and enhance monitoring,
4. Plant layout to enhance defensive fighting positions (e.g., protection from adversary suppressive fire and fields of fire),
5. Provisions for a minimum set of security posts needed to protect access to vital areas,
6. Provisions for passive and active delays and access denial systems,
7. Protection of the central and secondary alarm stations,
8. Design features for security monitoring vital and access to vital areas and security zones,
9. Physical protection of doors and penetrations of credited barriers for delay (including reactor containment, such as emergency core cooling system piping into annulus, HVAC penetrations, etc.),

10. Configurations and hardening of interior and exterior doors for access, delay, and protection against explosives,
11. Provisions for primary and backup power supply (e.g., uninterruptible power supply and emergency generators) for security-significant systems.
12. Provisions for reliable plant security lighting,
13. Protection of security digital systems and protection of cable routing, and redundancy,
14. Provisions for local monitoring capability at security posts,
15. Consideration for human/machine interface of security design features,
16. Provisions in facility/room environment to enhance personnel attentiveness,
17. Provisions for mitigating insider threat (e.g., separations and redundancy of safety systems, tamper and abnormal condition alarms,
18. Facility layout for access control, active and passive barriers, interior intrusion alarms, monitoring and interior cameras),
19. Provision for personnel protection or survivability against hazards, such as radiological, chemicals, and fire, for CAS, SAS, defensive,
20. Posts, and ready rooms (e.g., HEPA filtration, recirculation and fresh air supply, fire-rating, bullet resistant, differential pressures,
21. Room HVAC dampers, etc.),
22. Provision for securing and permitting use of required emergency exits,
23. Plant layout to protect against DBT's explosive threats (i.e., standoff distances),
24. Other security features that could be addressed as a part of standard design

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. Currently, the EPR design certification application, Tier I, Chapter 3, "Non-System Based Design Descriptions and ITAAC discussed security "Design Features" and Table 3.1-1, "Inspection, Test, Analyses, and Acceptance Criteria

(4 sheet)” discussed inspection, tests, and analysis and acceptance criteria for design features. Tier 2, Chapter 14 or appropriate FSAR chapters (e.g., Chapter 13, “Conduct of Operations”) do not contain supporting technical detailed security design information for the standard EPR design that supports the Tier 1, Chapter 3, generic descriptions for security design features and associated ITAAC. Although not a specific regulatory requirement, the Commission draft policy statement published in Federal Register Notice 26349, dated May 9, 1998, expects design vendors to address security for new reactors early in the design stage. Therefore, generic security systems or features relied on for protection against the DBT should be incorporated into the EPR design to the extent possible as standard design and specifications. The security-related hardware or credited design features must be described in Tier 2 FSAR (Chapter 13 or other appropriate FSAR chapters) or in a referenced technical report to support the described security ITAAC.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

14.03.12-2

Tier 2: Provide detailed information and descriptions as to how the standard EPR design has incorporated by design the minimum standards for physical protection of key facilities of the EPR nuclear island and the protection of certain SSCs.

- 1) Facilities/structures
 - a) Containment Building
 - b) Fuel Building
 - c) Safeguards Buildings (2)
 - d) Emergency Power Generation Buildings
 - e) Essential Service Water (ESW) Cooling Tower and Pump Structures

- 2) Systems and Components
 - a) Emergency Core Cooling System (ECCS)
 - b) Low Head Safety Injection (LHSI)/ Residual Heat Removal (RHR)
 - c) Emergency Feedwater (EFW)
 - d) Severe Accident Heat Removal System (SAHRS)
 - e) In-Containment Refueling Water Storage Tank (IRWST)
 - f) Emergency Diesel Generators
 - g) Station Blackout Diesel Generators (SBODG)
 - h) Safety Chilled Water System
 - i) Fuel Pool Cooling Systems
 - j) Cable spreading and routing for ECCS to MCR and Remote Shutdown Station
 - k) Reactor Cooling Pumps
 - l) Diverse Actuation System (DAS)

- m) Extra Borating System (EBS)
- n) Other safety-significant SSCs

Regulatory Basis: Subpart B of 10 CFR) 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. The descriptions of security features incorporated in the standard EPR design for achieving protection-in-depth (i.e., defense-in-depth) provides a generic licensing bases for protection against the DBT. Structures, systems and components identified as important to maintaining safety are potential targets of adversary attacks to cause radiological sabotage. The additional information requested is needed to provide clarity of what is within the scope of EPR design and required ITAAC, and provides a portion of the generic licensing basis that a COL applicant would apply as reference to the EPR design.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

14.03.12-3

Tier 2: Provide discussion and appropriate detailed information of approaches or concepts (e.g., protection-in-depth) for physical protection considered and applied in the standard EPR design. Discuss whether the EPR design, to the extent within the scope of the design, considered and/or applied in part or in whole the concepts described in NRC's technical guidance NUREG/CR-1345, Nuclear Power Plant Concepts for Sabotage Protection (latest revision (issued January 1981) and as applicable, Nuclear Power Plant (NPP) Security Assessment Technical Manual (SAND5591-2007) and NPP Security Assessment Format and Content Guide (2007).

Regulatory Basis: Subpart B of 10 CFR) 52, Section 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. The descriptions of security features incorporated in the standard EPR design for achieving protection-in-depth (i.e., defense-in-depth) provides a generic licensing basis for protection against the DBT. NRC guidance is not regulatory requirements and provides the applicant with guidance on methods or approaches that the

NRC staff will find acceptable for demonstrating reliability and availability of protection and determination of adequate protection.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

14.03.12-4

Tier 2: Provide descriptions and discussions regarding construction activities, preoperational testing (Phase I), and test procedures for security-related systems within the scope of the standard EPR design. Specifically, consistent with descriptions for safety systems, (a) construction quality activities associated with installation of security-related systems (e.g., conduit and cable installation, circuit integrity, separations, buried sensors, delay barrier or building walls, protection of penetrations, etc.) should include security-related systems as systems components may not be easily confirmed as adequate after construction without non-destructive methods, and (b) phase I – preoperational testing should include assurance of readiness of physical protection hardware for implementing required security prior to the receipt of fuel.

Regulatory Basis: Subpart B of 10 CFR 52, Section 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Sufficient details for EPR design ITTAC are needed for the staff to determine what is acceptable and to ensure that sufficient information is provided in the design certification documentation, such that test procedures develop by a COL applicant meets the intended design performance and specifications of the referenced design.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

14.03.12-5

Tier 2: Describe objectives, prerequisites, test methods, data required and acceptance criteria associated with the security-related systems and design features incorporated into the standard EPR design. Detail descriptions for security-related systems and components, consistent with descriptions in Section 14.2.12, "Individual Test Descriptions," should be provided for clarity

of test objectives, acceptance criteria, pre-requisites, system initial conditions, environmental conditions, special precautions, detailed procedures, restoration, and documentation of results. An example of this is provided in Section 14.2.12.10.7, "Security Lighting (Test #114) of FSAR Chapter 14.

Regulatory Basis: Subpart B of 10 CFR (10 CFR) 52, Section 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Tier 2 documentation currently does not provide sufficient information on the technical bases for inspection, test, or analysis (ITA) of security-related system that supports the Tier 1 ITAAC for certification. Detailed descriptions of performance and specifications for acceptance and inspection of security credited EPR design features (e.g., containment wall as barrier for delaying of adversary) may be addressed in safety-related individual test descriptions without a need of repeating it in security test description, provided the required security performance are appropriately described in the safety-related test description. In such a case, the applicant should consider a means of cross-reference between the safety/security features in Section 14.3.3 discussions of security certified design material and ITAAC.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

14.03.12-6

Tier 1, Chapter 3, Table 3.1.1: Provide clarification for the following items identified under "Acceptance Criteria" of Table 3.1.1:

1. State the specific method or methods required to verify commitments for all items listed under "Inspections, Test, and Analysis" (ITA). The method(s) not applicable should be deleted or all methods applicable should be indicated. For example, vital equipment located within a vital area is inspected. Testing would not be a method use to demonstrate that physical locations of vital equipment are in designated vital areas. Review and modify all items under the ITA column of Table 3.1.1.
2. Provide clarification or define "a type test" as stated in ITA column of Table 3.1.1. Is "type test" a commitment to perform a complete test of all systems and components or sampling method of testing? A commitment for sampling test of identified ITTAC is not acceptable for demonstrating or verifying that security-related design commitments have been met.

3. Commitment #2: Clarify that inspections will be performed to verify that access to vital equipment will include the passage through at least two physical barriers. Testing is not expected to demonstrate meeting the design commitment.
4. Commitment #12: The commitment does not state that the site will apply the use of picture badge in accordance with 10 CFR 73.55(d)(5)(i). Provide clarification on whether the intent of the DCD is that the reference COL applicant will request the appropriate exemption or propose alternative under 10 CFR 73.55(a) as a licensing action associated with the COL application.

Regulatory Basis: Subpart B of 10 CFR (10 CFR) 52, Section 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73.