C.IV.1 Combined License Application Acceptance Review Checklist

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Handout for
September 5, 2007
NRO All-Hands
Meeting on
Acceptance Review

A-1

C.IV.1 Combined License Application Acceptance Review Checklist

The COL application must contain an FSAR that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the SSC of the facility as a whole. The FSAR shall include the following information, at a level sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved by the Commission before issuance of a COL (see 10 CFR 52.79).

The NRC staff will perform a review of a COL application to determine its acceptability for docketing. During its acceptance review of a COL application, the NRC staff will use the following checklists as guides to ensure that the application addresses the technical information required by 10 CFR 52.79 and 52.80. For any items listed below that are not included in the COL application, the applicant should include a request for exemption, in accordance with 10 CFR 52.7. The NRC staff's intent in using these checklists is to ensure that the application submitted for review is complete. The acceptance review focuses on whether there is sufficient information for the staff to perform a complete review. That is, acceptance review confirms that there is no missing information and there are no applicable regulatory requirements that have not been addressed. Upon docketing, the NRC staff will perform a review of the application to determine the adequacy of the information submitted to resolve all safety issues. Sufficient information in the context of acceptance review is not interchangeable with adequate and acceptable information necessary for the staff to make a reasonable assurance finding. Therefore, the NRC staff assumes that completing its review will involve requests for additional information from the COL applicant.

The acceptance review checklist does not include the information in 10 CFR 52.79(e) for a COL applicant that references use of one or more manufactured nuclear power reactors licensed under 10 CFR Part 52, Subpart F.

Technical Information in Final Safety Analysis Report (10 CFR 52.79)

The COL application must include the following technical information required by 10 CFR 52.79:

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
1	The application contains the following information:			
1(i)	The boundaries of the site	Sec. 2.1		
1(ii)	The proposed general location of each facility on the site	Secs. 1.1, 2.1		
1(iii)	The seismic characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated	Sec. 2.5		
1(iii)	The meteorological characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated	Sec. 2.3		

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
1(iii)	The hydrologic characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated	Sec. 2.4		
1(iii)	The geologic characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated	Sec. 2.5		
1(iv)	The location and description of any nearby industrial, military, or transportation facilities and routes	Sec. 2.2		
1(v)	The existing and projected future population profile of the area surrounding the site	Sec. 2.1.3		
1(vi)	A description and safety assessment of the site on which the facility is to be located:			
1(vi)	• The assessment assumes a fission product release[1] from the core into the containment assuming that the facility is operated at the ultimate power level contemplated. [1] The fission product release assumed for this evaluation should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible accidental events. These accidents have generally been assumed to result in substantial meltdown of the core with subsequent release into the containment of appreciable quantities of fission products.	Ch. 15		
1(vi)	• The assessment includes an evaluation and analysis of the postulated fission product release, using the expected demonstrable containment leak rate and any fission product cleanup systems intended to mitigate the consequences of the accidents, together with the applicable site characteristics, including site meteorology, to evaluate the offsite radiological consequences.	Ch. 15		
1(vi)	Site characteristics must comply with Part 100.	Ch. 2		

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
1(vi)	The evaluation concludes that:			
1(vi)(A)	• An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product release, would not receive a radiation dose in excess of 25 rem[1] total effective dose equivalent (TEDE). [1] A whole body dose of 25 rem has been stated to correspond numerically to the once in a lifetime accidental or emergency dose for radiation workers which, according to NCRP recommendations at the time could be disregarded in the determination of their radiation exposure status (see NBS Handbook 69 dated June 5, 1959). However, its use is not intended to imply that this number constitutes an acceptable limit for an emergency dose to the public under accident conditions. Rather, this dose value has been set forth in this section as a reference value, which can be used in the evaluation of plant design features with respect to postulated reactor accidents, to assure that these designs provide assurance of low risk of public exposure to radiation, in the event of an accident.	Ch. 15		
1(vi)(B)	• An individual located at any point on the outer boundary of the LPZ, who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a radiation dose in excess of 25 rem TEDE.	Ch. 15		
2	A description and analysis of the SSCs of the facility, with emphasis upon performance requirements, the bases, with technical justification therefore, upon which these requirements have been established, and the evaluations required to show that the safety functions will be accomplished.	System-related chaps. and/or Ch. 15		
2	It is expected that reactors will reflect through their design, construction, and operation an extremely low probability for accidents that could result in the release of significant quantities of radioactive fission products. The descriptions shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations, and include:			
2	• reactor core	Ch. 4		
2	• RCS	Ch. 5		
2	• I&C systems	Ch. 7		
2	• electrical systems	Ch. 8		
2	• containment system	Sec. 6.2		
2	• other ESF	Ch. 6		
2	• auxiliary systems	Ch. 9		
2	• emergency systems	Ch. 6		
2	• power conversion systems	Ch. 10		
2	• radioactive waste handling systems	Ch. 11		
2	• fuel handling systems	Sec. 9.1		

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
	The following power reactor design characteristics and proposed operation will be taken into consideration by the Commission:			
2(i)	Intended use of the reactor including the proposed maximum power level and the nature and inventory of contained radioactive materials;	Ch. 1 and Ch. 11		
2(ii)	The extent to which generally accepted engineering standards are applied to the design of the reactor;	Ch. 3		
2(iii)	The extent to which the reactor incorporates unique, unusual or enhanced safety features having a significant bearing on the probability or consequences of accidental release of radioactive materials;	Ch. 1		
2(iv)	The safety features that are to be engineered into the facility and those barriers that must be breached as a result of an accident before a release of radioactive material to the environment can occur. Special attention must be directed to plant design features intended to mitigate the radiological consequences of accidents. In performing this assessment, an applicant shall assume a fission product release[1] from the core into the containment assuming that the facility is operated at the ultimate power level contemplated; [1] The fission product release assumed for this evaluation should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible accidental events. These accidents have generally been assumed to result in substantial meltdown of the core with subsequent release into the containment of appreciable quantities of fission products.	Ch. 6		
3	Identify the kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposures within the limits set forth in 10 CFR Part 20 of this chapter:	Ch. 12		
4	The application contains the design of the facility, including:			
4	• the principle design criteria for the facility [see Attachment 1 to this appendix for a tabulated list of Appendix A to 10 CFR Part 50] establishes minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have previously been issued by the Commission and provides guidance to applicants in establishing principal design criteria for other types of nuclear power units	Sec. 3.1		
4	• the design bases and their relation to the principal design criteria	Chaps. 2–12 and 15		
4	• information relative to materials of construction, arrangement, and dimensions, sufficient to provide reasonable assurance that the design will conform to the design bases with adequate margin for safety	Chaps. 3–12		

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
5	An analysis and evaluation of the design and performance of SSC with the objective of assessing the risk to public health and safety resulting from operation of the facility and including determination of the margins of safety during normal operations and transient conditions anticipated during the life of the facility, and the adequacy of SSCs provided for the prevention of accidents and the mitigation of the consequences of accidents	Chaps. 3–12 and 15		
5	Analysis and evaluation of ECCS cooling performance and the need for high-point vents following postulated LOCAs shall be performed in accordance with the requirements of 10 CFR 50.46 and 50.46a	Secs. 5.4.12, 6.2, 6.3		
6	A description and analysis of the fire protection design features for the reactor necessary to comply with 10 CFR Part 50, Appendix A, GDC 3, and 10 CFR 50.48	Sec. 9.5		
7	A description of protection provided against PTS events, including projected values of the reference temperature for reactor vessel beltline materials as defined in 10 CFR 50.60 and 10 CFR 50.61(b)(1) and (b)(2)	Sec. 5.3.2		
8	An analysis and description of the equipment and systems required by 10 CFR 50.44 for combustible gas control	Sec. 6.2.5		
9	The coping analyses, and any design features necessary to address SBO, as described in 10 CFR 50.63	Sec. 8.4		
10	A description of the program, and its implementation, required by 10 CFR 50.49(a) for the environmental qualification of electric equipment important to safety and the list of electric equipment important to safety that is required by 10 CFR 50.49(d)	Sec. 3.11		
11	A description of the program(s), and their implementation, necessary to ensure that the systems and components meet the requirements of the ASME O&M Code of nuclear power plants in accordance with 10 CFR 50.55a	Sec. 3.9		
12	A description of the primary containment leakage rate testing program, and its implementation, necessary to ensure that the containment meets the requirements of Appendix J to 10 CFR Part 50	Sec. 6.2.6		
13	A description of the reactor vessel material surveillance program required by Appendix H to 10 CFR Part 50 and its implementation	Sec. 5.3		
14	A description of the operator training program, and its implementation, necessary to meet the requirements of 10 CFR Part 55	Sec. 13.2		
15	A description of the program, and its implementation, for monitoring the effectiveness of maintenance necessary to meet the requirements of 10 CFR 50.65	Sec. 17.6		
16(i)	Information with respect to the design of equipment to maintain control over radioactive materials in gaseous and liquid effluents produced during normal reactor operations, as described in 10 CFR 50.34a(d)	Ch. 11		

Item	Information Required in COL Application 10 CFR 52.79(a)	FSAR Section	Yes	No
16(ii)	A description of the process and effluent monitoring and sampling program required by Appendix I to 10 CFR Part 50 and its implementation	Sec. 11.5		
17	The application contains the information with respect to compliance with technically relevant positions of the TMI requirements in 10 CFR 50.34(f), with the exception of the combustible gas control requirements of §50.34(f)(1)(xii), (f)(2)(ix), and (f)(3)(v), which have been superceded by 10 CFR 50.44 [See Attachment 2 to this appendix for §50.34(f) requirements checklist]	Sec. 1.9		
18	If the applicant seeks to use risk-informed treatment of SSCs in accordance with 10 CFR 50.69, and if so, contains the information required by 10 CFR 50.69(b)(2)	Ch. 19		
19	Information necessary to demonstrate that the plant complies with the earthquake engineering criteria in 10 CFR Part 50, Appendix S	Sec. 3.7		
20	Proposed technical resolutions of those USI and medium- and high-priority GSI which are identified in the version of NUREG-0933 current on the date up to 6 months before the docket date of the application and which are technically relevant to the design[1] (See Section C.IV.8 of this guide) [1] A certified design addresses the design-related generic issues only. If the COL application references a certified design, the COL application must address the procedural issues.	Sec. 1.9		
21	Emergency plans complying with the requirements of 10 CFR 50.47 and 10 CFR Part 50, Appendix E	Sec. 13.3		
22	All emergency plan certifications that have been obtained from the State and local governmental agencies with emergency planning responsibilities must state that: • the proposed emergency plans are practicable • these agencies are committed to participating in any further development of the plans, including any required field demonstrations • these agencies are committed to executing their responsibilities under the plans in the event of an emergency. If certifications cannot be obtained after sustained, good faith efforts by the applicant, then the application must contain information, including a utility plan, sufficient to show that the proposed plans provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the site.	Sec. 13.3		
23	[Reserved]			