HANDOUT #3
RG 1.206 Public Meeting on September 17, 2014
Proposed Updated RG 1.206 Section B. Discussion

B. Discussion

The Atomic Energy Act of 1954[1] (AEA), as amended, legislates the peaceful use of atomic energy. The AEA mandates that a license, issued by the U.S. Nuclear Regulatory Commission (NRC) is required for any utilization or production facility for industrial or commercial purposes. Section 103 of the AEA, "Commercial Licenses," authorizes the NRC to issue such licenses and Section 161 of the AEA, "General Provisions" grants the NRC the authority to issue rules, regulations, and orders governing the possession and use of special nuclear material. A Class 103 license, under Section 103, is required for the construction and operation of a nuclear power plant intended for commercial purposes to include the generation of electrical energy.

The NRC regulations are set forth in Title 10 of the Code of Federal Regulations (10 CFR) – Energy, Chapter I – Nuclear Regulatory Commission. The regulations pertaining to licensing for construction and operation of commercial nuclear power plants are provided at both 10 CFR Part 50, "Domestic Licensing of Product and Utilization Facilities" and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

The NRC regulations provide that a Class 103 license for a nuclear power plant may be applied for and issued via the regulatory process set forth in either 10 CFR Part 50 or 10 CFR Part 52. A brochure prepared by the NRC staff, NUREG/BR-0298, "Nuclear Power Plant Licensing Process," provides an overview appropriate for both prospective applicants and stakeholders. In summary, Part 50 is considered a "two-step" licensing process in which an applicant applies for a construction permit (CP) that authorizes construction of the nuclear plant. Subsequent to issuance of the CP, the CP holder initiates construction of the plant and applies for an operating license (OL) which, upon issuance by the NRC, authorizes plant operation. In contrast, Part 52 is considered a "one-step" licensing process in which an applicant applies for a combined license (COL) that authorizes both construction of the plant and conditional operation of the plant. The NRC verifies that inspections, tests, analyses, and acceptance criteria (ITAAC) stated in the combined license have been completed to ensure that the plant has been constructed as designed. Part 52, Subpart C, "Combined Licenses," sets forth the requirements and processes applicable to issuance of COLs for nuclear power plants.

Additionally, Part 52 includes the requirements pertaining to both early site permits (ESPs) and standard design certifications (DCs). An ESP is NRC approval of a site or sites for future placement of one or more nuclear power facilities (Subpart A, "Early Site Permits"). A DC is NRC approval of a final standard design for a nuclear power facility; and, each design certification is codified in an appendix to Part 52 (Subpart B, "Standard Design Certifications"). As provided in Part 52, the applications for, and issuance of, both ESPs and DCs are processes that are separate from the licensing process for COLs.

[1] http://legcounsel.house.gov/Comps/Atomic Energy Act Of 1954.pdf, or NUREG-0980 (AEA is in Volume 1) http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0980/; updated regulations may be found at http://www.nrc.gov/reading-rm/doc-collections/cfr/

A COL applicant, as stated in Part 52, has the option to reference an ESP, a DC, both an ESP and DC, or neither (§ 52.73, "Relationship to other subparts"). Thus, the COL applicant has the following options: 1) identify a custom (i.e., unique) nuclear plant design in the application for placement at the site identified in the application; 2) reference a DC for placement at the site identified in the application; 3) identify a custom nuclear plant design in the application and reference an ESP; or, 4) reference both a DC and an ESP. For a COL applicant, the application process is the same for each option; however, the application content is dependent upon the option selected at the time the application is tendered[2]. In addition, an applicant may request a limited work authorization (LWA) in accordance with 10 CFR 50.10, as a part of an ESP application in accordance with 10 CFR 52.17(c), or as a part of a COL application in accordance with 10 CFR 52.80(c).

Part 52, Subpart C, "Combined Licenses," requires a COL application to contain comprehensive and detailed information. For example, the contents of a COL applicant's final safety analysis report is addressed at § 52.79, "Contents of applications; technical information in final safety analysis report," and the environmental report at § 51.50, "Environmental report-construction permit, early site permit, or combined license stage." The COL application which references an ESP and/or DC contains only the supplemental information necessary to address issues not resolved as a part of the ESP and/or DC that is incorporated by reference. A COL applicant referencing a DC would have a significant portion of the proposed facility design, and design characteristics, already reviewed by the NRC before submitting the COL application. Correspondingly, a COL applicant referencing an ESP would have a significant portion, if not all, of the site characteristics already reviewed by the NRC before submitting the COL application. With some limited exceptions, the NRC does not intend that a COL applicant resubmit information previously submitted and reviewed. Accordingly, the COL application would include the remaining portions of the facility design and site characteristics information that require review. For example, § 52.79(b) specifies the final safety analysis report content if the COL application references an ESP and § 52.79(d) specifies the final safety analysis report content if the COL application references a DC.

Figure 1 illustrates the Part 52 process for a COL, both with and without the COL application incorporating by reference an ESP or DC. In Figure 1, the solid arrows indicate the COL process from submittal of the application, through the review and hearing process and verification of ITAAC, to NRC authorization for plant operation. The dashed arrows indicate the options for the COL application to reference an ESP and/or DC.

[2]The application is considered tendered when it is formally submitted to the NRC and is undergoing the acceptance review to determine if it can be docketed for a detailed technical review.

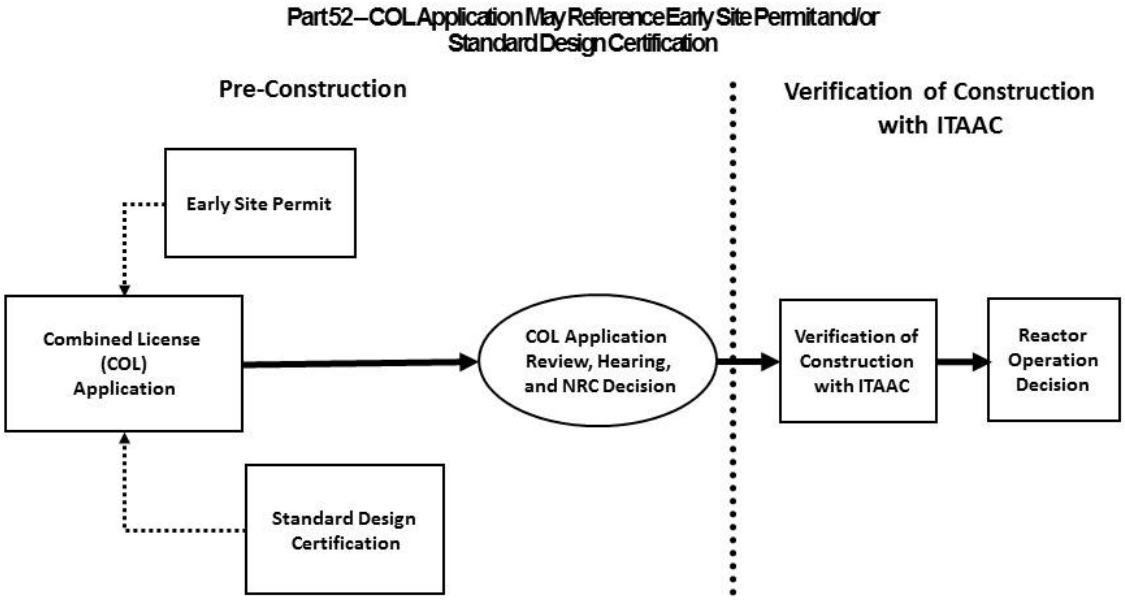

Figure 1 – Simplified Part 52 Process – COL Licensing

Applications – 10 CFR Part 52

The NRC intends that applications submitted under the provisions of 10 CFR Part 52, to include COLs, ESPs, and DCs, adhere to the standardized format and content identified in this regulatory guide. The guidance in section C.1, "Applications -- Standard Format & Content," identifies the standard parts of an application and, additionally, describes the format and content of the respective application parts.

An overview of the standard parts and content of each type of application is provided in Table 1, "Application Format & Content." In Table 1, the application parts are identified as mandatory ("√"), "optional," or "not applicable" for a COL, ESP, and DC application. The Table 1 explanatory notes provide a summary of the content of the respective application parts and identify the applicable NRC regulations.

Table 1: Application Format & Content

	Combined License (Part 52 Subpart C--Combined Licenses)	Early Site Permit (Subpart A—Early Site Permits)	Standard Design Certification (Subpart B--Standard Design Certifications)
Application Part	[Refer to Note 1]	[Refer to Note 2]	[Refer to Note 3]
Transmittal Letter	✓	✓	✓
Part 1: General & Financial Information	✓	✓	✓
Part 2: Safety Analysis Report	✓	✓	✓
Part 3: Environmental Report	✓	✓	✓
Part 4: Technical Specifications	✓	Not Applicable	✓
Part 5: Emergency Plans	✓	Optional	Not Applicable
Part 6: Security Plans	✓	Not Applicable	Not Applicable
Part 7: Exemptions / Departures / Variations	✓	Not Applicable	Not Applicable
Part 8: ITAAC	✓	Not Applicable	✓
Part 9: Proprietary Information [redacted from other parts]	✓	✓	✓
Part 10: Quality Assurance Program Description	✓	✓	✓
Part 11: Referenced Standard Design Certification	Optional	Not Applicable	Not Applicable
Part 12: Referenced Early Site Permit	Optional	Not Applicable	Not Applicable
Part 13: Supplemental Information	Optional	Optional	Optional

Table 1, Note 1:
Combined License requirements are set forth in Part 52, Subpart C, “Combined Licenses.”

- ✓ Part 1, General & Financial Information, contains all of the information required by § 52.77.
- ✓ Part 2, Final Safety Analysis Report, contains information required by § 52.79.
- ✓ Part 3, Environmental Report, contains the information required by § 52.80(b).
- ✓ Part 4, Technical Specifications, contains the information required by § 52.79(a)(30).
- ✓ Part 5, Emergency Plans, contains the information required by § 52.79(a)(21).
- ✓ Part 6, Security and Safeguards Plans, contains information required by § 52.79(a)(35) & (36).
- ✓ Part 7, Exemptions / Departures / Variances, is information required by § 52.79(b), (c); § 52.93.
- ✓ Part 8, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), contains information required by § 52.80(a).
- ✓ Part 9, Proprietary Information, contains information considered to be proprietary, sensitive and/or personal and requested to be withheld from disclosure in accordance with 10 CFR 2.390.
- ✓ Part 10, Quality Assurance Program Description, is information required by § 52.79(a)(25).

- ✓ Part 11 [optional]. The COL application referencing a standard design certification, as provided in § 52.79(c)(1), includes the referenced design certification FSAR in Part 11 of the COL application.
- ✓ Part 12 [optional]. The COL application referencing an early site permit, as provided in § 52.79(b)(1), includes the referenced early site permit SSAR in Part 12 of the COL application.
- ✓ Part 13 [optional]. Information supplemental to that provided in other parts of the application and which is pertinent for review by the NRC is included in Part 13. For example, the applicant may request a limited work authorization and include information required by § 52.80(c).

Table 1, Note 2:
Early Site Permit requirements are set forth in Part 52, Subpart A, "Early Site Permits."

- ✓ Part 1, General & Financial Information, contains all of the information required by § 52.16.
- ✓ Part 2, Site Safety Analysis Report, contains the information required by § 52.17.
- ✓ Part 3, Environmental Report, contains the information required by § 52.17(a)(2).
- ✓ Part 4 – not applicable.
- ✓ Part 5, Emergency Plans, is optional. As provided in § 52.17(b), the applicant must identify any significant impediments to an emergency plan in the site safety analysis report and, in addition, may either describe major features of emergency or submit complete and integrated emergency plans.
- ✓ Part 6 – not applicable.
- ✓ Part 7 – not applicable.
- ✓ Part 8 – not applicable.
- ✓ Part 9, Proprietary Information, contains that information considered to be proprietary, sensitive and/or personal and requested to be withheld from disclosure in accordance with 10 CFR 2.390.
- ✓ Part 10, Quality Assurance Program Description, contains the information required by § 52.17(a)(1)(xi) related to design, fabrication, construction, testing of future facility.
- ✓ Part 11 – not applicable.
- ✓ Part 12 – not applicable.
- ✓ Part 13 [optional]. Information supplemental to that provided in other parts of the application and which is pertinent for review by the NRC is included in Part 13. For example, the applicant may request a limited work authorization and include the information required by § 52.17(c).

Table 1, Note 3:
Standard Design Certification requirements are set forth in Part 52, Subpart B, "Standard Design Certifications."

- ✓ Part 1, General & Financial Information, contains all of the information required by § 52.46.
- ✓ Part 2, Final Safety Analysis Report, contains the information required by § 52.47(a).
- ✓ Part 3, Environmental Report, contains the information required by § 52.47(b)(2).
- ✓ Part 4, Technical Specifications, contains the information required by § 52.47(a)(11)
- ✓ Part 5 – not applicable.
- ✓ Part 6 – not applicable.
- ✓ Part 7 – not applicable.
- ✓ Part 8, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), contains information required by § 52.47(b)(1).
- ✓ Part 9, Proprietary Information, contains that information considered to be proprietary, sensitive and/or personal and requested to be withheld from disclosure in accordance with 10 CFR 2.390.
- ✓ Part 10, Quality Assurance Program Description, contains information required by § 52.47(a)(19) applied to design of the facility structures, systems, and components.
- ✓ Part 11 – not applicable.
- ✓ Part 12 – not applicable.
- ✓ Part 13 [optional]. Information supplemental to that provided in other parts of the application and which is pertinent for review by the NRC staff is included in Part 13.

Applications – Safety Analysis Reports

The NRC expects that safety analysis reports submitted as part of an application under the provisions of 10 CFR Part 52 adhere to the standardized format and content identified in the Appendices of this regulatory guide. The requirements of 10 CFR Part 52 determine the scope and content of the respective safety analysis reports (i.e., the final safety analysis report of a COL application, the site safety analysis report of an early site permit application, and the final safety analysis report [aka design control document] of a standard design certification application). However, the Appendices of this regulatory guide contain the guidance for all safety analysis reports to share a common format, including organization, structure, and numbering scheme, that parallels the organization and chapter/section numbering of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." This standardization of format is intended to facilitate assurance that the safety analysis report is complete (i.e., all applicable requirements are addressed) and to support efficient and effective review and processing of an application.

The scope and content of the safety analysis reports and interrelationship among the COL, ESP, and DC are illustrated in Figure 2 and Figure 3. Figure 2 is a simplistic illustration of the scope and content of the safety analysis reports for each type of application. As depicted by the large circle, a COL final safety analysis report is all-inclusive; it contains all safety-relevant information pertaining to both the specific plant design and the specific site. The embedded small circles depict the subsets of information included in the other applications; the design-specific information contained in a DC final safety analysis report and the site-specific information contained in an ESP safety analysis report. While not included in the below figure, portions of the safety analysis report may also be included as part of an LWA application. NRC regulations require a COL final safety analysis report to contain all required safety-relevant information, either contained directly in the report or incorporated by reference.

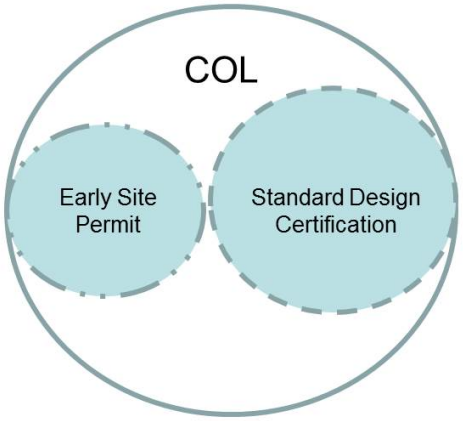

Figure 2 – Scope of Safety Analysis Reports

Figure 3 provides a more detailed illustration for a COL application referencing a DC and ESP. The DC final safety analysis report includes the design-specific characteristics and the design-specific site parameters (i.e., parameters identifying the range of potential sites which could accommodate the design). The early site permit site safety analysis report, and the ESP itself, include the site-specific characteristics and the site-specific design parameters (i.e., parameters identifying the potential designs which could be accommodated by the site). Accordingly, when a COL references a DCD, the COL final safety analysis report contains: 1) information sufficient to demonstrate that the site characteristics fall within the site parameters specified in the DC and 2) when a COL references an ESP, information sufficient to demonstrate that the design characteristics of the facility fall within the design parameters specified in the ESP. In addition, the COL final safety analysis report includes supplemental information to address any departures or exemptions from the DC, any variances from the ESP, and all COL action items.

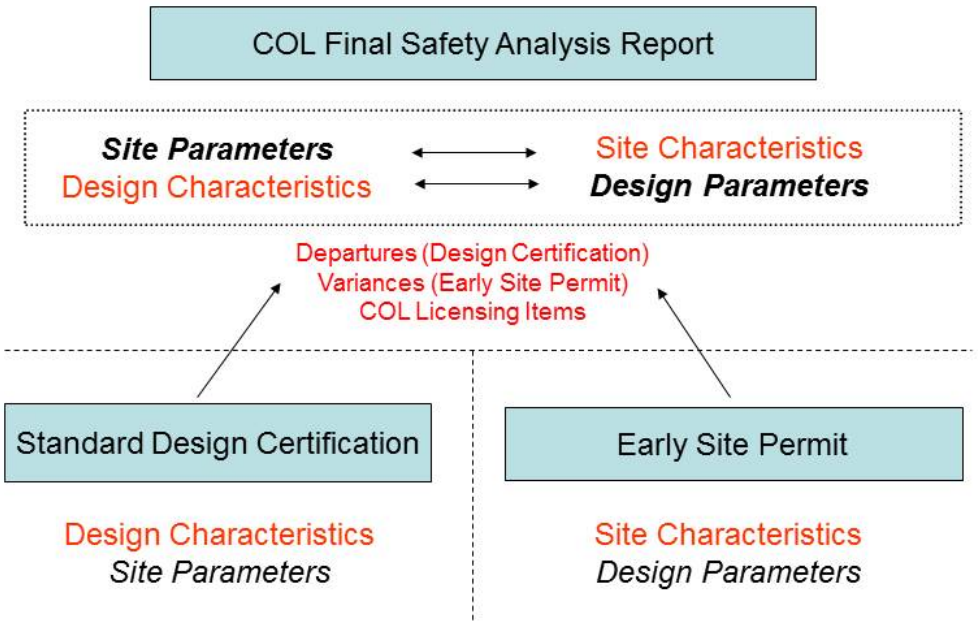

Figure 3 – COL Final Safety Analysis Report

Applications – Review Processes

The review process related to an application submitted under Part 52 may be separated into two phases – pre-application and formal application review. Section C.2, "Applications – Policy &

Regulatory Topics," of this regulatory guide, provides guidance on key topics, activities, and issues pertaining to both pre-application and the formal application review.

The pre-application activities (e.g., application-related interactions with NRC staff, meetings with NRC staff regarding technical issues, pre-application readiness assessment) are most effective when initiated well in advance of the expected application date allowing for adequate time to address any significant technical or policy issues and to develop new regulatory tools that may be needed in advance of the application. Pre-application activities also allow an applicant to understand and discuss staff concerns before submittal, support preparation of a complete and high-quality application, and provide the applicant with an understanding of NRC expectations and processes for formal submittal of the application.

The formal review process starts with the acceptance review and typically continues until the detailed technical review is completed with an NRC decision on whether to issue a permit, license, or rule. The review process may also end if an applicant chooses to stop the review and notifies the NRC of that decision. The formal review typically involves requests for additional information (RAIs) issued to the applicant for formal response, public meetings to resolve technical issues, and audits of material available from the applicant, but not required to be submitted, to support review of the application. The review may also include an applicant's request for materials licenses under 10 CFR Parts 30, 40, & 70, and/or an LWA, if appropriate.

The NRC expects that applications submitted under the provisions of 10 CFR Part 52 be complete, sufficiently detailed, and accurate in order to support an effective and efficient review. Applicants should support the NRC's application acceptance review and formal review process through timely response to NRC staff inquires.