



U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

1.0 INTRODUCTION AND INTERFACES

REVIEW RESPONSIBILITIES

Primary - Licensing project manager

Secondary - All review organizations

I. AREAS OF REVIEW

This section provides guidance to the licensing project manager and all review organizations performing the review of the introductory material contained in Chapter 1 of the applicant's safety analysis report. This is a general chapter for an application for a construction permit (CP) or an operating license (OL) submitted in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50 or an early site permit (ESP), a design certification (DC), or combined license (COL) submitted in accordance with 10 CFR Part 52. This chapter is also applicable to a standard design approval (SDA) or a manufacturing license (ML) application submitted in accordance with 10 CFR Part 52. The scope of information to be reviewed in this Standard Review Plan (SRP) chapter is that for a COL application unless otherwise noted.

Revision 2 – December 2011

USNRC STANDARD REVIEW PLAN

This Standard Review Plan, NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC's regulations. The Standard Review Plan is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The standard review plan sections are numbered in accordance with corresponding sections in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of Regulatory Guide 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by email to NRR_SRP@nrc.gov.

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There are two types of information presented:

- General information that enables the reviewer or reader to obtain a basic understanding of the overall facility without having to refer to the subsequent chapters. Review of the remainder of the application can be accomplished with a better perspective and recognition of the relative safety-significance of each individual item in the overall plant description.
- Specific information that relates to regulatory considerations that applies throughout the balance of the application (e.g., conformance with the SRP acceptance criteria).

The specific areas of review are as follows:

1. Introduction

The principal aspects of the overall application are reviewed. These principal aspects include: the type of license requested, the number of plant units, a brief description of the proposed plant location, the type of containment structure and its designer, the type of nuclear steam supply system and its designer, the core thermal power levels (both rated and design), the corresponding net electrical output for each thermal power level, and the scheduled completion date and anticipated commercial operation date of each unit.

2. General Plant Description

A summary description of the principal characteristics of the site and a concise description of the facility is reviewed. The facility description should include a brief discussion of the principal design criteria, operating characteristics, and safety considerations for the facility; the engineered safety features and emergency systems; the instrumentation, control, and electrical systems; the power conversion system; the fuel handling and storage systems; the cooling water and other auxiliary systems; and the radioactive waste management system. The general arrangement of major structures and equipment should also be indicated by the use of plan and elevation drawings in sufficient number and detail to provide a reasonable understanding of the general layout of the plant. Those features of the plant that are likely to be of special interest because of their relationship to safety should also be identified. In addition, such items as unusual site characteristics, solutions to particularly difficult engineering and/or construction considerations (e.g., modular construction techniques or plans), and significant changes in technology represented by the design should be highlighted.

3. Comparison with Other Facilities

A comparison with other facilities of similar design and comparable power level is reviewed.

4. Identification of Agents and Contractors

The primary agents or contractors for the design, construction, and operation of the nuclear power plant are reviewed. The principal consultants and outside service organizations (such as those providing audits of the quality assurance program) are also reviewed. The division of responsibility between the reactor/facility designer(s), architect-engineer(s), constructor(s), and plant operator should also be delineated by the applicant.

5. Performance of New Safety Features

For a DC application or COL application that does not reference a certified design, this review addresses information or references to the location of information that demonstrates the performance of new safety features for nuclear power plants that differ significantly from light-water reactor (LWR) designs licensed before 1997, or use simplified, inherent, passive, or other innovative means to accomplish their safety functions.

6. Material Referenced

A table of all topical reports and technical reports that are incorporated by reference as part of the application is reviewed. In this context, "topical reports" are defined as reports that have been prepared by reactor designers and manufacturers, architect-engineers, or other organizations, and filed separately with the U.S. Nuclear Regulatory Commission (NRC) in support of this application or other applications or product lines. For each topical report, this table should include the report number and title, the date on which the report was submitted to the NRC, and the sections of the COL application in which the report is referenced. For any topical reports that have been withheld from public disclosure as proprietary documents pursuant to 10 CFR 2.390(b), this table should also reference nonproprietary summary descriptions of the general content of each such report.

A table of any documents submitted to the Commission in other applications that are incorporated in whole or in part by reference in the application is reviewed. If any information submitted in connection with other applications is incorporated by reference in this application, summaries of such information should be included in appropriate sections of this application, as necessary, to provide clarity and context.

Results of test and analyses may be submitted as separate reports. In such cases, these reports should be referenced in this section and summarized in the appropriate section(s) of the final safety analysis report (FSAR).

7. Drawings and Other Detailed Information

A table of all instrumentation and control (I&C) functional diagrams, as well as electrical one-line diagrams cross-referenced to the related application section(s), including legends for electrical power, I&C, lighting, and communication drawings is reviewed.

A table of system drawings (e.g., piping and instrumentation diagrams) and system designators that are cross-referenced to the related section(s) of the application is reviewed. This information should include the applicable drawing legends and notes.

8. Interfaces with Standard Designs

For a DC application or a COL application referencing a DC, this SRP section addresses interface requirements contained in a DC application and a COL application that references a certified design. For a DC, this review will address interface requirements for those design features that are outside the scope of the certified design as identified by the applicant and a representative conceptual design for those portions of the plant for which the application does not seek certification; 10 CFR 52.47(a)(24) requires a conceptual design and 10 CFR 52.47(a)(25) sets forth interface requirements for out-of-scope portions of the design. Inspection, test, analysis, and acceptance criteria (ITAAC), required by 10 CFR 52.47(b)(1), apply only to in-scope portions of the design and are not related to 10 CFR 52.47(a)(24) and (25). For a COL, this review will address how a COL application addresses the interface requirements established for the design. The COL review will be based on complete design information, as any conceptual design information included in a DC FSAR will be replaced by site-specific information.

COL Action Items

A table of information demonstrating how COL action items were addressed, or appropriate FSAR section references as to where this information is provided, is reviewed. COL applicants may also include a consolidation, in an appropriate section of the COL application, of those COL action items that cannot be completely resolved before the COL is issued, as well as any post-licensing information commitments made to the NRC as part of the license application review. The COL applicant may propose such post-licensing commitments as ITAAC, license conditions or FSAR commitments to ensure completion of these items.

Departures

A table listing the departures and applicable FSAR section(s) is reviewed along with the departure report submitted in accordance with the applicable appendix to 10 CFR Part 52.

9. Conformance with Regulatory Guidance

Regulatory Guides (RGs)

A table of conformance with the NRC's RGs that are applicable to the application is reviewed. The table should also include an identification and description of deviations from the guidance contained in the NRC's RGs, as well as suitable justifications for any alternative approaches proposed by the COL applicant with appropriate references to the FSAR sections where they are addressed.

Conformance with the Review Guidance

An evaluation of the facility against the SRP in effect 6 months before the docket date of the application is reviewed. The evaluation should include an identification and

description of all differences in design features, analytical techniques, and procedural measures proposed for the facility and those corresponding features, techniques, and measures given in the acceptance criteria in the review guidance. Where differences exist, the evaluation should discuss or provide references to the FSAR section that describes how the proposed alternative provides an acceptable method of complying with the Commission's regulations that underlie the corresponding acceptance criteria. The regulations specify that this evaluation is made against the SRP in effect 6 months before the docket date of the application; however, as a practical matter the evaluation should be performed against the guidance in effect 6 months before the submittal date of the application.

Generic Issues and Three Mile Island (TMI) Requirements

A table that identifies proposed technical resolutions for those unresolved safety issues and medium- and high-priority generic safety issues that are identified in the version of NUREG-0933 current on the date up to 6 months before the submittal date of the application and that are technically relevant to the design and identifies FSAR section references where the resolutions are addressed is reviewed. The table also identifies TMI requirements set forth in 10 CFR 50.34(f).

Part 21 Notification of Failure to Comply or Existence of a Defect and its Evaluation

An evaluation by the applicant of all defects and noncompliance reports submitted under 10 CFR Part 21 to determine their applicability and potential impacts on applications for design certification (DC) , DC renewal, and combined licenses (COLs) that reference a DC is reviewed. For DC renewals and COLs that reference a DC, the evaluation should address those notifications issued between the original certification and the DC renewal or COL application as stipulated in 10 CFR 21.21.

Operational Experience (Generic Communications)

Information from the applicant that demonstrates how operating experience insights from generic letters and bulletins issued after the most recent revision of the applicable standard review plan and 6 months before the docket date of the application, or comparable international operating experience, have been incorporated into the plant design is reviewed.

Advanced and Evolutionary Light-Water Reactor Design Issues

A table that identifies information addressing applicable issues developed by the NRC and documented in SECY-93-087 and the associated staff requirements memorandum for advanced and evolutionary LWR designs is reviewed.

10. Nuclear Power Plants to be operated on Multi-Unit Sites

This section addresses the review of an evaluation of potential hazards to the structures, systems, and components (SSCs) important to safety of the 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 multi-unit sites.

Review Interfaces

Other SRP sections interface with this section as follows:

1. The general information provided in each area of review enables the reviewer or reader to obtain a basic understanding of the overall facility without having to refer to the subsequent chapters. Review of the detailed chapters that follow can then be accomplished with a better understanding of the relative safety-significance of each individual item in the overall plant design.
2. The specific information provided in each area of review provides references to where the regulatory considerations are addressed throughout the balance of the application.

The specific acceptance criteria and review procedures are contained in the applicable SRP sections.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations:

1. 10 CFR 50.33, 10 CFR 50.34, 10 CFR 52.16, 10 CFR 52.17, 10 CFR 52.46, 10 CFR 52.47, 10 CFR 52.77, and 10 CFR 52.79, as they relate to general introductory matters.
2. Regulations governing Interfaces with standard designs, including:
 - A. 10 CFR 52.47(a)(24) requires the DC application to contain a representative conceptual design for those portions of the plant for which the application does not seek certification, to aid the NRC in its review of the design control document (DCD) and to permit assessment of the adequacy of the interface requirements in paragraph (a)(25) of 10 CFR 52.47.
 - B. 10 CFR 52.47(a)(25) requires the DC FSAR to contain the interface requirements to be met by those portions of the plant for which the application does not seek certification. These requirements must be sufficiently detailed to allow completion of the FSAR.
 - C. 10 CFR 52.47(a)(26) requires the DC FSAR to contain justification that compliance with the interface requirements of paragraph (a)(25) of 10 CFR 52.47 is verifiable through inspections, tests, or analyses. The method to be used for verification of interface requirements must be included as part of the proposed ITAAC required by paragraph (b)(2) of 10 CFR 52.47.

- D. 10 CFR 52.79(d)(2) requires that for a COL referencing a standard DC, the FSAR demonstrate that the interface requirements established for the design under 10 CFR 52.47 have been met.
3. 10 CFR 50.34(h), 10 CFR 52.17(a)(1)(xii), 10 CFR 52.47(a)(9), and 10 CFR 52.79(a)(41) as they relate to an evaluation of the application against the applicable NRC review guidance in effect 6 months before the docket date of the application.
 4. 10 CFR 52.47(a)(21) and 10 CFR 52.79(a)(20) as they relate to proposed technical resolutions of those unresolved safety issues and medium and high priority generic safety issues, 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.
 5. 10 CFR 50.34(f)¹, 10 CFR 52.47(a)(8) and 10 CFR 52.79(a)(17) as they relate to compliance with technically relevant positions of the TMI requirements.
 6. 10 CFR 52.47(a)(22) and 10 CFR 52.79(a)(37) as they relate to the information necessary to demonstrate how operating experience insights have been incorporated into the plant design.
 7. 10 CFR 50.43(e) as it relates to requirements for approval of applications for a DC, COL, ML, or OL that propose nuclear reactor designs, which differ significantly from LWR designs that were licensed before 1997, or use simplified, inherent, passive, or other innovative means to accomplish their safety functions.
 8. 10 CFR 52.79(a)(31) regarding nuclear power plants to be operated on multi-unit sites, as it relates to an evaluation of the potential hazards to the SSCs 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.
 9. 10 CFR 21.21 as it relates to reviews of failure notifications and evaluations of the impacts from operational experience and implementation of lessons learned on engineering design for the review of DC and COL applications. The applicability, relevancy and significance of these failure notifications in DC and COL reviews shall be determined by the individual applicant and specific to each design center with emphasis on significant notifications. The applicant's evaluation shall include all defects and noncompliance reports submitted under 10 CFR 21.21 to determine their applicability and potential impact on the application under review by the staff. For DC reviews, the scope of the applicant's review should include notifications issued prior to submittal of the DC application. For DC renewals, and COL applications that reference a DC, the scope of the applicant's review should include those notifications issued between the

¹ For Part 50 applicants not listed in 10 CFR 50.34(f), the applicable provisions of 10 CFR 50.34(f) will be made a requirement during the licensing process.

original design certification rule (DCR) and submittal of the DC renewal, or COL application that references the DCR, as applicable.

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations.

1. There are no specific SRP acceptance criteria associated with these general requirements.
2. For regulatory considerations, acceptance is based on addressing the regulatory requirements as discussed within this FSAR section or within the referenced FSAR section. The SRP acceptance criteria associated with the referenced section will be reviewed within the context of that review.
3. For performance of new safety features, the information is sufficient to provide reasonable assurance that (1) these new safety features will perform as predicted in the applicant's FSAR, (2) the effects of system interactions are acceptable, and (3) the applicant provides sufficient data to validate analytical codes. The design qualification testing requirements may be met with either separate effects or integral system tests; prototype tests; or a combination of tests, analyses, and operating experience.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified SRP acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

1. General information

The licensing project manager will review the information for sufficiency to enable the reviewer or reader to obtain a basic understanding of the overall facility without having to refer to subsequent chapters.

2. Regulatory considerations

The licensing project manager will review the information for sufficiency. The licensing project manager will coordinate the reviews of the specific technical issues as referenced.

3. Potential hazards from construction to SSCs important to safety on an operating unit.

The licensing project manager will review the evaluation and consult with the organization responsible for the review of site hazards and the operating reactor project manager.

4. Post-licensing commitments.

The licensing project manager will review any post-licensing commitments proposed by the COL applicant and will consult with the organization responsible for the review of the technical areas associated with these commitments. The project manager should ensure that no post-licensing information commitment involves information that is necessary for the staff's determination regarding COL issuance.

IV. EVALUATION FINDINGS

The licensing project manager, with support from the identified technical reviewers, verifies that the applicant has provided sufficient information and that the review and evaluations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report (SER). The reviewer also states the bases for those conclusions.

As applicable to the type of license application, the applicant has provided sufficient information to enable the reviewer or reader to obtain a basic understanding of the overall facility without having to refer to subsequent chapters.

The applicant provided sufficient information to address the regulatory considerations, including potential hazards to SSCs of the operating reactor as a result of construction (if applicable). The staff concludes the requirements identified above have been met.

The licensing project manager, with support from the identified technical reviewers, determines the most appropriate post-licensing commitment option for any COL action items that cannot be completely resolved before license issuance, as well as any post-licensing information commitments made to the NRC as part of the license application review. The project manager should ensure that no post-licensing information commitment involves information that is necessary for the staff's determination regarding COL issuance. Guidance for making this determination is provided in Appendix A. This evaluation of post-licensing commitments should be included in the SER associated with the NRC staff's review of the COL application.

For DC applications, the licensing project manager, with support from the identified technical reviewers, verifies that COL action items are identified correctly and that the scope of responsibility is appropriately defined for the COL applicant. See definition of "COL action item" in Section VI for further discussion.

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of DC applications and license applications submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52. Except when the applicant proposes an acceptable alternative method for complying with

specified portions of the Commission's regulations, the staff will use the method described herein to evaluate conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications submitted 6 months or more after the date of issuance of this SRP section, unless superseded by a later revision.

VI. DEFINITIONS

The following definitions are used in the context of ESPs:

- Site Characteristics: Based on site investigation, exploration, analysis and testing, the applicant initially proposes a set of site characteristics. These site characteristics are the actual physical, environmental and demographic features of a site. Site characteristics, if reviewed and approved by the staff, are specified in the ESP. In general, site characteristics may fall into one of four categories, namely: (1) severe natural phenomena (e.g., tornado wind speed, probable maximum flood, maximum groundwater levels); (2) physical features of the site (e.g., soil strength, topography); (3) boundaries or locations controlled by the applicant (e.g., exclusion area boundary, low population zone); and (4) characteristics relating to nearby human activities (e.g., χ/Q for the nearest resident, meat animal, or vegetable garden; distances to nearby man-made hazards to the new plant).
- Plant Parameter Envelope: A plant parameter envelope (PPE) sets forth postulated values of design parameters that provide design details to support the NRC staff's review of an ESP application. A controlling PPE value, or bounding parameter value, is one that necessarily controls the value of a site characteristic. As the PPE is intended to bound multiple reactor designs, the actual design selected in a COL or CP application referencing an ESP would be reviewed to ensure that the design fits within the bounding parameter values. Otherwise, the COL or CP applicant would need to demonstrate that the design, given the site characteristics in the ESP, complies with the Commission's regulations. Should an applicant reference an ESP for a design that is not certified, the applicant would need to demonstrate that the design's characteristics fall within the bounding parameter values.
- Permit Condition: The Commission's regulation in 10 CFR 52.24 authorizes the inclusion of limitations and conditions in an ESP. The staff should recommend a permit condition in three typical circumstances: (1) the staff's evaluation in the SER rests on an assumption that is not currently supported, and which is practicable to support only after ESP issuance (e.g., subsurface conditions discovered upon excavation for foundation construction); (2) a site physical attribute is not acceptable for the design of SSCs important to safety (such

a condition may call for action to remedy the deficiency, e.g., cracked or weathered rock that is not acceptable for bearing foundation loads is replaced or filled with lean concrete or otherwise treated so as to be acceptable) (the attribute may be deficient only with respect to a particular type of reactor); or (3) the staff's evaluation depends on a future act (e.g., a state regulatory approval may be called for). A permit condition is not needed when an existing NRC regulation requires a future regulatory review and approval process to ensure adequate safety during design, construction, or inspection activities for a new plant.

The following definitions are used in the context of ESPs and DC reviews:

COL action item:

COL action items identify certain matters that shall be addressed in the FSAR by an applicant who submits a COL application that references a DC and/or an ESP. The term "COL holder item" is not defined and shall not be used. COL action items constitute information requirements, but do not form the only acceptable set of information in the FSAR. An applicant may depart from or omit these items, provided that the departure or omission is identified and justified in the FSAR. In addition, these items do not relieve an applicant from any requirement in 10 CFR Parts 50 and 52 that govern the application. That is, DCs were not intended to identify, as COL action items, all the requirements that a COL applicant needs to meet to demonstrate compliance with 10 CFR Part 52, "Subpart C – Combined Licenses." Therefore, for a COL application that references a DC or an ESP, it may not be sufficient for the COL applicant to address only those COL action items contained in the referenced DC or ESP. The COL applicant must demonstrate compliance with all the regulatory requirements in 10 CFR 52.79 and 10 CFR 52.80 whether they are addressed by a COL action item or not.

COL action items may contain requirements for information that are necessary for the NRC to review to make its license determination. This information must be provided as part of the COL application and cannot be deferred until after license issuance. COL action items may also include requirements for providing updated FSAR information or updates to other licensing basis documents. Completion of these types of COL action items may be deferred as post-licensing commitments. After issuance of a construction permit or COL, these items are not requirements for the licensee unless such items are restated as conditions of the license.

Further, the staff may identify COL action items with respect to individual site characteristics in order to ensure that particular significant issues are tracked and considered during the COL

application phase. For example, since control room air intake design and location are not yet specified, a COL action item is warranted with respect to the evaluation of the dispersion of airborne radioactive materials to the control room.

The COL action items need not and should not be exhaustive. Rather, COL action items should focus on matters that may be a significant issue in any COL application referencing the particular ESP. COL action items should not normally be needed for matters controlled by permit conditions, or explicitly covered by the postulated design parameters (i.e., within a PPE or design described in the ESP application).

VII. REFERENCES

10 CFR Part 50, as noted.

10 CFR Part 52, as noted.

Appendix – A
Guidance for NRC Review of Post-Combined License
Commitments on Completion of COL Items

Background:

COL action or information items may be included in ESPs, DCs or applications for ESPs and DCs. Although the terms COL action item and COL information item are used interchangeably by the NRC staff, historically, DC applicants have included the term “COL information item” in their DCDs, while the NRC staff has used the term “COL action item” in its SERs and regulations. This is also discussed in RG 1.206, Section C.III.4, “COL Action or Information Items.” Applicants for COLs that reference ESPs or DCDs are required to address these COL action or information items in their applications. The scope of information typically requested in these COL action or information items is beyond the scope of information requirements necessary to obtain an ESP or DC. This information typically includes site specific facility design information and operational information for the facility such as programs and procedures.

Information Required for License Determination:

COL action or information items contained in an ESP or DCD may include information requirements that are necessary for the NRC staff to make findings that are necessary to issue a COL and information requirements that are not necessary for license issuance. Information necessary for the NRC staff to issue a license cannot be deferred by a COL action or information item and must be provided during the COL application review. COL action or information items may also include information requirements that are not necessary for license issuance, and therefore, may be deferred. Deferred actions may include such items as providing as-built design information or to provide notifications to the NRC regarding schedules for implementation of programs or for commencement of certain activities. During reviews of applications, the NRC staff may request that applicants not combine the two types of information requirements (i.e., licensing and post-licensing) into one COL action or information item, but rather include them in separate COL items.

No “COL Holder Items”:

Although the timing for providing the two categories of information (i.e., licensing and post-licensing) may be reasonably determined by an applicant for an ESP or DCD, it is not the purview of these applicants to determine the appropriate timing for the COL applicant to complete these items. Recently, attempts have been made by applicants to distinguish COL action or information items by the timing of their completion. Those COL action or information items that could not be completed until after the license was issued were sometimes identified as “COL holder items.” The term “COL holder item” is not defined in NRC regulations or guidance; therefore, during the development of ESP and DC applications, the applicants should refrain from using the term “COL holder item.” Although some designs that were previously certified may still include this term, the NRC staff should ensure that during its review of DC applications the term “COL holder item” is not used.

Regulatory Requirements and Guidance:

The regulations in 10 CFR Part 52 and the guidance provided in RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," provide several options for a COL applicant to provide the information necessary for a license application. A COL application may incorporate by reference an ESP, a DCD, neither, or both. As such, during its reviews of license applications, the NRC staff may encounter COL applications that include different combinations of the permitted options. In addition, the regulation in 10 CFR 52.55(c) permits a COL applicant to reference, at its own risk, a design for which a DC application has been docketed, but not granted. Only a few of the designs that have been certified by the NRC are currently being referenced by COL applicants. Certification of those designs took place several years ago and, as a result, the scope and nature of COL action or information items included in those certified designs may vary from those currently being proposed in DC applications that have been submitted to the NRC more recently. The NRC staff should expect that the nature and scope of COL action or information items included in more recent applications are more clearly defined. This expectation is a reasonable outcome of the implementation and on-going maturation of the new licensing process specified in 10 CFR Part 52. The NRC staff should be cognizant of the differing nature and scope of COL action or information items that were included in previously certified designs that are now being referenced in COL applications and the ramifications on completion of these items. For example, in more recent applications, ITAAC have been used to verify the as-built reconciliation of piping designs, whereas COL action or information items may have been used for this purpose in previously certified designs. For COL action or information items that cannot be completed until after license issuance, appropriate post-licensing commitments should be identified for these items.

The following review guidance is provided for the NRC staff in determining post-licensing commitment options and includes examples that illustrate differences in COL items as discussed above.

Guidance on Post-Combined License Commitment Options:

A COL applicant that references a certified design is required to provide information that addresses the COL action items (see Section IV.A.2.e of the DCRs). Likewise, an ESP may contain terms and conditions that must be satisfied by a COL applicant referencing an ESP to allow NRC staff issuance of the COL. In addition, a COL applicant may include a commitment to perform an action following issuance of the license (e.g., update information, provide schedules, etc.) that is related to site-specific design features or programs for the facility that were not identified in an ESP or DCD that it references. COL items associated with information that is not necessary to issue the license are identified as post-licensing commitments. The following options are provided for identifying these post-licensing commitments:

- ITAAC
- License conditions
- FSAR (or other licensing basis document) information commitments

The above options are not limited to COL action items that cannot be completed prior to license issuance, but may also be used for post-licensing information commitments that were identified during COL application reviews that were not associated with COL action items. COL

applicants may propose one or more of the options above for completing COL items as post-licensing commitments, but are not required to do so. In the case where a COL applicant proposes post-licensing commitments, the NRC staff will review the COL applicant's proposal, confirm the acceptability of the applicant's proposal or modify it, as appropriate, and document the final determination in their safety evaluation. If the COL applicant does not provide a proposal on post-licensing commitments, the NRC staff, based on its review of the COL application and other docketed correspondence including request for additional information responses, may include appropriate post-licensing commitments in the SER. In either case, the NRC staff should provide the final determination of the most appropriate post-licensing commitment from the options provided above and the applicant's FSAR should be revised to conform to the staff's final SER determination, as necessary. To assist with this determination, the NRC staff should consider the following review guidance:

ITAAC:

The requirement for inclusion of ITAAC in an application for a COL is set forth in 10 CFR 52.80(a), which states that the application must contain:

The proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that 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 be operated in conformity with the combined license*, the provisions of the Act, and the Commission's rules and regulations. (Emphasis added)

The licensee is required by regulation to provide notification along with sufficient documentation to demonstrate successful completion of ITAAC in accordance with 10 CFR 52.99(c). The NRC is required to ensure that the prescribed ITAAC are performed and to publish notices in the *Federal Register* of the NRC staff's determination of the licensee's successful completion of inspections, tests, and analyses per 10 CFR 52.99(e). Following that, the NRC must find that the acceptance criteria of the ITAAC are met in order to authorize operation of the facility per 10 CFR 52.103(g).

Guidance for development of ITAAC, as well as additional considerations for ITAAC, is provided in RG 1.206, Sections C.II.1, C.III.1, and C.III.7. NRC staff review guidance on ITAAC is provided in SRP Section 14.3. When determining whether a post-licensing information commitment or a COL action item that cannot be completed until after license issuance should be treated in an ITAAC or not, the NRC staff should use the same guidance and criteria provided in SRP Section 14.3. ITAAC are considered a post-licensing verification program, whose focus is on ensuring that the as-built condition of the plant complies with the license for the facility and the Commission's regulations. Another consideration for ITAAC is that *completion of ITAAC, by definition, must take place prior to fuel load*. The licensee must successfully complete all ITAAC in order for the Commission to make the findings prerequisite to fuel load as required by 10 CFR 52.103(g).

New ITAAC proposed by a COL applicant referencing a certified design to address completion of designs, reconciliation of portions of the as-built facility with the design of the facility, etc.,

within the scope of the referenced certified design may only be included in a COL application in accordance with the change process described in Section VIII, Processes for Changes and Departures, of the associated DCR. The NRC staff should review any new ITAAC proposed by a COL applicant in accordance with the guidance provided in SRP Section 14.3. In addition, NRC staff review should include the applicant's use of and compliance with the change processes described in Section VIII of the associated DCR. COL applicants have typically included their ITAAC and any necessary departures and exemptions in Part 10 of their applications. The NRC staff should use caution in attempting to create new ITAAC to address a COL action item that cannot be completed until after issuance of the license. Section VI.D of the DC rules contained in the Part 52 Appendices explicitly states:

- D. Except in accordance with the change processes in Section VIII of this attachment, the Commission may not require an applicant or licensee who references this attachment to:
1. Modify structures, systems, components, or design features as described in the generic DCD;
 2. Provide additional or alternative structures, systems, components, or design features not discussed in the generic DCD; or
 3. Provide additional or alternative design criteria, testing, analyses, acceptance criteria, or justification for structures, systems, components, or design features discussed in the generic DCD.

Note that the above requirements do not apply when a COL application references an application for DC. In this case, the NRC staff has more latitude within the context of the design-centered working group to discuss with the DC and COL applicants the potential for adding new ITAAC in the DCD. For site-specific elements or custom COL applicants, which do not reference certified designs, the staff should review the application, as appropriate, to determine if the proposed ITAAC are necessary and sufficient for the Commission to make the findings required by the Atomic Energy Act.

License Conditions:

The license for a nuclear facility contains terms and conditions for operation. Section 50.54 of the Commission's regulations identifies the standard conditions, with some exceptions, that are applicable to every COL issued. In addition to those standard conditions, additional license conditions may be proposed by the COL applicant to address completion of post-licensing information commitments or COL action items that cannot be completed until after license issuance. A license condition, however, is not necessary for those matters already covered by the license, including Technical Specifications, or regulations. License conditions may be proposed by COL applicants; however, there is no requirement to do so. Any license conditions proposed by the COL applicant shall be reviewed by the NRC staff. The NRC staff will make the final determination as to the appropriateness of the proposed license conditions, may modify proposed license conditions or include new conditions. In addition, in cases where COL applicants have not proposed any license conditions, appropriate license conditions may be

imposed by the NRC staff. The NRC staff should document any such license conditions necessary to complete COL items in the SER.

The following discussion should be considered by the NRC staff for review of license conditions proposed by a COL applicant and for those license conditions that the NRC staff determines are necessary to impose on the licensee:

- License conditions remain in effect for the licensee until satisfactorily completed and their removal is approved via the license amendment process per 10 CFR 52.98(f).
- License conditions are enforceable the same way a regulation or order is enforceable.
- In contrast to completion of an ITAAC, where a licensee is required to make a submission to the NRC staff documenting satisfactory completion of the ITAAC, there need not be submission requirements associated with completion of a license condition that necessitate further NRC reviews. However, there may be some conditions specifically included in the license that require the licensee to notify the NRC of the schedule of availability of information for inspection or implementation schedules of programs or activities to be inspected. For example, license conditions may be used to identify notification commitments to the NRC on when activities associated with completion of SSC design governed by design acceptance criteria (DAC) have been completed following issuance of the license and are available for inspection by the NRC. The NRC staff should use caution when including requirements in license conditions such as “submission” and “staff review” since these typically describe actions taking during the license review. The NRC staff should instead consider use of terms like “reporting requirements” or “make available for inspection,” as more appropriate.
- License conditions may be used to include operational restrictions for the facility, impose restrictions on operating power levels, require the performance of special tests, impose operational constraints associated with implementation of specific design features (e.g., containment sump screen sweepers, etc.).
- License conditions may be used to include implementation schedules for operational programs as discussed in RG 1.206, Sections C.I and C.III.1, Table 13.4.

Examples:

- (1) *In a section of a previously certified design describing spent fuel racks, the DCD identifies that the COL holder will implement a spent fuel rack Metamic coupon monitoring program when the plant is placed into commercial operation. This program will include tests to monitor bubbling, blistering, cracking, or flaking; and a test to monitor for corrosion, such as weight loss measurements and or visual examination. In this example, the commitment was previously characterized as a “COL holder item” since it cannot be completed until after license issuance. Based on the guidance above, either the COL applicant could propose or the NRC staff could impose a license condition to address this item. The licensee should develop a program for performing spent fuel rack coupon monitoring and evaluation.*

Although this program is not considered an operational program as discussed in RG 1.206, Sections C.I and C.III.1, Table 13.4, implementation of this program following issuance of a license can be imposed using a schedule milestone contained in a license condition.

- (2) *In a section of a previously certified design describing turbine design and the requisite maintenance and inspection that form part of the basis for turbine missile generation assumptions, the DCD identifies that the COL holder will submit to the NRC staff for review prior to fuel load, and then implement a turbine maintenance and inspection program. The program will be consistent with the maintenance and inspection program plan activities and inspection intervals identified in another section of the DCD. The COL holder will have available plant-specific turbine rotor test data and calculated toughness curves that support the material property assumptions in the turbine rotor analyses after the fabrication of the turbine and prior to fuel load.* In this example, the commitment was previously characterized as a “COL holder item” since it cannot be completed until after license issuance. Based on the guidance above, either the COL applicant could propose or the NRC staff could impose a license condition to address this item. In this example, it is important to point out the sensitivity and appropriateness of using the phrase “submit to the NRC staff for review prior to fuel load” in a license condition. A licensing decision must be based on turbine missile generation information already provided to the NRC in the DCD or the COL application. The license condition allows for confirmation by the NRC via inspection that the as-built information is bounded by the original assumptions regarding turbine missile generation. In this example, the NRC staff should use more appropriate language such as “available for NRC inspection” in the final language for the license condition, although a more detailed reporting requirement may be appropriate. It should be noted that more recent DC applications have included this as-built confirmation in an ITAAC rather than a COL action item. In addition, the licensee must implement a maintenance and inspection program that is not an operational program as discussed in RG 1.206, Sections C.I and C.III.1, Table 13.4, but implementation of the program validates assumptions related to turbine missile probability. Scheduling the availability of the confirmatory evaluation and implementation of the program for NRC inspection following issuance of a license can be determined using a schedule milestone contained in a license condition.

FSAR Commitments:

Another way for COL applicants to address completion of post-licensing information commitments or COL actions items that cannot be completed until after license issuance is through an FSAR commitment. In this context, an FSAR commitment is a commitment to provide updated information in the FSAR, which contains the design-basis portion of the licensing basis, or other licensing basis documents that has been considered appropriate by the NRC staff to ensure that the licensing basis for the facility is up-to-date. This approach may also be used for other licensee controlled documents such as Quality Assurance plans, emergency plans, etc. Based on past experience with currently operating reactors, it is important for licensees to maintain their licensing bases documents up-to-date. The NRC and its licensees have dealt with several issues resulting in significant efforts over the years that

emphasize the importance of maintaining a current licensing basis (CLB) and a discussion on CLB is provided for information following this section. These efforts have involved issues related to loss of configuration control, design-basis reconstitution, commitment management and commitment change control.

The staff has identified two approaches for providing the information necessary to maintain the design-basis for the facility: 1) include specific design-basis information items in a license condition, and 2) include design-basis information in FSAR updates required by 10 CFR 50.71(e). In the first approach, the focus is on ensuring that FSAR information that is identified during the COL review process and is necessary to include in the design-basis is included in an FSAR update. In the second approach, the focus is on ensuring that routine FSAR updates that have traditionally occurred following issuance of an OL are performed.

These routine FSAR updates are typically associated with:

- Changes to the facility in accordance with the requirements of 10 CFR 50.59
- Changes to the facility resulting from approved exemptions and departures from a referenced certified design
- Changes to the facility resulting from approved variances from a referenced ESP
- Amendments to the license in accordance with the requirements of 10 CFR 50.90

The two approaches for FSAR information commitments are discussed below:

FSAR information commitment included in a license condition

The regulations in 10 CFR 50.71(e) and the appendices to 10 CFR Part 52 that contain the DCRs include requirements for holders of COLs to update their FSARs. Specifically, 10 CFR 50.71(e)(3)(iii) requires that an update of the FSAR be submitted annually to the NRC during the period from the docketing of a COL application until the Commission makes the finding under 10 CFR 52.103(g). In addition, 10 CFR 50.71(e)(4) requires that subsequent FSAR revisions be filed annually or 6 months after each refueling outage provided the interval between successive updates does not exceed 24 months. These revisions must reflect all changes up to a maximum of 6 months prior to the date of the filing. Although these requirements for FSAR updates currently exist, the focus of FSAR information commitment items included in a license condition is to ensure the inclusion of specific information identified during the initial licensing review that should be included in the design-basis for the facility. This includes the information that should be reviewed as part of the design-basis for the facility when reviews and evaluations such as those performed in accordance with 10 CFR 50.54(f), 10 CFR 50.59, 10 CFR 50.65, etc., are required. The staff believes that use of a license condition for inclusion of specific FSAR information commitments provides an appropriate enforcement mechanism for ensuring an up-to-date licensing basis. The license condition should also include a milestone schedule for ensuring that the specific FSAR information identified is included in an FSAR update required by 10 CFR 50.71(e).

Examples of the types of information that may be included in this license condition are:

- FSAR level design information from completed digital I&C DAC
- FSAR level design information from as-built reconciliations of piping
- Design features installed as a result of the completed pipe break hazards analyses
- Update to turbine missile generation analyses, as necessary, based on as-procured material data
- Update to reactor vessel materials data, as necessary, based on as-procured vessel material data

The NRC staff considers the above types of information to be appropriate to include in a timely FSAR update on a schedule that is more suitable to ensuring an updated design-basis for initial operation of new plants than that required by 10 CFR 50.71(e). For example, the updated information would ensure that the licensing basis for the facility is up-to-date prior to loading fuel, prior to initial criticality, prior to exceeding 5% of the authorized power level, etc. The COL applicant should specifically identify these FSAR information requirements and consolidate them under a license condition that includes a proposed milestone for implementation.

The NRC staff considers this information to have sufficient relevance and distinction from the types of information typically included in routine FSAR updates to warrant its inclusion in a license condition. Together with the requirements of 10 CFR 50.71(e) and Part 52, this type of license condition furthers the NRC's goal of ensuring that the design-basis for the facility (i.e., the FSAR) is up-to-date when operation of the facility begins. A license condition proposed by COL applicants that includes such FSAR commitments should be included in an appropriate section of the COL application to facilitate identification and tracking.

Examples:

- (1) *In a section of a previously certified design describing pipe rupture hazard evaluations, the DCD identifies that after the COL is issued and prior to fuel load, the COL holder will complete the as-built reconciliation of the pipe break hazards analysis in accordance with the criteria outlined in another section of the DCD. In this example, the commitment was previously characterized as a "COL holder item" since it cannot be completed until after license issuance. Based on the guidance above, either the COL applicant or the NRC staff could propose a license condition that includes a specific FSAR information commitment to address this item. Note that in this example, completion of the piping design was part of DAC included in the ITAAC and other more recent DC applicants have included the as-built reconciliation of the piping design as ITAAC. In this example, a pipe rupture hazard analysis is to be completed following completion of the piping DAC. The completed design, including the as-built reconciliation, is used to identify postulated break locations and necessary layout changes, support designs and locations, whip restraint designs and locations, and jet shield designs and locations, as necessary. The piping DAC, approved and certified in the DCD, was sufficient for the NRC staff to make its licensing determination. The basis for including the as-built reconciliation in a license condition with a specific FSAR information commitment is that it provided updated*

information for the licensing basis document on the final as-installed piping, including any necessary pipe whip restraints and/or jet shields that were installed.

- (2) *In a section of a previously certified design describing the seismic analysis of nuclear island structures, the DCD identifies that the COL holder will reconcile, prior to fuel load, the seismic analysis described in another section of the DCD for detail design changes, such as those due to as-procured or as-built changes in component mass, center of gravity, and support configuration based on as-procured equipment information.* In this example, the commitment was previously characterized as a “COL holder item” since it cannot be completed until after license issuance. Based on the guidance above, either the COL applicant or the NRC staff could propose a license condition that includes a specific FSAR information commitment to address this item. Please note that other more recent DC applicants have included the as-built seismic reconciliation in the ITAAC. The basis for including the as-built seismic reconciliation in a license condition with a specific FSAR information commitment in this example is that an analysis was provided either in the COL or in the referenced DCD that was sufficient for the NRC staff to make its licensing determination. The FSAR information commitment is for the as-built reconciliation of this analysis to be included as an update to the licensing basis document.

FSAR information commitments included in routine FSAR update:

Updated information that does not warrant inclusion in the above categories or that occurs after the milestone associated with the license condition should be included in the periodic FSAR updates required by 10 CFR 50.71(e). Guidance on FSAR updates is provided in RG 1.181, “Content of the Update Final Safety Analysis Report in Accordance with 10 CFR 50.71(e),” which endorses Revision 1 of Nuclear Energy Institute (NEI) 98-03, “Guidelines for Updating Final Safety Analysis Reports.” The guidance for these routine FSAR updates is contained in RG 1.181 and NEI 98-03 and is typically associated with:

- Changes to the facility in accordance with the requirements of 10 CFR 50.59
- Changes to the facility resulting from approved exemptions and departures from a referenced certified design
- Changes to the facility resulting from approved variances from a referenced ESP
- Amendments to the license in accordance with the requirements of 10 CFR 50.90

The following additional guidance should be considered by COL applicants when proposing FSAR information commitments in their application:

- Completion of COL action items via an FSAR commitment cannot be used to provide information to the NRC that is necessary to make a finding required for license issuance. However, completion of post-licensing information commitments or a COL action item that does not include information necessary for licensing via an FSAR commitment could be used to ensure that the licensing basis for the facility is updated and maintained in a current state.

- For COLs referencing certified designs that include as-built reconciliation activities in COL action items rather than in ITAAC, a license condition containing specific FSAR information requirements can be made to include the relevant as-built facility information from these activities in the FSAR (e.g., fire hazards analysis, pipe break hazards analysis, site-specific seismic responses and their impacts on design features, etc.).
- A license condition containing specific FSAR information requirements could be used to provide more schedule flexibility than the FSAR update requirements of 10 CFR 50.71(e) or license conditions for implementation of commitments (e.g., the licensee could provide a commitment to include information associated with NSSS vendors in an FSAR update at least 60 days prior to the initiation of construction).

Examples for routine FSAR information updates may be found in RG 1.181 and NEI 98-03.

Current Licensing Basis:

The Office of Nuclear Reactor Regulation Office Instruction LIC-100, Revision 1, “Control of Licensing Bases for Operating Plants,” provides the following discussion and definition for the term “current licensing basis”:

Although the terms “current licensing bases” and “licensing bases” are widely used in matters related to power reactors operating in accordance with the regulations in 10 CFR Part 50, the terms are not defined in Part 50 or major regulatory guidance related to Part 50. The following definition is provided by 10 CFR 54.3 pertaining to license renewal for power reactor facilities.

CLB is the set of NRC requirements applicable to a specific plant and a licensee’s written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design-basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 26, 30, 40, 50, 51, 54, 55, 70, 72, 73, 100, and appendices thereto; orders, license conditions, exemptions, and technical specifications. It also includes the plant-specific design-basis information defined in 10 CFR 50.2 as documented in the most recent FSAR as required by 10 CFR 50.71 and the licensee’s commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.

Establishing a common understanding of the existing licensing bases and related processes is especially important to our efforts to make significant revisions to the NRC’s regulatory approach. Improvements in this area are necessary as the NRC measures its performance not only in terms of maintaining safety, but also in how it accomplishes that objective. The NRC has established performance

goals that include ensuring openness in our regulatory processes and ensuring that NRC actions are effective, efficient, realistic and timely. Revising long-standing requirements and technical positions requires that we understand the complicated nature of how the licensing bases for power reactors has evolved over several decades. Establishing a common understanding of the various elements of the licensing bases for operating reactors can help in deciding how best to change the licensing bases for large or small sets of licensees.

A DCR is not a license and Part 52 is not listed as one of the sets of requirements that form part of the CLB, as defined in Part 54. However, the DCD information, when referenced in a COL application, becomes part of the licensing basis for that COL. The FSAR for a certified design (also known as the DCD) contains design-basis information. Because the design-basis information in the DCD becomes part of the licensing basis for a COL referencing that DCR, this guidance uses the term “licensing basis information” and is understood to include the design information in the DCD, which is approved in a DCR proceeding and incorporated by reference into a COL.

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

SRP Section 1.0
“Introduction and Interfaces”
Description of Changes

- I This Revision 2 to SRP Section 1.0 updates Revision 1, which was issued in November 2007, (ADAMS Accession No. ML072900601) to reflect the following changes from DC/COL-ISG-015:
1. Item 8, Interfaces with Standard Design in Section I. AREAS OF REVIEW, added a statement at the end of the discussion on COL Action Items.
 2. Section III. REVIEW PROCEDURES, added Item 4, Post-licensing commitments.
 3. Section IV. EVALUATION FINDING, added discussion for licensing project manager’s determination of appropriate post-licensing commitments options.
 4. Section VI. DEFINITIONS, replaced first paragraph with two paragraphs on the implementation of COL action items and requirements.
 5. Added Attachment A, “Guidance for NRC Review of Post-Combined License Commitments on Completion of COL Items” to SRP Section 1.0.
- II. This revision also includes changes to describe the 10 CFR Part 21 process, an evaluation by the applicants that reviews all defects and noncompliance reports submitted under 10 CFR Part 21, to determine their applicability and potential implications on DCs, revisions to DCs, or COLs issued between the DCR and COL application submittals for all design centers and COL applications as stipulated in 10 CFR 21.21.