

WordPerfect Document Compare Summary

Original document: P:\RG 1.206 draft\C.IV.1.wpd

Revised document: @PFDesktop\MyComputer\C:\Documents and Settings\dlc3.NRCDOMAIN\Application Data\NRC\ADAMSDesktop\Cache\ML0706300341.wpd

Deletions are shown with the following attributes and color:

~~Strikeout~~, **Blue** RGB(0,0,255).

Deleted text is shown as full text.

Insertions are shown with the following attributes and color:

Double Underline, Redline, **Red** RGB(255,0,0).

Moved blocks are marked in the new location, and only referenced in the old location.

Moved block marks are shown in the following color:

Orange RGB(255,200,0).

The document was marked with 391 Deletions, 428 Insertions, 1 Move.

C.IV.1: Combined License Application Acceptance Review Checklist

The COL application must contain a ~~final safety analysis report~~ FSAR that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the ~~structures, systems, and components~~ SSC of the facility as a whole. ~~The final safety analysis report~~ The FSAR shall include the following information, at a level ~~of information~~ 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 combined license.~~ [Excerpted from proposed 10 CFR of a COL (see 10 CFR 52.79).]

The NRC staff will perform a review of a ~~combined license (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 ~~proposed Title 10, Sections 52.79 and 52.80, of the Code of Federal Regulations (10 CFR 10 CFR 52.79 and 52.80).~~ For any items listed below that are not included in the COL application, the applicant ~~must include~~ should include a request for exemption, in accordance with ~~proposed~~ 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~~ 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~~ 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 staff~~ the NRC staff assumes that completing its review ~~of the application may necessitate~~ will involve requests for additional information from the COL applicant.

The acceptance review checklist does not include the information in ~~proposed~~ 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 ~~proposed~~ 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 technical information: | | | |
| 1(i) | The boundaries of the site | <u>Sec. 2.1</u> | | |
| 1(ii) | The proposed <u>general</u> location of each facility on the site | <u>Secs. 1.1, 2.1</u> | | |
| 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 <u>and with</u> <u>and with</u> sufficient margin for the limited accuracy, quantity, <u>and time</u> <u>and time</u> in which the historical data have been accumulated | <u>Sec. 2.5</u> | | |

| Item | Information Required in COL Application 10 CFR 52.79(a) | FSAR Section | Yes | No |
|--------|--|-------------------|-----|----|
| 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 <u>and surrounding</u> area and with sufficient margin for the limited accuracy, quantity, and time in which the historical data have been accumulated | <u>Sec. 2.3</u> | | |
| 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 <u>and with</u> sufficient margin for the limited accuracy, quantity, and time <u>and time</u> in which the historical data have been accumulated | <u>Sec. 2.4</u> | | |
| 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 <u>and with</u> sufficient margin for the limited accuracy, quantity, and time <u>and time</u> in which the historical data have been accumulated | <u>Sec. 2.5</u> | | |
| 1(iv) | The location and description of any nearby industrial, military, or transportation <u>or transportation</u> facilities and routes | <u>Sec. 2.2</u> | | |
| 1(v) | The existing and projected future population profile of the area surrounding the site | <u>Sec. 2.1.3</u> | | |
| 1(vi) | A description and safety assessment of the site on which the facility is to be located: | | | |
| 1(vi) | <ul style="list-style-type: none"> The assessment assumes a fission product release <u>release</u>¹ from the core <u>the core</u> into the containment assuming that the facility is operated <u>is operated</u> at the ultimate power level contemplated. <p>¹ <u>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.</u></p> | Ch. 15 | | |
| 1(vi) | <ul style="list-style-type: none"> The assessment includes an evaluation and analysis of the postulated <u>the postulated</u> 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 <u>the offsite</u> radiological consequences. | Ch. 15 | | |
| 1(vi) | <u>Site characteristics must comply with Part 100.</u> | <u>Ch. 2</u> | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|---------------------|--|-------------------------------------|------------|-----------|
| <u>1(vi)</u> | The evaluation concludes that: | | | |
| 1(vi) <u>(A)</u> | <ul style="list-style-type: none"> 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<u>rem</u>¹ total effective dose equivalent (TEDE). <p>¹ <u>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.</u></p> | Ch. 15 | | |
| 1(vi) <u>(B)</u> | <ul style="list-style-type: none"> An individual located at any point on the outer boundary of the low-population-zone (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 | The application contains a <u>A</u> description and analysis of the structures, systems, and components [SSCs] <u>the SSCs</u> of the facility, with emphasis upon performance requirements, the bases, with technical justification therefore, upon which these [performance] 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 | The application contains descriptions that are <u>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</u> sufficient to permit understanding of the system <u>of the system</u> designs and their relationship to safety evaluations, and include: | | | |
| 2 | <ul style="list-style-type: none"> reactor core | Ch. 4 | | |
| 2 | <ul style="list-style-type: none"> reactor coolant system<u>RCS</u> | Ch. 5 | | |
| 2 | <ul style="list-style-type: none"> instrumentation and control<u>I&C</u> systems | Ch. 7 | | |
| 2 | <ul style="list-style-type: none"> electrical systems | Ch. 8 | | |
| 2 | <ul style="list-style-type: none"> containment system | <u>Sec.</u> 6.2 | | |
| 2 | <ul style="list-style-type: none"> other engineered safety features<u>ESF</u> | Ch. 6 | | |
| 2 | <ul style="list-style-type: none"> auxiliary systems | Ch. 9 | | |
| 2 | <ul style="list-style-type: none"> emergency systems | Ch. 6 | | |
| 2 | <ul style="list-style-type: none"> power conversion systems | Ch. 10 | | |
| 2 | <ul style="list-style-type: none"> radioactive waste handling systems | Ch. 11 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|---|-------------------------------|------------|-----------|
| 2 | <ul style="list-style-type: none"> • fuel handling systems | <u>Sec. 9.1</u> | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|---------------|---|---|------------|-----------|
| <u>3</u> | The <u>application identifies</u> following power reactor design characteristics and proposed operation will be taken into consideration by the Commission: | | | |
| <u>2(i)</u> | <u>Intended use of the reactor including the proposed maximum power level and the nature and inventory of contained radioactive materials;</u> | <u>Ch. 1</u> <u>and</u> <u>Ch. 11</u> | | |
| <u>2(ii)</u> | <u>The extent to which generally accepted engineering standards are applied to the design of the reactor;</u> | <u>Ch. 3</u> | | |
| <u>2(iii)</u> | <u>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;</u> | <u>Ch. 1</u> | | |
| <u>2(iv)</u> | <u>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 release¹ from the core into the containment assuming that the facility is operated at the ultimate power level contemplated;</u> <u>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.</u> | <u>Ch. 6</u> | | |
| <u>3</u> | <u>Identify</u> 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 <u>of 10 CFR 50.34(a)(1) set forth in 10 CFR Part 20 of this chapter;</u> | Ch. 12 | | |
| 4 | The application contains the design of the facility, including: | | | |
| 4 | <ul style="list-style-type: none"> <u>a discussion of the principle design criteria for the facility and conformance with the General Design Criteria of Appendix A to 10 CFR Part 50 [see Attachment 1 to this appendix for a tabulated list of GDG] 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</u> | <u>Sec. 3.1</u> | | |
| 4 | <ul style="list-style-type: none"> <u>a discussion of the design bases and their relation to the principal design criteria</u> | Chaps. 2-12 and 15 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|---|-------------------------------|------------|-----------|
| 4 | <ul style="list-style-type: none"> 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 | | |
| 5 | The application contains a An analysis and evaluation of the design and performance of structures, systems, and components <u>SSC</u> with the objective of assessing the risk to the 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 <u>and the adequacy</u> of SSCs provided for the prevention of accidents and the mitigation of the consequences of accidents:- | Chaps. 3–12 and 15 | | |
| 5 | The application contains a Analysis and evaluation of [emergency core cooling system (ECCS)] cooling performance and the need for high-point vents following a postulated loss-of-coolant accident <u>[LOCA]</u> <u>LOCAs shall be performed</u> in accordance with the requirements of 10 CFR 50.46 and 50.46a | <u>Secs.</u> 5.4.12, 6.2, 6.3 | | |
| 6 | The application contains a 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:- | <u>Sec.</u> 9.5.4 | | |
| 7 | The application contains a A description of protection provided against pressurized thermal shock <u>PTS</u> 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):- | <u>Sec.</u> 5.3.2 | | |
| 8 | The application contains the An analysis and descriptions of the equipment and systems required by 10 CFR 50.44 for combustible gas control | <u>Sec.</u> 6.2.5 | | |
| 9 | The application contains the coping analyses required , and any necessary design features necessary to address station blackout <u>SBO</u> , as described in 10 CFR 50.63 | <u>Sec.</u> 8.4 | | |
| 10 | The application contains a A description of the program, and its implementation , required by 10 CFR 50.49(a) for the environmental qualification of electrical equipment important to safety and the list of electrical equipment important to safety that is required by 10 CFR 50.49(d):- | <u>Sec.</u> 3.11 | | |
| 11 | The application contains a A description of the program(s), and their implementation , necessary to ensure that the systems and components meet the requirements of the [American Society of Mechanical Engineers (ASME)] Boiler and Pressure Vessel Code <u>ASME O&M Code of nuclear power plants</u> in accordance with 10 CFR 50.55a | <u>Sec.</u> 3.9 | | |
| 12 | The application contains a 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:- | <u>Sec.</u> 6.2.6 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|---------------|---|-------------------------------|------------|-----------|
| 13 | The application contains a description of the reactor vessel material surveillance program required by Appendix H to 10 CFR Part 50- <u>and its implementation</u> | <u>Sec.</u> 5.3 | | |
| 14 | The application contains a description of the operator training program, <u>and its implementation</u> , necessary to meet the requirements of 10 CFR Part 55 | <u>Sec.</u> 13.2 | | |
| 15 | The application contains a description of the program, <u>and its implementation</u> , for monitoring the effectiveness of maintenance necessary to meet the requirements of 10 CFR 50.65- | <u>Sec.</u> 17.6 | | |
| 16(i) | The application contains the i nformation 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 | | |
| <u>16(ii)</u> | <u>A description of the process and effluent monitoring and sampling program required by Appendix I to 10 CFR Part 50 and its implementation</u> | <u>Sec.</u> 11.5 | | |
| 17 | The application contains the information with respect to compliance with technically relevant positions of the Three Mile Island [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 <u>checklist</u>] | <u>Sec.</u> } <u>1.9</u> | | |
| 18 | The application contains a discussion on whether if the applicant seeks to use risk-informed treatment of SSCs in accordance with <u>10 CFR 50.69, and if so, contains the</u> information required by 10 CFR 50.69(b)(2) | <u>Ch.</u> TBD <u>19</u> | | |
| 19 | The application contains i nformation necessary to demonstrate that the SSCs important to safety comply <u>plant complies</u> with <u>the</u> earthquake engineering criteria in 10 CFR Part- 50, Appendix S | <u>Sec.</u> 3.7 | | |
| 20 | The application contains p roposed technical resolutions to of those unresolved safety issues <u>USI</u> and medium- and high-priority <u>generic safety issues that</u> <u>GSI which</u> are identified in the version of NUREG-0933 current on the date <u>up to 6 months prior to</u> <u>before the docket date of the</u> application <u>submission</u> and <u>that</u> <u>which</u> are technically relevant to the <u>design.*</u> <u>design</u> ¹ (See DC-1145 , Section C.IV.8- <u>of this guide</u>) ¹ A certified design addresses the design-related generic issues only. If the COL application <u>incorporates by references</u> a certified design, the COL application must address the procedural issues. | <u>Sec.</u> 1.9 | | |
| 21 | The application contains e mergency plans complying with the requirements of 10 CFR 50.47 and 10- <u>CFR Part 50, Appendix E</u> | <u>Sec.</u> 13.3 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|---|--------------------------------------|------------|-----------|
| 22 | <p>The application contains aAll emergency plan certifications that have been obtained from the State and local governmental agencies with emergency planning responsibilities and<u>must</u> state that:</p> <ul style="list-style-type: none"> • 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. <p>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<u>the proposed</u> plans provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological<u>a radiological</u> emergency at the site.</p> | <u>Sec.</u> 13.3 | | |
| 23 | <p>Text Was Moved From Here: † TBD<u>[Reserved]</u></p> | | | |
| 24 | <p>If the application is for a nuclear power reactor design which differs significantly from the light-water reactor<u>LWR</u> designs that were licensed before 1997 or use simplified, inherent, passive, or other innovative means to accomplish their safety functions, the application must describe how the design meets the requirements in §50.43(e) (i.e., demonstration by testing, analysis, and/or prototype).</p> | TBD <u>Ch</u> <u>1</u> | | |
| 25 | <p>The application contains aA description of the quality assurance<u>QA</u> program to be applied to the design, and to be applied to the fabrication, construction, and testing<u>and testing</u>, of structures, systems, and components<u>the SSC</u> of the facility. <u>Appendix B to 10 CFR part 50 sets forth the requirements for QA programs for nuclear power plants.</u> The description of the quality assurance<u>QA</u> program for a nuclear power plant shall<u>must</u> include a discussion of how the applicable requirements of Appendix B to 10 CFR Part 50 have been and will be satisfied, <u>including a discussion of how the QA program will be implemented.</u></p> | Ch. 17 | | |
| 26 | <p>The application contains a description of the<u>applicant's</u> organizational structure, allocations or responsibilities and authorities, and personnel<u>and personnel</u> qualifications requirements for operation.</p> | <u>Secs.</u> 13.1, 13.2 | | |
| 27 | <p>The application contains mManagerial and administrative controls to be used to assure safe operation. <u>Appendix B to 10 CFR Part 50 sets forth the requirements for these controls for nuclear power plants.</u> The information on the controls to be used for a nuclear power plant should<u>shall</u> include a discussion of how the applicable requirements of Appendix B to 10-<u>CFR Part 50</u> will be satisfied.</p> | <u>Sec.</u> 13.5, Ch. 17 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|--|--|------------|-----------|
| 28 | The application contains p Plans for preoperational testing and initial operations | <u>Sec.</u> <u>14.2</u> | | |
| 29(i) | The application contains p Plans for conduct of normal operations, including maintenance, surveillance, and periodic testing of structures, systems, and components <u>of SSC</u> | <u>Sec.</u> <u>13.5</u> | | |
| 29(ii) | <u>Plans for coping with emergencies, other than the plans required by § 52.79(a)(21)</u> | <u>Sec.</u> <u>13.5</u> | | |
| 30 | The application contains p Proposed technical specifications <u>TS</u> prepared in accordance with the requirements of §50 <u>10 CFR 50.36</u> and §50 <u>10 CFR 50.36a</u> : | Ch. 16 | | |
| 31 | For nuclear power plants to be operated on multi-unit sites, the application contains an evaluation of the potential hazards to the structures, systems, and components <u>SSC</u> important to safety of operating units resulting from construction activities, as well as a description of the managerial and administrative controls to be used to provide assurance that the limiting conditions for operation are not exceeded as a result of construction activities at the multi-unit sites: | FBD <u>Sec</u> <u>.1.10*</u> | | |
| 32 | The application contains the technical qualifications of the applicant to engage in the proposed activities | <u>Sec.</u> 1.4 | | |
| 33 | The application contains a <u>A</u> description of the training program required by 10 CFR 50.120 | <u>Sec.</u> <u>13.2</u> | | |
| 34 | The application contains a <u>A</u> description and plans for implementation of an operator operator <u>operator</u> requalification program. The information on the operator <u>operator</u> requalification program should include <u>must as a discussion of how</u> minimum, meet the requirements offor those programs contained in <u>10 CFR 55.59</u> will be satisfied . | <u>Sec.</u> <u>13.2</u> | | |
| 35(i) | The application contains a <u>A</u> physical security plan, describing how the applicant will meet the requirements of 10 CFR Part 73 (and 10 CFR Part 11, if applicable, including the identification and description of jobs as required by §11.11(a), at the proposed facility). The plan must list tests, inspections, audits, and other means to be used to demonstrate compliance with the requirements of 10 CFR Parts 11 and 73, if applicable. | <u>Sec.</u> <u>13.6</u> | | |

* Construction activities also addressed in appropriate licensing basis documents for operating unit(s)

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|---------------|--|-------------------------------|------------|-----------|
| <u>35(ii)</u> | <u>A description of the implementation of the physical security plan</u> | <u>Sec.</u> 13.6 | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|----------------|--|-------------------------------------|------------|-----------|
| 36(i) | <p>The application contains a safeguards contingency plan in accordance with the criteria set forth in Appendix C to 10 CFR Part 73. The safeguards contingency plan shall include plans for dealing with threats, thefts, and radiological sabotage, as defined in 10 CFR Part 73, relating to the special nuclear material and nuclear facilities licensed under 10 CFR Part 50 or 52 and in the applicant's possession and control. Each application for this type of license shall include the information contained in the applicant's safeguards contingency plan.¹ (Implementing procedures required for this plan need not be included in the application. <u>submitted for approval.</u>)</p> <p>¹ <u>A physical security plan that contains all the information required in both § 73.55 of this chapter and appendix C to 10 CFR part 73 satisfies the requirement for a contingency plan.</u></p> | 13.6 <u>Sec. 13.6</u> | | |
| <u>36(ii)</u> | <u>A training and qualification plan in accordance with the criteria set forth in Appendix B to 10 CFR Part 73</u> | <u>Sec. 13.6</u> | | |
| <u>36(iii)</u> | <u>A description of the implementation of the safeguards contingency plan and the training and qualification plan</u> | <u>Sec. 13.6</u> | | |
| <u>36(iv)</u> | <p>The application contains provisions for protecting the <u>Each applicant who prepares a physical security plan, a</u> safeguards contingency plans, or a guard qualification and training plan, <u>shall protect the plans</u> and other <u>related</u> Safeguards † information against unauthorized disclosure in accordance with the requirements of 10 CFR 73.21, as appropriate.</p> | <u>Sec. 13.6</u> | | |
| 37 | <p>The application contains information which <u>necessary to</u> demonstrates how operating experience insights from generic letters and bulletins issued up to 6 months before the docket date of the application, or comparable international operating experience, has ve <u>been</u> incorporated into the plant design. * (See DG-1145, Section C.IV.8.)</p> <p>* See note for Item 20.</p> | <u>Sec. 1.9</u> ^{**} | | |
| 38 | <p>The application contains <u>For LWR designs,</u> a description and analysis of design features for the prevention and mitigation of severe accidents (core-melt accidents), including e.g., challenges to containment integrity caused by core-concrete interaction, steam explosion, high-pressure core melt ejection, hydrogen detonation <u>combustion</u>, and containment bypass.* <u>bypass</u>¹</p> <p>*¹ See note for Item 20.</p> | Ch. 19 | | |
| 39 | <p>The application contains the earliest and latest dates for completion of the construction. <u>A description of the radiation protection program required by 10 CFR 20.1101 and its implementation</u></p> | FBD <u>Ch. 12</u> | | |
| 40 | RESERVED <u>A description of the fire protection program required by 10 CFR 50.48 and its implementation</u> | <u>Sec. 9.5</u> | | |

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(a)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|---|--|------------|-----------|
| 41 | The application contains <u>For applications for light-water-cooled nuclear power plant combined licenses,</u> an evaluation of the facility against the Standard Review Plan (SRP) <u>SRP revision</u> in effect 6 months before the docket date of the application. The evaluation required by this section shall include an identification and description of all differences in design <u>in design</u> features, analytical techniques, and procedural measures proposed for a facility and those corresponding features, techniques, and measures given in the SRP acceptance criteria. Where a difference exists, the evaluation shall discuss how the proposed alternative provides an acceptable method of complying with the Commission's regulations, or portions thereof, that underlie the corresponding SRP acceptance criteria. The SRP was issued to establish criteria that the NRC staff intends to use in evaluating whether an applicant/licensee meets the Commission's regulations. The SRP is not a substitute for the regulations, and compliance is not a requirement. | <u>Sec.</u> <u>1.9**</u> | | |
| 42 | The application contains i information demonstrating how the applicant will comply with requirements for reduction of risk from anticipated transient without scram (ATWS) events in §50 <u>10 CFR 50.62</u> | <u>Secs.</u> <u>4.2,</u> <u>15.8</u> | | |
| 43 | The application contains i information demonstrating how the applicant will comply with requirements for criticality accidents in §50 <u>10 CFR 50.68</u> | <u>Sec. 9.1</u> | | |
| <u>44</u> | <u>A description of the fitness-for-duty program required by 10 CFR Part 26 and its implementation</u> | <u>Sec. 13.7</u> | | |
| <u>45</u> | <u>The information required by 10 CFR 20.1406</u> | <u>Chaps 11</u> <u>and 12</u> | | |
| <u>46</u> | <u>A description of the plant-specific PRA and its results</u> | <u>Ch. 15</u> <u>9</u> | | |

** COL applicants may chose to incorporate by reference topical reports or separate reports that address these items.

For a COL Application That References an Early Site Permit (ESP)

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(b)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|--|---|------------|-----------|
| 1 | The application contains <u>FSAR need not contain information or analyses submitted to the Commission in connection with the early site permit, provided, however, that the FSAR must either include or incorporate by reference the ESP site safety analysis report and must contain, in addition to the information and analyses otherwise required,</u> information sufficient to demonstrate that the design of the facility falls within the site <u>characteristics and</u> design parameters specified in the ESP. | 1.8 <u>Ch</u> <u>Sec.</u> <u>2.0</u> | | |
| 2 | If the final safety analysis report <u>FSAR</u> does not demonstrate that the design of the facility falls within the site <u>characteristics and</u> design parameters: Then <u>the application contains shall include</u> a request for a variance that complies with the requirements of §52 <u>10 CFR 52.39</u> and §52 <u>10 CFR 52.93</u> . | Letter* | | |

| | | | | |
|---|---|-----------------------------|--|--|
| 3 | The application contains information in the final safety analysis report that demonstrates FSAR must demonstrate that all terms and conditions that have been included in the ESP other than those imposed under § 50.36b, will be satisfied by the date of issuance of the combined license of the COL. <u>Any terms or conditions of the ESP that could not be met by the time of issuance of the COL, must be set forth as terms or conditions of the COL.</u> | TBD <u>Ch. 1</u> | | |
| 4 | If the ESP approves complete and integrated emergency plans, or major features of emergency plans, the application contains information in the final safety analysis report that includes then the FSAR must include any new or additional information that updates and corrects the information that was provided under §52.10 CFR 52.17(b), and discusses whether the new or additional information materially changes the bases for compliance for compliance with the applicable requirements. | <u>Sec. 13.3</u> | | |
| 4 | If the proposed facility emergency plans incorporate existing emergency plans or major features of emergency plans, the application identifies The application must identify changes to the emergency plans or major features of emergency plans that have been incorporated into the proposed facility emergency plans and that constitute a decrease or would constitute a decrease in effectiveness under §50.54(q). | <u>Sec. 13.3</u> | | |
| 5 | The application does not need to contain new certifications meeting the requirements of §52.79(a)(22) if complete and integrated emergency plans are approved as part of the ESP, new certifications meeting the requirements of paragraph (a)(22) of this section are not required. | <u>Sec. 13.3</u> | | |

* Requests for variances may be included in the letter transmitting the COL application to the NRC for acceptance and review.

For a COL Application That References a Standard Design Approval

| Item | Information Required in COL Application 10 CFR 52.79(c) | FSAR Section | Yes | No |
|-----------|--|-------------------------------------|-----|----|
| 1 | The final safety analysis report (FSAR) need not contain information or analyses submitted to the Commission in connection with the design approval. The application contains, provided, however, that the FSAR must either include or incorporate by reference the standard design approval FSAR and must contain, in addition to the information and analyses otherwise required, information sufficient to demonstrate that the characteristics of the site fall within the site parameters specified in the design approval. | 1-8; <u>Ch. Sec. 2.0</u> | | |
| <u>21</u> | The application demonstrates in the FSAR that the interface requirements established In addition, the plant-specific PRA information must use the PRA information for the design under 10-CFR 52.137 have been met approval and must be updated to account for site-specific design information and any design changes or departures. | <u>Ch. 1-89</u> | | |
| <u>32</u> | The application demonstrates in the FSAR FSAR must demonstrate that all terms and conditions that have been included in the final design approval will be satisfied by the date of issuance of the combined license COL. | TBD <u>Ch. 1</u> | | |

For a COL Application That References a Standard Design Certification

| Item | Information Required in COL Application 10 CFR 52.79(d) | FSAR Section | Yes | No |
|------|--|--------------|-----|----|
|------|--|--------------|-----|----|

| | | | | |
|---|--|-----------------|--|--|
| 1 | The final safety analysis report <u>FSAR</u> need not contain information or analyses submitted to the Commission in connection with the design certification. The application contains <u>provided, however, that the FSAR must either include or incorporate by reference the standard design certification FSAR and must contain</u> , in addition to the information and analyses otherwise required, information sufficient to demonstrate that the characteristics of the site <u>the site characteristics</u> fall within the site parameters specified in the design certification. | <u>Sec. 2.0</u> | | |
| 1 | <u>In addition, the plant-specific PRA information must use the PRA information for the design certification and must be updated to account for site-specific design information and any design changes or departures.</u> 8; | <u>Ch. 219</u> | | |
| 2 | The application demonstrates in the final safety analysis report <u>FSAR must demonstrate</u> that the interface requirements established for the design under 10 CFR 52.47 have been met. | <u>Sec. 1.8</u> | | |
| 3 | The application demonstrates in the final safety analysis report <u>FSAR must demonstrate</u> that all requirements and restrictions set forth in the referenced design certification rule <u>other than those imposed under §50.36b, must be satisfied by the date of issuance of the COL. Any requirements and restrictions set forth in the referenced design certification rule that could not be satisfied by the time of issuance of the COL, must be set forth as terms or conditions of the COL.</u> | <u>Ch. 1</u> | | |

For a COL Application That References the use of one or more manufactured nuclear power reactors licensed under subpart F of this part

| <u>Item</u> | <u>Information Required in COL Application</u> <u>10 CFR 52.79(e)</u> | <u>FSAR</u> <u>Section</u> | <u>Yes</u> | <u>No</u> |
|-------------|--|-------------------------------|------------|-----------|
| <u>1</u> | <u>The FSAR need not contain information or analyses submitted to the Commission in connection with the manufacturing license, provided, however, that the FSAR must either include or incorporate by reference the manufacturing license FSAR and must contain, in addition to the information and analyses otherwise required, information sufficient to demonstrate that the site characteristics fall within the site parameters specified in the manufacturing license.</u> | <u>Sec. 2.0</u> | | |
| <u>1</u> | <u>In addition, the plant-specific PRA information must use the PRA information for the manufactured reactor and must be updated to account for site-specific design information and any design changes or departures.</u> | <u>Ch. 19</u> | | |
| <u>2</u> | <u>The FSAR must demonstrate that the interface requirements established for the design have been met.</u> | <u>Sec. 1.8</u> | | |
| <u>3</u> | <u>The FSAR must demonstrate that all terms and conditions that have been included in the manufacturing license, other than those imposed under § 50.36b, will be satisfied by the date of issuance of the combined license of the COL. Any terms or conditions of the manufacturing license that could not be met by the time of issuance of the COL, must be set forth as terms or conditions of the COL.</u> | TBD <u>Ch. 1</u> | | |

Additional Technical Information (10 CFR 52.80)

The COL application must include the following additional technical information per 10 CFR 52.80:

| Item | Information Required in COL Application <u>10 CFR 52.80</u> | FSAR Section | Yes | No |
|--|--|-------------------------|-----|----|
| <p>The application contains a plant-specific probabilistic risk assessment (PRA). If the application references a standard design certification or standard design approval, or if the application proposes to use a nuclear reactor or manufactured</p> | <p>The application contains the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations-</p> | <p><u>Sec.</u> 14.3</p> | | |

| Item | Information Required in COL Application <u>10 CFR 52.80</u> | FSAR Section | Yes | No |
|--------------|---|-------------------|-----|----|
| <u>2(a)1</u> | If the COL application references an early site permit with [inspection, test, analysis, and acceptance criteria (ITAAC)] , the early site permit ITAAC ITAAC, the <u>ESP ITAAC must</u> apply to those aspects of the COL which are approved in the ESP. | <u>Sec.</u> 14.3 | | |
| <u>(a)2</u> | If the COL application references a standard design certification, the ITAAC contained in the certified design applies <u>must apply</u> to those portions of the facility design which are approved in the design certification. | <u>Sec.</u> 14.3 | | |
| <u>2(a)3</u> | If the COL application references an ESP with ITAAC or a standard design certification or both, the application may include a notification that a required inspection, test, or analysis in the ITAAC has been successfully completed and that the corresponding acceptance criterion has been met. The <i>Federal Register</i> notification required by §52.85 must indicate that the application includes this notification. | | | |
| <u>3b</u> | The application contains a <u>A</u> complete environmental report as required by 10 CFR 51.50(c). TBD | | | |
| <u>c</u> | Text Moved Here: 1 If the applicant wishes to be able to perform the activities at the site allowed by 10 CFR 50.10(e) before issuance of the combined license <u>the COL</u> , the applicant must identify and describe the activities that are requested and propose a plan for redress of the site in the event that the activities are performed and either construction is abandoned or the combined license <u>COL</u> is revoked. The application must demonstrate that there is reasonable assurance that redress carried out under the plan will achieve an environmentally stable and aesthetically acceptable site suitable for whatever non-nuclear use may conform with local zoning laws. | End Of Moved Text | | |

Administrative Requirements

The COL application meets the following administrative requirements:

| Item | Requirements | Yes | No |
|------------------------------|---|-----|----|
| 52.7 <u>5</u> | The combined license <u>COL</u> application complies with the relevant sections of 10 CFR 52.3 and <u>10 CFR 50.30 of this chapter</u> . | | |
| 52.3 | <u>(b)(2)</u> The application is addressed to the NRC's Document Control Desk, with a copy sent to the appropriate Regional Office, and a copy to the appropriate NRC Resident Inspector, if one has been assigned to the site of the facility [10 CFR 52.3(b)(2)] . | | |
| <u>52.3</u> | <u>(b)(2)</u> If the application is on paper, the submission must be the signed original [10 CFR 52.3(b)(2)] . | | |
| 450.3 <u>0</u> | The combined license <u>COL</u> application is submitted under oath or affirmation [10 CFR 50.30(b)]. | | |

| Item | Requirements | Yes | No |
|---|---|-----|----|
| 5Per 10 CFR 52.77 ,the comb ined licens e | <u>The</u> application <u>must</u> contains all <u>of the</u> information required by 10 CFR <u>10 CFR</u> 50.33 . <u>.</u> | | |
| <u>550.3</u> <u>3</u> | (a) Name of applicant ; | | |
| <u>550.3</u> <u>3</u> | (b) Address of applicant ; | | |
| <u>550.3</u> <u>3</u> | (c) Description of business or occupation of applicant ; | | |
| <u>550.3</u> <u>3</u> | (d)(1) If applicant is an individual, citizenship is provided in the application. | | |
| <u>550.3</u> <u>3</u> | (d)(2) If applicant is a partnership, the name, citizenship, and address of each partner and the principal location of where the partnership does business is provided in the application. | | |
| <u>550.3</u> <u>3</u> | (d)(3) If applicant is a corporation or an unincorporated association, the application includes: <ul style="list-style-type: none"> • the state where it is incorporated or organized and the principal location where it does business; • the names, addresses, and citizenship of its directors and principal officers; • whether it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, and, if so, details are provided in the application; | | |
| <u>550.3</u> <u>3</u> | (d)(4) If the applicant is acting as an agent or representative of another person in filing the application, the application identifies <u>identify</u> the principal and furnishes the information <u>furnish information</u> required by paragraph <u>10 CFR 50.33</u> (d) with respect to this <u>such</u> principal. | | |
| <u>550.3</u> <u>3</u> | (e) The application provides the class of license applied for, the use to which the facility will be put, the period of time for which the license is sought, and a list of other licenses, except operator's licenses, issued or applied for in connection with the proposed facility ; | | |

| Item | Requirements | Yes | No |
|--------------------------|---|-----|----|
| <u>550.3</u> <u>3</u> | <p>(f)(1,2,3) If the application provides <u>is for a construction permit, the applicant shall submit</u> information that demonstrates that the applicant <u>the applicant</u> possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs; and <u>related fuel cycle costs, and estimated operation costs for the period of the license.</u> The application contains <u>applicant shall submit</u> estimates of the total construction costs of the facility; and <u>related fuel cycle costs, and shall indicate the source(s) of funds to cover these costs. If the application is for an operating license, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operation costs for the period of the license. The applicant shall submit</u> estimates for total annual operating costs for each of the first 5 years <u>five years of operation</u> of the facility. The application <u>applicant</u> shall also indicate the source(s) of funds <u>of funds</u> to cover these costs. <u>An applicant seeking to renew or extend the term of an operating license for a power reactor need not submit the financial information that is required in an application for an initial license. Applicants to renew or extend the term of an operating license for a nonpower reactor shall include the financial information that is required in an application for an initial license.</u></p> | | |
| <u>550.3</u> <u>3</u> | <p>(f)(4) If the applicant is a newly-formed <u>application is for a combined license under Subpart C of Part 52 of this chapter, the applicant shall submit the information described in paragraphs (f)(1) and (f)(2) of this section.</u></p> | | |
| <u>50.33</u> | <p>(f)(4) Each application for a construction permit, operating license, or COL submitted by a newly-formed <u>entity organized for the primary purpose of constructing and/or operating a facility, the application must also</u> include information showing:</p> <ul style="list-style-type: none"> • the legal and financial relationships it has or proposes to have with its stockholders or owners; • the stockholders' or owners' financial ability to meet any contractual obligation to the entity which they have incurred or proposed to incur; • any other information considered necessary by the Commission to enable it to determine the applicant's financial qualification; | | |
| <u>550.3</u> <u>3</u> | <p>(f)(5) If required by <u>The Commission, the application submitted by</u> may request <u>an established entity or newly-formed or newly-formed</u> entity contains <u>to submit</u> additional or more detailed information respecting its financial arrangements and status of funds; including if the Commission considers this information appropriate. This may include <u>information regarding the licensee's ability of the licensee to continue to the conduct of the activities authorized by the license and to decommission and to decommission</u> the facility;</p> | | |

| Item | Requirements | Yes | No |
|--------------------------|--|-----|----|
| <u>550.3</u> <u>3</u> | <p>(g) The application contains the<u>If the application is for an operating license or COL for a nuclear power reactor, or if the application is for an ESP and contains plans for coping with emergencies under § 52.17(b)(2)(ii) of this chapter, the applicant shall submit</u> radiological emergency response plans of State<u>of State</u> and local governmental entities in the United States that are wholly or partially<u>or partially</u> within the plume exposure pathway emergency planning zone (EPZ),¹ as well as the plans of State<u>of State</u> governments wholly or partially within the ingestion pathway EPZ.² <u>If the application is for an ESP that, under 10 CFR 52.17(b)(2)(i), proposes major features of the emergency plans describing the EPZs, then the descriptions of the EPZs must meet the requirements of this paragraph. Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway include</u>shall focus on such actions as are appropriate to protect<u>to protect</u> the food ingestion pathway.</p> <p>¹ <u>EPZs are discussed in NUREG-0396, EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978.</u></p> <p>² <u>If the State and local emergency response plans have been previously provided to the NRC for inclusion in the facility docket, the applicant need only provide the appropriate reference to meet this requirement.</u></p> | | |
| <u>550.3</u> <u>3</u> | <p>(h) The application provides <u>If the applicant, other than an applicant for a COL, proposes to construct or alter a production or utilization facility, the application shall state the earliest and latest dates for completion of construction of the construction of the facility alteration.</u></p> | | |
| <u>550.3</u> <u>3</u> | <p>(i) The application contains<u>If the proposed activity is the generation and distribution of electric energy under a class 103 license,</u> a list of the names and addresses of such regulatory agencies as may have jurisdiction over the rates and services incident to the proposed activity, and a list of trade and news publications which circulate in the area where the proposed activity will be conducted and which<u>and which</u> are considered appropriate to give reasonable notice of the application<u>the application</u> to those municipalities, private utilities, public bodies, and cooperatives<u>and cooperatives</u>, which might have a potential interest in the facility.</p> | | |
| <u>550.3</u> <u>3</u> | <p>(j) If<u>the application is</u>contains <u>Restricted Data or other defense information, it shall be prepared in such a manner that any</u>all <u>Restricted Data or other</u>and other defense information is<u>are</u> separated from the unclassified information.</p> | | |
| <u>550.3</u> <u>3</u> | <p>(k)(1) The application contains information.<u>For an application for an operating license or COL for a production or utilization facility, information</u> in the form of a report, as described in §5010<u>10 CFR 50.75</u>, indicating how reasonable assurance will be provided that funds will be available to decommission the facility.</p> | | |

Attachments

Attachment 1. Appendix A to 10 CFR Part 50, “General Design Criteria for Nuclear Power Plants”

General Design Criteria for Nuclear Power Plants Yes/No I. Overall Requirements: 1 Quality Standards and Records 2 Design Bases for Protection Against Natural Phenomena 3 Fire Protection 4 Environmental and Dynamic Effects Design Bases 5 Sharing of Structures, Systems, and Components II. Protection by Multiple Fission Product Barriers: 10 Reactor Design 11 Reactor Inherent Protection 12 Suppression of Reactor Power Oscillations 13 Instrumentation and Control 14 Reactor Coolant Pressure Boundary 15 Reactor Coolant System Design 16 Containment Design 17 Electric Power Systems 18 Inspection and Testing of Electric Power Systems 19 Control Room III. Protection and Reactivity Control Systems: 20 Protection System Functions 21 Protection System Reliability and Testability 22 Protection System Independence 23 Protection System Failure Modes 24 Separation of Protection and Control Systems 25 Protection System Requirements for Reactivity Control Malfunctions 26 Reactivity Control System Redundancy and Capability 27 Combined Reactivity Control Systems Capability 28 Reactivity Limits 29 Protection Against Anticipated Operational Occurrences IV. Fluid Systems: 30 Quality of Reactor Coolant Pressure Boundary 31 Fracture Prevention of Reactor Coolant Pressure Boundary 32 Inspection of Reactor Coolant Pressure Boundary 33 Reactor Coolant Makeup 34 Residual Heat Removal 35 Emergency Core Cooling 36 Inspection of Emergency Core Cooling System 37 Testing of Emergency Core Cooling System 38 Containment Heat Removal 39 Inspection of Containment Heat Removal System 40 Testing of Containment Heat Removal System 41 Containment Atmosphere Cleanup 42 Inspection of Containment Atmosphere Cleanup Systems 43 Testing of Containment Atmosphere Cleanup Systems 44 Cooling Water 45 Inspection of Cooling Water System 46 Testing of Cooling Water System V. Reactor Containment: 50 Containment Design Basis 51 Fracture Prevention of Containment Pressure Boundary 52 Capability for Containment Leakage Rate Testing 53 Provisions for Containment Testing and Inspection 54 Systems Penetrating Containment 55 Reactor Coolant Pressure Boundary Penetrating Containment 56 Primary Containment Isolation 57 Closed Systems Isolation Valves VI. Fuel and Radioactivity Control: 60 Control of Releases of Radioactive Materials to the Environment 61 Fuel Storage and Handling and Radioactivity Control 62 Prevention of Criticality in Fuel Storage and Handling 63 Monitoring Fuel and Waste Storage 64 Monitoring Radioactivity Releases

Attachment 2. 10 CFR 50.34(f), “Additional TMI-Related Requirements”

(f) Additional TMI-related requirements. Each applicant for a design certification, design approval, combined license, or manufacturing license under Part 52 of this chapter shall demonstrate Checklist

The application contains the information with respect to compliance with the technically relevant portions of the requirements of the TMI requirements in (f)(1) through (3) of this section. ~~[Excerpted from proposed 10 CFR Part 52.]~~ 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.

| 50.34(f) Item | Requirement | Action Plan Item* | N/A | Yes | No |
|--|---|-------------------------------|-----|-----|----|
| (1) To satisfy the following requirements, the application shall provide sufficient information to describe the nature of the studies, how they are to be conducted, estimated submittal dates, and a program to ensure that the results of such these studies are factored into the final design of the facility. For licensees identified in the introduction to paragraph (f) of this section, all studies shall be completed no later than 2 years following issuance of the construction permit or manufacturing license. For all other applicants, the studies must be submitted as part of the final safety analysis report the FSAR. | | | | | |
| (1)(i) | Perform a plant/site-specific probabilistic risk assessment (PRA) , the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant. | II.B.8 | | | |
| (1)(ii) | Perform an evaluation of the proposed auxiliary feedwater system (AFWS), to include (PWRs only): | II.E.1.1 | | | |
| | (A) A simplified AFWS reliability analysis using event-tree and fault-tree logic techniques: | | | | |
| | (B) A design review of AFWS: | | | | |
| | (C) An evaluation of AFWS flow design bases and criteria: | | | | |
| (1)(iii) | Perform an evaluation of the potential for and impact of reactor coolant pump seal damage following small-break loss-of-coolant accident (LOCA) with loss of offsite power <u>LOOP</u> . If damage cannot be precluded, provide an analysis of the limiting small-break loss-of-coolant accident <u>LOCA</u> with subsequent reactor coolant pump seal damage. | II.K.2.16 and II.K.3.25 | | | |
| (1)(iv) | Perform an analysis of the probability of a small-break loss-of-coolant accident (LOCA) caused by a stuck-open power-operated relief valve (PORV). If this probability is a significant contributor to the probability of small-break LOCAs from all causes, provide a description and evaluation of the effect on small-break LOCA probability of an automatic PORV isolation system that would operate when the reactor coolant system <u>RCS</u> pressure falls after the PORV has opened. (PWRs only) | II.K.3.2 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for information only.

| <u>50.34(f)</u> <u>Item</u> | <u>Requirement</u> | <u>Action Plan</u> <u>Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|--------------------------------|--|------------------------------------|------------|------------|-----------|
| (1)(v) | Perform an evaluation of the safety effectiveness of providing for separation of high-pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) system initiation levels so that the RCIC system initiates at a higher water level than the HPCI system, and <u>of</u> providing that both systems restart on low water level. (For plants with high-pressure core spray [HPCS] systems in lieu of high-pressure coolant injection <u>HPCI</u> systems, substitute the words, “high-pressure core spray” for “high-pressure coolant injection” and “HPCS” for “HPCI”.) (BWRs only) | II.K.3.13 | | | |
| (1)(vi) | Perform a study to identify practicable system modifications that would reduce challenges and failures of relief valves, without compromising the performance of the valves or other systems. (BWRs only) | II.K.3.16 | | | |
| (1)(vii) | Perform a feasibility and risk assessment study to determine the optimum automatic depressurization system (ADS) design modifications that would eliminate the need for manual activation to ensure adequate core cooling. (BWRs only) | II.K.3.18 | | | |
| (1)(viii) | Perform a study of the effect on all core-cooling modes under accident conditions of designing the core spray and low-pressure coolant injection systems to ensure that the systems will automatically restart on loss of water level, after having been manually stopped, if an initiation signal is still present. (BWRs only) | II.K.3.21 | | | |
| (1)(ix) | Perform a study to determine the need for additional space cooling to ensure reliable long-term operation of the reactor core isolation cooling (RCIC) and high-pressure coolant injection (HPCI) <u>RCIC and HPCI</u> systems, following a complete loss of offsite power <u>LOOP</u> to the plant for at least 2 hours. (For plants with high-pressure core spray [HPCS] systems in lieu of high-pressure coolant injection systems, substitute the words, “high-pressure core spray” for “high-pressure coolant injection” and “HPCS” for “HPCI”.) (BWRs only) | II.K.3.24 | | | |
| (1)(x) | Perform a study to ensure that the automatic depressurization system, valves, accumulators, and associated equipment and instrumentation will be capable of performing their intended functions during and following an accident situation, taking no credit for non-safety related equipment or instrumentation, and accounting for normal expected air (or nitrogen) leakage through valves. (BWRs only) | II.K.3.28 | | | |
| (1)(xi) | Provide an evaluation of depressurization methods, other than by full actuation of the automatic depressurization system, that would reduce the possibility of exceeding vessel integrity limits during rapid cooldown. (BWRs only) | II.K.3.45 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for information only.

| <u>50.34(f)</u> <u>Item</u> | <u>Requirement</u> | <u>Action Plan</u> <u>Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|---|--|------------------------------------|------------|------------|-----------|
| (2) To satisfy the following requirements, the application shall provide sufficient information to demonstrate that the required actions will be satisfactorily completed by the operating license stage. This information is of the type customarily required to satisfy 10 CFR 50.35(a)(2) or to address unresolved <u>generic safety issues</u> <u>GSI</u> . | | | | | |
| (2)(i) | Provide a simulator capability that correctly models the control room and includes the capability to simulate small-break LOCAs. (<u>CP</u> <u>Applicable to construction permit</u> applicants only; <u>also applies to COL applicants</u>) | I.A.4.2 | | | |
| (2)(ii) | Establish a program, to begin during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, reliability analyses, human factors engineering, crisis management, operator training, and coordination with [the Institute of Nuclear Power Operations (INPO)] and other industry efforts. (<u>CP</u> <u>Applicable to construction permit</u> applicants only; <u>also applies to COL applicants</u>) | I.C.9 | | | |
| (2)(iii) | Provide, for Commission review, a control room design that reflects state-of-the-art human factors principles prior to committing to fabrication or revision of fabricated control room panels and layouts. | I.D.1 | | | |
| (2)(iv) | Provide a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded. | I.D.2 | | | |
| (2)(v) | Provide for automatic indication of the bypassed and operable status of safety systems. | I.D.3 | | | |
| (2)(vi) | Provide the capability of high-point venting of noncondensable gases from the <u>reactor coolant system</u> <u>RCS</u> , and other systems that may be required to maintain adequate core cooling. Systems to achieve this capability shall be capable of being operated from the control room, and their operation shall not lead to an unacceptable increase in the probability of <u>loss-of-coolant accident</u> <u>LOCA</u> or an unacceptable challenge to containment integrity. | II.B.1 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for information only.

| <u>50.34(f) Item</u> | <u>Requirement</u> | <u>Action Plan Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|--------------------------|---|------------------------------|------------|------------|-----------|
| (2)(vii) | <p>Perform radiation and shielding design reviews of spaces around systems that may, as a result of an accident, contain accident source term^{††}<u>term¹¹</u> radioactive materials, and design as necessary to permit adequate access to important areas and to protect safety equipment from the radiation environment.</p> <p><u>¹¹Footnote 11 in 10 CFR 50.34(f) reads as follows: “The fission product release assumed for these calculations should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible accidental events, that would result in potential hazards not exceeded by those considered credible. Such accidents have generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products.”</u></p> | II.B.2 | | | |
| (2)(viii) | <p>Provide a capability to promptly obtain and analyze samples from the reactor coolant system<u>RCS</u> and containment that may contain accident source term¹¹ radioactive materials without radiation exposures to any individual exceeding 5 rems to the whole body or 50 rems to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, radioiodines and cesiums, and nonvolatile isotopes), hydrogen in the containment atmosphere, dissolved gases, chloride, and boron concentrations.</p> | II.B.3 | | | |
| (2)(x) | <p>Provide a test program and associated model development, and conduct tests to qualify reactor coolant system<u>RCS</u> relief and safety valves and, for PWRs, PORV block valves, for all fluid conditions expected under operating conditions, transients, and accidents. Consideration of anticipated transient without scram (ATWS) conditions shall be included in the test program. Actual testing under ATWS conditions need not be carried out until subsequent phases of the test program are developed.</p> | II.D.1 | | | |
| (2)(xi) | <p>Provide direct indication of relief and safety valve position (open or closed) in the control room.</p> | II.D.3 | | | |
| (2)(xii) | <p>Provide automatic and manual auxiliary feedwater (AFW) system initiation, and provide auxiliary feedwater<u>AFW</u> system flow indication in the control room. (PWRs only)</p> | II.E.1.2 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for information only.

| <u>50.34(f)</u> <u>Item</u> | <u>Requirement</u> | <u>Action Plan</u> <u>Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|--------------------------------|--|------------------------------------|------------|------------|-----------|
| (2)(xiii) | Provide pressurizer heater power supply and associated motive and control power interfaces sufficient to establish and maintain natural circulation in hot standby conditions with only onsite power available. (PWRs only) | II.E.3.1 | | | |
| (2)(xiv) | Provide containment isolation systems that: | II.E.4.2 | | | |
| | (A) Ensure all non-essential systems are isolated automatically by the containment isolation system; | | | | |
| | (B) For each non-essential penetration (except instrument lines) have two isolation barriers in series; | | | | |
| | (C) Do not result in reopening of the containment isolation valves on resetting of the isolation signal; | | | | |
| | (D) Utilize a containment set point pressure for initiating containment isolation as low as is compatible with normal operation; | | | | |
| | (E) Include automatic closing on a high radiation signal for all systems that provide a path to the environs; | | | | |
| (2)(xv) | Provide a capability for containment purging/venting designed to minimize the purging time consistent with as low as reasonably achievable (ALARA) principles for occupational exposure. Provide and demonstrate high assurance that the purge system will reliably isolate under accident conditions. | II.E.4.4 | | | |
| (2)(xvi) | Establish a design criterion for the allowable number of actuation cycles of the emergency core cooling system <u>ECCS</u> and reactor protection system consistent with the expected occurrence rates of severe overcooling events (considering both anticipated transients and accidents). (B&W designs only) | II.E.5.1 | | | |
| (2)(xvii) | Provide instrumentation to measure, record, and readout in the control room (A) containment pressure, (B) containment water level, (C) containment hydrogen concentration, (D) containment <u>containment</u> radiation intensity (high level), and (E) noble gas effluents at all potential, accident release points. Provide for continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples. | II.F.1 | | | |
| (2)(xviii) | Provide instruments that provide in the control room an unambiguous indication of inadequate core cooling, such as primary coolant saturation meters in PWRs, and a suitable combination of signals from indicators of coolant level in the reactor vessel and in-core thermocouples in PWRs and BWRs. | II.F.2 | | | |
| (2)(xix) | Provide instrumentation adequate for monitoring plant conditions following an accident that includes core damage. | II.F.3 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for

information only.

| <u>50.34(f)</u> <u>Item</u> | <u>Requirement</u> | <u>Action Plan</u> <u>Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|--------------------------------|--|------------------------------------|------------|------------|-----------|
| (2)(xx) | Provide power supplies for pressurizer relief valves, block valves, and level indicators such that (A) level indicators are powered from vital buses; (B) motive and control power connections to the emergency power sources are through devices qualified in accordance with requirements applicable to systems important to safety, and (C) electric power is provided from emergency power sources. (PWRs only) | II.G.1 | | | |
| (2)(xxi) | Design auxiliary heat removal systems such that necessary automatic and manual actions can be taken to ensure proper functioning when the main feedwater system is not operable. (BWRs only) | II.K.1.22 | | | |
| (2)(xxii) | Perform a failure modes and effects analysis of the integrated control system (ICS) to include consideration of failures and effects of input and output signals to the ICS. (B&W designs only) | II.K.2.9 | | | |
| (2)(xxiii) | Provide, as part of the reactor protection system, an anticipatory reactor trip that would be actuated on loss of main feedwater and on turbine trip. (B&W designs only) | II.K.2.10 | | | |
| <u>(2)(xxiv)</u> | Provide the capability to record reactor vessel water level in one location on recorders that meet normal post-accident recording requirements. (BWRs only) | II.K.3.23 | | | |
| <u>(2)(xxv)</u> | Provide an onsite Technical Support Center, an onsite Operational Support Center, and, for construction permit applications only, a near-site Emergency Operations Facility. | III.A.1.2 | | | |
| (2)(xxvi) | Provide for leakage control and detection in the design of systems outside containment that contain (or might contain) accident source term ¹¹ radioactive materials following an accident. Applicants shall submit a leakage control program, including an initial test program, a schedule for retesting these systems, and the actions to be taken for minimizing leakage from such systems. The goal is to minimize potential exposures to workers and the public, and to provide reasonable assurance that excessive leakage will not prevent the use of systems needed in an emergency. | III.D.1.1 | | | |
| (2)(xxvii) | Provide for monitoring of in-plant radiation and airborne radioactivity as appropriate for a broad range of routine and accident conditions. | III.D.3.3 | | | |
| (2)(xxviii) | Evaluate potential pathways for radioactivity and radiation that may lead to control room habitability problems under accident conditions resulting in an accident source term ¹¹ release, and make necessary design provisions to preclude such problems. | III.D.3.4 | | | |

* Alphanumeric designations corresponding to related action plan items in NUREG-0718 and NUREG-0660, are provided herein for information only.

| <u>50.34(f)</u> <u>Item</u> | <u>Requirement</u> | <u>Action Plan</u> <u>Item*</u> | <u>N/A</u> | <u>Yes</u> | <u>No</u> |
|--|--|------------------------------------|------------|------------|-----------|
| (3) To satisfy the following requirements, the application shall provide sufficient information to demonstrate that the requirement has been met. This information is of the type customarily required to satisfy paragraph (a)(1) of this section or to address the applicant's technical qualifications and management structure and competence. | | | | | |
| (3)(i) | Provide administrative procedures for evaluating operating, design, and construction experience and for ensuring that applicable important industry experiences will be provided in a timely manner to those designing and constructing the plant. | I.C.5 | | | |
| (3)(ii) | Ensure that the quality assurance (QA) list required by Criterion II in Appendix B to 10 CFR Part 50 includes all structures, systems, and components <u>SSC</u> important to safety. | I.F.1 | | | |
| (3)(iii) | Establish a quality assurance (QA) program based on consideration of (A) ensuring <u>ensuring</u> independence of the organization performing checking functions from the organization responsible for performing the functions; (B) performing quality assurance/quality QA/quality control (QC) functions at construction sites to the maximum feasible extent; (C) including QA personnel in the documented review of and concurrence in quality related procedures associated with design, construction, and installation; (D) establishing criteria for determining QA programmatic requirements; (E) establishing qualification requirements for QA and [quality control] QC <u>QC</u> personnel; (F) sizing the QA staff commensurate with its duties and responsibilities; (G) establishing procedures for maintenance of "as-built" documentation; and (H) providing a QA role in design and analysis activities. | I.F.2 | | | |
| (3)(iv) | Provide one or more dedicated containment penetrations, equivalent in size to a single 3-foot-diameter opening, in order not to preclude future installation of systems to prevent containment failure, such as a filtered vented containment system. | II.B.8 | | | |
| <u>(3)(vi)</u> | <u>For plant designs with external hydrogen recombiners, provide redundant dedicated containment penetrations so that, assuming a single failure, the recombiner systems can be connected to the containment atmosphere.</u> | <u>II.E.4.1</u> | | | |

| | | | | | |
|----------|--|----------|--|--|--|
| (3)(vii) | <p>Provide a description of the management plan for design and construction activities, to include: (A) the organizational and management structure singularly responsible for direction of design and construction of the proposed plant; (B) technical resources director by the applicant; (C) details of the interaction of design and construction within the applicant's organization and the manner by which the applicant will ensure close integration of the architect engineer and the nuclear steam supply vendor; (D) proposed procedures for handling the transition to operation; (E) the degree of top-level management oversight and technical control to be exercised by the applicant during design and construction, including the preparation and implementation of procedures necessary to guide the effort.</p> | II.J.3.1 | | | |
|----------|--|----------|--|--|--|