

COMBUSTION ENGINEERING

March 18, 1988
LD-88-020

Docket No. STN 50-470F

Mr. Guy S. Vissing, Project Manager
Standardization and Non-Power
Reactor Project Directorate
Office of Nuclear Reactor Regulation
Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Response to NRC Request for Additional Information
Concerning Chapter 1, Safeguards

Reference: Letter, G. S. Vissing (NRC) to A. E. Scherer (C-E),
dated December 17, 1987

Dear Mr. Vissing:

The reference letter requested that Combustion Engineering provide additional information on where the Severe Accident Policy will be addressed and on how the protection of vital equipment against acts of sabotage will be addressed for the System 80+™ Standard Design.

Enclosure (1) to this letter provides our responses to your specific questions in a direct question and response format. We are also providing our proposed revision to the Combustion Engineering Standard Safety Analysis Report - Design Certification (CESSAR-DC) as Enclosure (2).

Should you have any questions, please feel free to contact me or Dr. M. D. Green of my staff at (203) 285-5204.

Very truly yours,

COMBUSTION ENGINEERING, INC.



A. E. Scherer
Director
Nuclear Licensing

AES:ss
Enclosures: As Stated

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Response to NRC Request for Additional Information

Concerning Chapter 1, Safeguards, CESSAR-DC

- References:
- (A) Letter, G. S. Vissing (NRC) to A. E. Scherer (C-E), dated December 17, 1987.
 - (B) Letter, LD-88-005, A. E. Scherer (C-E) to F. J. Miraglia (NRC), dated January 19, 1988.
 - (C) Letter, LD-88-008, A. E. Scherer (C-E) to L. S. Rubenstein, dated January 22, 1988.

Reference (A) requested that Combustion Engineering provide additional information on where the Severe Accident Policy will be addressed and on how the protection of vital equipment against acts of sabotage will be addressed for the System 80+TM Standard Design.

This enclosure provides Combustion Engineering's responses to your specific questions in a direct question and response format. We are also providing our proposed revision to the Combustion Engineering Standard Safety Analysis Report - Design Certification (CESSAR-DC) as Enclosure (2).

Question 500.1

There is no indication in this chapter of wherein the Severe Accident Policy and the unresolved generic issues will be addressed.

Response 500.1

The Severe Accident Policy and the unresolved generic issues will be addressed as described in Appendices A, B, and C to the Licensing Review Basis (LRB) document [Reference (B)].

Appendix A to the LRB details Combustion Engineering's program for resolving all applicable unresolved safety and generic issues as required in the Severe Accident Policy Statement for the System 80+TM Standard Design. The resolution of these issues will be based primarily on the acceptance criteria from EPRI ALWR and DOE Advanced Reactor Severe Accident Program (ARSAP) Topic Papers. The acceptance criteria and proposed design features for resolution of all applicable issues will be provided, at a later date, as an appendix to CESSAR-DC.

Appendix B to the LRB and the System 80^R Baseline PRA report [Enclosure to Reference (C)] detail Combustion Engineering's process for Probabilistic Risk Assessment (PRA) as required by the Severe Accident Policy Statement. A Level III PRA for the System 80+TM Standard Design will be performed. The PRA evaluation process for the System 80+ design will be similar to that described in the System 80 Baseline PRA report. The System 80+ PRA will be summarized and included in an appendix to CESSAR-DC, which is scheduled to be submitted when the PRA is completed (1989). Combustion Engineering also intends to meet periodically with the NRC staff during the design process to discuss interim PRA results and other Severe Accident issues.

Appendix C to the LRB details Combustion Engineering's process for degraded core evaluation. The proposed approach for this evaluation is to identify the severe accident issues applicable to the

System 80+ Standard Design, to develop criteria for resolution of those issues, and to develop the method of resolution of each issue. The resolution of severe accident issues will be based on the requirement to demonstrate safety acceptability in compliance with the NRC Severe Accident Policy Statement. The design features which address the severe accident issues will be described in CESSAR-DC, and the analysis will be described in the appendix to CESSAR-DC on PRA.

Section 1.1.3 of CESSAR-DC will be amended to reflect the above response.

Question 500.2

Section 1.2-2 indicates that the descriptions of the Nuclear Power Module (NPM) and the Interfaces are sufficient for evaluation of the essentially complete plant. Neither Table 1.2-1, the CESSAR scope for NPM, nor Table 1.2-2, the matrix of Interface sections, includes the security system. Yet:

- (a) Section 13.6 of NUREG-0800 includes review of the layout of the plant and other design features and equipment arrangements intended to provide protection of vital equipment against acts of radiological sabotage.
- (b) The physical barrier guidance in Regulatory Guide 5.65 should be considered during design of structures that contain equipment designated as vital equipment.
- (c) A protected source of power for security lighting and access control systems should be considered during design of on-site electric power systems. (See NUREG/CR-1327, Security Lighting Planning Document for Nuclear Fixed Site Facilities.)

Response 500.2

The System 80+TM Standard Design will be developed in accordance with all current NRC regulations and guidance regarding physical security of nuclear power plants.

The criteria for physical security are summarized in Section 13.6 of NUREG-0800 [Standard Review Plan (SRP)]. Detailed criteria are provided in the regulations and the guidance which are referenced in Section 13.6 of the SRP. Each of the criteria will be addressed by either a design feature or by input (Standardized Functional Description) to site-specific physical security plans. The Standardized Functional Description input for the physical security plan will be provided in Section 13.6 of CESSAR-DC.

Table 1 shows the CESSAR-DC chapter wherein the information will be provided in response to parts (a), (b), and (c) of the question.

Section 1.2 of CESSAR-DC will be amended to identify where information on physical security will be provided.

Table 1

<u>Criterion</u>	<u>CESSAR-DC Chapter</u>
10 CFR 73.5: Radiological Sabotage	
(c) Physical Barriers and Plant Layout	2,3
Regulatory Guide 5.65: Access Controls and Equipment Protection	
(C.1) Physical Barriers	2,3
(C.2) Spent Fuel Pools	9
(C.7) Security Equipment	9
(C.8) Keys and Locks	9
NUREG/CR-1327: Security Lighting Planning Document	8

Question 500.3

Table 1.8-1, the list of applicable Regulatory Guides addressed in the System 80+ design, does not include RG 5.65.

Response 500.3

Table 1.8-1 will be revised to include Regulatory Guide 5.65 subsequent to submittal of the CESSAR-DC Chapter 13. The System 80+TM Standard Design will comply with the intent of the applicable portions of this Regulatory Guide.

PROPOSED REVISIONS TO THE
COMBUSTION ENGINEERING STANDARD SAFETY ANALYSIS REPORT

1.1.3.3 Types of Interfaces

The functional requirement interfaces in CESSAR describe the configuration and capabilities required of site specific systems. They are of two types: (a) a specific requirement for a certain condition to exist at a given interface point (e.g., cooling water supply to a heat exchanger); and (b) a requirement to provide a specific function (e.g., missile protection). | 12

1.1.3.4 Interface Functional Descriptions

Each system that interfaces with a CESSAR design scope system will have a listing of all appropriate interfaces. Rather than provide the specific interface requirement with each of these category headings in the CESSAR design scope section, the reviewer is, instead, referred to the appropriate sections within CESSAR. These sections not only provide the reviewer with the specific interface requirement(s) for the system(s) in this section, but also provide a standardized functional description of the system sufficient to obtain Regulatory review and approval. | 12

Table 1.2-2 provides a matrix of the sections in CESSAR which provide the functional descriptions of the interface requirements related to the systems in the CESSAR design scope.

1.1.4 CESSAR ORGANIZATION

CESSAR is organized to respond to Regulatory Guide 1.70, Revision 2, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants", since CESSAR-F was originally prepared in accordance with Rev. 2. In preparing future amendments, however, additional information will be provided as appropriate. | 12

Insert
A

Q/R 500.1

1.1.5 SITE RELATED INFORMATION

Site related information is provided to the maximum extent practicable. This site related information, where it affects System 80+ design and safety analyses, is assumed as a series of envelopes for certain site-related parameters (see Chapter 2.0) which will encompass most of the current nuclear power plant locations in the continental United States. Non-nuclear steam supply system information or details related to a specific and/or number of sites is deferred to the site specific safety analysis report, unless otherwise noted in CESSAR. | 12

1.1.6 PIPING AND INSTRUMENTATION SYMBOLS

Figure 1.1-1 and Table 1.1-1 provide a summary of the standard symbols used for the engineering flow, piping and instrumentation diagrams, and valve lists presented in CESSAR. Table 1.1-2 provides a cross reference list between CESSAR figure numbers and C-E piping and instrumentation diagram (P&ID) numbers. System 80+ P&IDs will be revised and submitted with the appropriate chapter revisions. | 12

Q/R 500.1

Insert A

1.1.3.5 Severe Accident Policy

The requirements to be met by future plants are:

- a. Demonstration of compliance with the procedural requirements and criteria of the current Commission regulations, including the Three Mile Island requirements for new plants as reflected in the CP Rule [10 CFR 50.34(f)];
- b. Demonstration of technical resolution of all applicable Unresolved Safety Issues and the medium- and high-priority Generic Safety Issues, including a special focus on assuring the reliability of decay heat removal systems and the reliability of both AC and DC electrical supply systems;
- c. Completion of a Probabilistic Risk Assessment (PRA) and consideration of the severe accident vulnerabilities the PRA exposes along with the insights that may add to the assurance of no undue risk to public health and safety; and
- d. Completion of a staff review of the design with a conclusion of safety acceptability using an approach that stresses deterministic engineering analysis and judgment complemented by PRA.

CESSAR-DC will address the Severe Accident Policy and the unresolved generic issues. The resolution of these issues will be summarized in Appendix A and they will take into full consideration the acceptance criteria from EPRI ALWR and DOE ARSAP Topic Papers. A Level III PRA will be performed. This PRA will be described in Appendix B. Degraded core analyses will be included in the PRA.

The System 80+ employs an improved letdown configuration of which key elements are (1) a full pressure letdown heat exchanger, and (2) pressure reduction to CVCS operating pressures downstream of the letdown heat exchanger by use of a letdown flow control valve in series with a letdown orifice. In addition, the charging flow is controlled by the use of centrifugal charging pumps and a charging pump flow control or throttle valve on the discharge of the pumps.

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1.2.12 RADIOACTIVE WASTE MANAGEMENT SYSTEMS

Standardized functional requirements and interfaces are described in Section 11.0. See the site specific SAR for details.

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1.2.13 Insert (B) Q/R 500.2

Q/R 500.2

Insert B

1.2.13 Physical Plant Security and Protection from Sabotage

Standardized Functional Descriptions and interfaces are presented in Section 13.6. Design features are described in Chapters 2, 3, 8, and 9.

TABLE 1.8-1

(Sheet 11 of 11)

REGULATORY GUIDES

<u>Document/Title GDC References</u>	<u>Original or Revision Issue Date</u>	<u>Reference CESSAR Section</u>
Reg. Guide 1.86 - Termination of Operating Licenses for Nuclear Reactors		See Site Specific SAR
Reg. Guide 1.87 - Construction Criteria for Class 1 Components in Elevated Temperature Reactors		Not Applicable (ETR)
Reg. Guide 8.8 - Information Relevant to Maintaining Occupational Radiation Exposure ALAP (Nuclear Reactors)		See Site Specific SAR

Insert (C)

Q/R 500.3

Q/R 500.3

Insert C

Reg. Guide 5.65 -
Vital Area Controls, Protection of
Physical Security Equipment,
and Key and Lock Controls

September 1986

2, 3, 9, 13.6