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March 27, 1992
LD-92-045

Docket No. 52-002

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: System 80+ ™ Standard Review Plan Deviations

Reference: C-E Letter LD-91-054, dated October 22, 1991

Dear Sirs:

Enclosure I to this letter includes a listing of the deviations between the acceptance criteria of the NRC's Standard Review Plan (SRP) and the System 80+ design certification application (CESSAR-DC). This listing complies with the requirement of 10 CFR 50.34(g) and the submittal schedule provided in the reference letter. The deviations were identified as a result of a section-by-section review of the SRP, experience from responding to Requests for Additional Information, and management review. If additional deviations are identified during the closeout of NRC review issues, the listing in CESSAR-DC will be revised.

Certain SRP criteria identify the need for site-specific or plant owner/operator information. Since this information is not within the scope of the System 80+ design, corresponding deviations were not identified. Nonetheless, these items are included in Enclosure II for your information. Both Enclosures I and II will be added to CESSAR-DC in the next amendment.

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If you have any questions on the enclosed material, please contact Mr. Stan Ritterbusch at (203) 285-5206.

Very truly yours,

COMBUSTION ENGINEERING, INC.

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ser/lw

Enclosures: As Stated

cc: J. Trotter (EPRI)
T. Wambach (NRC)

Enclosure 1 to
LD-92-045

LISTING OF DEVIATIONS BETWEEN

ACCEPTANCE CRITERIA OF NRC's SRP AND CESSAR-DC

TABLE 1.8-4

(Sheet 1 of 10)

DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.5.2	Vibratory Ground Motion - Rev. 2	OBE equal to one-third (1/3) SSE is used.	Table 2.0-1 2.5.2.7
3.6.2	Determination of Rupture Locations and Dynamic Effects Associated With the Postulated Rupture of Piping - Rev. 1, July 1981	The application of leak-before-break methodology eliminates dynamic effects of postulated pipe rupture in the System 80+ Standard Design for Class 1 piping with a diameter of ten inches or greater and for the main steam line. A leakage crack is postulated in place of a circumferential break, or longitudinal break, or through-wall crack if justified by leak-before-break analyses.	3.6.2.1 3.6.3
3.7.1	Seismic Design Parameters - Rev. 2	Sets of representative cases from generic site categories were evaluated to create the design response spectrum. The control motion spectrum, however, does not bound that in R.G. 1.60 at low frequencies.	3.7.1.1
3.7.3	Seismic Subsystem Analysis - Rev. 2	Alternate analysis methods are employed for piping systems.	3.7.3.1

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
		No explicit range of the fundamental frequencies of components and equipment with respect to the dominant frequencies of the support structure is made.	3.7.3.4 3.7.3.8
3.10	Seismic and Dynamic Qualification of Mechanical and Electrical Equipment	Qualification tests will be performed at the time of specific equipment procurement. Methodology and criteria are, however, summarized in CESSAR-DC.	3.10
4.2	Fuel System Design - Rev. 2, July 1981	With the application of the limiting factor for fuel assembly lateral deflection to the fuel assembly structure, no specific limit on lateral fuel rod deflection is provided. The Chapter 15 safety analysis uses the DNB convolution criterion for fuel failure; not the 95/95 Specified Acceptable Fuel Design Limit described in Section 4.4 of CESSAR-DC. Post-irradiation programs will be described in site-specific SARs.	4.2.1.2

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
4.4	Thermal and Hydraulic Design - Rev. 1, July 1981	The effects of fuel densification are not included in the calculation of total heat flux factor and linear heat generation rate because it is negligible.	4.4.2.2
4.5.1	Control Rod Drive Structural Materials - Rev. 2, July 1981	The usage of control drive structural material with a yield strength greater than 90 Kpsi is limited to the steel ball in the vent valve on the top of the CEDM and bearing inserts in the motor assembly.	4.5.1.2
		In lieu of the ASTM A262 Method E as required in Regulatory Guide 1.44, ASTM A708 Strauss Test is employed in the System 80+ Standards Design for demonstrating freedom from sensitization in the fabricated unstabilized austenitic stainless steel.	4.5.1.3
4.5.2	Reactor Internal and Core Support Materials - Rev. 2, July 1981	ASTM A708 Strauss Test is used for sensitization test in fabricated unstabilized austenitic stainless steel.	4.5.2.3
4.6	Functional Design of Control Rod Drive System - Rev. 1, July 1981	No isolation between the CEDMs and the CEAs is required because no non-essential elements are involved at the interface between these two systems.	4.6.2.2

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
5.2.1.1	Compliance with the Codes and Standards Rule, 10 CFR § 50.55a - Rev. 2, July 1981	Specific codes and editions are not identified in CESSAR-DC for design certification.	
5.2.3	Reactor Coolant Pressure Boundary Materials - Rev. 2, July 1981	The electroslag weld process is not used in the fabrication of any RCPB components.	5.2.3.3
		The specific recommendations of Regulatory Guide 1.71 for welder qualification for areas of limited accessibility are not completely followed, by performance qualifications for welders for those areas are conducted in accordance with the requirements of ASME Code Sections III and IX.	
		The ASTM A708 Strauss Test is used for sensitization test of fabricated unstabilized stainless steel.	5.2.3.4
5.3.1	Reactor Vessel Materials - Rev. 1, July 1981	Actual reactor vessel materials will be tested at the time of material procurement. Test requirements are described in CESSAR-DC, Section 5.3.1.5.	5.3.1.5

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title	Comment or Summary Description of Deviation	CESSAR-DC Section
5.4.1.1 Pump Flywheel Integrity (PWR) - Rev. 1, July 1981	A minimum transient critical stress intensity factor, K_{IC}, of at least 100 ksi $\sqrt{in}$ will be employed as the minimum fracture toughness of the flywheel material at the normal operating temperature.	5.4.1.1
	Alternate methods demonstrating compliance of acceptance criteria for fracture toughness of the materials are employed.	5.4.1.1
	The flywheels will be designed to withstand the largest mechanistic pipe breaks size remaining after application of the leak-before-break	
	The highest anticipated overspeed is predicted for the largest break size remaining after application of the leak-before-break	
5.4.7 Residual Heat Removal (RHR) System - Rev. 3, April 1984	Interlocks for RHR suction isolation valves are not diverse.	5.4.7.2 7.6.1.1
	The isolation valve operability and interlock circuits cannot be tested in the RHR operating mode.	5.4.7.4

TABLE 1.8-4

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title	Comment or Summary Description of Deviation	CESSAR-DC Section
6.2.1.1.A PWR Dry Containments, Including Subatmospheric Containments - Rev. 2, July 1981	The containment design pressure criteria for CP stage are not applicable to the System 80+ Standard Design.	6.2.1.1.3
	Analytical results of inadvertent operation of containment heat removal systems exhibit that no special provisions against damage from external pressure conditions are required in the System 80+ Standard Design.	6.2.1.1
6.2.1.2 Subcompartment Analysis - Rev. 2, July 1981	Due to application of leak-before-break, the dynamic effects of pipe ruptures in containment subcompartments is not considered.	6.2.1.2
6.2.1.3 Mass and Energy Release Analysis for Postulated Loss-of-Coolant Accidents - Rev. 1, July 1981	Metal-water reaction energy is not included in the mass/energy source terms since this energy has been shown to have a very small effect on the containment pressure.	6.2.1.3
6.2.2 Containment Heat Removal Systems - Rev. 4, October 1985	The in-containment refueling water storage tank eliminates the switchover to the recirculation mode of operation of the containment spray system.	6.2.2.2 6.5

TABLE 1.8-4

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
6.2.4	Containment Isolation System - Rev. 2, July 1981	The Chapter 15 dose analysis showed the acceptability of 30 second closure times for the purge valves.	
6.4	Control Room Habitability System - Rev. 2, July 1981	Operator wash room and kitchen are located outside the emergency zone.	6.4
6.5.3	Fission Product Control Systems and Structures - Rev. 2, July 1981	The System 80+ analysis assumes more than 50% mixing.	App. 15A
6.6	Inservice Inspection of Class 2 and 3 Components - Rev. 1, July 1981	The ISI program is summarized in CESSAR-DC, Section 6.6, but lists of components to be inspected will be provided as part of the owner/operator's detailed inspection program. Some limits may be imposed on welding area accessibility.	6.6 6.6.2
11.1	Source Terms - Rev. 2, July 1981	Cost-benefit analysis for radioactive waste management systems is defered to the site-specific application. Cost-benefit analysis for radwaste augments used in the calculation of effluent releases to the environment is defered to the site-specific application.	11.1

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
11.2	Liquid Waste Management Systems - Rev. 2, July 1981	Cost-benefit analysis for liquid waste management systems is deferred to the site-specific application due to the site-specific nature of population dose analyses.	11.2.[illegible]
		The plant transients which might occur less frequently than once per fuel cycle are not taken into account for the design of waste collection tanks and waste sample tanks.	11.2.2
11.3	Gaseous Waste Management Systems - Rev. 2, July 1981	Cost-benefit analyses for gaseous waste management systems is deferred to the site-specific application.	11.3.6.5
12.2	Radiation Sources - Rev. 2, July 1981	The shielding analysis will be performed subsequent to component procurement and detailed piping design (layout).	
12.3-12.4	Radiation Protection Design Features - Rev. 2, July 1981	The shielding analysis will be performed subsequent to component procurement and detailed piping layouts.	

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
15.1.5	Steam System Piping Failures Inside and Outside of Containment (PWR) - Rev. 2, July 1981	Fuel rod failures are assumed based on the DNB convolution method.	
		Loss of offsite power subsequent to turbine trip is assumed to occur three seconds after turbine trip.	15.1.5.1 15.1.5.3
		Leak-Before-Break analysis and criteria are applied to the Main Steam Line.	
15.3.3-15.3.4	Reactor Coolant Pump Rotor Seizure and Reactor Coolant Pump Shaft Break - Rev. 2, July 1981	The assumption of coincident turbine trip, loss of offsite power, and coastdown of damaged pumps is not made. Loss of offsite power after turbine trip is assumed to occur 3 seconds after turbine trip.	15.3.3.2 15.3.3.3
15.4.6	Chemical and Volume Control System Malfunction that Results in a Decrease in Boron Concentration in the Reactor Coolant (PWR) - Rev. 1, July 1981	Any single active component failure or single operator error has a negligible adverse impact on the accident consequences.	15.4.6.1
15.6.3	Radiological Consequences of Steam Generator Tube Failure (PWR) - Rev. 2, July 1981	The dose in the exclusion area boundary for the postulated accident with an accident initiated iodine spike and two single failures is calculated.	15.6.3.3 Table 15.6.3-9

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DEVIATIONS FROM THE U.S. NRC STANDARD REVIEW PLAN

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
15.8	Anticipated Transients Without Scram - Rev. 1, July 1981	ATWS events are not within the design basis and, therefore, their analysis are presented as part of the PRA in Appendix B of CESSAR-DC.	App. B
16.0	Technical Specifications - Rev. 1, July 198[illegible]	The System 80+ Technical Specification input will be [illegible] of the NRC/[illegible] group revised [illegible]	16.0

Enclosure II to
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SRP COMPLIANCE COMMENTS

TABLE 1.8-5

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.1.1	Site Location and Description - Rev. 2, July 1981	The System 80+ Standard Design is based on a set of site-related parameters which were selected to envelope most potential nuclear power plant sites in the United States.	2.0 Table 2.0-1 2.1.1
2.1.2	Exclusion Area Authority and Control - Rev. 2, July 1981	No specific parameters on exclusion area authority and control were employed in the evaluation of the System 80+ Standard Design.	2.1.2
2.1.3	Population Distribution - Rev. 2, July 1981	Site-specific SARs will provide information relevant to requirements of the acceptance criteria. No specific parameters were employed in the evaluation of the System 80+ Standard Design.	2.1.3
2.2.1 2.2.2	Identification of Potential Hazards in Site Vicinity - Rev. 2, July 1981	Site-specific SARs will provide data to ensure that siting criteria for the System 80+ Standard Design are met.	2.2.1 2.2.2
2.2.3	Evaluation of Potential Accidents - Rev. 2, July 1981	Site-specific SARs will evaluate the influence of site-specific, offsite potential accidents on the plant design.	2.2.3

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.3.1	Regional Climatology - Rev. 2, July 1981	A set of regional climatology parameters was selected to envelope most potential nuclear power plant sites in the United States.	2.3.1 Table 2.0-1
2.3.2	Local Meteorology - Rev. 2, July 1981	Local meteorological information will be presented in site-specific SARs.	2.3.2 Table 2.0-1 2.3.4 2.3.5
2.3.3	Onsite Meteorological Measurements Programs - Rev. 2, July 1981	Onsite meteorological programs and measurements will be presented in site-specific SARs.	2.3.3
2.3.4	Short-term Dispersion Estimates for Accidental Atmospheric Releases - Rev. 1, July 1981	In lieu of site meteorological data, a specified set of atmospheric conditions is employed to determine the values of short-term diffusion estimates for the System 80+ Standard Design accident analyses.	2.3.4
2.3.5	Long-term Diffusion Estimates - Rev. 2, J ly 1981	In lieu of site meteorological data, conservative atmospheric conditions are specified to determine the values of long-term diffusion estimates.	2.3.5
2.4.1	Hydrologic Description - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4 Table 2.0-1

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.4.2	Floods - Rev. 3, April 1989	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4 Table 2.0-1
2.4.3	Probable Maximum Flood (PMF) on Streams and Rivers - Rev. 3, April 1989	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4 Table 2.0-1
2.4.4	Potential Dam Failures - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.5	Probable Maximum Surge and Seiche Flooding - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.6	Probable Maximum Tsunami Flooding - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.7	Ice Effects - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.8	Cooling Water Canals and Reservoirs - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.4.9	Channel Diversions - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.10	Flooding Protection Requirements - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.11	Cooling Water Supply - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.12	Groundwater - Rev. 2, July 1981	The site-specific SAR will demonstrate that the site parameters specified in the System 80+ Standard Design are met.	2.4
2.4.13	Accidental Releases of Liquid Effluents in Ground and Surface Waters - Rev. 2, July 1981	This is a site-specific issue.	2.4
2.4.14	Technical Specifications and Emergency Operation Requirements - Rev. 2, July 1981	Any corresponding technical specifications would be based on site-specific considerations	2.4
2.5.1	Basic Geologic and Seismic Information - Rev. 2, July 1981	Information will be provided in site-specific SARs to show that the System 80+ envelope is met.	2.5.1

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
2.5.2	Vibratory Ground Motion - Rev. 2	Information will be provided in site-specific SARs to show that the System 80+ envelope is met.	2.5.2.6 Table 2.0-1
2.5.2	Vibratory Ground Motion - Rev. 2 (Continued)	The complete historical record of earthquakes in the site region will be listed in the site-specific SAR	2.5.2.1
2.5.3	Surface Faulting - Rev. 2, July 1981	The site-specific SAR will present an evaluation to demonstrate compliance with the SRP acceptance criteria.	2.5.3
2.5.4	Stability of Subsurface Materials and Foundations - Rev. 2, July 1981	The site-specific SAR will present an evaluation to demonstrate compliance with the SRP acceptance criteria.	2.5.4
2.5.5	Stability of Slopes - Rev. 2, July 1981	The site-specific SAR will present an evaluation for stability of slopes to demonstrate compliance with the SRP acceptance criteria.	2.5.5
3.3.1	Wind Loading - Rev. 2, July 1981	In lieu of site-specific value, the design wind velocity of 130 mph, at the height of 30 feet above nominal ground elevation is used as the most severe wind velocity for a 100 year recurrence interval.	3.3.1.1 Table 2.0-1

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
3.4.1	Flood Protection - Rev. 2, July 1981	Compliance will be based on a site-specific evaluation	3.4.4
3.4.2	Analysis Procedures - Rev. 2, July 1981	A description of analysis procedures will be detailed in site-specific SAR.	3.4.5
3.5.1.5	Site Proximity Missiles (Except Aircraft) - Rev. 1, July 1981	Justification will be provided in the site-specific SAR.	3.5.1.5
3.5.1.6	Aircraft Hazards - Rev. 2, July 1981	Justification will be provided in the site-specific SAR.	3.5.1.6
6.4	Control Room Habitability System - Rev. 2, July 1981	Site-specific requirements are ensured through interface requirements. Toxic gas releases shall be addressed in the site-specific SAR	6.4
9.2.1	Station Service Water System - Rev. 4, June 1985	SSWS pump structure is addressed with site-specific interface requirements.	9.2
9.2.2	Reactor Auxiliary Cooling Water Systems - Rev. 3, June 1986	Component Cooling Water Hx structure is addressed with site-specific interface requirements.	9.2.2
9.2.4	Potable and Sanitary Water Systems - Rev. 2, July 1981	This system is not within the scope of the System 80+ design. Interface requirements are provided.	9.2.4

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
9.2.5	Ultimate Heat Sink - Rev. 2, July 1981	The UHS is not within the System 80+ design. Interface requirements are provided.	9.2.5
		Site-specific SARs will demonstrate compliance with specific requirements of Regulatory Guide 1.27.	9.2.5.2
10.4.5	Condenser Circulating Water System	System is site-specific and is addressed with interface requirements.	10.4.9
12.1	Assuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable - Rev. 2, July 1981	Operational radiation protection programs will be provided in the site-specific SAR.	12.1
12.5	Operational Radiation Protection Program - Rev. 2, July 1981	This information will be provided by the owner/operator.	
13.1.2-13.1.3	Operating Organization - Rev. 2, July 1981	This information will be provided by the owner/operator.	13.1
13.2.1	Reactor Operator Training - Rev. 0, July 1981	This information will be provided by the owner/operator.	13.2
13.2.2	Training for Non-Licensed Plant Staff- Rev. 0, July 1981	This information will be provided by the owner/operator.	13.2

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STANDARD REVIEW PLAN COMPLIANCE COMMENTS

SRP Section/Title		Comment or Summary Description of Deviation	CESSAR-DC Section
13.3	Emergency Planning - Rev. 2, July 1981	This information will be provided in the site-specific SAR.	13.3
13.4	Operational Review - Rev. 2, July 1981	This information will be provided by the owner/operator.	13.4
13.5.1	Administration Procedures - Rev. 0, July 1981	This information will be provided by the owner/operator.	13.5
13.5.2	Operating and Maintenance Procedures - Rev. 1, July 1985	This information will be provided by the owner/operator.	13.5
13.6	Physical Security - Rev. 2, July 1981	This information will be provided by the owner/operator.	13.6
14.2	Initial Plant Test Program - Final Safety Analysis Report - Rev. 2, July 1981	Certain required information will be provided by the owner/operator.	14.2