

The following comments and questions were submitted by the public prior to the public workshop held on June 13-14, 2006

DG-1145 Development Questions

C.I.1-1 There are several places where the applicability of this guidance for different combined license (COL) application scenarios is stated. The applicability is stated differently in different subsections. For example, the first paragraph states "The guidance provided in DG-1145, Section C.1, is applicable to a combined license applicant that references neither a certified design nor an early site permit. Additional guidance for COL applicants referencing a certified design and/or early site permit is provided in Section C.III of this document." Section 1.4 states that "The division of responsibility between the reactor designer or certified plant designer (sic), architect-engineer, constructor, ----". Section 1.8 states "The guidance provided in this regulatory guide is for a COL applicant that does not reference a certified design as part of the application". Section 1.8 goes on to say that there would be no interfaces for an application that includes all design and site information without reference to a design control document (DCD) or early site permit (ESP).

Our understanding was that DG-1145 is intended to cover all scenarios, i.e., COL applications referencing a Certified Design and/or ESP as well as a COL application referencing either a DCD or ESP or neither. The wording in this section implies that all the information requirements for COL applications referencing a DCD and/or an ESP will be in Section C.III of the guidance. The intent of the approach for all of DG-1145 should be clarified since this is a critical aspect of the use of the guidance.

C.I.1.1.6.6-1 In section 1.1.6.6, Is the list of acronyms for the safety analysis report (SAR) or the entire application?

C.I.1.6-1 In section 1.6, the last two sentences in the first paragraph requires a summary of information submitted to the Commission in other applications and incorporated by reference in the combined license (COL). Industry did not plan to summarize information in Topical Reports and other documents referenced in a generic design control document (DCD). We believe this requirement is carried over from the Part 50 licensing processes. Incorporation of the DCD by reference is permitted by 10 CFR 52 and that rule does not require the COL application to include a summary of the DCD. What is the intent of this requirement?

C.I.1.1.6.2-1 Section 1.1.6.2 addresses compliance with the standard review plan (NUREG-0800) for technical guidance and acceptance criteria. (emphasis added). However, 10 CFR 50.34 (g)(2) requires an evaluation of the differences in the design features, analytical techniques and procedural measures proposed

DG-1145, Public Comments and Questions

for a facility and those corresponding features, techniques and measures given in the SRP acceptance criteria. 10 CFR 52.79(b) incorporates 50.34(g)(2) by reference. Is it the intent of the staff to expand the information required beyond that required in the rules?

- C.I.1.9-1 Sections 1.9.1, 1.9.2, and 1.9.3 requires a combined license (COL) applicant to provide an evaluation of compliance with regulatory guides, Standard Review Plans, and generic issues in effect 6 months prior to the date of application. Industry understands that the effective date for such an evaluation for issues resolved in a referenced generic design control document (DCD) or early site permit (ESP) is tied to the application date for those documents. Therefore, the only evaluation required for a COL application referencing a certified design and/or ESP would be for those Reg. Guides, SRPs and generic issues that are beyond the scope of the referenced DCD and/or ESP. Please confirm this understanding.
- C.I.1.9-2 The second Section 1.9.4 should be 1.9.5.
- C.I.1.9.2-1 Section 1.9.2. the last word in the last sentence should be requirement vs. requirements.
- C.I.1.9.4-1 Section 1.9.4 addresses the requirements for including information in an application that demonstrates how operating experience insights from generic letters and bulletins, or comparable international operating experience, have been incorporated into the plant design. The last sentence in paragraph 3 of Section 1.9.4 states "- generic communications that remain open and which are technically relevant to the COL applicant's facility design, including operational aspects of the facility, should be addressed in the application." (emphasis added) Please clarify if the operating experience review for insights is only applicable to facility design.
- C.I.3.1.4.1-1 Section 3.1.4.1(3) requires a discussion of the protection provided to cope with in-leakage from such phenomena as cracks in structure walls. This appears to be a new requirement. What is the regulatory basis for requiring this information?
- C.I.3.2.1-1 Section 3.2.1 states that "Plant features, including foundations and supports, that are designed to remain functional in the event of a safe shutdown earthquake (SSE, see Section 2.5) or surface deformation should be designated Seismic Category I." What is the definition of "surface deformation" and the regulatory basis for this addition to the requirements in Regulatory Guide 1.70?
- C.I.3.2.1-2 Section 3.2.1, last paragraph requires a list of structures, systems, and components (SSCs) designed for an operating-basis earthquake (OBE). Designing equipment for an OBE is no longer a requirement. What is the basis for this information requirement?

DG-1145, Public Comments and Questions

- C.I.3.3.1 Section 3.3.1 requires the application to provide "current" references for the basis, including assumptions. What is intended by the use of the word current? Some references may not be the latest version of a document but may be adequate. Please clarify.
- C.I.3.4.1-1 Section 3.4.1(1) requires identification of safety- and non-safety-related structures, systems, and components (SSCs) that should be protected against external flooding resulting from natural phenomena and internal flooding resulting from failures of non-seismic tanks, etc. The requirement to address protection of non-safety related SSCs is new. Does the staff expect a statement in this section that non-safety SSCs are not credited in the design and therefore not included in the analysis?
- C.I.3.5.1.6-1 The third paragraph in section 3.5.1.6 refers to radiological consequences in excess of the exposure guidelines of 10 CFR 100. The correct reference for exposure guidelines should be 10 CFR 50.34(a)(1).
- C.I.3.6.2.1-1 Section 3.6.2.1 requires that the combined license (COL) applicant, "Provide the resulting number and location of design basis breaks and cracks. Also provide the postulated rupture orientation ... for each postulated design basis break location." Given that the number and location of breaks and splits is typically dictated by detailed stress and fatigue analysis and that this detailed analysis will not be completed for all high and moderate energy piping until the detailed design phase (i.e. post COL application submittal), it is impractical for the COL applicant to provide this information in the COL application. This requirement essentially forces the applicant to guess where the breaks and splits will be in his high and moderate energy piping or to guess which break and split locations and orientations will be bounding. In either case, if the initial guesses do not prove to be accurate, there would be implications relative to licensing the plant. We recommend that this requirement be removed from DG-1145.
- C.I.3.6.3-1 Section 3.6.3(1)(a) requires types of materials and material specifications (including heat numbers) used for base metal, weldments, nozzles and safe ends. This information will not be available at the time a combined license (COL) application is submitted and should be in the category of information to be verified by inspection during plant construction.
- C.I.3.6.3-2 C.I.3.6.3(1)(a) requires that the COL applicant to "Identify the types of materials and material specifications (including heat numbers) used for the base metal, weldments, nozzles, and safe ends." [for LBB piping]. For the near term COL submittals that DG-1145 is provided for, the new plant designs LBB candidate piping components would not have been ordered so it is impractical (if not impossible) to provide heat numbers on these components. We recommend that this requirement be removed from DG-1145.
- C.I.3.6.3-3 Section 3.6.3(1)(b) requires that the application include material properties including toughness (J-R curves) and tensile (stress-strain curves) data at

DG-1145, Public Comments and Questions

temperatures near the upper range of normal plant operation. As built properties will not be available at the time the application is submitted. The combined license (COL) application can include representative properties that would be updated to as-built conditions during construction.

- C.I.3.6.3-4 C.I.3.6.3(1)(b) requires that the COL applicant: "Provide the material properties, including the following: toughness (J-R curves) and tensile (stress-strain curves) data at temperatures near the upper range of normal plant operation; long-term effects attributable to thermal aging; yield strength and ultimate strength." [for LBB piping]. The material properties for the base metal, weldments and safe ends can only be provided for those materials and material specifications planned for use (detailed nozzle properties should not be required since they are not considered in an LBB analysis). That is to say, the material properties of the as-built materials will not be available until the construction phase. Material properties that will be very consistent with the actual materials that will be used and fabricated for the new plant design can be provided. We recommend that this requirement be reworded to allow the applicant to submit representative material properties.
- C.I.3.6.3-5 Section 3.6.3(2)(a) requires that the application include as-built drawings of pipe geometry, etc. Obviously, these will not be available for the application but should be available for inspection during construction.
- C.I.3.6.3-6 C.I.3.6.3(2)(a) requires that the combined license (COL) applicant: "Provide as-built drawing(s) of pipe geometry (e.g., piping isometric drawings)." The as-built drawings would not be available until the construction phase. Design isometrics can be provided. We recommend deleting the word "as-built" from item 2(a).
- C.I.3.6.3-7 Section 3.6.3(2)(c) requires a discussion of snubber reliability including any technical specification requirements. Typically, snubbers are no longer addressed in the tech specs.
- C.I.14-1 Does the Staff expect to update Regulatory Guides 1.16 and 1.68 in the near term?
- C.I.14.2.2-1 In the first sentence of section 14.2.2, the term "organizational units" is used here and elsewhere in the guidance. Is that term defined elsewhere in regulatory guidance applicable to a COL application? What is the definition?
- C.I.14.2.2-2 Section 14.2.2 states that the applicant should develop a training program for each fundamental group in the organization relative to the schedule for pre-op and startup testing. This type of information was not developed in the past per Regulatory Guide 1.70. Is there guidance elsewhere for this training?
- C.I.14.2.2-3 The third sentence in section 14.2.2 states that the safety analysis report (SAR) should describe how and to what extent the applicant's plant operating and technical staff will participate in each major test phase. Applicants can describe

DG-1145, Public Comments and Questions

in general terms the degree of involvement of the plant staff in testing but the details will not be known at the time the combined license (COL) application is submitted.

C.I.14.2.4-1 The wording in section 14.2.1 implies that the details of the administrative control procedures will be known and described in the combined license (COL) application. A general description can be provided in the COL application. The staff and Industry need to discuss the expectations for this section.

C.I.14.2.4-2 Section 14.2.4. states that the methods to be used to ensure retesting required for modifications or maintenance remains in compliance with inspection, test, analyses and acceptance criteria (ITAAC) requirements should be described. We expect that final safety analysis reports (FSARs) will describe that:

The licensee is responsible for evaluating any work performed after an ITAAC determination has been made to ensure that the acceptance criteria continue to be met,

This evaluation may be based on post-work testing, engineering analysis, or a combination of both testing and analysis, and available for NRC inspection, and

Like non-ITAAC related work, this work will be performed under approved maintenance and/or plant change processes and procedures.

The specific methods to be used (i.e., post-work testing and/or analysis) may be as varied as the ITAAC themselves and are thus not practical to describe the FSAR. Rather, does the staff agree that a more general description similar to the bullets identified above would be appropriate in this regard for Section 14.2.4 of the FSAR?

C.I.14.2.5-1 The last two sentences in section 14.2.5 appear to be more appropriate for Section 14.2.6.

C.I.14.2.8-1 Section 14.2.8 describes the review of operating and testing experience in the past tense, i.e., performed prior to combined license (COL) application submittal. It is more likely that operating experience closer to the time that the test procedures are written will be reviewed and experience applied to procedures as they are developed and as appropriate.

C.I.14.2.8-2 The second paragraph in section 14.2.8. requests a "summary description" of pre-op and startup testing for unique or first-of-a-kind design features. Does the NRC staff agree that the level of detail typically provided in safety analysis report (SAR) test abstracts is appropriate for this section?

C.I.14.2.10-1 Section 14.2.10 states that the applicant should "describe the procedures" that will guide initial fuel loading and initial criticality. The AP1000 and ESBWR

DG-1145, Public Comments and Questions

provide criteria that must be met for procedures for initial fuel loading and criticality. Does the NRC staff agree that the information provided in these documents is the expected level of detail for a COL application?

- C.I.14.2.11-1 The fifth sentence in section 14.2.11 states that each test required to be completed before initial fuel load or designed to satisfy the requirements for completing inspection, test, analyses, and acceptance criteria (ITAAC) should be identified, cross-referenced and provided with the combined license (COL) application or be made available for audit during NRC COL application review. These procedures will be prepared during construction and will, therefore, not be available prior to issuance of the COL.
- C.I.14.2.11-2 Section 14.2.11.e requires approved test procedures be made available 60 days prior to use. This commitment can be made, but experience indicates that it is not unusual for procedures to be revised during this 60-day window due to testing experience and a number of other reasons. Providing an approved procedure 60 days prior to the scheduled testing should not be construed as a commitment to "freeze" the procedure during that window.
- C.I.14.2.11-3 The third sentence in the first paragraph of section 14.2.11 states that the sequential test schedule for testing individual structures, systems, and components (SSCs) should be provided. The detailed testing schedule will not be available at the time the application is submitted but will be available later during construction. This section should indicate that a high level schedule be provided with the application.
- C.I.14.3-1 Section 14.3, 4th paragraph, The third sentence in the fourth paragraph in Section 14.3 references Section 13.6 for Security ITAAC, and Section 13.6 references Section 14.3.
- C.I.14.3-2 Section C.1.14.3 states that combined license (COL) inspection, tests, analyses, and acceptance criteria (ITAAC) should not be included as part of the final safety analysis report (FSAR) because ITAAC cease to exist after the Commission's Section 52.103(g) finding. ITAAC would not be unlike other FSAR info that has a limited FSAR lifetime, such as the Start-up Test Program, Technical Specifications and Construction QAP. Are there other reasons why ITAAC should be submitted separately from the FSAR?
- C.I.14.3-4 Section C.1.14.3 states that COL applicants should describe their methods and criteria for establishing ITAAC. Substantial guidance in this regard is provided in draft SRP 14.3 (1996) and in Section 14.3 of the AP1000 DCD. As the industry has discussed with the NRC, COL applicants will use the same methods and criteria for defining site-specific ITAAC as were used for design certification ITAAC. Why has the staff not provided that type of guidance here, or will this type of guidance be provided in Section C.II.2? What is the relationship between the guidance in C.I.14.3, C.II.2, and C.III.7? Does the staff agree that Section 14.3 for a COL applicatoin that references a design certification may consist

DG-1145, Public Comments and Questions

largely of a reference to design control document (DCD) Section 14.3?

- C.I.15-1 The first paragraph in section 15.0 refers to policies and procedures that may not be available at the time the COLA is submitted. The balance of the Chapter 15 guidance does not refer to any policies or procedures. What policies and procedures are these?
- C.I.15-3 The fourth paragraph in section 15.0 lists a number of TMI Action Plan items that must be addressed. Some of these were not addressed in generic design control documents (DCDs) even though the subject matter is in the generic DCD scope. We understand that a combined license (COL) application referencing a certified design would not be required to address the generic design issues in this list since the DCD information was determined to be adequate for that scope during the design certification process. This comment also applies to the information on Generic Safety Issues and operating experience insights.
- C.I.15.1-1 Section 15.1, The 1st sentence. It appears that a word(s) is missing in the first line.
- C.I.15.6.2-1 Item f in section 15.6.2 requests a discussion of the basis in the emergency operating procedures (EOPs) for operator response, available instrumentation and timing. Typical safety analysis report (SAR) Chapter 15 analyses include any credited operator actions in the sequence of events following an accident or transient. The basis for assumed action times and available instrumentation were described in the basis documentation for the EOPs. It is not clear what level of detail is requested here for inclusion in Chapter 15.
- C.III.7-1 The last sentence of the first paragraph under DC-ITAAC says guidance on physical security ITAAC is provided in Section C.I.13.6. However, no such guidance is provided there. We agree that when generic physical security ITAAC are established, they should be presented in Section C.I.13.6.
- C.III.7-2 The guidance states that combined license (COL) applications "must" include physical security ITAAC, in the same way that COL applications "must" include emergency planning (EP) inspections, tests, analyses, and acceptance criteria (ITAAC). However, EP ITAAC are unique in the way they are called out in the regulation as required. We recommend the guidance be reworded to say that COLAs will contain physical security ITAAC identified in the referenced DCD and should be supplemented as necessary consistent with guidance on generic PS-ITAAC. The balance of the guidance on development of generic PS-ITAAC is appropriate.
- C.III.7-3 There is a sixth ITAAC scenario: a COL application that refers to a design certification but no ESP.
- C.III.7-4 The phrasing is different for discussion of the same topic under differing scenarios. In particular, under scenario 3, it says, "The COL applicant in

DG-1145, Public Comments and Questions

scenario 3 that references an ESP may only include the generic emergency planning (EP) ITAAC as described in Section C.I.13.3 of this regulatory guide." While under scenario 5, it says, "the COL applicant in this scenario may only have included the generic EP-ITAAC provided in Section C.I.13.3 of this regulatory guide as part of the ESP referenced in the application. The differing phrasing affects the meaning of these sentences. Please clarify the intent of these statements and assure consistency of the various scenario discussions.

C.III.7-5 It may simpler, and promote consistency, to present the guidance on the various ITAAC scenarios in a tabular format.