UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

March 6, 2007

MEMORANDUM TO: ACRS Members

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS/ACNW

SUBJECT: CERTIFICATION OF THE MINUTES OF THE FUTURE PLANT DESIGNS SUBCOMMITTEE MEETING ON DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS" NOVEMBER 30, 2006, ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on March 6, 2007, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment:
F. Gillespie
S. Duraiswamy
C. Santos

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MEMORANDUM TO: David C. Fischer, Senior Staff Engineer
Technical Support Staff, ACRS

FROM: Thomas S. Kress, Chairman
Future Plant Designs Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS SUBCOMMITTEE MEETING ON DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS" NOVEMBER 30, 2006, ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on November 30, 2006, are an accurate record of the proceedings for that meeting.

T. S. Kress 3/6/07

Thomas S. Kress, Date
Future Plant Designs Subcommittee, Chairman

Issued: March 6,2007

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
FUTURE PLANT DESIGNS SUBCOMMITTEE MEETING MINUTES
NOVEMBER 30, 2006
ROCKVILLE, MARYLAND

INTRODUCTION

The ACRS Subcommittee on Future Plant Designs met on November 30, 2006, at 11545 Rockville Pike, Rockville, Maryland, in Room T-2B3. The purpose of this meeting was to hear presentations by and hold discussions with representatives of the NRC staff, Nuclear Energy Institute (NEI) and other meeting participants regarding DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)." The Subcommittee gathered information, analyzed relevant issues and facts, and formulated proposed positions and actions, as appropriate, for deliberation by the full Committee. The entire meeting was open to public attendance. Mr. David C. Fischer was the cognizant staff engineer and the Designated Federal Official for this meeting. The Subcommittee received no written comments, or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 8:30 am and adjourned at 3:36 pm.

ATTENDEES

ACRS

Thomas S. Kress, Chairman
Said Abdel-Khalik, Member (via teleconference)
J. Sam Armijo, Member
Mario V. Bonaca, Member
David C. Fischer, ACRS Staff
Michael Corradini, Member
William J. Shack, Member
John D. Sieber, Member
Graham B. Wallis, Member

NRC

David Matthews, NRR/DNRL
Eric Oesterle, NRR/DNRL
Joe Colaccino, NRR/DRA
Donnie Harrison, NRR/DRA
Nick Saltos, NRR/DRA
Stephen Tingen, NRR
Jerry Wilson, NRR/DNRL
Mark Rubin, NRR/DRA
Bob Palla, NRR/DRA
Bruce Musico, NSIR/DPR

ATTENDEES (CONT'D)

OTHERS

Leslie Kass, NEI
Andrea Sterdis, Westinghouse
Meghan Goldman, DOE
Martha Shields, DOE
Jerry Mauck, South Texas Project
Eddie R. Grant, NuStart/EXCEL Services
Joe Mihalcik, UniStar Nuclear/Constellation
Ryusi Iwasaki, Toshiba

A complete list of attendees is in the ACRS Office file and will be made available upon request. The presentation slides and handouts used during the meeting are attached to the Office Copy of these minutes.

OPENING REMARKS BY THE SUBCOMMITTEE CHAIRMAN

Dr. Thomas S. Kress, Chairman of the Future Plant Designs Subcommittee, stated that the purpose of this meeting was to summarize and discuss the technical content of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," discuss the public comments that the staff received on DG-1145, and summarize how the staff plans on resolving the public comments. He explained that because of the document's formidable size, the committee assigned different chapters to individual members that may have some knowledge of that particular area. He said that individual member comments were developed, provided to the staff, and would be discussed during the DG-1145 overview portion of the meeting.

STAFF PRESENTATIONS

Mr. David Matthews, Director of NRO's Division of New Reactor Licensing provided the staff introductory comments. He said that DG-1145 development effort is being done in parallel with, and is meant to be consistent with, the proposed revisions to Part 52, currently being considered by the Commission. He said that these efforts needed to be completed in a timely manner in order to support the 13 COL applications expected in the beginning of fiscal year 2008, and a total of 20 possible COL applications by the end of fiscal year 2008. Mr. Matthews said that DG-1145 was developed with a high level of external stakeholder participation (e.g., numerous public workshops). He said that DG-1145 was developed to support the staff's expectation that COL applications will be of a high-quality and will be complete. He also said that DG-1145 is formatted in such a way to facilitate applications being prepared under all of the options that are outlined in 10 CFR Part 52 (e.g., a COL application supported by a design certification, a COL application supported by an early site permit, both or neither. The development of DG-1145 was an intensive, expedited, and committed effort on the part of the staff and management with a high level of Commission interest. Mr. Matthews said that the staff is looking to have DG-1145 out within a couple of weeks of publishing the revised Part 52. Mr. Matthews then suggested that the subcommittee not get a presentation on the regulatory treatment of non-safety systems (RTNSS). Mr. Colaccino (NRO) said that the guidance in DG-1145 on RTNSS was taken directly from Chapter 22 of the AP1000 design certification safety evaluation (NUREG-1793), which the Committee has already reviewed. He said that this guidance is not new and is consistent with SECY-94-084 and SECY-95-132 and their associated SRMs. He said that while there are no RTNSS requirements in the revised version

of Part 52 currently before the Commission, the concept of RTNSS is not going away (referring to a recent meeting on RTNSS associated with the staff's ESBWR design certification review). Dr. Bonaca and Dr. Shack said that the guidance on RTNSS should be retained in DG-1145 since the concept of RTNSS is not going away.

DG-1145 Overview

Mr. Oesterle (NRR/DNRL), the lead project manager for the development of DG-1145, provided an overview and status of DG-1145. He said there won't be presentations on each and every section of DG-1145, as that would take too long. Rather, he said that time had been reserved time at the end of his overview presentation for the Subcommittee to ask questions on specific sections of DG-1145. To support that Q&A session, he said that many of the staff members who were involved in development of DG-1145 are here to respond to questions. Mr. Oesterle noted that the draft DG-1145 which the Subcommittee reviewed was based on the proposed Part 52 rule that was issued in March of 2006. He acknowledged that changes to DG-1145 will need to be made to make it comport with the final rule that is ultimately approved by the Commission. Dr. Wallis expressed concern that more time was not allotted on the agenda for the Subcommittee to dialogue with the staff.

For several years prior to the development of DG-1145, the staff was engaged with the industry and NEI in their effort to develop guidance for COL Applications (NEI 04-01). Revision E of NEI 04-01 contains much useful guidance for COL applicants that reference both an ESP and a certified design, specifically the AP1000 design. With the passage of Energy Policy Act of 2005 and the resulting potential increase in the number of COL applicants, the staff recognized the need for broader guidance to cover any COL application scenario permitted by Part 52. While the staff did not anticipate receiving a COL application for a custom (non-certified) plant design, the staff provided guidance for this scenario because it could also be used by an applicant for a certified design and because it provides insights to COL applicants referencing a certified design.

Mr. Oesterle said that the development of DG-1145 began in earnest in January 2006. He said to develop DG-1145, the staff started with Reg Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition). So, DG-1145 also applies to light water reactors and does not provide guidance on gas-cooled reactors or other non-LWR type reactors. The various sections of RG 1.70 were updated or revised based on information from the 1996 draft of the SRP, guidance contained in draft NEI 04-01, experience from NRC certification of standard designs, experience from NRC reviews of ESP applications, and numerous SECY papers and associated SRMs related to new reactor licensing. Then these revised sections were provided to staff technical reviewers to update, refine, and include any additional applicable technical guidance. Draft work-in-progress sections of DG-1145 were plased on the NRC's public website. Monthly public workshops were held between March and September 2006. Public comments and feedback were solicited during these workshops and over 500 comments were received and dispositioned (see Appendix I to DG-1145). Drafts of all section of DG-1145 were on the NRC's public website by June 30, 2006. DG-1145 was published in the *Federal Register* (71 FR 52826) on September 7, 2006, for a formal 45-day public comment period. The public comment period ended on October 23, 2006.

Section C of DG-1145 outlines the appropriate content of COL applications. Section C.I is intended to provided guidance to a COL applicant that references neither a design certification nor an ESP. This section is consistent with the requirements in proposed Part 52.79, Contents of applications; technical information in final safety analysis report. That is, it is structured like the chapters of a licensee's Final Safety Analysis Report (FSAR) and the staff's SER. Section C.II was developed to be consistent with the requirements in proposed Part 52.80, Contents of applications; additional technical information. Section C.III was developed to provide guidance to COL applicants referencing a certified design and an early site permit and to provide guidance associated with topics unique to that scenario. Section C.IV provides guidance on miscellaneous topics associated with COL applications and new reactor licensing (e.g., limited work authorizations, RTNSS). Dr. Armijo asked what additional information needed to be submitted by a COL applicant that referenced both an ESP and a design certification. Messrs. Oesterle and Matthews explained that such an applicant would need to address and resolve COL Action items; any design acceptance criteria (DAC); Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC); and site specific features, such as security and the ultimate heat sink.

Mr. Oesterle described the format and structure of DG-1145. Section C provides the guidance on the content of COL applications. Part C.I provides guidance for a COL applicant that references neither a CD nor an ESP (consistent with proposed 10 CFR Part 52.79). This Part is further subdivided, by chapters and similar to the way a Final Safety Analysis Report (FSAR) is organized. However, a new introductory subsection and a new subsection on probabilistic risk assessment were added. Part C.II provides additional technical guidance (consistent with proposed 10 CFR Part 52.80). Part CII is further subdivided to address PRA; Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC); and Environmental Report. Mr. Oesterle explained that this section will need to be revised to reflect the fact that the latest Part 52 rule (currently before the Commission) no longer requires the submittal of a PRA. Part CIII provides guidance for a COL applicant that references just a CD as well as those that reference both a CD and an ESP. This section also provides guidance related to ITAAC, design acceptance criteria (DAC), and COL Action Items. Part CIV provides guidance on miscellaneous topics associated with a COL application [e.g., operational programs, limited work authorizations, generic issues, regulatory treatment of non-safety systems (RTNSS)]. Mr. Oesterle said that the information needed to get a COL will generally consist of information provided for the CD, information provided to get an ESP, and remaining information (e.g., plant-specific design information, information on operational programs).

Mr. Oesterle also provided a brief status of the development of DG-1145. He said the public comment period closed on October 23, 2006, and that approximately 700 individual comments were received. The staff is currently working to resolve the public comments. He emphasized that DG-1145 will be revised to comport with the final revision to 10 CFR Part 52 as approved by the Commission. Mr. Oesterle said that there was a process in place to ensure consistency between DG-1145 and the proposed Regulatory Guide and SRP Section updates. The staff plans to publish DG-1145 (as Regulatory Guide 1.206) after incorporation of public comments and after final issuance of the Part 52 rule. The staff is considering additional public forums to update external stakeholders on Regulatory Guide 1.206 prior to publication.

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were received. The staff is currently working to resolve the public comments. He emphasized that DG-1145 will be revised to comport with the final revision to 10 CFR Part 52 as approved by the Commission. Mr. Oesterle said that there was a process in place to ensure consistency between DG-1145 and the proposed Regulatory Guide and SRP Section updates. The staff plans to publish DG-1145 (as Regulatory Guide 1.206) after incorporation of public comments and after issuance of the final Part 52 rule. The staff is considering additional public forums to update external stakeholders on Regulatory Guide 1.206 prior to publication, such as use of the NRCs public website to post completed sections of RG 1.206, and additional public meetings (perhaps in the mid- to late January time frame) to share status and progress on RG 1.206 efforts.

Mr. Oesterle showed a time line depicted the development of DG-1145 in relation to issuance of the Energy Policy Act of 2005, revision to Part 52, revisions to RGs and SRP Sections, and anticipated receipt of COL applications. Dr. Wallis expressed concern that DG-1145 needs to be technically complete and accurate and not just be a process document. Mr. Matthews explained that DG-1145 is merely a roadmap for COL applicant to guide them in terms of what information should be included in their application. He said that DG-1145 imposes no new requirements and also said it will be revised to be consistent with the final (not the proposed or proposed final) Part 52 rule approved by the Commission. DG-1145 identifies the information required to accept a COL application. By insuring that applications contain all of the information the staff believes it needs to complete it review it should minimize the need for requests for additional information (RAIs). Then the COL application will be reviewed against the regulations, other RGs, and SRP Sections.

ACRS Member Comments on DG-1145

Dr. Kress asked the ACRS members in attendance to ask the staff any questions or comments they might have on DG-1145, particularly on any chapter to which they were assigned to review. Dr. Shack noted that the regulatory guide on BWR water chemistry, RG 1.56, is obsolete and should be replaced. Mr. Koenick said that the related SRP section was being revised to reference the EPRI water chemistry guidelines. Dr. Shack also noted that DG-1145 had a good discussion on leak-before-break, but questioned why there wasn't a separate regulatory guide on the issue. Mr. Chan of the NRC staff said that work had begun several years ago on the development of a regulatory guide on leak-before-break, but that they decided to put that regulatory guide in abeyance because of concerns related to primary water stress corrosion cracking (the staff wanted to rethink its position which required two mitigative methods to address PWSCC in light of active degradation in piping that might be a candidates for leak-before-break). Dr. Shack also noted that there considerable variability in the level of detail from chapter to chapter in DG-1145 (e.g., section on feedwater piping which recommends that cast stainless steel be volumetrically inspect able as compared to the section on Class 1 piping which simply references the Code). Mr. Colaccino said that before the staff finalizes DG-1145 they would try to rectify these inconsistencies.

Dr. Armijo suggested that materials degradation issues (materials and environment) be addressed together in one section of DG-1145 as opposed to being spread out in the various system-related sections of DG-1145. Mr. Oesterle suggested that it may be more appropriate to have a separate RG on materials degradation issues.

Mr. Sieber said that he thought there should be more description in DG-1145 of what the licensee proposed to do as far as reactor coolant system (RCS) pipe and component hangers, snubbers, and supports. He also expected to see more in DG-1145 on the applicants fatigue analysis and a description off the design limitations for hydrostatic testing of the reactor coolant pressure boundary. Mr. Seiber also suggested that reviewers might also need additional information on RCS weld material, geometry, etc., particularly for ferirtic-to-austenitic welds where buttering is used. Mr. Oesterle noted that some of the details that Mr. Sieber was looking for may be verified during the construction phase by ITAAC or by engineering design verification efforts or by first-of-a-kind engineering inspections.

Dr Corradini said that he checked chapter 6 against the contents of an old FSAR and found the level of detail of the information requested to be very detailed and consistent with the Kewaunee. He said he also agreed with NEI's editorial comments. Dr. Wallis noted that DG-1145 asked applicants to analyze the effects of small particles that penetrate the sump screen but expressed scepticism over an applicant's ability to do such an analysis as well as the staff's ability to evaluate it. Dr. Wallis said that subject of fan coolers draining and refilling following an accident, and the resultant potential for water hammer effects, should be addressed in DG-1145. Subcommittee members discussed the difference between primary and secondary leakage rates.

Dr. Abdel-Khalik said that the chapter on digital instrumentation and control (I&C) systems asks applicants to statistically validate computer system functional requirements. Specifically, "The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated." He asked the staff why 95%. Mr. Li, from NRR's Instrumentation and Control Branch, said that industry also question why the staff specified a specific confidence level, said that the guidance was going to be revised to delete the specific value and, rather, ask for documentation to demonstrate compliance with the ITAAC requirement. Mr. Sieber noted that the I&C section does not provide sufficient information to understand the staff's guidance that there be "independence of protection systems from control systems" and that digital I&C systems have "redundancy, diversity and defense in depth." He questioned whether additional regulation was needed in this area and whether additional regulation would constitute a backfit. Dr. Wallis agreed with Mr. Sieber that the words in the I&C section were vague. Dr. Wallis also thought the I&C section should address cyber-security. Mr. Li indicated that the staff is working with industry to revise Regulatory Guide 1.152 to provide additional guidance on cyber-security.

With regard to the Electrical Power chapter of DG-1145, Mr. Sieber said he thought it might by unreasonable or impractical for system operators to perform real-time analysis regarding grid stability. He also questioned the meaningfulness of the supposedly worst case analysis the applicant would need to submit to describe the means for doing the real-time analysis. He did think it was good to promote a relationship between the licensee and the system operator. Mr. Sieber also said that the staff, in its review, should pay attention to the power supplies to microprocessor control devices (e.g., timers, relays) because they are sensitive to DC power surges which can result in equipment failures (e.g., diesel generator load sequencers, breakers). Dr. Wallis also said the Electrical Power section was well done because it was technology-neutral, applicable to any reactor type.

Dr. Kress indicated that comments of ACRS members, not present at today's Subcommittee meeting, would be provided to the staff.

Dr. Abdel-Khalik expressed concern that there needed to be more consistency or cross-correlation between the Steam and Power Conversion System chapter and the other chapters of DG-1145 (e.g., BWR water chemistry in Chapter 3 and PWR water chemistry in Chapter 10). Mr. Koenick said that the staff would try to address this in its conformancy and consistency check.

Dr. Bonaca said that the Human Factors Engineering Chapter was excellent. He said the industry comments on the chapter were good and that the staff was working to bring industry's issues to closure.

Probabilistic Risk Assessment (PRA)

Mr. Harrison described the guidance contained in DG-1145 related to PRA and severe accident evaluations. He said that the proposed10 CFR 52 rulemaking included a requirement for COL applicants to submit a plant-specific PRA to the NRC for review. After completion of DG-1145, the NRC position changed to accept the industry comment to delete this requirement. Rather, final 10 CFR Part 52 now requires that the PRA be maintained available for staff inspection at the applicant's office. Dr. Wallis questioned why, if it is available, doesn't the staff just ask applicants to send in their PRA with the COL application? He expressed his opinion several times during the meeting that the PRA should be made available to the public. Mr. Rubin explained that late in the concurrence process, there was a decision by senior management to remove the requirement that the PRA be submitted as part of a design certification or COL application. The requirement to submit the PRA was deleted throughout Part 52, including the existing requirement for design certification applicants to submit a design-specific PRA. Mr. Harrison said that DG-1145 will need to be revised to reflect the change in the NRC position i.e., to conform to the final rule. Specifically, he said that the majority of the guidance currently in Section C.II.1 (PRA) will need to be incorporated into C.I.19 (FSAR Chapter 19). Since FSAR Chapter 19 is a qualitative, summary description of the PRA, results, insights, uses, etc., staff audits will be necessary to fully understand, review, and confirm the bases for the PRA results and insights and adequacy for the PRA uses/applications [e.g., RTNSS, Reliability Assurance Program (RAP)]. Mr. Harrison said that the requirement to submit a design-specific or plant-specific PRA with the DC or COL application is separate and distinct from the requirement to submit PRA updates to the NRC. Mr. Rubin noted that Part 52 is the first place in the regulations that actually requires that a PRA be done, but it does not require that it be maintained or updated. Mr. Harrison pointed out that the development of PRA standards is ongoing and evolving process.

Mr. Harrison stated that the basis for the PRA guidance in DG-1145 is taken from: NRC Policy Statements, SECY Papers and related SRMs; experience with design certification reviews for CE System 80+, ABWR, AP-600, and AP-1000; and 10 CFR 52.79 PRA/Severe Accident requirements.

Mr. Harrison said that the staff intends to use the applicant's PRA and severe accident evaluations to conclude that 9 objectives (derived from NRC Policy Statements, SECY Papers, and related SRMs) are met. The COL applicant will specifically address how each objective is

met. Both the 0.1 conditional containment failure probability (CCFP) and the 10^{-6}/yr large release frequency (LRF) metrics were derived from SECY Papers and approved by the Commission. Mr. Rubin explained that objectives are guidelines and not strict regulatory requirements. He said that applicants should not artificially or intentionally increase PRA results associated with one objective or metric simply to meet one of the other objectives. Dr. Kress noted that the conditional containment failure probability metric of 0.1 is weighted by the core damage frequency and that that automatically took care of the issue. Dr. Kress asked the staff why it used a 10^{-6}/yr metric on LRF as opposed to on LERF. Dr. Palla of the NRC staff said that for the AP600 design certification, Westinghouse's LERF calculation picked up late failures. He explained that Westinghouse did not look at early fatalities in calculating LERF. Rather, Westinghouse took all release frequencies that did not result in an intact containment to contribute to LERF. While Westinghouse called it large, they did not try to distinguish between the release magnitudes that would cause fatalities and those which would not. Mr. Harrison said that several of the nine objectives are used to identify and assess the balance of preventive and mitigative features (including operator actions) such that the plant design reflects a reduction in risk compared to existing plants (contemporary with the Severe Accident Policy Statement of 1985). Several other objectives are in support of specific uses and applications of the PRA results for programs [e.g.,, RTNSS, ITAAC, COL and interface requirements]. Mr. Harrison said that none of theobjectives would require an applicant to do a Level 3 PRA and that the guidance on RTNSS in DG-1145 would be revised to clarify thaat a Level 3 PRA is not required. Mr. Rubin clarified that while a Level 3 PRA is not required, NEPA requires that a severe accident management design assessment (SAMDA) study be conducted and that some vendors have chosen to do a bounding Level 3 assessment to meet that requirement. Dr. Bonaca said that some of the near term operating license plants licensed after the TMI accident (e.g., Seabrook) were required to do a Level 3 PRA in order to get their license. Dr. Kress indicated that he felt that the guidance on population density near nuclear power plant site is adequate. Finally, Mr. Harrison outlined the regulatory guidance provided in DG-1145 to assist COL applicants in the development of Chapter 19 of the FSAR.

Reliability Assurance Program (RAP)

Steve Tingen with NRR's Quality Assurance Branch described the guidance in DG-1145 on Reliability Assurance Programs (RAPs). He said that the guidance is based on Commission direction in SECY-95-132, Item E, "Reliability Assurance Program." He said the purpose of RAP is twofold, first to design reliability into the plant (i.e., design RAP), and second to maintain reliability (i.e., operational RAP). The scope of a RAP includes both safety-related and non-safety-related structures, systems, and components (SSCs) and plant/design-specific as well as site-specific information. RAP activities for the operational phase are integrated into existing programs i.e., not a new separate program. Mr. Tingen said that the information the staff asks for in DG-1145 related to RAP is consistent with the RAP-related SRP sections (Section 17.4, which is the RAP section and Section 19, which is the PRA section). Specifically, DG-1145 asks applicants to describe the scope, purpose, and objectives of their RAP. It also asks for a description of any deterministic or probabilistic methods (e.g., use of importance measures) they will use for prioritizing SSCs. Mr. Tingen said that DG-1145 asks a description of the quality controls they used for the development of their design RAP (e.g., organization, design control procedures, and instructions, corrective actions, ad audit plans). Finally, he said there is an ITAAC associated with the design RAP that could be reviewed with the COL application.

Operational Programs

Mr. Colaccino said that guidance on operational programs is provided in Sections C.I.13.4 and C.IV.4 of DG-1145. He said there was an issue as to whether operational programs should have an ITAAC associated with them and that this was discussed in two earlier SECY Papers and ultimately resolved in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." The staff decided that if an operational program could be fully described in a COL application then an ITAAC for that program was unnecessary. Mr. Colaccino said that, by statute, there is a generic ITAAC related to emergency planning. This ITAAC was developed with input from industry and is described in SECY-05-0197. It is a generic template type ITAAC that can accommodate the site-specific aspects of emergency planning. The proposed revision to the emergency planning SRP Section13.3 is consistent with the generic emergency planning ITAAC. Mr. Musico (NSIR) said that SRP Section 13.3 has an additional ITAAC table in it, that goes slightly beyond generic ITAAC in SECY-05-0197 because the SRP Section expands the use of the ITAAC beyond COL applications to include ESP applications as well. Mr. Musico said that the staff could not make a reasonable assurance finding on emergency planning at the ESP stage, because the plant was not physically there, even if the ESP applicant proposed a complete and integrated emergency plan, unless the plan was bolstered by an additional ITAAC. Operational programs that can be fully described in a COL application must be required by regulation, reviewed as part of the COL application review, and inspected to verify implementation. Because a substantial portion of operational programs will occur after the COL is issued, the program description (FSAR level) in the COL application should include implementation milestones. Mr. Colaccino showed a slide which identified 20 or so operational programs. He said that the NRC intends to inspect operational program implementation during construction. He said that the proposed final Part 52 rule has included implementation milestones for some operational programs and that there are license conditions associated with operational program (i.e., scheduling and implementation) that are not specifically covered in rule.

ITAAC/DAC

Mr. Oesterle said that ITAAC were first mentioned in an Atomic Industrial Forum (AIF) Report on "Standardization of Nuclear Power Plants in US" (1986). In that report nuclear industry representatives proposed ITAAC so that licensees would know in advance the specific inspections and acceptance criteria for those inspections. He said ITAAC were codified in Part 52 in 1989. Part 52 requires COL applicants to include ITAAC to ensure the facility has been constructed and will be operated in accordance with the license. Section C.II.2 of DG-1145 provides generic guidance on ITAAC. Guidance on ITAAC and the methodology by which the applicant determines which SSCs they are going to include in the ITAAC are supposed to be included in the application. Mr. Oesterle said the staff wants cross-references between key aspects of the PRA, safety analyses, and features of the design, including risk significant SSCs, to be included in ITAAC. He said the applicant must include ITAAC for the entire facility including site-specific features not addressed during the design certification, ITAACS from the referenced certified design, and ITAAC for security design features. Mr. Oesterle showed a table that highlighted ITAAC with varying degrees of complexity as well as the general format of an ITAAC. He said that ITAACs are proposed by the design certification, ESP or COL applicant, then reviewed and approved by the NRC. Completion of the ITAAC will be a license

condition. COL holders will need to complete all ITAAC before the Commission can make a finding allowing the plant to operate.

Design Acceptance Criteria (DAC) are used for design areas that include rapidly changing technology or require as-built or as-procured information (e.g., digital I&C, control room, leak-before-break, radiation shielding). DAC are approved by the Commission on a case-by-case basis and are only used to certify a new reactor design. DAC, like ITAAC, must be completed prior to plant operation. There are two elements necessary to close out a DAC: 1) completion and acceptance of the design and 2) verification that the as-built plant conform with the approved design. DAC were approved for the ABWR, CE System 80+, AP600, and AP1000 certified designs. Mr. Oesterle said it would be prudent for COL applicants to resolve DAC as part of their COL application, even though it is not required. He said the the certified design vendors are currently working on completion of DAC (i.e., via the approval of topical reports). The NRC will inspect the completion of all DAC.

COL Action Items

Mr. Oesterle said that COL action are specific items that have been deferred to COL applicants that reference either a certified design, an ESP, or both. They may include operational aspects which are in the purview of the licensee but they also include certain aspects of the design that are site specific. COL action items can be associated with either a certified designs or an ESP and are documented in the staff's final Safety Evaluation Report. COL applicants referencing a certified design are required to provide information that addresses the COL action items associated with the referenced design. It is anticipated that the terms and conditions for an ESP will include addressing COL action items. Mr. Oesterle said that COL action items als vary in their range of complexity and provided a couple of examples of COL action items. He said that is prudent for COL applicants to provide resolution for COL action items as part of their application, even though it is not required. Some COL action items may be completed after the license is issued. Mr. Oesterle said that DG-1145 identifies a number of mechanisms by which completion or resolution of COL action items can be closed out or verified and those are ether by ITAAC, by a license condition, or by an operational program. He said that COL action items must also be closed out prior to operation. Mr. Fischer said that he thought it would be useful for the staff and COL applicant to knew, before COL applications are actually submitted, which COL action items needed to be resolved (as opposed to just addressed) at the COL application stage and which COL action items could be deferred to prior to plant operation.

Workshop Issues

Mr. Oesterle said that the development of DG-1145 began in earnest in January 2006. He said that draft work-in-progress sections of DG-1145 were posted on the NRC's website following completion to facilitate public workshop discussions. Monthly public workshops on DG-1145 were held from March 2006 to September 2006. Major issues discussed during the workshops include:

DESIGN FINALITY

Workshop discussions focused on areas of DG-1145 where addition information was requested in areas where a design had already been certified (e.g., radiation protection). The concern

was that the certified design should not be re-evaluated under a COL application.
Mr. Oesterle said that this was one of the most challenging areas for the staff in terms of being able to negotiate the paradigm shift from the Part 50 licensing process to the Part 52 licensing process.

COL INFORMATION AVAILABILITY

Due to use of RG 1.70 as the basis for DG-1145 and the staff's experience in licensing plants using the Part 50 process, workshop discussion also focused on areas of the guidance document in which information was requested that would not be available at the time of COL application (but would have been available to the staff under the OL review period under Part 50).

VERIFICATION ACTIVITIES

Mr. Oesterle said that there was considerable discussion as to whether certain verification activities should be performed as part of the construction inspection program (a sampling activity) as opposed to by a more formal ITAAC.

FIRST-OF-A-KIND ENGINEERING (FOAKE)

Workshop discussions also focused on the translation of high level design information (e.g., FSAR level) in DCDs and COLs into detailed design and construction documents. The issue was whether this first-time translation activity needed to be inspected (FOAKE inspections) and whether issuance of the COL should be dependent on the results of these inspections. What level of detail does the staff need to look at in order to make its reasonable assurance finding?

ENGINEERING DESIGN VERIFICATION (EDV)

Mr. Oesterle said there was also discussions focused on the COL applicant's engineering QA and QC controls and whether issuance of the COL should be dependent on the inspection of these activities, and when such inspections might occur.

PASSIVE DESIGNS

Mr. Oesterle said there were discussions at the workshops as to whether DG-1145 should provide guidance specific to passive plant designs. He said that in drafting DG-1145, the staff was initially reluctant to provide any such guidance, because it wanted the guidance to be broadly applicable. After receiving public comments on the draft and addition internal staff discussions, he said the staff is considering providing limited guidance related to passive plant designs (e.g., in the electrical systems area).

MAINTENANCE RULE

Mr. Oesterle said that workshop participants expressed concern that the information requested in DG-1145 related to the Maintenance Rule went far beyond what should be required for a COL applicant (i.e., initially DG-1145 asked for everything). He said that discussions during dedicated breakout sessions and additional workshop discussion allowed the staff and

stakeholders to reach mutual agreement on the appropriate content of the guidance document in this area.

ENVIRONMENTAL REPORT AND FINALITY

Mr. Oesterle said that DG-1145 initially contained outdated guidance on the format and content of the environmental report (taken from Regulatory Guide 4.2). It also failed to recognize the finality of the environmental impact statement associated with an early site permit (ESP) unless, as provided for in Part 52, there was new and significant information. He said that DG-1145 also needed to provide better guidance on how to transition from an ESP environmental report to a COL environmental report.

PRA

According to Mr. Oesterle there were discussions about the format, content, and timing of the PRA submittal. He said that timing was an issue because the peer-review lagged the COL application by a few months. He said that there were discussions as to whether the PRA needed to be kept up to date (i.e., a living-PRA updated to include changes during construction and after operation) and discussions about the appropriate metric to be use for licensing new reactors (i.e., LRF versus LERF and CCFP).

HUMAN FACTORS ENGINEERING

How and when the 12 elements of the human factors engineering DAC would be addressed or completed was also discussed at the workshops. This was somewhat difficult or controversial because some elements are design and some elements are implementation. Discussions also focused on ensuring the guidance in DG-1145 on human factors engineering did not extend beyond what is already provided in NUREG-0711 (which it apparently did initially).

RADWASTE TREATMENT SYSTEMS

Mr. Oesterle said that they discussed radioactive waste treatment during the workshops. The discussions focused on the level of information COL applicants needed to submit to ensure that any mobile or temporary (e.g., skid mounted) radioactive waste treatment equipment brought onsite would remain within the bounds of the license in terms of leakage and offsite dose.

DIGITAL I&C

Mr. Oesterle said there were two separate breakout sessions on digital instrumentation and control (I&C). They discussed the proposed guidance in DG-1145 and in the revised SRP Section on I&C. They discussed the issue of bidirectional communication between computers in different safety channels or between computers in safety channels and non-safety channels. They also discussed refinement of cyber-security guidance (i.e., as contained in in RG 1.152) and adjustment of technical specification surveillance requirements based on self-testing or monitoring. He said that staf an industry have come to resolution on some of the digital I&C issues and that DG-1145 would be updated to reflect resolution of the issues. Mr. Sieber said that one of the critical issues that needs to be addressed is the degree to which one requires separation between protection channels and control channels and between accident

instrumentation and protection channels. He asked, do you use the same sensor and run different wires or do you run everything through a single processor and then branch off?

Characterization of Public Comments

Mr. Oesterle said that following an intensive and open effort to develop the many sections of DG-1145, and respond to approximately 500 public workshop comments, the staff formally issued DG-1145 for a 45-day public comment period on September 7, 2006. Prior to that, on September 1, 2006, the staff had made the formal draft of DG-1145 available to external stakeholders on the NRC's public website. He said the public comment period closed on October 23, 2006. Approximately 700 public comments were received. He said the bulk of comments came from NEI, as they acted as the focal point for compilation and consolidation of industry comments. In addition, the staff received public comments from AREVA, GE, Burns & Roe, ANS, and a few nuclear industry consultants. He said the staff is also working on resolving the 700 public comments on DG-1145 and conforming DG-1145 with the updated SRPs and the proposed final Part 52 rule. Dr. Wallis asked if the staff got any meaningful feedback from non-industry participants during the workshops. Mr. Colaccino said he did not know but added that the workshops were public meetings. He also said that the development of DG-1145 was a collaborative effort between the staff and industry.

As summarized below, Mr. Oesterle characterize the more significant public comments.

COL INFORMATION AVAILABILITY

There were several areas where the guidance document requested information that commenters said would not be available when the COL application is submitted or during the COL application review phase. For example, the guidance for Onsite DC Power Systems requested battery characteristic curves. These battery characteristic curves will not be available until batteries have been procured which will be after submittal of the COL application and could likely be after issuance of the license. As another example, he said the guidance on determination of pipe rupture locations and dynamic effects associated with the postulated pipe ruptures requested that applicants provide,, in addition to their design criteria, detailed information on containment penetrations and protective assemblies or guard pipes to be used for piping penetrations of containment areas. This detailed information is not expected to be available at the time the COL application is submitted.

GUIDANCE ON PASSIVE DESIGN FEATURES

Several commenters requested specific or additional guidance in areas where the requirements for SSCs in plant designs that incorporate passive safety systems differ significantly than those plant designs that incorporate the more traditional active safety systems. For example, DG-1145 did not provide any specific requirements for offsite AC power systems for passive plant designs that rely on Class 1E batteries for emergency power and non-safety related diesel generators for battery charging. Similarly, the guidance did not provide any specific requirements for diesel generator support systems, such as the fuel oil storage and transfer system, cooling water system, starting air system, lubrication system, and air intake and exhaust systems, for passive plant designs that rely on Class 1E batteries for emergency power.

DESIGN FINALITY

The staff also received comments that DG-1145 inappropriately requested design information from the COL applicant in some areas that have already been certified. For example, DG-1145 requested information related to diesel generator support systems that should have already been addressed in a certified design.

INSPECTIONS vs. ITAAC

Mr. Oesterle said the staff got the comment that DG-1145 contained guidance for a COL applicant that does not reference a certified design or an ESP. In areas where the guidance document requested information that was either not available at the time the COL application was submitted or required an update to verify that as-built or as-procured information conformed with the design, the guidance document also requested the applicant to ensure or identify that appropriate ITAAC existed or was proposed. Commenters suggested that construction inspections rather than ITAAC were the more appropriate verification mechanism.

PLANT SPECIFIC PRA

Mr. Oesterle said that several comments were related to the guidance provided on plant-specific PRAs. He said the guidance on plant-specific PRAs will be revised based on the changes in the Part 52 rule that was sent to the Commission. He said that by and large, the guidance provide in DG-1145 on PRAs is consistent with Commission policy.

ITAAC

Mr. Oesterle said numerous comments were received in the guidance provided on ITAAC. These comments generally focused on the use of ITAAC for verification of items that were considered more detailed than "top-level performance requirements or design requirements". He said that many ITAAC comments were focused on the guidance provided for development of ITAAC for instrumentation and control.

ER and FINALITY of an EIS

Comments on the environmental report guidance focused primarily on the fact that Regulatory Guide 4.2 is outdated and that better guidance on use of NUREG-1555 should be provided. Other comments focused on the importance of resolving finality of an environmental impact statement (EIS) associated with an ESP and that this was pending the release of final proposed Part 52 rule language.

GUIDANCE FROM PUBLIC WORKSHOP QUESTIONS

Mr. Oesterle said that during development of the draft work-in-progress guidance document which was posted on the NRCs public website, the staff received approximately 500 public workshop comments. The staff developed responses to these comments and included these in Appendix I of draft DG-1145 issued for public comment. In areas where the staff agreed with the comment and agreed to change DG-1145, either the guidance failed to get revised, the basis for staff agreement failed to get incorporated into the document, or both. As an example,

he said the guidance on meteorological data requested at least 2 years of data. Workshop questions suggested that it should be acceptable for an applicant to provide 1 years worth of meteorological data at the time of COL Application submittal and supplement the data with an additional years worth of data from the same site after it has been collected (and prior to issuance of the license). This was intended to apply to a green field site that did not have a pre-existing meteorological tower and meteorological program, comparable to a Regulatory Guige 1.23 program, in place for a sufficient period of time prior to application submittal to acquire such data. The staff agreed that this flexibility for acquiring and submitting the meteorological data was acceptable but it was not reflected in the body of DG-1145.

INDUSTRY COMMENTS

Ms. Leslie Kass, representing NEI, said Mr. Oesterle had done a very good job characterizing industry's comments. She commended the staff for its efforts in developing DG-1145 and for conducting the workshops. Ms. Kass said that NEI had the help of several utilities and vendors in preparing NEI's comments on DG-1145. She said DG-1145 will help promote standardization and will make the COL process go smoother. She acknowledged DG-1145 as a guidance document that contains no new requirements. She said that in some instances DG-1145 provided guidance that inappropriately went beyond the regulations. Ms. Kass said that the size or number of NEI's comments on DG-1145 did not reflect on adversely on the quality of the document. She said that there is significant industry interest in DG-1145 and expressed a desire to interact with the staff again on DG-1145, before it is published in final form (e.g., during another workshop). The NRC staff seemed amenable to such an interaction, but said a date for another workshophas not been finalized.

Mr. Sieber suggested that the first users of DG-1145 capture any lessons learned from the COL application process, so follow-on utilities are not prone to making the same mistakes. Ms. Kass noted that there are consortia participating in the first COL application, so they have multiple utilities participating which gives them broader exposure, and therefore, to some extent, they all learn together. Mr. Oesterle said the staff recognizes the need to revise Regulatory Guide 1.206 based on lessons learned and don't plan on letting it solidify. Ms. Sterdis indicated that Westinghouse has been very involved with NEI's review of DG-1145 and with the workshops. She said that the staff and industry appear to be converging on the satisfactory resolution of the major issues but would like to see the document again before it goes final. Ms. Kass said there are still issues to be worked out in the digital I&C area.

SUMMARY / PLANS FOR FULL COMMITTEE PRESENTATION

The Subcommittee suggested that the staff address the following topics during the December Full Committee meeting:

- The Staff's Overview of DG-1145
- Information Availability at the COL Application Stage
- PRA Guidance in DG-1145
- Industry Comments/Concerns
- Conformance with Part 52, Completeness, and Consistency of the Guidance in DG-1145
- Any Significant Comments from ACRS Members not in Attendance at the Subcommittee Meeting

Agreements

None.

Staff/Industry Follow-up Actions

Mr. Oesterle agreed to consider individual member comments (provided to the staff in advance of the November 30, 2006, Future Plant Design Subcommittee meeting) in revising DG-1145. A complete list of individual member comments is in the ACRS Office file and will be made available upon request.

Subcommittee's Action

The staff plans to provide a briefing on DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)" to the full Committee during the December 7-8, 2006, ACRS meeting.

Documents Provided to the Subcommittee

1. Memorandum dated September 1, 2006, from David B. Matthews, Director, Division of New Reactor Licensing, NRR to John T. Larkins, Executive Director, ACRS, Subject: Transmittal of Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)" (ML062440120)
2. Letter dated October 20, 2006, from Adrian Heymer, Nuclear Energy Institute to Rules and Directives Branch, Office of Administration, NRC, Subject: Notice of Availability Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)." ("DG-1145") 71 Fed. Reg. 52,826 (Sept. 7, 2006) (ML063000204)
3. Memorandum dated November 15, 2006, from David C. Fischer, ACRS Staff, to Tom Kress, Chairman, Future Plant Designs Subcommittee, Subject: Status Report for the Meeting of the Future Plant Designs Subcommittee, November 30, 2006, in Rockville, Maryland

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NOTE : Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at http://www.nrc.gov/reading-rm/adams.html or http://www.nrc.gov/reading-rm/doc-collections/ can be purchased from Neal R. Gross and Co., 1323 Rhode Island Ave., N.W., Washington, DC 20005 (202) 234-4433.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

January 17, 2007

MEMORANDUM TO: Thomas S. Kress, Chair
Future Plant Designs Subcommittee

FROM: David C. Fischer, Senior Staff Engineer

SUBJECT: ANALYSIS OF EDO RESPONSE TO ACRS LETTER ON DRAFT FINAL REGULATORY GUIDE DG-1145, COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

Attached is a copy of the EDO's January 11, 2007, letter of response to the ACRS's December 12, 2006, letter on Draft Final Regulatory Guide DG-1145, Combined License Applications for Nuclear Power Plants (LWR Edition). A copy of the Committee's letter is also attached.

Committee Letter

In its December 12, 2006, report to the Chairman on DG-1145, the Committee recommended:

1. The final rule, 10 CFR Part 52, should retain the requirements that a design-specific probabilistic risk assessment (PRA) be submitted with the design certification application and that a plant-specific PRA be submitted with the combined license (COL) application.

2. DG-1145 should be issued as a final Regulatory Guide after the staff ensures that it is consistent with the final rule 10 CFR Part 52 and with the Regulatory Guides and Standard Review Plan (SRP) Sections/Chapters being revised or developed in support of new reactor licensing.

Further, the Committee requested to be inform of any significant changes to the final RG prior to publication.

EDO Response

Regarding PRA submittal requirements, upon review of the comments and preparation of the final rule requirements, the staff now recommends requiring applicants to submit a description and the results of the PRA. Over the last several years, the NRC staff and other PRA experts have developed national consensus standards on PRA methods. There are a growing number of PRA standards applicable to new reactors. In light of these PRA standards, which were not available or even envisioned at the time that 10 CFR Part 52 was written, the staff plans to shift its review emphasis. Instead of checking all of the details of the PRA models and inputs submitted for a new reactor, the staff will: (1) verify that the PRA was developed according to available standards, including the required peer reviews; (2) check selected areas of importance; and (3) apply PRA risk insights, including importance measures and identified dominant sequences to focus its review on those areas most important to public health and safety. The draft final rule supports this approach. The Commission will decide on this matter when it votes on the final rule.

ACRS recommended that the staff issue RG DG-1145 as a final RG only after ensuring consistency with the final rule and related guidance (e.g., RGs, NUREG-0800 (the Standard

Review Plan)). The staff agrees and has activities underway to enhance the consistency among these products. The staff will reconcile the final rule, RG DG-1145, and SRP Chapter 19 (i.e., the PRA provisions) with respect to the review objectives as noted in the December 12, 2006, ACRS letter.

Finally, the staff will inform ACRS of any significant changes to the final RG prior to publication. Please contact me if you have any questions or concerns.

Analysis

The EDO response to the Committee's first recommendation is not satisfactory. It fails to address the Committee's fundamental concern that "[t]o certify a design or approve a COL, it will be necessary to have a detailed review of the PRA." It is not clear to me how having national consensus standards on PRA methods obviates the need for a detailed review, by either the NRC staff or ACRS, of either the design-specific PRA (for a design certification review) or plant-specific PRA (for a COL application review). The EDO response says that, in light of the new PRA standards, the staff plans to "shift its review emphasis." Instead of checking all of the details of the PRA models and inputs, the staff will:

> (1) verify that the PRA was developed according to available standards, including the required peer reviews;
> (2) check selected areas of importance; and
> (3) apply PRA risk insights, including importance measures and identified dominant sequences to focus its review on those areas most important to public health and safety.

While I agree that the staff should focus its review on those areas most important to public health and safety, I am not sure how such a limited review can support a reasonable assurance finding, given the fact that endorsed PRA standards are unavailable in several areas that can be significant contributors to risk (e.g., internal fires, external events, shutdown and low power modes). In addition, the PRA standards are aimed at ensuring the technical adequacy of the PRA (e.g., data, models, methods, etc.)and not at ensuring that the risk from a certain design or plant is acceptably low. PRA standards were not written to ensure that the bottom line number (CDF or LERF) is precise or below a regulatory metric. Rather, using PRA standards will provide confidence that the insights derived from the PRA are valid, thereby allowing its user to focus on the design, operation, and maintenance of the more safety significant structures, systems, and components. Finally, and as noted in the Committee's report, not having the PRA submitted would make it difficult for the staff to conduct a detailed review and infeasible for the Committee to do a detailed review, if either determines that such a review is appropriate. However, having the PRA submitted by a design certification or COL applicant would not preclude doing a limited review. Past design certification applicants have submitted their PRA. The EDO response offers no explanation as to why it would be onerous for future design certification or COL applicant to submit their PRA.

The EDO response to the other recommendations in the Committee's report are satisfactory. The staff committed to inform the ACRS of any significant changes to the final RG prior to publication.

Attachments: As stated

cc: ACRS Members
F. Gillespie
S. Duraiswamy
C. Santos

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 11, 2007

Dr. William J. Shack, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REGULATORY GUIDE DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)"

Dear Dr. Shack:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to the Advisory Committee on Reactor Safeguards (ACRS) letter dated December 12, 2006, documenting the results of ACRS review of draft Regulatory Guide (RG) DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)." The ACRS recommends that: (1) 10 CFR Part 52 (the final rule) retain requirements from the proposed rule that applicants submit a design-specific probabilistic risk assessment (PRA) with the design certification application and submit a plant-specific PRA with the combined license application; and (2) the staff ensures RG DG-1145 is consistent with ongoing rulemaking and related guidance. Further, the ACRS requested the staff to inform the Committee of any significant changes to the final RG prior to publication.

Regarding PRA submittal requirements, upon review of the comments and preparation of the final rule requirements, the staff now recommends requiring applicants to submit a description and the results of the PRA. Over the last several years, the NRC staff and other PRA experts have developed national consensus standards on PRA methods. There are a growing number of PRA standards applicable to new reactors. In light of these PRA standards, which were not available or even envisioned at the time that 10 CFR Part 52 was written, the staff plans to shift its review emphasis. Instead of checking all of the details of the PRA models and inputs submitted for a new reactor, the staff will: (1) verify that the PRA was developed according to available standards, including the required peer reviews; (2) check selected areas of importance; and (3) apply PRA risk insights, including importance measures and identified dominant sequences to focus its review on those areas most important to public health and safety. The draft final rule supports this approach. The Commission will decide on this matter when it votes on the final rule.

ACRS recommended that the staff issue RG DG-1145 as a final RG only after ensuring consistency with the final rule and related guidance (e.g., RGs, NUREG-0800 (the Standard Review Plan)). The staff agrees and has activities underway to enhance the consistency among these products. The staff will reconcile the final rule, RG DG-1145, and SRP Chapter 19 (i.e., the PRA provisions) with respect to the review objectives as noted in the December 12, 2006, ACRS letter.

Finally, the staff will inform ACRS of any significant changes to the final RG prior to publication. Please contact me if you have any questions or concerns.

Sincerely,

Luis A. Reyes
Executive Director
for Operations

cc: Chairman Klein
Commissioner McGaffigan
Commissioner Merrifield
Commissioner Jaczko
Commissioner Lyons
SECY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

ACRSR-2227

December 12, 2006

The Honorable Dale E. Klein
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REGULATORY GUIDE DG-1145, COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

Dear Chairman Klein:

During the 538th meeting of the Advisory Committee on Reactor Safeguards, December 7-8, 2006, we met with representatives of the NRC staff to discuss draft final Regulatory Guide DG-1145, Combined License Applications for Nuclear Power Plants (LWR Edition). Our Subcommittee on Future Plant Designs also reviewed this Guide and related matters on November 30, 2006. We also had the benefit of the documents referenced.

Recommendations

1. The final rule, 10 CFR Part 52, should retain the requirements that a design-specific probabilistic risk assessment (PRA) be submitted with the design certification application and that a plant-specific PRA be submitted with the combined license (COL) application.

2. DG-1145 should be issued as a final Regulatory Guide after the staff ensures that it is consistent with the final rule 10 CFR Part 52 and with the Regulatory Guides and Standard Review Plan (SRP) Sections/Chapters being revised or developed in support of new reactor licensing.

Background and Discussion

DG-1145, Combined License Applications for Nuclear Power Plants (LWR Edition), provides detailed guidance on the content of a COL application. The development of DG-1145 was done in parallel with the development of a proposed revision to 10 CFR Part 52 and the development of revisions to Regulatory Guides and (SRP) Sections/Chapters in support of new reactor licensing.

The proposed 10 CFR Part 52 (SECY-05-0203), that we reviewed, required that PRAs be submitted as part of the design certification and COL applications. In the draft final rule (SECY-06-0220), this requirement has been eliminated. The staff stated that DG-1145 has to be revised to reflect this change. We disagree with this change in Part 52. To certify a design or

approve a COL, it will be necessary to have a detailed review of the PRA. The information needed for this review includes event trees, fault trees, support system dependencies, initiating events, data (reliabilities/probabilities of failure), human reliability, common-cause failure analysis, fire risk, flooding risk, seismic risk, minimal cutsets, and uncertainty and importance measures. Unless the PRA is submitted, such a review will have to be done at the applicant's office. This will be extremely difficult for the staff and not feasible for the ACRS. The requirements to submit the PRA with a design certification application and with a COL application should be retained in Part 52. After issuance of the COL, updates to the PRA need not be submitted.

Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure that it is consistent with 10 CFR Part 52 and with other Regulatory Guides and SRP Sections/Chapters associated with future plant designs. In addition, the staff should ensure that the scope and level of detail of the information within the various sections of DG-1145 are complete and consistent.

Section C.II.1 of DG-1145 identifies nine objectives that the COL applicant must address in its risk evaluation. Neither the ASME PRA Standard (ASME RA-S-2002) nor Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," provides guidance on how to meet these objectives. SRP Chapter 19.0, which is being revised, should include review guidelines for determining whether an applicant's risk evaluation meets these objectives.

We would like to be informed of any significant changes made to this Guide prior to publishing it in final form.

Sincerely,

/RA/

Graham B. Wallis
Chairman

References

1. Memorandum dated September 1, 2006, from David B. Matthews, Director, Division of New Reactor Licensing, NRR, to John T. Larkins, Executive Director, ACRS, Subject: Transmittal of Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)"
2. SECY-05-0203, Revised Proposed Rule to Update 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," dated November 3, 2005
3. SECY-06-0220, Final Rule to Update 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," dated December 3, 2006
4. Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications (ASME RA-S-2002), Issued April 5, 2002
5. U. S. Nuclear Regulatory Commission, Regulatory Guide 1.200 For Trial Use, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," February 2004
6. Standard Review Plan NUREG-0800, Chapter 19.0, Probabilistic Risk Assessment

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

ACRSR-2227

December 12, 2006

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Chairman
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Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure that it is consistent with 10 CFR Part 52 and with other Regulatory Guides and SRP Sections/Chapters associated with future plant designs. In addition, the staff should ensure that the scope and level of detail of the information within the various sections of DG-1145 are complete and consistent.

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Graham B. Wallis
Chairman

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DCF/TSK
DRAFT

December , 2006

Mr. Luis A. Reyes
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT REGULATORY GUIDE DG-1145, COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

Dear Mr. Reyes:

During the 538th meeting of the Advisory Committee on Reactor Safeguards, December 7-9, 2006, we met with representatives of the NRC staff to discuss draft Regulatory Guide DG-1145, Combined License Applications for Nuclear Power Plants (LWR Edition). Our subcommittee on Future Plant Designs also reviewed this matter on November 30, 2006. We also had the benefit of the documents referenced.

Recommendations

Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure that it is consistent with the proposed revision to 10 CFR Part 52 and with the revised Regulatory Guides and Standard Review Plan (SRP) Sections being revised or developed in support of new reactor licensing.

The staff should consider developing review procedures and acceptance criteria (e.g., SRP guidance) for determining whether an applicant's risk evaluation meets the objectives specified in Section C.II.1 of DG-1145.

Background and Discussion

DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)" provides detailed guidance on the content of a COL application. The development of DG-1145 was done in parallel with the development of a proposed revision to 10 CFR Part 52 and the development of revised Regulatory Guides and Standard Review Plan (SRP) Sections in support of new reactor licensing. Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure these documents are consistent. In addition, the staff should also ensure that the scope and level of detail of the information within the various sections of DG-1145 are complete and consistent.

Section C.II.1 of DG-1145 identifies nine objectives that the COL applicant's risk evaluation is intended to meet. Neither the ASME PRA Standard (ASME RA-S-2002) nor Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" provide explicit guidance on how to meet these objectives. The staff should consider developing review procedures and acceptance criteria (e.g., SRP guidance) for determining whether an applicant's risk evaluation meets these objectives.

The Committee would like to be informed of any significant changes made to this Guide prior to publishing it in its final form.

Sincerely,

Graham Wallis
Chairman

References

1. Memorandum dated September 1, 2006, from David B. Matthews, Director, Division of New Reactor Licensing, NRR to John T. Larkins, Executive Director, ACRS, Subject: Transmittal of Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)"
2. Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications (ASME

RA-S-2002), Issued April 5, 2002

3. U. S. Nuclear Regulatory Commission Regulatory Guide 1.200 For Trial Use, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," February 2004

David:

I like your version very much – let's go with it

Thanks
Tom

C:\temp\Draft letter on R.G. 1145.wpd

DCF/TSK

DRAFT

December ~~03~~ 07, 2006

Mr. Luis A. Reyes
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT REGULATORY GUIDE DG-1145, COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

Dear Mr. Reyes:

During the 538th meeting of the Advisory Committee on Reactor Safeguards, December 7-9, 2006, we met with representatives of the NRC staff to discuss draft Regulatory Guide DG-1145, Combined License Applications for Nuclear Power Plants (LWR Edition). Our subcommittee on Future Plant Designs also reviewed this matter on November 30, 2006. We also had the benefit of the document~~s~~ referenced.

Recommendation

The Regulatory Guide should be issued as a final document after consideration of the comments of the Committee and of the Industry.

Recommendations

Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure that it is consistent with the proposed revision to 10 CFR Part 52 and with the revised Regulatory Guides and Standard Review Plan (SRP) Sections being revised or developed in support of new reactor licensing.

The staff should consider developing review procedures and acceptance criteria (e.g., SRP guidance) for determining whether an applicant's risk evaluation meets the objectives specified in Section C.II.1 of DG-1145.

Discussion

DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)" provides detailed guidance on the content of a COL application. The development of DG-1145 was done in parallel with the development of a proposed revision to 10 CFR Part 52 and the development of revised Regulatory Guides and Standard Review Plan (SRP) Sections in support of new reactor licensing. Before publishing DG-1145 as a final Regulatory Guide, the staff should ensure these documents are consistent. In addition, the staff should also ensure that the scope and level of detail of the information within the various sections of DG-1145 are complete and consistent.

Section C.II.1 of DG-1145 identifies nine objectives that the COL applicant's risk evaluation is intended to meet. Neither the ASME PRA Standard (ASME RA-S-2002) nor Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" provide explicit guidance on how to meet these objectives. The staff should consider developing review procedures and acceptance criteria (e.g., SRP guidance) for determining whether an applicant's risk evaluation meets these objectives.

Sincerely

Graham Wallis
Chairman

References

1. DG 1145

Advisory Committee on Reactor Safeguards
Future Plant Designs Subcommittee
Draft Regulatory Guide DG-1145
November 30, 2006
T-2 B3, Rockville, MD

MARKED UP AGENDA WITH ACTUAL TIMES

-REVISED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Presenters	Presentation Time
I	Opening Remarks	T. Kress, ACRS	8:3~~0~~ 2 am - 8:40 am
II	Staff Introductory Remarks	D. Matthews, NRR	8:40 am - 8:~~45~~ 55 am
III	DG-1145 Overview - Purpose - Format and Structure - Developmental Basis - Status Member Comments (Chapter-by-Chapter)	E. Oesterle, NRR T. Kress	8:~~45~~ 55 am - 9:15 am 9:15 am - ~~9:45~~ 10:31 am
IV	PRA / ~~RTNSS~~ DCF / RAP	D. Harrison, NRR ~~P. Prescott~~, NRR	~~9:45~~ 10:46 am - ~~10:30~~ 11:35 am
	BREAK		10:3~~0~~ 1 am - 10:4~~7~~ 6 am
IV	~~PRA / RTNSS~~ DCF / RAP S. Tingen	~~D. Harrison, NRR~~ ~~P. Prescott~~, NRR	~~10:45 am~~ 1:05 pm - ~~11:30 am~~ 1:15 pm
V	ITAAC / DAC	E. Oesterle, NRR	~~11:30 am~~ 1:27 pm - ~~12:00~~ 1:39 pm
	LUNCH		~~12:00 pm~~ 11:55 am - 1:0~~0~~ 5 pm
VI	COL Action Items	E. Oesterle, NRR	1:~~00~~ 39 pm - 1:~~30~~ 50 pm
VII	Operational Programs J. Colacinno	~~E. Oesterle~~, NRR	~~1:30~~ 1:15 pm - ~~2:00~~ 1:27 pm
VIII	Workshop Issues - Design Finality - COL Information Availability - Inspections / ITAAC - FOAKE / EDV	E. Oesterle, NRR	~~2:00~~ 1:50 pm - ~~3:00~~ 2:20 pm
	BREAK		3:00 pm - 3:15 pm
IX	Characterization of Public Comments	E. Oesterle, NRR	~~3:15~~ 2:20 pm - ~~4:00~~ 2:40 pm
X	Industry Comments	Leslie Kass, NEI ~~Russell Bell, NEI~~	~~4:00~~ 3:02 pm - 4:45 pm
XI	Summary / Plans for Full Committee	T. Kress, ACRS	~~4:45~~ 3:19 pm - ~~5:00~~ 3:36 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS

November 30, 2006
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

	NAME	NRC ORGANIZATION
1	✓ ERIC OESTERLE	NRO/DNRL/NGIF
2	✓ Stephen Tingen	NRR/DE/EQVA
3	KERBY SCALES	NRR/DE/EQVA
4	Michael Boggi	RES/DRASP/PRA/HFRB
5	YAVOR IVANCHEV	RES/DRASP/PRA/HFRB
6	Kathryn Brock	NSIR/DPR/EPD
7	Edward H. Roach	NSIR/DPR/EPD
8	Paul Prescott	NRR/DE/EQVA
9	✓ DAVID MATTHEWS	NRR/DNRL
10	Bob Radlinski	NRR/DRA/AFPB
11	Dale F. Thatch	NRR/DE/EQVA
12	Om Chopra	NRR/DE/NRO
13	John Fair	NRR/DE/EEMB
14	YUKEN WONG	NRR/DCI/CPTB
15	STEVE ALEXANDER	NRR/DRA/APOB
16	Hulbert Li	NRR/DE/EICB
17	MARTIN STUTZKE	NRR/DRA/APLA
18	Bob Davis	NRR/DCI/CFEB
19	Bruce Musico	NRC/NSIR/DPR
20	RICK PELTON	NRR/DIRS/IOLB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS

November 30, 2006
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

	NAME	NRC ORGANIZATION
1	Mike Tschiltz	NRR / DRA
2	Alison DeBree	NRC / RES
3	K. Ganesilas	RES / DRASP / NRCA
4	C Craig Harbuck	NRR / DIRS / ITSB
5	David Terao	NRR / DORL
6	Jennifer Dixon-Herrity	NRR / DE / EEMB
7	Ranjitsinh Parmar	NRR / DRA / APLB
8	BOB PALLA	NRR / DRA / APLA
9	Nick Saltos	NRR / DRA / APLB
10	JC Dehmel	NRR / DIRS / IHPB
11	Tim Frye	NRR / DIRS / IHPB
12	Lynn Mrowca	NRR / DRA / APLB
13	Leroy Hardin	NRR / DNRL
14	JOSEPH GOLACCINO	NRR / NRO / DNRL
15	PRAVIN D. PATEL	NRR / DE / EGCA
16	JERRY WILSON	NRO / DNRL
17	MATT CHIRAMAL	NRR / DE
18	Hossein Hamzehee	NRR / DE
19		
20		

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS

November 30, 2006
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

	NAME	NRC ORGANIZATION
1	Hank Thon	NRR/ADLB
2	DON DUBE	NRR/DRA
3	Rocky Foster	NRO/DNRL
4	Charles Hinson	NRR/DIRS
5	Doug Huyck	NRC/NSIR/RSB
6	John TSAO	NRR/DCI/CFEB
7	Joe Birmingham	NRR
8	Ching Ng	NRR/DE
9	J. BONGARRA	NRR/DIRS
10	Doug Weaver	NRO/DNRL
11	David Bessette	RES/DSARP
12	George Georgiev	NRR/DCI
13	Glenn Kelly	NRR/DRA
14	Donnie Harrison	NRR/DRA
15	PAT PATNAIK	NRR/DCI/CFEB
16	TERENCE CHAN	NRR/DCI/CPNB
17	Mark Rubin	NRR/DRA
18	A. El-Bassioni	NRR/DRA/APLA
19	KERRI KAVANAGH	NRR/DE/EQUA
20	MARK HARTZMAN	NRR/DE/EEMB

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS

November 30, 2006
Date

PLEASE PRINT

	NAME	AFFILIATION
1	Jerry Mauck	South Texas Project
2	Eddie R Grant	NuStart / EXCEL Services
3	Joe Mihalcik	UniStar Nuclear/Constellation
4	Ryuji Iwasaki	Toshiba
5	Meghan Goldman	DOE
6	Martha Shields	DOE
7	✓ Leslie Kass	NEI
8	Andrea Sterdis	Westinghouse
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Advisory Committee on Reactor Safeguards
Future Plant Designs Subcommittee
Draft Regulatory Guide DG-1145
November 30, 2006
Rockville, MD

-PROPOSED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Presenters	Presentation Time
I	Opening Remarks	T. Kress, ACRS	8:30 am - 8:40 am
II	Staff Introductory Remarks	D. Matthews, NRR	8:40 am - 8:45 am
III	DG-1145 Overview - Purpose - Format and Structure - Developmental Basis - Status Chapter by Chapter comments from members	E. Oesterle, NRR	8:45 am - 9:45 am
IV	PRA / RTNSS / RAP		9:45 am - 10:30 am
	BREAK		10:30 am - 10:45 am
IV	PRA / RTNSS / RAP		10:45 am - 11:30 am
V	COL Action Items		11:30 am -12:00 pm
	LUNCH		12:00 pm - 1:00 pm
VI	ITAAC / DAC		1:00 pm - 1:30 pm
VII	Operational Programs		1:30 pm - 2:00 pm
VIII	Workshop Issues - Design Finality - COL Information Availability - Inspections / ITAAC - FOAKE / EDV		2:00 pm - 3:00 pm
	BREAK		3:00 pm - 3:15 pm
IX	Characterization of Public Comments		3:15 pm - 4:00 pm
X	Industry Comments	Leslie Kass, NEI Russell Bell, NEI	4:00 pm - 4:45 pm
XI	Summary / Plans for Full Committee	T. Kress, ACRS	4:45 pm - 5:00 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

From: David Fischer
To: Eric Oesterle
Subject: Re: ACRS Subcommittee on Future Plant Designs - Agenda

Eric,
I don't see any problem with that.
Dave

>>> Eric Oesterle 11/16/2006 7:48:33 AM >>>
Dave,

I'm considering switching the presentation order for COL Action Items with ITAAC/DAC so that I can present the ITAAC/DAC concepts prior to the presentations on COL Actions Items and Operational Programs. Reason being is that the presentations on COL Actions Items and Operational Programs include references to ITAAC.

Any problems doing that? Please advise. Thanks!

Eric

Eric R. Oesterle, Project Manager
NRR/DNRL/NGDB
301-415-1365

INTRODUCTORY STATEMENT BY THE CHAIRMAN
OF THE ACRS SUBCOMMITTEE
ON FUTURE PLANT DESIGNS
11545 ROCKVILLE PIKE, ROOM T-2B3
ROCKVILLE, MARYLAND
NOVEMBER 30, 2006

The meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Future Plant Designs. I am Tom Kress, Chairman of the Subcommittee.

Members in attendance are Sam Armijo, Mario Bonaca, Michael Corradini, William Shack, Jack Sieber, and Graham Wallis. Dr. Abdel-Khalik is participating via video conference. The purpose of this meeting is to summarize and discuss the technical content of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," discuss the public comments that the staff has received on DG-1145, and summarize how the staff plans on resolving the public comments. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, Nuclear Energy Institute, and other interested persons regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee. Mr. David Fischer is the Designated Federal Official for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on September 25, 2006.

A transcript of the meeting is being kept and will be made available as stated in the Federal Register Notice. It is requested that speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard.

We have received no written comments, or requests for time to make oral statements from any members of the public regarding today's meeting.

(Chairman's Comments, if any)

Right after the staff's overview of DG-1145, I will ask the committee members for their comments or questions on the sections of DG-1145 that they have been asked to review. I understand that the technical staff will be available at that time to answer questions. This will facilitate the discussion of issues not specifically called out on the agenda. The staff will then also be able to get back to the Subcommittee later in the day if, for whatever reason, the staff is unable to address the comment or concern at that time.

Also, I would encourage attendees a today's meeting (e.g., members of the public or industry representatives) to feel free to offer comments on specific agenda items as we proceed through the agenda. But again, please come up to a microphone and identify yourself first. A revised agenda is available in the back of the meeting room.

We will now proceed with the meeting, and I call upon [Mr. David Matthews] of the NRC staff to begin with the staff's introductory remarks.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

October 24, 2006

MEMORANDUM TO: Michael R. Snodderly, Branch Chief, ACRS/ACNW

FROM: David C. Fischer, Senior Staff Engineer

SUBJECT: FEDERAL REGISTER NOTICE REGARDING THE ACRS SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS NOVEMBER 30, 2006, ROCKVILLE, MARYLAND

Attached is a *Federal Register Notice* regarding the subject meeting. Please have this Notice transmitted for publication as soon as possible.

Attachment:
FR Notice

cc with Attachment:
T. Kress, ACRS
J. Larkins, ACRS
J. Szabo, OGC
A. Bates, SECY
B. Sosa, OEDO
S. Burnell, OPA
E. Oesterle, NRR
S. (Min) Lee, NRR
R. Tregoning, RES
PMNS
Public Document Room

[7590-01-P]

NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
SUBCOMMITTEE MEETING ON FUTURE PLANT DESIGNS

Notice of Meeting

The ACRS Subcommittee on Future Plant Designs will hold a meeting on November 30, 2006, Room T-2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Thursday, November 30, 2006 - 8:30 a.m. until the conclusion of business

The Subcommittee will summarize and discuss the technical content of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," public comments on DG-1145, and public comment resolution. Certain sections of DG-1145 will be discussed in greater detail. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. David C. Fischer (telephone 301-415-6889) between 7:30 a.m. and 5:00 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 5:00 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

10-26-2006
Date

Michael R. Snodderly
Michael R. Snodderly, Branch Chief, ACRS/ACNW

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards: Meeting Notice

In accordance with the purposes of Sections 29 and 182b. of the Atomic Energy Act (42 U.S.C. 2039, 2232b), the Advisory Committee on Reactor Safeguards (ACRS) will hold a meeting on December 7–9, 2006, 11545 Rockville Pike, Rockville, Maryland. The date of this meeting was previously published in the **Federal Register** on Tuesday, November 22, 2005 (70 FR 70638).

Thursday, December 7, 2006, Conference Room T–2B3, Two White Flint North, Rockville, Maryland

8:30 a.m.–8:35 a.m.: Opening Remarks by the ACRS Chairman (Open)—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

8:35 a.m.–10:30 a.m.: Draft Final Regulatory Guide, DG–1145, "Combined License Applications for Nuclear Power Plants" (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding Draft Final Regulatory Guide, DG–1145, "Combined License Applications for Nuclear Power Plants," and resolution of significant public comments.

10:45 a.m.–12:15 p.m.: Draft Final Regulatory Guide, DG–1144, "Guidelines for Evaluating Fatigue Analyses Incorporating the Life Reduction of Metal Components Due to the Effects of the Light-Water Reactor Environment for New Reactors" (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding Draft Final Regulatory Guide DG–1144 and the resolution of public comments.

1:15 p.m.–3:15 p.m.: Proposed Revisions to Standard Review Plan Section 13.3, "Emergency Planning" (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding proposed revisions to Standard Review Plan Section 13.3, "Emergency Planning," and related matters.

3:30 p.m.–5:30 p.m.: State-of-the-Art Reactor Consequence Analysis Project (Open)—The Committee will hear presentations by and hold discussions with representatives of the NRC staff regarding status of the staff's efforts associated with the state-of-the-art reactor consequence analysis project.

5:45 p.m.–7 p.m.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports on matters considered during this meeting.

Friday, December 8, 2006, Conference Room T–2B3, Two White Flint North, Rockville, Maryland

8:30 a.m.–8:35 a.m.: Opening Remarks by the ACRS Chairman (Open)—The ACRS Chairman will make opening remarks regarding the conduct of the meeting.

8:35 a.m.–9:30 a.m.: Proposed Revisions to Regulatory Guides and Standard Review Plan Sections in Support of New Reactor Licensing (Open)—The Committee will discuss proposed revisions to Regulatory Guides and Standard Review Plan Sections that are being made in support of new reactor licensing.

9:30 a.m.–10:30 a.m.: Future ACRS Activities/Report of the Planning and Procedures Subcommittee (Open)—The Committee will discuss the recommendations of the Planning and Procedures Subcommittee regarding items proposed for consideration by the full Committee during future meetings. Also, it will hear a report of the Planning and Procedures Subcommittee on matters related to the conduct of ACRS business, including anticipated workload and member assignments.

10:45 a.m.–11 a.m.: Reconciliation of ACRS Comments and Recommendations (Open)—The Committee will discuss the responses from the NRC Executive Director for Operations to comments and recommendations included in recent ACRS reports and letters.

11 a.m.–11:30 a.m.: Election of ACRS Officers for CY 2007 (Open)—The Committee will elect Chairman and Vice-Chairman for the ACRS and Member-at-Large for the Planning and Procedures Subcommittee.

1 p.m.–7 p.m.: Preparation of ACRS Reports (Open)—The Committee will discuss proposed ACRS reports.

Saturday, December 9, 2006, Conference Room T–2B3, Two White Flint North, Rockville, Maryland

8:30 a.m.–12 Noon: Preparation of ACRS Reports (Open)—The Committee will continue discussion of proposed ACRS reports.

12 Noon–12:30 p.m.: Miscellaneous (Open)—The Committee will discuss matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

Procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on October 2, 2006 (71 FR 58015). In accordance with those procedures, oral or written views may be presented by members of the public, including representatives of the nuclear industry. Electronic recordings will be permitted only during the open portions of the meeting. Persons desiring to make oral statements should notify the Cognizant ACRS staff named below five days before the meeting, if possible, so that appropriate arrangements can be made to allow necessary time during the meeting for such statements. Use of still, motion picture, and television cameras during the meeting may be limited to selected portions of the meeting as determined by the Chairman. Information regarding the time to be set aside for this purpose may be obtained by contacting the Cognizant ACRS staff prior to the meeting. In view of the possibility that the schedule for ACRS meetings may be adjusted by the Chairman as necessary to facilitate the conduct of the meeting, persons planning to attend should check with the Cognizant ACRS staff if such rescheduling would result in major inconvenience.

Further information regarding topics to be discussed, whether the meeting has been canceled or rescheduled, as well as the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by contacting Mr. Sam Duraiswamy, Cognizant ACRS staff (301–415–7364), between 7:30 a.m. and 4 p.m., (ET).

ACRS meeting agenda, meeting transcripts, and letter reports are available through the NRC Public Document Room at *pdr@nrc.gov*, or by calling the PDR at 1–800–397–4209, or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS) which is accessible from the NRC Web site at *http://www.nrc.gov/reading-rm/adams.html* or *http://www.nrc.gov/reading-rm/doc-collections/* (ACRS & ACNW Mtg schedules/agendas).

Videoteleconferencing service is available for observing open sessions of ACRS meetings. Those wishing to use this service for observing ACRS meetings should contact Mr. Theron Brown, ACRS Audio Visual Technician (301–415–8066), between 7:30 a.m. and 3:45 p.m., (ET), at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the videoteleconferencing link. The availability of

videoteleconferencing services is not guaranteed.

The ACRS meeting dates for Calendar Year 2007 are provided below.

ACRS meeting No.	Meeting dates
—	January 2007.
539	February 1–3, 2007.
540	March 8–10, 2007.
541	April 5–7, 2007.
542	May 3–5, 2007.
543	June 6–8, 2007.
544	July 11–13, 2007.
—	August [1]
545	September 6–8, 2007.
546	October 4–6, 2007.
547	November 1–3, 2007.
548	December 6–8, 2007.

[1] No ACRS Meeting.

Dated: November 8, 2006.

Andrew L. Bates,

Advisory Committee Management Officer.

[FR Doc. E6–19239 Filed 11–14–06; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards (ACRS)

Subcommittee Meeting on Materials, Metallurgy, and Reactor Fuels; Notice of Meeting

The ACRS Subcommittee on Materials, Metallurgy, and Reactor Fuels will hold a meeting on December 6, 2006, Room T–2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Wednesday, December 6, 2006—1:30 p.m. until the conclusion of business.

The Subcommittee will review Draft Regulatory Guide DG–1144, "Guidelines for Evaluating Fatigue Analyses Incorporating the Life Reduction of Metal Components Due to the Effects of the Light-Water Reactor Environment for New Reactors." The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. Charles G. Hammer (telephone 301/415–7363) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 6:45 a.m. and 3:30 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: November 8, 2006.

Antonio F. Dias,

Acting Branch Chief, ACRS/ACNW.

[FR Doc. E6–19241 Filed 11–14–06; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards (ACRS) Subcommittee Meeting on Thermal-Hydraulic Phenomena; Notice of Meeting

The ACRS Subcommittee on Thermal-Hydraulic Phenomena will hold a meeting on December 5, 2006, 11545 Rockville Pike, Rockville, Maryland in Room T–2B3.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows: *Tuesday, December 5, 2006—8:30 a.m. until the conclusion of business.*

The Subcommittee will hear presentations from the NRC staff, their contractors, and other interested persons concerning the progress they have been making in the development of the TRACE T/H system analysis code. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. Ralph Caruso (Telephone: 301–415–8065) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted only during those portions of the meeting that are open to the public.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 4:15 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: November 8, 2006.

Antonio F. Dias,

Acting Branch Chief, ACRS/ACNW.

[FR Doc. E6–19280 Filed 11–14–06; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Notice of Sunshine Act Meetings

AGENCY: Nuclear Regulatory Commission.

DATE: Weeks of November 13, 20, 27, December 4, 11, 18, 2006.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public and closed.

MATTERS TO BE CONSIDERED:

Week of November 13, 2006

There are no meetings scheduled for the Week of November 13, 2006.

Week of November 20, 2006—Tentative

There are no meetings scheduled for the Week of November 20, 2006.

Week of November 27, 2006—Tentative

Thursday, November 30

12:55 p.m. Affirmation Session (Public Meeting) (Tentative). a. Hydro Resources, Inc. (Crownpoint, NM) Intervenors' Petition for Review of LBP–06–19 (Final Partial Initial Decision—NEPA Issues) (Tentative).

Week of December 4, 2006—Tentative

Thursday, December 7, 2006

9:30 a.m. Discussion of Security Issues (Closed—Ex. 2 & 3).

Week of December 11, 2006—Tentative

Monday, December 11, 2006

1:30 p.m. Briefing on Status of Decommissioning Activities (Public Meeting) (Contact: Keith McConnell, 301–415–7295).

This meeting will be Webcast live at the Web address— *http://www.nrc.gov.*

Tuesday, December 12, 2006

9:30 a.m. Briefing on Threat Environment Assessment (Closed—Ex. 1).

1:30 p.m. Discussion of Security Issues (Closed—Ex. 1 & 3).

Wednesday, December 13, 2006

9:30 a.m. Briefing on Status of Equal Employment Opportunity (EEO) Programs (Public Meeting) (Contact: Barbara Williams, 301–415–7388).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

Thursday, December 14, 2006

9:30 a.m. Meeting with Advisory Committee on Nuclear Waste (ACNW) (Public Meeting) (Contact: John Larkins, 301–415–7360).

This meeting will be Webcast live at the Web address—*http://www.nrc.gov.*

this service for observing ACNW meetings should contact Mr. Theron Brown, ACNW Audiovisual Technician (301–415–8066), between 7:30 a.m. and 3:45 p.m. ET, at least 10 days before the meeting to ensure the availability of this service. Individuals or organizations requesting this service will be responsible for telephone line charges and for providing the equipment and facilities that they use to establish the video teleconferencing link. The availability of video teleconferencing services is not guaranteed.

Dated: October 27, 2006.

Annette L. Vietti-Cook,

Secretary of the Commission.

[FR Doc. E6–18468 Filed 11–1–06; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Nuclear Waste Meeting on Planning and Procedures; Notice of Meeting

The Advisory Committee on Nuclear Waste (ACNW) will hold a Planning and Procedures meeting on November 13, 2006, Room T–2B1, 11545 Rockville Pike, Rockville, Maryland. The entire meeting will be open to public attendance, with the exception of a portion that may be closed pursuant to 5 U.S.C. 552b (c) (2) and (6) to discuss organizational and personnel matters that relate solely to internal personnel rules and practices of ACNW, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.

The agenda for the subject meeting shall be as follows:

Monday, November 13, 2006—8:30 a.m.–9:30 a.m.

The Committee will discuss proposed ACNW activities and related matters. The purpose of this meeting is to gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. Antonio F. Dias (*Telephone:* 301/415–6805) between 8:15 a.m. and 5 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted only during those portions of the meeting that are open to the public.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 8:15 a.m. and 5 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes in the agenda.

Dated: October 26, 2006.

Michael R. Snodderly,

Branch Chief, ACRS/ACNW.

[FR Doc. E6–18469 Filed 11–1–06; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards Subcommittee Meeting on Future Plant Designs; Notice of Meeting

The ACRS Subcommittee on Future Plant Designs will hold a meeting on November 30, 2006, Room T–2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Thursday, November 30, 2006—8:30 a.m. until the conclusion of business.

The Subcommittee will summarize and discuss the technical content of Draft Regulatory Guide DG–1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," public comments on DG–1145, and public comment resolution. Certain sections of DG–1145 will be discussed in greater detail. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Official, Mr. David C. Fischer (telephone 301–415–6889) between 7:30 a.m. and 5 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted.

Further information regarding this meeting can be obtained by contacting the Designated Federal Official between 7:30 a.m. and 5 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: October 26, 2006.

Michael R. Snodderly,

Branch Chief, ACRS/ACNW.

[FR Doc. E6–18467 Filed 11–1–06; 8:45 am]

BILLING CODE 7590–01–P

RAILROAD RETIREMENT BOARD

Agency Forms Submitted for OMB Review, Request for Comments

Summary: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), the Railroad Retirement Board (RRB) is forwarding an Information Collection Request (ICR) to the Office of Information and Regulatory Affairs (OIRA), Office of Management and Budget (OMB) to request an extension of its approval for the following collection of information: 3220–0141, Vocational Report, consisting of RRB Form G–251, Vocational Report. Our ICR describes the information we seek to collect from the public. Review and approval by OIRA ensures that we impose appropriate paperwork burdens.

The RRB invites comments on the proposed collection of information to determine (1) the practical utility of the collection; (2) the accuracy of the estimated burden of the collection; (3) ways to enhance the quality, utility and clarity of the information that is the subject of collection; and (4) ways to minimize the burden of collections on respondents, including the including the use of automated collection techniques or other forms of information technology. Comments to RRB or OIRA must contain the OMB control number of the ICR. For proper consideration of your comments, it is best if RRB and OIRA receive them within 30 days of publication date.

Previous Requests for Comments: The RRB has already published the initial 60-day notice (71 FR 43824 on August 2, 2006) required by 44 U.S.C. 3506(c)(2). That request elicited no comments.

Information Collection Request (ICR)

Title: Vocational Report.

OMB Control Number: 3220–0141.

Form(s) submitted: G–251, Vocational Report.

Type of request: Extension of a currently approved collection.

Affected public: Individuals or households.

Abstract: Section 2 of the Railroad Retirement Act provides for the payment of disability annuities to qualified employees and widower(s). In order to determine the effect of a disability on an applicant's ability to

INDIVIDUAL MEMBER COMMENTS

(Provided to the staff in advance of the November 30, 2006 Advanced Reactor Designs Subcommittee meeting.)

From: <JDSIEBER@aol.com>
To: <DCF@nrc.gov>, <wjshack@anl.gov>, <TSKress@aol.com>, <omaynard@charter.net>, <wallis@dartmouth.edu>, <banerjee@engineering.ucsb.edu>, <corradini@engr.wisc.edu>, <abdelkhalik@me.gatech.edu>, <apostola@mit.edu>, <DanaPowers@msn.com>, <jsarmijo@msn.com>, <mvbonaca@snet.net>
Date: Tue, Nov 7, 2006 3:44 PM
Subject: Re: ACRS REVIEW OF DG-1145, COMBINED LICENSE APPLICATION GUIDANCE

In a message dated 11/3/2006 12:31:27 P.M. Eastern Standard Time, DCF@nrc.gov writes:

Please look over those portions of DG-1145 that you have been assigned to review (see attached assignment list), to see if we need to add/delete anything from the draft agenda (also attached). Please let me and Tom Kress know of any adjustments you would like to make to the draft agenda by November 10th. I need to line up NRC staff reviewers and post the final agenda ASAP.

Dave and Tom,

As you know, these sections are difficult to review, since we do not have a library of applicable codes and standards at home, and I need to use the NRC web site (which doesn't always work properly) to view the referenced Regulatory Guides. However, I am familiar with most of the applicable codes and standards which are referenced in the two sections assigned to me.

What I notice most are the things that seem to be missing. For example, in the reactor coolant system section, I did not see any requirement for the applicant to supply drawings of hangers, supports (both pipe and component supports) and restraints (whip (if any) and seismic restraints). Also, when describing the materials of the system, I think that iso drawings are very helpful, if they are annotated with base and weld metal compositions.

Also, besides knowing the chemistry, it is good to have a record of pre and post fabrication and weld heat treatments. Also, a description of any repairs made (and what sections of the ASME Code (or Code Cases) allow the repair to be made). There are other issues that should be elaborated on in this section, related to its fabrication, erection, testing and qualification of the piping, components and supports.

In the area of Electric Power Systems, I would like to see the Applicant describe its plant electrical grounding system. I would like to see some typical three wire diagrams along with a full set of single line drawings which show the protection components.

I also believe that the analysis required for grid stability calcs does not fully bound all possible vulnerabilities. Perhaps what is asked for is the best that one can do, since we do not describe a real design basis as to what we expect the electric power grid to be able to do. Since many applicants do not have control of the grid to which their plant is connected. Again, perhaps this is the best that can be done.

Also, there is a standard referenced for coordinated electrical protection, but no description of the electrical protection scheme is requested. Since electrical protection is well understood, perhaps no further information is

needed - except for single line drawings.

I did not find any reference to fire protection except a reference as to the separation criteria for electrical systems. Where does a description of the fire protection program come in?

I also reviewed the I & C section. I have some comments, but since this section was not assigned to me, I will not comment unless some missing piece is evident. Otherwise, the I & C section looks OK to me, without breaking new ground. The description matches the rules in place today.

I wonder if a one day meeting will be enough to review this document? I think that there is a lot of information contained in it and that the review is complex, since it has so many references. Does NRR plan to discuss each section individually? If so, in what detail? If not, are we just to show up with our list of questions?

I think that it would be a good idea for us to know exactly what NRR plans to say so that we can prepare properly.

Jack

CC: <BJW2@nrc.gov>, <CXS3@nrc.gov>, <MRS1@nrc.gov>, <SXD1@nrc.gov>, <jtl@nrc.gov>

From: Said Abdel-Khalik <said.abdelkhalik@me.gatech.edu>
To: "David Fischer" <DCF@nrc.gov>, "William Shack" <wjshack@anl.gov>, "John Sieber" <jdsieber@aol.com>, "Thomas Kress" <TSKress@aol.com>, "Otto Maynard" <omaynard@charter.net>, "Graham Wallis" <graham.b.wallis@dartmouth.edu>, "Sanjoy Banerjee" <banerjee@engineering.ucsb.edu>, "Michael Corradini" <corradini@engr.wisc.edu>, "George Apostolakis" <apostola@mit.edu>, "Dana Powers" <DanaPowers@msn.com>, <jsarmijo@msn.com>, "Mario Bonaca" <mvbonaca@snet.net>
Date: Sun, Nov 12, 2006 6:02 PM
Subject: Comments on Chapters 7 and 10 of DG-1145, COMBINED LICENSE APPLICATION GUIDANCE

Dear David:

I have reviewed Chapters 7 (Instrumentation & Controls) and Chapter 10 (Steam and Power Conversion System) of DG-1145. The following comments are offered:

I. Chapter 7 -- Instrumentation & Controls:

My questions pertain to items 6 and 7 of Appendix C.I.7-A (Digital Instrumentation and Control Systems Application Guidance).

Item 6 deals with life cycle process requirements; it specifies that " ... The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated."

Item 7 deals with software life cycle process design outputs; it specifies that ".... A statistically valid sample of software design outputs should be provided to confirm with at least 95% assurance that they address that they address the functional requirements and .... "

The questions in both cases deal with the specified 95% confidence level. Why was it selected? and is it adequate for all systems including those important to safety?

II. Chapter 10 (Steam & Power Conversion System)

Section C.I.10.3.5 deals with Water Chemistry (PWR only). There is no section dealing with BWR water chemistry. Will that information be provided in a different Chapter?

Said

At 12:30 PM 11/3/2006, David Fischer wrote:
>ACRS members,
>I am trying to finalize the agenda for our November 30, 2006, Future
>Plant Designs Subcommittee meeting on DG-1145, Combined License
>Applications.
>
>Please look over those portions of DG-1145 that you have been assigned
>to review (see attached assignment list), to see if we need to
>add/delete anything from the draft agenda (also attached). Please let
>me and Tom Kress know of any adjustments you would like to make to the
>draft agenda by November 10th. I need to line up NRC staff reviewers
>and post the final agenda ASAP. Thanks in advance,
>Dave

>
>P.S. The latest Subcommittee Meeting List shows everyones hotel
>reservations. If any adjustments are needed there, please let me and
>Barbara Jo White know.
>
>
>
>
>

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Dr. S. I. Abdel-Khalik
SNC Distinguished Professor
G. W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology
Atlanta, GA 30332-0405

Voice: (404) 894-3719 FAX: (404) 894-8496
said.abdelkhalik@me.gatech.edu
****

CC: "Cayetano Santos" <CXS3@nrc.gov>, "Michael Snodderly" <MRS1@nrc.gov>, "Sam Duraiswamy" <SXD1@nrc.gov>

From: WJ Shack <wjshack@anl.gov>
To: Dana Powers <DanaPowers@msn.com>, George Apostolakis <apostola@mit.edu>, Graham Wallis <Graham.B.Wallis@Dartmouth.edu>, Jack Sieber <JDSIEBER@AOL.COM>, "Mario V. Bonaca" <mvbonaca@snet.net>, Michael Corradini <corradin@cae.wisc.edu>, Otto Maynard <omaynard@charter.net>, Said Abdel-Khalik <said.abdelkhalik@me.gatech.edu>, Sam Armijo <jsarmijo@msn.com>, Sanjoy Banerjee <banerjee@engineering.ucsb.edu>, Tom Kress <TSKress@aol.com>, David Fischer <DCF@nrc.gov>
Date: Sun, Nov 19, 2006 11:37 PM
Subject: A few more nits on 1145

In Chapter 5, which Jack is reviewing, I have a few nits.

All refs to RG 1.99 should be RG 1.99 Rev 2, all refs to NUREG-0313 should NUREG-0313 Rev 2.

In DG-1145 the sections on BWR water chemistry bring in RG 1.56. The original version of RG 1.56 was 1973; there is a 1978 Rev 1, which has "For Comment" on it so I am not sure if it was ever officially approved. If RG 1.56 is supposed to define BWR water chemistry acceptable to the staff, we are in trouble. There is no RG on PWR primary or secondary water chemistry and DG-1145 just gives sensible general statements. The general statements on BWR water chemistry are sensible enough and they ought to just drop the refs to RG 1.56 in DG-1145 and trash RG 1.56. It has long been superceded by industry documents. If they want to give refs. It ought to be for some recent revison of the EPRI BWR and PWR primary and secondary water chemistry guidelines.

From: <TSKress@aol.com>
To: <apostola@mit.edu>, <dapower@sandia.gov>, <graham.b.wallis@dartmouth.edu>, <mvbonaca@snet.net>, <jsarmijo@msn.com>, <omaynard@charter.net>, <wjshack@anl.gov>, <JDSIEBER@aol.com>, <banerjee@engineering.ucsb.edu>, <corradin@cae.wisc.edu>, <said.abdelkhalik@me.gatech.edu>, <DCF@nrc.gov>
Date: Mon, Nov 13, 2006 1:08 PM
Subject: Review of my Chapters of DG-1145

Gentlemen: I have reviewed my chapters of DG-1145 which are:

1. Introduction & General Description of Plant
14. Initial Test Program and ITAAC -- Design Certification
20. Generic Issues.

Believe it or not, I have no comments on these chapters. If the rest of the reviewers have the same reaction, it is going to be a dull meeting. I presume the process will be that the staff will give a very brief statement of what is in a chapter and then ask for any comments. I liked what Jack Sieber did in looking for what was missing rather than what was there. Perhaps I could persuade him and Otto to look at Chapter 14 which, by the way, is called Verification Program in the DG. They both know a hell of a lot more about that subject than I do which is very little.

My only real issue with the DG is that there should be a requirement and guidance on having to do a site specific Level-3 risk assessment. This may very well be a part of the Environmental Impact Statement but I think it should be explicitly stated in this RG.

Cheers,
Tom Kress

From: Michael Corradini <corradin@cae.wisc.edu>
To: Tom Kress <tskress@aol.com>
Date: Sun, Nov 19, 2006 6:27 PM
Subject: COMMENTS on DG-1145

Dear Tom - I reread the Sections assigned (6 and 19). Section 6 is quite complete and reasonable. Section 19 is pretty sparse and the severe accident section is really non-existent. Here are my comments. Mike

Comments on Section C.I.6: Engineered Safety Features

This section of the Regulatory Guide is quite detailed and thorough in treatment of the guidance for the ESF systems. These comments are more for clarification than major issues.

1. Section C.I.6.2: Organic materials provide general guidance. Are there no particular issues that a potential COL application consider?

2. Section C.I.6.2.1.2: Containment subcompartment specifications for mass and energy release data seems quite detailed. Is that needed?

3. Section C.I.6.2.3.3: Secondary containment design evaluation identifies a specific evaluation if the leakage exceeds 100%/day. Why is this evaluation needed at > 100%/day?

Comments on Section C.I.19.3: Severe Accident Evaluation

The details of this section were not provided in the version of the document, dated September 1, 2006. So no review is possible. Only introductory paragraphs are given.

CC: David Fischer <DCF@nrc.gov>

From: "Sam Armijo" <jsarmijo@msn.com>
To: <TSKress@aol.com>, <apostola@mit.edu>, <dapower@sandia.gov>, <graham.b.wallis@dartmouth.edu>, <mvbonaca@snet.net>, <omaynard@charter.net>, <wjshack@anl.gov>, <JDSIEBER@aol.com>, <banerjee@engineering.ucsb.edu>, <corradin@cae.wisc.edu>, <said.abdelkhalik@me.gatech.edu>, <DCF@nrc.gov>
Date: Mon, Nov 13, 2006 2:48 PM
Subject: RE: Review of my Chapters of DG-1145

Tom,

I have reviewed Chapter 4 (Reactor) and have found it to be pretty complete. I have included my comments in the attachment. I was not impressed with the level of information requested for materials in this chapter, but found a more complete list of requested information in Chapter 5 (Reactor Coolant and Connecting Systems) which Jack is reviewing. I will take a closer look at this and send you my comments later.

It seems to me that Design Guide should have a special chapter that asks the applicant to identify all the materials degradation mechanisms that have plagued the industry and to describe what materials selections, fabrication steps, mechanical design, and water chemistry specifications they have put it place to prevent failures in new reactors. For example the chapter would list the known failure mechanisms each reactor type (for example, IGSCC, IASCC, FAC, PWSCC, Thermal Fatigue, denting, vessel embrittlement, etc) and describe why the new materials would not be subject to each mechanism. I think it would help the designers focus their materials efforts, demonstrate that they have put these problems to bed, and help the staff determine if the designs are complete and adequate. Right now it seems that material issues are sprinkled all over the DG.

The industry has spent billions fixing materials failure and degradation issues, and the DG should ask for a comprehensive treatment of these issues.

Sam

From: TSKress@aol.com [mailto:TSKress@aol.com]
Sent: Monday, November 13, 2006 10:06 AM
To: apostola@mit.edu; dapower@sandia.gov; graham.b.wallis@dartmouth.edu; mvbonaca@snet.net; jsarmijo@msn.com; omaynard@charter.net; wjshack@anl.gov; JDSIEBER@aol.com; banerjee@engineering.ucsb.edu; corradin@cae.wisc.edu; said.abdelkhalik@me.gatech.edu; DCF@nrc.gov
Subject: Review of my Chapters of DG-1145

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20. Generic Issues.

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My only real issue with the DG is that there should be a requirement and guidance on having to do a site specific Level-3 risk assessment. This may very well be a part of the Environmental Impact Statement but I think it should be explicitly stated in this RG.

Cheers,

Tom Kress

C.I.4. Reactor

Chapter 4 of the final safety analysis report (FSAR) should provide an evaluation and supporting information to establish the capability of the reactor to perform its safety functions throughout its design lifetime under all normal operational modes, including transient, steady-state, and accident conditions. This chapter should also include information to support the analyses presented in Chapter 15, "Accident Analyses."

C.I.4.1 ***Summary Description***

Provide a summary description of the mechanical, nuclear, and thermal and hydraulic designs of the various reactor components, including the fuel, reactor vessel internals, and reactivity control systems. This summary description should indicate the independent and interrelated performance and safety functions of each component. (Information on control rod drive systems and reactor vessel internals presented in Sections 3.9.4 and 3.9.5 of the FSAR may be incorporated by reference.) In addition, this description should include a summary table of the important design and performance characteristics, as well as a tabulation of analysis techniques used and load conditions considered (including computer code names).

C.I.4.2 ***Fuel System Design***

The fuel system is defined as consisting of guide tubes or thimbles; fuel rods with fuel pellets, insulator pellets, cladding, springs, end closures, fill gas, and getters; water rods; burnable poison rods; spacer grids and springs; assembly end fittings and springs; channel boxes; and the reactivity control assembly. In the case of the control rods, this section should cover the reactivity control elements that extend from the coupling interface of the control rod drive mechanism. In addition, this section should present the design bases for the mechanical, chemical, and thermal designs of the fuel system, which can affect or limit the safe, reliable operation of the plant.

The description of the fuel system mechanical design should include the following aspects:

(1) mechanical design limits, such as those for allowable stresses, deflection, cycling, and fatigue
(2) capacity for fuel fission gas inventory and pressure
(3) listing of material properties
(4) considerations for radiation damage, cladding collapse time, materials selection, and normal operational vibration

Details for seismic loadings should be presented in Section 3.7.3 of the FSAR; however, this section should present shock loadings [associated with a loss-of-coolant accident (LOCA)] and the effects of combined shock and seismic loads.

The chemical design should consider all possible fuel cladding-coolant interactions. The description of the thermal design should include such items as maximum fuel and cladding temperatures, clad-to-fuel gap conductance as a function of burnup and operating conditions, and fuel cladding integrity criteria.

Summary of Comments on E:\FileNET \ML061570330.wpd

Page: 1

Author: Sam
Subject: Note
Date: 11/08/2006 6:08:04 PM
Should include information related to effects of oxidation and hydriding on the mechanical properties of the fuel cladding.

This page contains no comments

C.I.4.2.1 Design Bases

Explain and substantiate the selection of design bases from the perspective of safety considerations. Where the limits selected are consistent with proven practice, a referenced statement to that effect will suffice; however, where the limits exceed present practice, this section should provide an evaluation and explanation based on developmental work or analysis. These design bases may be expressed as either explicit numbers or general conditions. In addition, the discussion of design bases should include a description of the functional characteristics in terms of desired performance under stated conditions. This should relate systems, components, and materials performance under normal operating, anticipated transient, and accident conditions. The discussion should consider the following with respect to performance:

(1) Cladding
   (a) mechanical properties of the cladding (e.g., Young's modulus, Poisson's ratio, design dimensions, strength, ductility, and creep rupture limits), and effects of design temperature and irradiation on those properties
   (b) stress-strain limits
   (c) vibration and fatigue
   (d) chemical properties of the cladding

(2) Fuel Material
   (a) thermal-physical properties of the fuel (e.g., melting point, thermal conductivity, density, and specific heat), and effects of design temperature and irradiation on those properties
   (b) effects of fuel densification and fission product swelling
   (c) chemical properties of the fuel

(3) Fuel Rod Performance
   (a) analytical models and conservatism in the input data
   (b) ability of the models to predict experimental or operating characteristics
   (c) standard deviation or statistical uncertainty associated with the correlations or analytical models

(4) Spacer Grid and Channel Boxes
   (a) mechanical, chemical, thermal, and irradiation properties of the materials
   (b) vibration and fatigue
   (c) chemical compatibility with other core components, including coolant

(5) Fuel Assembly
   (a) structural design
   (b) thermal-hydraulic design

(6) Reactivity Control Assembly and Burnable Poison Rods
   (a) thermal-physical properties of the absorber material
   (b) compatibility of the absorber and cladding materials
   (c) cladding stress-strain limits
   (d) irradiation behavior of absorber material

(7) Surveillance Program
   (a) requirements for surveillance and testing of irradiated fuel rods, burnable poison rods, control rods, channel boxes, and instrument tubes/thimbles

This page contains no comments

C.I.4.2.2 Description and Design Drawings

Provide a description and final (FSAR) design drawing of the fuel rod components, burnable poison rods, fuel assemblies, and reactivity control assemblies showing arrangements, dimensions, critical tolerances, sealing and handling features, methods of support, internal pressurization, fission gas spaces, burnable poison content, and internal components. In addition, include a discussion of design features that prevent improper orientation or placement of fuel rods or assemblies within the core.

Provide the following fuel system information and associated tolerances:

- type and metallurgical state of the cladding
- cladding outside diameter
- cladding inside diameter
- cladding inside roughness
- pellet outside diameter
- pellet roughness
- pellet density
- pellet resintering data
- pellet length
- pellet dish dimensions
- burnable poison content
- insulator pellet parameters
- fuel column length
- overall rod length
- rod internal void volume
- fill gas type and pressure
- sorbed gas composition and content
- spring and plug dimensions
- fissile enrichment
- equivalent hydraulic diameter
- coolant pressure
- design-specific burnup limit

Also provide the following design drawings:

- fuel assembly cross-section
- fuel assembly outline
- fuel rod schematic
- spacer grid cross-section
- guide tube and nozzle joint
- control rod assembly cross-section
- control rod assembly outline
- control rod schematic
- burnable poison rod assembly cross-section
- burnable poison rod assembly outline
- burnable poison rod schematic
- orifice and source assembly outline

C.I.4.2.3 Design Evaluation

Present an evaluation of the fuel system design for the physically feasible combinations of chemical, thermal, irradiation, mechanical, and hydraulic interactions. The evaluation of these interactions should include the effects of normal reactor operations, anticipated operational occurrences, anticipated transients without scram, and postulated accidents. In particular, the fuel system design evaluation should include the following considerations:

(1) Cladding
- (a) vibration analysis
- (b) fuel element internal and external pressure and cladding stresses during normal and accident conditions, with particular emphasis on temperature transients or depressurization accidents
- (c) potential for chemical reaction, including hydriding, fission product attack, and crud deposition
- (d) fretting and crevice corrosion
- (e) stress-accelerated corrosion
- (f) cycling and fatigue
- (g) material wastage due to mass transfer
- (h) rod bowing due to thermal, irradiation, and creep dimensional changes
- (i) consequences of power-coolant mismatch
- (j) irradiation stability of the cladding
- (k) creep collapse and creepdown

(2) Fuel
- (a) dimensional stability of the fuel
- (b) potential for chemical interaction, including possible waterlogging rupture
- (c) thermal stability of the fuel, including densification, phase changes, and thermal expansion
- (d) irradiation stability of the fuel, including fission product swelling and fission gas release

(3) Fuel Rod Performance
- (a) fuel-cladding mechanical interaction
- (b) failure and burnup experience, including the thermal conditions for which the experience was obtained for a given type of fuel and the results of long-term irradiation testing of production fuel and test specimens
- (c) fuel and cladding temperatures, both local and gross, with an indication of the correlation used for thermal conductivity, gap conductance as a function of burnup and power level, and the method of employing peaking factors
- (d) an analysis of the potential effect of sudden temperature transients on waterlogged elements or elements with high internal gas pressure
- (e) an analysis of temperature effects during anticipated operational transients that may cause bowing or other damage to fuel, control rods, or structure
- (f) an analysis of the energy release and potential for a chemical reaction in the event of a physical burnout of fuel elements[1]
- (g) an analysis of the energy release and resulting pressure pulse should waterlogged elements rupture and spill fuel into the coolant[1]
- (h) an analysis of fuel rod behavior in the event that coolant flow blockage is predicted[1]

[1] If this information is included in Chapter 15 of the FSAR, it may be incorporated in this section by reference.

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Author: Sam
Subject: Note
Date: 11/08/2006 6:12:40 PM
This is a strange term for fuel cladding. Should use stress corrosion cracking due to pellet clad interaction (PCI)

Author: Sam
Subject: Note
Date: 11/08/2006 6:15:03 PM
I never heard of a mass transfer phenomenon. Are the authors talking about accelerated cladding corrosion due to excessive crud deposition and subsequent burnout? If so should ask for info on crud-related failure mechanisms.

(4) Spacer Grid and Channel Boxes
   (a) dimensional stability considering thermal, chemical, and irradiation effects
   (b) spring loads for grids

(5) Fuel Assembly
   (a) loads applied by core restraint system
   (b) analysis of combined shock (including LOCA) and seismic loading
   (c) loads applied in fuel handling, including misaligned handling tools

(6) Reactivity Control Assembly and Burnable Poison Rods
   (a) internal pressure and cladding stresses during normal, transient, and accident conditions
   (b) thermal stability of the absorber material, including phase changes and thermal expansion
   (c) irradiation stability of the absorber material, taking into consideration gas release and swelling
   (d) potential for chemical interaction, including possible waterlogging rupture

When conclusive operating experience is not available, discuss any prototype testing associated with the fuel design, with a particular focus on any of the following prototype tests that have been performed:

- spacer grid structural tests
- control rod structural and performance tests
- fuel assembly structural tests (lateral, axial and torsional stiffness, frequency, and damping)
- fuel assembly hydraulic flow tests (lift forces, control rod wear, vibration and assembly wear and life)
- in-reactor testing of design features and lead assemblies of a new design, which may include one or more of the following:
  - fuel and burnable poison rod growth
  - fuel rod bowing
  - fuel assembly growth
  - fuel assembly bowing
  - channel box wear and distortion
  - fuel rod ridging (PCI)
  - crud formation
  - fuel rod integrity
  - hold down spring relaxation
  - spacer grid spring relaxation
  - guide tube wear characteristics

Also discuss the following phenomenological models:

- radical power distribution
- fuel and cladding temperature distribution
- burnup distribution in the fuel
- thermal conductivity of the fuel, cladding, cladding crud, and oxidation layers
- densification of the fuel
- thermal expansion of the fuel and cladding
- fission gas production and release
- solid and gaseous fission product swelling
- fuel restructuring and relocation
- fuel and cladding dimensional changes
- fuel-to-cladding heat transfer coefficient
- thermal conductivity of the gas mixture

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Author: Sam
Subject: Note
Date: 11/08/2006 6:18:33 PM
Probably mean radial power distribution

- thermal conductivity in the knudsen domain
- fuel-to-cladding contract pressure
- heat capacity of the fuel and cladding
- growth and creep of the cladding
- rod internal gas pressure and composition
- sorption of helium and other fill gases
- cladding oxide and crud layer thickness
- cladding-to-coolant heat transfer coefficient

In addition, provide the following information:

(1) Fuel system damage criteria for all known [redacted]anisms:
   (a) stress, strain, or loading limits for spacer grids, guide tubes, thimbles, fuel rods, control rods, channel boxes, and other fuel system structured members
   (b) commutative number of strain fatigue cycles [redacted]
   (c) fretting wear at contact points on structural members
   (d) oxidation, hydriding, and the buildup of corrosion production
   (e) dimensional changes, such as rod bowing or irradiation growth on fuel rods and guide tubes (discuss associated analyses)
   (f) fuel and burnable poison rod internal gas pressures
   (g) "worst case" hydraulic loads for normal operations
   (h) maintaining control rods "watertight" to control rod reactivity

(2) Regarding fuel rod failure, the design evaluation should include the following:
   (a) analysis of maximum linear heat generation rate anywhere in the core, including all hot spots and hot channel factors, and the effects of burnups and composition on the melting point
   (b) calculation of the cladding swelling and rupture resulting from the temperature distribution in the cladding and pressure differences between the inside and outside of the cladding [this should be included in the evaluation model for the emergency core cooling system (ECCS)]

(3) Regarding fuel coolability, the design evaluation should include the following:
   (a) how the analysis of the core flow distribution accounts for the burst strain and flow blockage caused by ballooning (swelling)
   (b) whether the analyses of other accidents involving systems depressurization include burst strain and flow blockage caused by ballooning (swelling)

C.I.4.2.4 Testing and Inspection Plan

Describe the testing and inspections to be performed to verify the design characteristics of the fuel system components, including cladding integrity; dimensions; fuel enrichment; burnable poison concentration; absorber composition; and characteristics of the fuel, absorber, and poison pellets. This section should also include descriptions of radiographic inspections, destructive tests, fuel assembly dimensional checks, and the inspection program for new fuel assemblies and new control rods to ensure mechanical integrity after shipment. Where testing and inspection programs are essentially the same as for previously accepted plants, a statement to that effect should be provided, along with an identification of the fabricator and a table summarizing the important design and performance characteristics.

In addition, describe the online fuel rod failure monitoring methods and post-irradiation surveillance package, as well as surveillance of control rods containing boron carbide (B_4C).

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Author: Sam
Subject: Note
Date: 11/08/2006 6:21:29 PM
should insert "failure or performance limiting mechanisms".

Author: Sam
Subject: Note
Date: 11/08/2006 6:20:12 PM
Should be cumulative number of cycles.

This page contains no comments

C.I.4.3 ***Nuclear Design***

C.I.4.3.1 Design Bases

Provide and discuss the design bases for the nuclear design of the fuel and reactivity control systems, including nuclear and reactivity control limits such as excess reactivity, fuel burnup, negative reactivity feedback, core design lifetime, fuel replacement program, reactivity coefficients, stability criteria, maximum controlled reactivity insertion rates, control of power distribution, shutdown margins, stuck rod criteria, rod speeds, chemical and mechanical shim control, burnable poison requirements, and backup and emergency shutdown provisions.

C.I.4.3.2 Description

Describe the nuclear characteristics of the design, including the information indicated in the following sections.

C.I.4.3.2.1 ***Nuclear Design Description***

List, describe, or illustrate features of the nuclear design that are not discussed in specific subsections for appropriate times in the fuel cycle. Include such areas as fuel enrichment distributions, burnable poison distributions, other physical features of the lattice or assemblies relevant to nuclear design parameters, delayed neutron fraction and neutron lifetimes, core lifetime and burnup, plutonium buildup, soluble poison insertion rates, and the relationship to cooldown, xenon burnout, or other transient requirements.

C.I.4.3.2.2 ***Power Distribution***

Present full quantitative information on calculated "normal" power distributions, including distributions within typical assemblies, axial distributions, gross radial distributions (XY assembly patterns), and nonseparable aspects of radial and axial distributions. This should include a full range of both representative and limiting power density patterns related to representative and limiting conditions of such relevant parameters as power, flow, flow distribution, rod patterns, time in cycle (burnup and possible burnup distributions), cycle, burnable poison, and xenon. Cover these patterns in sufficient detail to ensure that normally anticipated distributions are fully described and the effects of all parameters important in affecting distributions are displayed. This should include details of transient power shapes and magnitudes accompanying normal transients, such as load following, xenon buildup, decay or redistribution, and xenon oscillation control. Describe the radial power distribution within a fuel pin and its variation with burnup if this is used in thermal calculations.

Discuss and assign specific magnitudes to errors or uncertainties that may be associated with these calculated distributions, and present the experimental data, including results from both critical experiments and operating reactors that support the analysis, likely distribution limits, and assigned uncertainty magnitudes. Also, discuss experimental checks to be performed on this reactor, as well as the criteria for satisfactory results.

Present detailed descriptions of the design power distributions (shapes and magnitudes) and design peaking factors to be used in steady-state limit statements and transient analysis initial conditions. Include all relevant components and such variables as maximum allowable peaking factors vs. axial position or changes over the fuel cycle. Justify the selections by discussing the relationships of these design assumptions to the previously presented expected and limiting distributions and uncertainty analysis.

This page contains no comments

Describe the relationship of these distributions to the monitoring instrumentation, discussing in detail the adequacy of the number of instruments and their spatial deployment (including allowed failures); required correlations between readings and peaking factors, calibrations and errors, operational procedures and specific operational limits; axial and azimuthal asymmetry limits; limits for alarms, rod blocks, scrams, etc., to demonstrate that sufficient information is available to determine, monitor, and limit distributions associated with normal operation to within proper limits. Describe in detail all calculations, computer codes, and computers used in the course of operations that are involved in translating power distribution-related measurements into calculated power distribution information. Provide the frequency with which the calculations are normally performed and execution times of the calculations. Also describe the input data required for the codes. In addition, present a full quantitative analysis of the uncertainties associated with the sources and processing of information used to produce operational power distribution results. This should include consideration of allowed instrumentation failures.

C.I.4.3.2.3 ***Reactivity Coefficients***

Present full quantitative information on calculated reactivity coefficients, including the fuel Doppler coefficient, moderator coefficients (density, temperature, pressure, and void), and power coefficient. State the precise definitions or assumptions related to parameters involved (e.g., effective fuel temperature for Doppler, distinction between intra- and inter-assembly moderator coefficients, parameters held constant in the power coefficient, spatial variation of parameters, and flux weighting used). The information should primarily take the form of curves covering the full applicable range of parameters (density, temperature, pressure, void, and power) from cold startup through limiting values used in accident analyses. Include quantitative discussions of both spatially uniform parameter changes and those nonuniform parameter and flux weighting changes appropriate to operational and accident analyses, as well as the methods used to treat nonuniform changes in transient analyses.

Present sufficient information to illustrate the normal and limiting values of parameters appropriate to operational and accident states, considering cycle, time in cycle, control rod insertions, boron content, burnable poisons, power distribution, moderator density, etc. Discuss potential uncertainties in the calculations and experimental results that support the analysis and assigned uncertainty magnitudes and experimental checks to be made in this reactor. Where limits on coefficients are especially important (e.g., positive moderator coefficients in the power range), experimental checks on these limits should be fully detailed.

Present the coefficients actually used in transient analyses, and show (by reference to previous discussions and uncertainty analyses) that suitably conservative values are used (1) for both beginning of life (BOL) and end of life (EOL) analyses, (2) where most negative or most positive (or least negative) coefficients are appropriate, and (3) where spatially nonuniform changes are involved.

C.I.4.3.2.4 ***Control Requirements***

Provide tables and discussions related to core reactivity balances for BOL, EOL, and (where appropriate) intermediate conditions. Include consideration of such reactivity influences as control bank requirements and expected and minimum worths, burnable poison worths, soluble boron amounts and unit worths for various operating states, "stuck rod" allowances, moderator and fuel temperature and void defects, burnup and fission products, xenon and samarium poisoning, pH effects, permitted rod insertions at power, and error allowances. Also, present and discuss the required and expected shutdown margin as a function of time in cycle, along with uncertainties in the shutdown margin and experimental confirmations from operating reactors.

This page contains no comments

Fully describe all methods, paths, and limits for normal operational control involving such areas as soluble poison concentration and changes, control rod motion, power shaping rod (e.g., part length rod) motion, and flow change. Include consideration of cold, hot, and peak xenon startup, load following and xenon reactivity control, power shaping (e.g., xenon redistribution or oscillation control), and burnup.

C.I.4.3.2.5 ***Control Rod Patterns and Reactivity Worths***

Present full information on control rod patterns expected to be used throughout a fuel cycle. Include details concerning separation into groups or banks if applicable; order and extent of withdrawal of individual rods or banks; limits (with justification) to be imposed on rod or bank positions as a function of power level and/or time in cycle or for any other reason; and expected positions of rods or banks for cold critical, hot standby critical, and full power for both BOL and EOL. Describe allowable deviations from these patterns for misaligned or stuck rods or for any other reason (such as spatial power shaping). For allowable patterns (including allowable deviations), indicate for various power, EOL, and BOL conditions, the maximum worth of rods that might be postulated to be removed from the core in an ejection or drop accident, as well as rods or rod banks that could be removed in rod withdrawal accidents. Also give the worths of these rods as a function of position, describe any experimental confirmations of these worths, and present maximum reactivity increase rates associated with these withdrawals. Describe fully and give the methods for calculating the scram reactivity as a function of time after scram signal, including consideration for Technical Specification scram times, stuck rods, power level and shape, time in cycle, and any other parameters important for bank reactivity worth and axial reactivity shape functions. In addition, for boiling-water reactors (BWRs), provide criteria for control rod velocity limiters and control rod worth minimizers.

C.I.4.3.2.6 ***Criticality of Reactor During Refueling***

State the maximum value of K_{eff} for the reactor during refueling. Describe the basis for assuming that this maximum value will not be exceeded.

C.I.4.3.2.7 ***Stability***

Define the degree of predicted stability with regard to xenon oscillations in both the axial direction and the horizontal plane. If any form of xenon instability is predicted, include evaluations of higher-mode oscillations. Describe in detail the analytical and experimental bases for the predictions, and include an assessment of potential error in the predictions. Also, show how unexpected oscillations would be detectable before safety limits are exceeded.

Provide unambiguous positions regarding stability or lack thereof. That is, where stability is claimed, provide corroborating data from sufficiently similar power plants, or provide commitments to demonstrate stability. Indicate criteria for determining whether the reactor will be stable. Where instability or marginal stability is predicted, provide details of how oscillations will be detected and controlled, as well as provisions for protection against exceeding safety limits.

In addition, present analyses of overall reactor stability against power oscillations (other than xenon).

This page contains no comments

C.I.4.3.2.8 *Vessel Irradiation*

Provide the neutron flux distribution and spectrum in the core, at core boundaries, and at the pressure vessel wall for appropriate times in the reactor life for NVT determinations. Clearly state the assumptions used in the calculations, including power level, use factor, type of fuel cycle, and vessel design life. Also, discuss the computer codes used in the analysis database for fast neutron cross-sections, geometric modeling of the reactor, support barrel, water annulus, and pressure vessel, as well as the calculation uncertainties.

C.I.4.3.3 **Analytical Methods**

Describe in detail the analytical methods used in the nuclear design, including those for predicting criticality, reactivity coefficients, and burnup effects. This detailed description should include the computer codes used, including the code name and type, how it is used, its validity (based on critical experiments or confirmed predictions of operating plants), and methods of obtaining nuclear parameters (such as neutron cross-sections). In addition, the detailed descriptions of analytical methods should include estimates of the accuracy of each method.

C.I.4.3.4 **Changes**

List any changes in reactor core design features, calculational methods, data, or information relevant to determining important nuclear design parameters that depart from prior practice of the reactor designs, and identify the parameters affected by each change. Details regarding the nature and effects of these changes should be treated in appropriate subsections.

C.I.4.4 *Thermal and Hydraulic Design*

C.I.4.4.1 **Design Bases**

Provide the design bases for the thermal and hydraulic design of the reactor. Include such items as maximum fuel and clad temperatures and cladding-to-fuel gap characteristics as a function of burnup (at rated power, at design overpower, and during transients), critical heat flux ratio (at rated power, at design overpower, and during transients), flow velocities and distribution control, coolant and moderator voids, hydraulic stability, transient limits, fuel cladding integrity criteria, and fuel assembly integrity criteria.

C.I.4.4.2 **Description of Thermal and Hydraulic Design of the Reactor Core**

Describe the thermal and hydraulic characteristics of the reactor design. Include information indicated in the following sections.

C.I.4.4.2.1 *Summary Comparison*

Present a summary comparison of the reactor's thermal and hydraulic design parameters with previously approved reactors of similar design. This should include, for example, primary coolant temperatures, fuel temperatures, maximum and average linear heat generation rates, critical heat flux ratios, critical heat flux correlations used, coolant velocities, surface heat fluxes, power densities, specific powers, surface areas, and flow areas.

This page contains no comments

C.I.4.4.2.2 ***Critical Heat Flux Ratios***

Provide the critical heat flux ratios for the core hot spot at normal full power and design overpower conditions. State the critical heat flux correlation used, analysis techniques, method of use, method of employing peaking factors, and comparison with other correlations.

C.I.4.4.2.3 ***Linear Heat Generation Rate***

Provide the core-average linear heat generation rate (LHGR), as well as the maximum LHGR anywhere in the core. Also, indicate the method of utilizing hot channel factors and power distribution information to determine the maximum LHGR.

C.I.4.4.2.4 ***Void Fraction Distribution***

Provide curves showing the predicted radial and axial distributions of steam quality and steam void fraction in the core. State the predicted core average void fraction, as well as the maximum void fraction anywhere in the core.

C.I.4.4.2.5 ***Core Coolant Flow Distribution***

Describe and discuss the coolant flow distribution and orificing, as well as the basis on which orificing is designed (relative to shifts in power production during core life).

C.I.4.4.2.6 ***Core Pressure Drops and Hydraulic Loads***

Identify core pressure drops and hydraulic loads during normal and accident conditions, which are not addressed in Chapter 15 of the FSAR.

C.I.4.4.2.7 ***Correlations and Physical Data***

Discuss the correlations and physical data employed in determining important characteristics such as heat transfer coefficients and pressure drop.

C.I.4.4.2.8 ***Thermal Effects of Operational Transients***

Evaluate the capability of the core to withstand thermal effects resulting from anticipated operational transients.

C.I.4.4.2.9 ***Uncertainties in Estimates***

Discuss the uncertainties associated with estimating the peak or limiting conditions for thermal and hydraulic analysis (e.g., fuel temperature, clad temperature, pressure drops, and orificing effects).

C.I.4.4.2.10 ***Flux Tilt Considerations***

Discuss the margin provided in the peaking factor to account for flux tilts to ensure that flux limits are not exceeded during operation. Describe plans for power reduction in the event of flux tilts, and provide criteria for selecting a safe operating power level.

This page contains no comments

C.I.4.4.3 Description of the Thermal and Hydraulic Design of the Reactor Coolant System

Describe the thermal and hydraulic design of the reactor coolant system. Include the information indicated in the following sections.

C.I.4.4.3.1 *Plant Configuration Data*

Provide the following information on plant configuration and operation:

(1) a description of the reactor coolant system, including isometric drawings that show the configuration and approximate dimensions of the reactor coolant system piping

(2) a listing of all valves and pipe fittings (elbows, tees, etc.) in the reactor coolant system

(3) total coolant flow through each flow path (total loop flow, core flow, bypass flow, etc.)

(4) total volume of each plant component, including ECCS components, with sufficient detail to define each part (downcomer, lower plenum, upper head, etc.) of the reactor vessel and steam generator [for pressurized-water reactors (PWRs)]

(5) the length of the flow path through each volume

(6) the height and liquid level of each volume

(7) the elevation of the bottom of each volume with respect to some reference elevation (preferably the centerline of the outer piping)

(8) the lengths and sizes of all safety injection lines

(9) minimum flow areas of each component

(10) steady-state pressure and temperature distribution throughout the system

C.I.4.4.3.2 *Operating Restrictions on Pumps*

State the operating restrictions that will be imposed on the coolant pumps to meet net positive suction head requirements.

C.I.4.4.3.3 *Power-Flow Operating Map (BWR)*

For BWRs, provide a power-flow operating map, indicating the limits of reactor coolant system operation. This map should indicate the permissible operating range, as bounded by minimum flow, design flow, maximum pump speed, and natural circulation.

C.I.4.4.3.4 *Temperature-Power Operating Map (PWR)*

For PWRs, provide a temperature-power operating map. This map should indicate the effects of reduced core flow due to inoperative pumps, including system capability during natural circulation conditions.

This page contains no comments

C.I.4.4.3.5 ***Load-Following Characteristics***

Describe the load-following characteristics of the reactor coolant system, as well as the techniques employed to provide this capability.

C.I.4.4.3.6 ***Thermal and Hydraulic Characteristics Summary Table***

Provide a table summarizing the thermal and hydraulic characteristics of the reactor coolant system.

C.I.4.4.4 Evaluation

Present an evaluation of the thermal and hydraulic design of the reactor and the reactor coolant system. This evaluation should include the information indicated in the following sections.

C.I.4.4.4.1 ***Critical Heat Flux***

Identify the critical heat flux, departure from nucleate boiling, or critical power ratio correlation used in the core thermal and hydraulic analysis. Describe the experimental basis for the correlation (preferably by reference to documents available to the NRC), and discuss the applicability of the correlation to the proposed design. Place particular emphasis on the effect of the grid spacer design, the calculational technique used to determine coolant mixing, and the effect of axial power distribution.

C.I.4.4.4.2 ***Core Hydraulics***

The core hydraulics evaluation should include (1) a discussion of the results of flow model tests (with respect to pressure drop for the various flow paths through the reactor and flow distributions at the core inlet), (2) the empirical correlation selected for use in analyses for both single-phase and two-phase flow conditions and applicability over the range of anticipated reactor conditions, and (3) the effect of partial or total isolation of a loop.

C.I.4.4.4.3 ***Influence of Power Distribution***

Discuss the influence of axial and radial power distributions on the thermal and hydraulic design. Include an analysis to determine which fuel rods control the thermal limits of the reactor.

C.I.4.4.4.4 ***Core Thermal Response***

Evaluate the thermal response of the core at rated power, at design overpower, and during expected transient conditions.

C.I.4.4.4.5 ***Analytical Methods***

Describe the analytical methods and data used to determine the reactor coolant system flow rate. This should include classical fluid mechanics relationships and empirical correlations, and should address both single-phase and two-phase fluid flow, as applicable. In addition, this description should provide estimates of the uncertainties in the calculations, as well as the resultant uncertainty in reactor coolant system flow rate.

This page contains no comments

Present a comprehensive discussion of the analytical techniques used in evaluating the core thermal-hydraulics, including estimates of uncertainties. This discussion should include such items as hydraulic instability, application of hot spot factors and hot channel factors, subchannel hydraulic analysis, effects of crud (in the core and reactor coolant system), and operation with one or more loops isolated. Descriptions of computer codes may be included by reference to documents available to the NRC.

C.I.4.4.5 Testing and Verification

Discuss the testing and verification techniques used to ensure that the planned thermal and hydraulic design characteristics of the core and reactor coolant system have been provided and will remain within required limits throughout the core lifetime. This discussion should address the applicable portions of Regulatory Guide 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants." References to the appropriate portions of Chapter 14 of the FSAR are acceptable.

C.I.4.4.6 Instrumentation Requirements

Discuss the functional requirements for instrumentation to be employed in monitoring and measuring those thermal-hydraulic parameters that are important to safety. For example, this discussion should include the requirements for in-core instrumentation to confirm predicted power density distribution and moderator temperature distributions. Details of the instrumentation design and logic should be presented in Chapter 7 of the FSAR.

Also, describe the vibration and loose-parts monitoring equipment to be provided in the plant. In addition, discuss the procedures to be used to detect excessive vibration and the occurrence of loose parts.

C.I.4.5 *Reactor Materials*

C.I.4.5.1 Control Rod Drive System Structural Materials

For the purpose of this section, the control rod drive system includes the control rod drive mechanism (CRDM) and extends to the coupling interface with the reactivity control (poison) elements in the reactor vessel. It does not include the electrical and hydraulic systems necessary to actuate the CRDMs. This section should provide the information described in the following subsections.

C.I.4.5.1.1 *Materials Specifications*

Provide a list of the materials, including weld materials, and their specifications for each CRDM component. Furnish information regarding the mechanical properties of any material not included in either Appendix I to Section III of the Boiler and Pressure Vessel (B&PV) Code promulgated by the American Society of Mechanical Engineers (ASME), or Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III, Division 1," and provide justification for the use of such materials.

State whether the CRDM design uses any materials that have a yield strength greater than 90,000 psi, such as cold-worked austenitic stainless steels, precipitation hardenable stainless steels, or hardenable martensitic stainless steels. If such materials are used, identify their usage and provide evidence that stress-corrosion cracking will not occur during service life in components fabricated from the materials.

C.I.4.5.1.2 *Austenitic Stainless Steel Components*

Describe the processes, inspections, and tests used to ensure that austenitic stainless steel components are free from increased susceptibility to intergranular stress-corrosion cracking caused by sensitization. Special processing or fabrication methods subject the materials to temperatures between 800–1,500°F (427–816°C), or involve slow cooling from temperatures over 1500°F (816°C), describe the processing or fabrication methods and provide justification to show that such treatment will not cause susceptibility to intergranular stress-corrosion cracking. Indicate the degree of conformance to the recommendations of Regulatory Guide 1.44, "Control of the Use of Sensitized Stainless Steel," as well as Position C.5 of Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants," as it relates to controls for abrasive steel surfaces. Provide justification for any deviations from these recommendations.

C.I.4.5.1.3 ***Other Materials***

Describe the tempering temperature of hardenable martensitic stainless steels and the aging temperature and aging time of precipitation-hardening stainless steels. Also, describe the processing and treatment of other special purpose materials, such as cobalt-base alloys (Stellites), nickle-based alloys (Inconel), titanium, colmonoys, and graphitars.

C.I.4.5.1.4 ***Cleaning and Cleanliness Control***

Provide details regarding the steps that will be taken to protect austenitic stainless steel materials and parts of these systems during fabrication, shipping, and onsite storage to ensure that all cleaning solutions, processing compounds, degreasing agents, and detrimental contaminants are completely removed and all parts are dried and properly protected following any flushing treatment with water. Indicate the degree of conformance to the recommendations of Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants." Provide justification for any deviations from these recommendations.

C.I.4.5.2 Reactor Internals and Core Support Materials

Discuss the materials used for reactor internals and core support materials. Include the information described in the following subsections.

C.I.4.5.2.1 ***Materials Specifications***

List the materials, including weld materials, and their specifications for components of the reactor internals and core support structures. Include materials treated to enhance corrosion resistance, strength, and hardness. Furnish information regarding the mechanical properties of any material not included in Appendix I to Section III of the ASME B&PV Code and provide justification for the use of such materials.

C.I.4.5.2.2 ***Controls on Welding***

Indicate the methods and controls that will be used when welding reactor internals components and core support structures, and provide assurance that such welds will meet the acceptance criteria of Article NG 5000 in Section III of the ASME B&PV Code.

C.I.4.5.2.3 ***Nondestructive Examination***

Indicate that the nondestructive examination procedures used to examine tubular products conform to the requirements of the ASME B&PV Code. Provide justification for any deviations from these

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Author: Sam
Subject: Note
Date: 11/08/2006 6:35:40 PM
This paragraph should be changed to read " Describe the processes, inspections, and tests used to ensure that austenitic stainless steels are highly resistant to intergranular stress corrosion cracking, and that fabrication or special processing methods such as heat treatment, cold work, welding or post-weld grinding do not create IGSCC susceptibility in the reactor coolant environment"
A similar statement should be written to address PWSCC in PWR coolants.

This page contains no comments

requirements.

C.I.4.5.2.4 ***Fabrication and Processing of Austenitic Stainless Steel Components***

Indicate the degree of conformance to the recommendations of Regulatory Guide 1.44, "Control of the Use of Sensitized Stainless Steel"; and Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants." If alternative measures are used, show that they will provide the same assurance of component integrity as would be achieved by following the recommendations of the listed regulatory guides. Indicate the maximum yield strength of all cold-worked stainless steels used in the reactor internals.

C.I.4.5.2.5 ***Other Materials***

Submit information on the mechanical properties, corrosion resistance, and fabrication, of any materials other than austenitic stainless steels. In particular, discuss the tempering temperature of hardenable martensitic stainless steels and the aging temperature and aging time of precipitation-hardening stainless steels. Also, discuss the processing and treatment of other special purpose materials, such as cobalt-base alloys (Stellites), nickel-based alloys (Inconel), Titanium and Colmonoys.

C.I.4.6 ***Functional Design of Reactivity Control Systems***

Present information to establish that the control rod drive system (CRDS), which includes the essential ancillary equipment and hydraulic systems, is designed and installed to provide the required functional performance and is properly isolated from other equipment. Also, present information to establish the bases for assessing the combined functional performance of all the reactivity control systems to mitigate the consequences of anticipated transients and postulated accidents.

In addition to the CRDS and ECCS, these reactivity control systems include the chemical and volume control system (CVCS) and the emergency boration system (EBS) for PWRs, and the standby liquid control system (SLCS) and the recirculation flow control system (RFCS) for BWRs.

C.I.4.6.1 Information for CRDS

Information submitted should include drawings of the rod drive mechanism, layout drawings of the collective rod drive system, process flow diagrams, piping and instrumentation diagrams, component descriptions and characteristics, and a description of the functions of all related ancillary equipment and hydraulic systems. This should also include the control rod drive cooling system for plants that have this system. This information may be presented in conjunction with the information requested for Section 3.9.4 of the FSAR.

C.I.4.6.2 Evaluations of the CRDS

Failure mode and effects analyses of the CRDS should be presented in tabular form, with supporting discussion to delineate the logic employed. The failure analysis should demonstrate that the CRDS, which for purposes of these evaluations includes all essential ancillary equipment and hydraulic systems, can perform the intended safety functions with the loss of any single active component.

These evaluations and assessments should establish that all essential elements of the CRDS are identified and provisions made for isolation from nonessential CRDS elements. In addition, this discussion should establish that all essential equipment is amply protected from common-mode failures (such as failure of moderate- and high-energy lines).

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C.I.4.6.3 Testing and Verification of the CRDS

Describe the functional testing program. This should include rod insertion and withdrawal tests, thermal and fluid dynamic tests simulating postulated operating and accident conditions, and test verification of the CRDS with imposed single failures, as appropriate.

Present preoperational and initial startup test programs. Include the test objectives, methods, and acceptance criteria.

C.I.4.6.4 Information for Combined Performance of Reactivity Systems

Other sections of the FSAR (e.g., 9.3.4 and 9.3.5) present piping and instrumentation diagrams, layout drawings, process diagrams, failure analyses, descriptive material, and performance evaluations related to specific evaluations of the CVCS, SLCS, and RFCS. This section should include sufficient plan and elevation layout drawings to provide bases for establishing that the reactivity control systems (CRDS, ECCS, CVCS, SLCS, RFCS, and EBS) are not vulnerable to common-mode failures when used in single or multiple redundant modes.

Evaluations pertaining to the plant's response to postulated process disturbances and equipment malfunctions or failures are presented in Chapter 15 of the FSAR. This section should list all postulated accidents evaluated in Chapter 15 that take credit for two or more reactivity control systems to prevent or mitigate each accident. In addition, this section should tabulate the related reactivity systems.

C.I.4.6.5 Evaluations of Combined Performance

Evaluate the combined functional performance for accidents where two or more reactivity systems are used. The neutronic, fluid dynamic, instrumentation, controls, time sequencing, and other process-parameter-related features are presented primarily in Chapters 4, 7, and 15 of the FSAR. This section should include failure analyses to demonstrate that the reactivity control systems are not susceptible to common-mode failures when used redundantly. These failure analyses should consider failures originating within each reactivity control system, as well as those originating from plant equipment other than reactivity systems, and should be presented in tabular form with supporting discussion and logic.

C.I.4.6.3 Testing and Verification of the CRDS

Describe the functional testing program. This should include rod insertion and withdrawal tests, thermal and fluid dynamic tests simulating postulated operating and accident conditions, and test verification of the CRDS with imposed single failures, as appropriate.

Present preoperational and initial startup test programs. Include the test objectives, methods, and acceptance criteria.

C.I.4.6.4 Information for Combined Performance of Reactivity Systems

Other sections of the FSAR (e.g., 9.3.4 and 9.3.5) present piping and instrumentation diagrams, layout drawings, process diagrams, failure analyses, descriptive material, and performance evaluations related to specific evaluations of the CVCS, SLCS, and RFCS. This section should include sufficient plan and elevation layout drawings to provide bases for establishing that the reactivity control systems (CRDS, ECCS, CVCS, SLCS, RFCS, and EBS) are not vulnerable to common-mode failures when used in single or multiple redundant modes.

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Evaluations pertaining to the plant's response to postulated process disturbances and equipment malfunctions or failures are presented in Chapter 15 of the FSAR. This section should list all postulated accidents evaluated in Chapter 15 that take credit for two or more reactivity control systems to prevent or mitigate each accident. In addition, this section should tabulate the related reactivity systems.

C.I.4.6.5 Evaluations of Combined Performance

Evaluate the combined functional performance for accidents where two or more reactivity systems are used. The neutronic, fluid dynamic, instrumentation, controls, time sequencing, and other process-parameter-related features are presented primarily in Chapters 4, 7, and 15 of the FSAR. This section should include failure analyses to demonstrate that the reactivity control systems are not susceptible to common-mode failures when used redundantly. These failure analyses should consider failures originating within each reactivity control system, as well as those originating from plant equipment other than reactivity systems, and should be presented in tabular form with supporting discussion and logic.

From: "Otto Maynard" <omaynard@charter.net>
To: "Dana Powers" <DanaPowers@msn.com>, "George Apostolakis" <apostola@mit.edu>, "Graham. B. Wallis" <graham.b.wallis@dartmouth.edu>, "John Sieber" <JDSIEBER@aol.com>, "Mario Bonaca" <mvbonaca@snet.net>, "Richard Denning" <denning@battelle.org>, "Sam Armijo" <jsarmijo@msn.com>, "Tom Kress" <TSKress@aol.com>, "William Shack" <wjshack@anl.gov>
Date: Thu, Nov 16, 2006 12:30 PM
Subject: DG 1145 Comments Chapters 9, 13, 16, & 18 from Otto Maynard

Tom,

Below are my specific comments on the chapters assigned. With two exceptions, my comments are minor and editorial in nature. These two exceptions are summarized first:

I note that throughout DG 1145 in the reference sections, there are numerous references to old Generic Letters, Information Notices, Bulletins, and other generic type communications. I'm not sure why all of this old "clarification" wasn't incorporated into the appropriate Regulatory Guide and Standard Review Plan revisions that the staff is required to make six months before receipt of the first COL application. I thought the purpose of all the Reg Guide and SRP revisions was to bring them up to date and to incorporate current guidance. Some of the generic communications referenced date back 20 years or more and potentially conflict with each other in some cases. I think this will create problems for the licensee and the staff in trying to sort out the applicable requirements and expectations. In the list of references for Fire Protection, it listed Branch Technical Position 9.5-1 which we were told was incorporated into the recent revision to RG 1.198 for new plants. I believe that to the maximum extent practical, the regulations, Regulatory Guides, Standard Review Plans and NUREGs should the requirements and guidance necessary for the licensee to prepare and application and the staff to review and evaluate the applications. In my opinion, relying on all of the old non-binding generic communications will create more work and conflict for both the licensee and the staff.

The second comment involves Security/Safeguards and is potentially addressed in another section or requirement. This probably shouldn't be discussed in detail in a public meeting. I'll simply say that in Auxiliary Systems (Chapter 9) the applicant is required to include the effects of natural phenomena in the safety evaluation for the structures and facilities associated with the auxiliary system. Nothing is discussed relative to non-natural phenomena for these systems. I believe C.I.13.6.1 relative to potential new Security Requirements may be the answer to this comment.

As I said earlier, the rest of my comments are minor and editorial in nature. Some of these questions may be addressed in the referenced Reg Guide or other documents. My comments are summarized below:

Chapt 9 Auxiliary Systems

C.I.9.1.2.1 First sentence, sub-critical is misspelled. (sub-clinical)

C.I.9.1.4.2 Should consider including description of equipment and procedures for fuel reconstitution and handling of damaged fuel in this section.

C.I.9.1.5.4 Should ensure that rigging is included in the inspection and testing requirements.

C.I.9.2.1.1 Should ensure that "freezing" includes considerations of "frazzle ice"

C.I.9.5.2.2 Communication systems should not create plant problems such as spurious equipment actuations.

C.I.9.5.6 Why isn't there a section for "Inspection and Testing" like the other sections?

C.I.9.5.7 Why aren't there sections for "Safety Evaluation" and "Inspection and Testing" like the other sections?

C.I.9.6 Why is BTP SPLB 9.5-1 included as a reference? I thought this was incorporated into RG 1.198.

Chapter 13 Conduct of Operations

C.I.13.1.1.1 (3) Why isn't Security included?

C.I.13.1.1.3 Why isn't Security included?

C.I.13.6.1 Is it appropriate to include the last paragraph talking about potential new requirements. New requirement can be imposed upon a licensee at anytime utilizing the appropriate regulatory process. When a new requirement is imposed, it includes the schedule and process for the licensee to follow for implementation. After the new requirements are finalized, this paragraph will be outdated. This is more of a process question than an impact question. The licensee will have to eventually take the same actions regardless of whether this paragraph is in the Reg Guide or not.

C.I.16 Technical Specifications

No comments

C.I.17 Quality Assurance & Reliability Assurance

I would anticipate public comments on some of the Reliability Assurance sections since it imposes some new requirements but I have not comments.

CC: "Cayetano Santos" <CXS3@nrc.gov>, "David Fischer" <dcf@nrc.gov>, "Eric Thornsbury" <eat2@nrc.gov>, "John Lamb" <JGL1@nrc.gov>, "Michael Junge" <MXJ2@nrc.gov>, "Michael Snodderly" <MRS1@nrc.gov>, "Ralph Caruso" <RXC@nrc.gov>

From: "George Apostolakis" <apostola@MIT.EDU>
To: "FISCHER David" <dcf@nrc.gov>, "KRESS Tom" <TSKress@aol.com>
Date: Sun, Nov 19, 2006 1:37 PM
Subject: DG 1145

Tom and David:

Attached are my comments on C.II.1: Probabilistic Risk Assessment (PRA) and C.IV.10: Regulatory Treatment of Non-Safety Systems. Both chapters are well written. I have a number of comments, but the one that stands out is the apparent inconsistency between these two chapters regarding PRA scope. C.IV.10 requires a Level-3 PRA, while C.II.1 does not. The latter demands that: "The scope should be sufficient to enable the NRC staff to meet the objectives identified in section C.II.1.2."

I have no comments on C.I.19. Probabilistic Risk Assessment and Severe Accident Evaluation. It's OK.

I am sorry I will miss the meeting on November 30.

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C.II.1. Probabilistic Risk Assessment (PRA)

A combined license (COL) application under Title 10, Part 52, of the *Code of Federal Regulations* (10 CFR Part 52), "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," should include a comprehensive probabilistic risk assessment (PRA).[1] The submitted information should provide complete and detailed documentation of the applicant's PRA sufficient to permit the NRC to conclude that it supports the objectives delineated in section C.II.1.2 of this guide, and should include explanatory details and technical data supplemental to that appropriate for inclusion in Chapter 19 of the final safety analysis report (FSAR).

C.II.1.1 *Regulatory Basis*

The Commission issued 10 CFR Part 52 on April 18, 1989. This rule provides for issuing early site permits (ESPs), standard design certifications, and combined licenses (COLs) with conditions for nuclear power reactors. It states the review procedures and licensing requirements for applications for these new licenses and certifications and was intended to achieve the early resolution of licensing issues, as well as to enhance the safety and reliability of nuclear power plants.

On March 13, 2006, the NRC published a proposed rulemaking (71 FR 12782) that would revise 10 CFR 52 to identify the specific requirements for COL applications. With regard to severe accidents, 10 CFR Part 52 codifies some parts of the guidance in the Severe Accident Policy Statement and Standardization Policy Statement. Specifically, 10 CFR 52.79 and 10 CFR 52.80 require the following information in a COL application:

- information with respect to compliance with technically relevant portions of the Three Mile Island (TMI) requirements set forth in 10 CFR 50.34(f)
- proposed technical resolutions of those unresolved safety issues and medium- and high-priority generic safety issues that are identified in the version of NUREG-0933, "A Prioritization of Generic Safety Issues," current 6 months prior to the application and that are technically relevant to the design
- a plant-specific PRA

The above requirements are similar to the requirements in 10 CFR 52.47 for design certification applications. A COL applicant that does not reference a certified design should ensure that its plant design also satisfies the requirements of 10 CFR 52.47, as well as the COL specific requirements of 10 CFR 52.79 and 10 CFR 52.80.

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[1]The probabilistic risk assessment (PRA) may include both probabilistic risk assessment techniques and alternative approaches (e.g., seismic margins analyses) for addressing contributors to risk, as defined in Section C.II.1.3 of this guide. For example, in lieu of a seismic PRA the applicant can choose to perform a risk-based seismic margins analysis (SMA) per SECY-93-087. The risk-based SMA is a method for estimating the "margin" above the safe shutdown earthquake (SSE) of the design which allows the identification of risk-important design and operational features, and associated requirements, to mitigate seismic events. In SECY-93-087, it is indicated that plants designed to withstand a specific ground acceleration SSE should have the capability to withstand beyond-design-basis earthquakes without resulting in core damage.

Summary of Comments on E:\FileNET \ML061640497.wpd

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The NRC has also issued guidance for addressing severe accidents and PRA in the following documents:

- NRC Policy Statement, "Severe Reactor Accidents Regarding Future Designs and Existing Plants" [Volume 50, page 32138, of the *Federal Register* (50 FR 32138), dated August 8, 1985]
- NRC Policy Statement, "Safety Goals for the Operations of Nuclear Power Plants" (51 FR 28044, dated August 4, 1986)
- NRC Policy Statement, "Nuclear Power Plant Standardization" (52 FR 34844, dated September 15, 1987)
- NRC Policy Statement, "The Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities" (60 FR 42622, dated August 16, 1995)
- SECY-90-016, "Evolutionary Light-Water Reactor (LWR) Certification Issues and Their Relationship to Current Regulatory Requirements," issued January 12, 1990, and the related staff requirements memorandum (SRM), issued June 26, 1990
- SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor Designs," issued April 2,1993, and the related SRM, issued July 21, 1993
- SECY-96-128, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," issued June 12, 1996, and the related SRM, issued January 15,1997
- SECY-97-044, "Policy and Key Technical Issues Pertaining to the Westinghouse AP600 Standardized Passive Reactor Design," issued February 18, 1997, and the related SRM, issued June 30, 1997

The first four documents provide guidance regarding the appropriate course of action to address severe accidents and the use of PRA. The SRMs relating to SECY-90-016, SECY-93-087, SECY-96-128, and SECY-97-044 provide Commission-approved guidance for implementing features in new designs to prevent severe accidents and to mitigate their effects, should they occur. Summaries of these documents are provided in Appendix A to this section of DG-1145.

C.II.1.2 ***Purpose and Objectives***

The NRC intends to use the applicant's PRA results and insights to determine whether the following objectives are met:

- During the design phase, the PRA should have been used to:
  - Identify and address potential design and operational vulnerabilities (i.e., failures or combinations of failures that are significant risk contributors that could drive the risk to unacceptable levels with respect to the Commission's goals, as presented below).
  - Reduce or eliminate known weaknesses of existing operating plants[2] that are applicable to the new design, by introducing appropriate features and requires.
  - Select among alternative features, operational strategies, and design options.

[2]The reference to existing operating plants applies to light water reactor (LWR) plant technology contemporary with the issuance of the Commission's Severe Accident Policy Statement on August 8, 1985.

- Determine how the risk associated with the design compares against the Commission's goals of less than **1E-4/yr for core damage frequency (CDF) and less than 1E-6/yr for large release frequency (LRF).** These goals were established in the Commission SRM dated June 26, 1990 in response to SECY-90-016. In addition, the Commission approved the use of a containment performance goal (CPG), which includes (1) a deterministic goal that containment integrity be maintained for approximately 24 hrs following the onset of core damage for the more likely severe accident challenges and (2) **a probabilistic goal that the conditional containment failure probability (CCFP) be less than approximately 0.1 for the composite of all core damage sequences assessed in the PRA.** It should be noted that these are goals and not regulatory requirements ~~and applicants should not artificially (or intentionally) increase PRA results associated with one metric simply to meet the goal associated with another metric.~~ Rather, the applicant should compare their plant-specific PRA results and insights against these goals and address how their plant features properly balance severe accident prevention and mitigation.
- Identify risk-informed safety insights based on systematic evaluations of the risks associated with the design:
  - Develop an in-depth understanding of the design's robustness and tolerance of severe accidents initiated by either internal or external events.
  - Develop an appreciation of the **risk significance of specific human errors** associated with the design, and characterize the significant human errors in preparation for better training and more refined procedures.
- Identify and support the development of design requirements, such as inspections, tests, analyses, and acceptance criteria (ITAACs), reliability assurance program (RAP), technical specifications (TS), and COL action items and interface requirements.
- Support the process used to determine whether regulatory treatment of non-safety systems (RTNSS) is necessary, if applicable.
- Determine whether the plant design, including the impact of site-specific characteristics, represents a reduction in risk compared to existing operating plant designs.[3]
- Assess the balance of preventive and mitigative features of the design per 10 CFR 52.79(a)(38) (71 FR 12782) including consistency with Commission's guidance in SECY-93-087.
- Support, as a minimum, regulatory oversight processes [e.g., Mitigating Systems Performance Index (MSPI), Significance Determination Process (SDP)] and programs that will be associated with plant operations (e.g., technical specifications, reliability assurance, human factors, Maintenance Rule).

The review objectives are drawn from 10 CFR Part 52, the Commission's Severe Reactor Accident Policy Statement regarding future designs and existing plants, the Commission's Safety Goals Policy Statement, the Commission-approved positions concerning severe accidents contained in SECY-93-087, and NRC interest in the use of PRA to help improve future reactor designs. In general, the PRA and the NRC staff's review achieve these objectives.

[3]This criterion is applicable for designs that have evolved from light water reactor (LWR) plant technology (contemporary with issuance of the Commission's Severe Accident Policy Statement on August 8, 1985) through the incorporation of features intended to enhance plant safety, availability, and operation.

Page: 3

Author: apostolakis
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Consistent with the LRF goal?

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Author: apostolakis
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C.II.1.3 ***Scope***

The applicant's PRA should be comprehensive in scope and address all applicable internal and external events and all plant operating modes. The scope should be sufficient to enable the NRC staff to meet the objectives identified in section C.II.1.2. The scope of the PRA may need to be expanded if the applicant voluntarily chooses to use the PRA to support other, additional risk-informed applications.[4]

C.II.1.4 ***Level of Detail***

The level of detail of the applicant's PRA should be commensurate with the purpose and objectives discussed in Section C.II.1.2 (i.e., sufficient to gain risk-informed insights and use such insights, in conjunction with assumptions made in the PRA, to identify and support requirements important to the design and plant operation). The PRA should reasonably reflect the actual plant design, planned construction, anticipated operational practices, and relevant operational experience of the applicant and the industry.

The burden is on the applicant to justify that the PRA approach, methods, and data, as well as the requisite level of detail necessary for the NRC staff's review and assessment, are appropriate for the COL application. Additional guidance on the level of detail that should be included in the PRA is provided in Regulatory Guide 1.200, "An Approach For Determining The Technical Adequacy Of Probabilistic Risk Assessment Results For Risk-Informed Activities," and Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes To The Licensing Basis."

In cases where detailed design information (regarding cable and pipe routing, for example) is not available or when it can be shown that detailed modeling does not provide significant additional information, it is acceptable to make bounding-type assumptions consistent with the guidelines in Regulatory Guide 1.200. However, the risk models should still be able to be used to identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items. In addition, the bounding assumptions should not mask any risk-significant information about the design and its operation.

C.II.1.5 ***Technical Adequacy***

Consistent with the guidance in Section 2.5 of Regulatory Guide 1.174 regarding quality assurance, the staff expects the applicant's PRA will have been subjected to quality control. The methods acceptable to the NRC staff to ensure that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that the PRA is sufficient to be used in demonstrating that the objectives identified in Section C.II.1.2 of this guide are met, include:

- Use of personnel qualified for the analysis.
- Use of procedures that ensure control of documentation, including revisions, and provide for independent review, verification, or checking of calculations and information used in the analyses (an independent peer review or certification program can be used as an important element in this process).

[4]Risk-informed applications (e.g., implementation of 10 CFR 50.69 or NFPA-805) may involve a scope, level of detail, and/or technical adequacy for the affected areas that is greater than that needed for the COL application.

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Author: apostolakis
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Chapter C.IV.10.3.1 (RTNSS) requires a Level-3 PRA.

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How can you tell? This is not performance based. Delete.

- Provide for documentation and maintenance of records, including archival documentation as well as submittal documentation.
- Use of procedures that ensure appropriate attention and corrective actions are taken if assumptions, analyses, or information used previously are changed or determined to be in error.

Toward this end, the applicant's PRA submittal should be consistent with the prevailing PRA standards, guidance, and good practices, as needed to support its uses and applications, and as endorsed by the NRC (e.g., Regulatory Guide 1.200). The adherence to the recommendations provided in Regulatory Guides 1.200 and 1.174 pertaining to quality and technical adequacy will result in a more efficient and consistent NRC staff review process. Alternatively, the applicant should identify, and justify the acceptability of, alternative measures for addressing PRA quality and technical adequacy.

In addressing the technical adequacy of the PRA, the applicant should include (1) a discussion of prior NRC staff review of the PRA (e.g., during design certification), findings (i.e., facts and observations) from that review, disposition to those findings, and the relevance of that review to the technical adequacy of the current plant-specific PRA; (2) a discussion of the scope, level of detail, and technical adequacy needed to support the specific uses and risk-informed applications; (3) a discussion regarding how technical adequacy is determined for pertinent PRA scope areas in which the NRC has not endorsed PRA standards (i.e., identify the guidance and good practices documents relied upon to determine the technical adequacy of the PRA); (4) a discussion on the use of and criteria for independent peer reviews; and (5) a discussion on the process for dispositioning independent peer review findings and maintaining or upgrading the PRA, as appropriate.

As noted in Element 1.1 of Table A-1 in Appendix A to Regulatory Guide 1.200, special emphasis should be placed on PRA modeling of novel and passive features in the design, as well as addressing issues related to these features, such as digital instrumentation and control, explosive (squib) valves, and the issue of thermal hydraulic (T-H) uncertainties.[5]

C.II.1.6 ***Risk Insights***

In addition to using the PRA models to assess risk and determine significant accident sequences and major contributors, the applicant should perform uncertainty, importance, and sensitivity analyses. Such analyses provide important information about (1) areas where certain design features are the most effective in reducing risk with respect to operating reactor designs; (2) major contributors to risk, such as hardware failures and human errors; (3) major contributors to maintaining the "built-in" plant safety and ensuring that the risk does not increase unacceptably; (4) major contributors to the uncertainty associated with the risk estimates; and (5) sensitivity of risk estimates to uncertainties associated with failure data, assumptions made in the PRA models, lack of modeling details in certain areas, and previously raised issues.

[5]The issue of T-H uncertainties arises from the "passive" nature of safety-related systems used for accident mitigation. Passive safety systems rely on natural forces, such as gravity, to perform their functions. Such driving forces are small compared to those of pumped systems, and the uncertainty in their values, as predicted by a "best-estimate" T-H analysis, can be of comparable magnitude to the predicted values themselves. Therefore, some accident sequences with a frequency high enough to impact results, but which are not predicted to lead to core damage by a "best-estimate" T-H analysis, may actually lead to core damage when T-H uncertainties are considered in the PRA models.

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For designs that have evolved from current plant technology, through the incorporation of several features intended to make the plant safer, more available, and easier to operate, **the results of the PRA should indicate that the design represents a reduction in risk compared to existing operating plants.**[2] For this purpose, a broad (qualitative or quantitative) comparison of risks, by initiating event category, between the proposed design and existing operating plant designs (from which the proposed design evolved) can be helpful in identifying the major design features that contribute to the reduced risk of the proposed design compared to existing plant designs (e.g., passive systems, less reliance on offsite and onsite power for accident mitigation, and divisional separation).

The applicant should also investigate the impact of data uncertainties on the risk estimates. The uncertainty analysis should **identify major contributors to the uncertainty** associated with the estimated risks.

Risk importance studies should be performed at the system, train, and component level. Such studies provide very useful insights about (1) the systems that contribute the most in achieving the low risk level assessed in the PRA, (2) events (e.g., component failures or human errors) that contribute the most to decreases in the "built-in" plant safety level, and (3) events that contribute the most to the assessed risk.

Sensitivity studies should be performed to gain insights about the impact of uncertainties (and potential lack of detailed models) on the estimated risk. The objectives of the sensitivity studies are to (1) determine the sensitivity of the estimated risk to potential biases in numerical values, such as initiating event frequencies, failure probabilities, and equipment unavailabilities; (2) determine the impact of potential lack of modeling details on the estimated risk; and (3) determine the sensitivity of the estimated risk to previously raised issues (e.g., motor-operated valve reliability). In addition, for designs using passive safety systems and active "defense-in-depth" systems, sensitivity studies can be performed to investigate the impact of uncertainties on PRA results under the assumption of plant operation without credit for the non-safety-related "defense-in-depth" systems. These studies provide additional insights about the risk importance of the "defense-in-depth" systems, that are taken into account in selecting non-safety-related systems for regulatory oversight according to the RTNSS process.

The applicant should use the results and insights of the PRA, including those from the uncertainty analyses, importance analyses, and sensitivity studies, in an integrated fashion, to perform the following:

- Address weaknesses through specific design and/or operational changes.
- Identify and establish specifications and performance objectives (e.g., ITAACs, technical specifications, reliability assurance program, RTNSS, and COL action items) for the design, construction, testing, inspection, and operation of the plant to ensure that assumptions made in the PRA (e.g., regarding design and operational features of a safety system, system interactions, and human actions) will remain valid in the as-to-be-built, as-to-be-operated plant and that uncertainties have been appropriately addressed.

The applicant's submittal should include the results of the PRA and a discussion of the corresponding insights. In addition, the submittal should address the application and implementation of the acquired risk insights.

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Model uncertainties?

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C.II.1.7 ***Format and Content***

The applicant should provide an acceptable level of documentation to enable the NRC staff to conclude that the objectives identified in Section C.II.1.2 were met and to reach a finding that the applicant has performed a sufficiently complete and scrutable analysis and that the results support the application for a COL. The submitted PRA should include adequate information, in terms of both models (initiating events, fault and event trees, success criteria, data, important assumptions and calculations) and results (minimal cut sets, importance, sensitivity, and uncertainty analyses).

Consistent with practices for operating plants, the applicant does not need to provide all plant- and site-specific PRA information to the NRC; however, the applicant should maintain such information and make it available for NRC review. Documentation of the PRA process and findings should be provided and, additionally, should include a description of the applicant's provisions to ensure adequacy in accordance with Regulatory Guide 1.200.

To support the NRC staff's timely review and assessment of the documentation, the applicant should adhere to the recommended format and content identified in Appendix B, Probabilistic Risk Assessment to Support a Combined License Application: Standard Format and Content.

In addition to submitted documentation, the applicant should maintain archival documentation, consistent with the guidance provided in Section 3.2, "Archival Documentation," of Regulatory Guide 1.174. The archival documentation should include a detailed description of engineering analyses conducted and the results obtained, irrespective of whether they were quantitative or qualitative, or whether the analyses made use of traditional engineering methods or probabilistic approaches. Such documentation should be maintained by the applicant, as part of the normal quality assurance program, so that it is available for examination. Documentation of the analyses should be maintained as lifetime quality records in accordance with Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."

C.II.1.8 ***PRA Maintenance and Upgrade***

The applicant should develop a PRA maintenance and upgrade program, based on the configuration control guidance in Regulatory Guide 1.200, and provide a description of this program. This description should identify how the PRA will be maintained to ensure that it reasonably reflects as-designed, as-to-be-built, and as-to-be-operated conditions. If the applicant uses a screening process that allows insignificant changes to be deferred or not incorporated during the next scheduled PRA maintenance update, the applicant should describe the process and criteria, including documentation requirements. Likewise, if the process includes conditions that require an immediate maintenance update or upgrade of the PRA prior to the next scheduled PRA maintenance update, the applicant should describe the related process and criteria.

The NRC staff expects the plant-specific PRA to reasonably reflect the plant as it was constructed, in preparations for startup, and therefore, the plant-specific PRA should be upgraded prior to initial operations to incorporate those changes that were deferred (i.e., screened as not being significant) during the design, COL application, and construction phases, and to address findings during the PRA-related plant walkdowns. Therefore, the applicant should describe their approach for ensuring that the plant-specific PRA will reasonably reflect the plant prior to initial operations.

In addition, the applicant should describe how the applicant will ensure that the PRA maintains the appropriate scope, level of detail, and technical adequacy, consistent with the prevailing PRA standards, guidance, and good practices, as needed to support its uses and risk-informed applications, per the guidance presented in Sections C.II.1.3, C.II.1.4, and C.II.1.5, respectively, of this guide.

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Appendix A

NRC Regulatory Guidance on Severe Accidents

The Commission expects that new designs will achieve a higher standard of severe accident safety performance than previous designs.[1] In an effort to provide this additional level of safety in the design of advanced nuclear power plants, the NRC has developed guidance and goals to accommodate events that are beyond the design basis of the plant. Designers should strive to meet these goals.

For advanced nuclear power plants, including both the evolutionary and passive designs, the NRC concluded that vendors should address severe accidents during the design stage. Designers can take full advantage of the insights gained from such input as probabilistic safety assessments, operating experience, severe accident research, and accident analysis by designing features to reduce the likelihood that severe accidents will occur and, in the unlikely occurrence of a severe accident, to mitigate the consequences of such an accident. Incorporating insights and design features during the design phase is much more cost effective than modifying existing operating plants.[2]

Severe Accident Policy Statement. The Commission issued its policy statement, entitled "Severe Reactor Accidents Regarding Future Designs and Existing Plants," on August 8, 1985. This policy statement was prompted by the NRC's judgment that severe accidents, which are beyond the traditional design-basis events, constitute the major remaining risk to the public associated with radioactive releases from nuclear power plant accidents. A fundamental objective of the Commission's severe accident policy is to take all reasonable steps to reduce the chances that a severe accident involving substantial damage to the reactor core will occur and to mitigate the consequences of such an accident, should one occur. This statement describes the policy that the Commission uses to resolve safety issues related to reactor accidents that are more severe than design-basis accidents (DBAs). The statement focuses on the guidance and procedures that the Commission intends to use to certify new designs for nuclear power plants. Regarding the decision process for certifying a new standard plant design, an approach the Commission strongly encouraged for future plants, this policy statement affirms the Commission's belief that a new design for a nuclear power plant can be shown to adequately address severe accident concerns if it meets the following guidance:

- demonstration of compliance with the requirements of current Commission regulations, including the TMI requirements for new plants, as reflected in 10 CFR 50.34(f)
- demonstration of technical resolution of all applicable unresolved safety issues (USI) and the medium- and high-priority generic safety issues (GSI), including a special focus on ensuring the reliability of decay heat removal (DHR) systems and the reliability of both alternating current (ac) and direct current (dc) electrical supply systems
- completion of a PRA and consideration of the severe accident vulnerabilities exposed by the PRA, along with the insights that it may add to providing assurance of no undue risk to public health and safety
- completion of a staff review of the design with a conclusion of safety acceptability using an approach that stresses deterministic engineering analyses and judgment, complemented by PRA

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At the time it issued the Severe Accident Policy Statement, the Commission believed that an adequate basis existed to establish appropriate guidance. This belief was supported by the current operating reactor experience, ongoing severe accident research, and insights from a variety of risk analyses. The Commission recognized the need to strike a balance between accident prevention and consequence mitigation and, in doing so, expected vendors engaged in designing new standard plants to achieve a higher standard of severe accident safety performance than they achieved in previous designs.[6]

Safety Goals Policy Statement. The Commission issued its policy statement, entitled "Safety Goals for the Operation of Nuclear Power Plants," on August 4, 1986. This policy statement focused on the risks to the public from nuclear power plant operations with the objective of establishing goals that broadly define an acceptable level of radiological risk that might be imposed on the public as a result of nuclear power plant operation. These risks are associated with the release of radioactive material from the reactor to the environment during normal operations, as well as from accidents. The Commission established the following two qualitative safety goals:

(1) Individual members of the public should be provided a level of protection from the consequences of nuclear power plant operation such that individuals bear no significant additional risk to life and health.

(2) Societal risks to life and health from nuclear power plant operation should be comparable to or less than the risks of generating electricity by viable competing technologies and should not be a significant addition to other societal risks.

These goals are supported by the following two quantitative objectives that determine achievement of the above safety goals:

(1) The risk to an average individual in the vicinity of a nuclear power plant of a prompt fatality that might result from reactor accidents should not exceed one-tenth of one percent (0.1 percent) of the sum of prompt fatality risks resulting from other accidents to which members of the U.S. population are generally exposed.

(2) The risk to the population in the area near a nuclear power plant of cancer fatalities that might result from nuclear power plant operation should not exceed one-tenth of one percent (0.1 percent) of the sum of cancer fatality risks resulting from all other causes.

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[6]Following the 1979 accident at the Three Mile Island (TMI) Nuclear Plant, Unit 2, it was recognized that "severe accidents" (i.e., those in which substantial damage is done to the reactor core, regardless of whether serious offsite consequences occur) needed further attention. The NRC evaluated, generically, the capability of existing operating plants to tolerate a severe accident. The NRC found that the design-basis approach contained significant safety margins for the analyzed events. These margins permitted operating plants to accommodate a large spectrum of severe accidents. Based on this information, the Commission, in the Severe Accident Policy Statement (50 FR 32138, August 8, 1985), concluded that existing operating plants posed no undue risk to public health and safety and that no basis existed for immediate action on generic rulemaking or other regulatory changes affecting these plants because of the risk posed by a severe accident. To address this issue for operating plants in the long term, the NRC issued SECY-88-147, "Integration Plan for Closure of Severe Accident Issues," in May 1988. This document identified the necessary elements for closure of severe accidents:

- performance of an individual plant examination
- assessment of generic containment performance improvements
- improved plant operations
- a severe accident research program
- an external events program
- an accident management program

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This statement of the NRC safety policy expresses the Commission's views on the level of risk to public health and safety that the industry should strive for in its nuclear power plants. The Commission recognizes the importance of mitigating the consequences of a core melt accident and continues to emphasize such features as the containment, siting in less populated areas, and emergency planning as integral parts of the defense-in-depth concept associated with its accident prevention and mitigation philosophy. The Commission approves the use of the qualitative safety goals, including use of the quantitative health effects objectives, in the regulatory decisionmaking process.

Standardization Policy Statement. The Commission issued its policy statement, entitled "Nuclear Power Plant Standardization," on September 15, 1987. This policy statement encourages the use of standard plant designs and contains information concerning the certification of plant designs that are essentially complete in terms of scope and level of detail. The intent of these actions was to improve the licensing process and to reduce the complexity and uncertainty in the regulatory process for standardized plants. With respect to severe accidents, the NRC expects applicants to address the guidance for new plant designs provided in the Commission's Severe Accident Policy Statement.

Use of PRA Methods in Nuclear Regulatory Activities Policy Statement. The Commission issued its policy statement, entitled "Use of Nuclear Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities," on August 16, 1995. This statement outlines the policy that the NRC will follow for using PRA methods in nuclear regulatory matters. The Commission established this policy so that the many potential applications of PRA could be implemented in a consistent and predictable manner to promote regulatory stability and efficiency. The Commission adopted the following policy statement regarding the expanded NRC use of PRA:

- The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.
- PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. Where appropriate, PRA should be used to support the proposal for additional regulatory requirements, in accordance with 10 CFR 50.109 (Backfit Rule). Appropriate procedures for including PRA in the process for changing regulatory requirements should be developed and followed. It is, of course, understood that the intent of this policy is that existing rules and regulations shall be complied with unless such rules and regulations are revised.
- PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.
- The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties in making regulatory judgments on the need for proposing and backfitting new generic requirements on nuclear power plant licensees.

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SECY-90-016. On January 12, 1990, the NRC staff issued SECY-90-016 which requested Commission approval for the staff's recommendations concerning proposed departures from current regulations for the evolutionary light-water reactors (LWR). The issues in SECY-90-016 were significant to reactor safety and fundamental to the NRC decision on the acceptability of evolutionary LWR designs. The positions in SECY-90-016 were developed as a result of the following activities:

- NRC reviews of current-generation reactor designs and evolutionary LWRs
- consideration of operating experience, including the TMI-2 accident
- results of PRAs of current-generation reactor designs and the evolutionary LWRs
- early efforts conducted in support of severe accident rulemaking
- research to address previously identified safety issues

The Commission approved some of the staff positions stated in SECY-90-016 and provided additional guidance regarding others in an SRM dated June 26, 1990.

SECY-93-087. On April 2, 1993, the NRC staff issued SECY-93-087 which sought Commission approval for the staff's positions pertaining to evolutionary and passive LWR design certification policy issues. This paper evolved from SECY-90-016. SECY-93-087 addresses the following preventive and mitigative feature issues relating to the AP1000:

- Preventive:
  - anticipated transient without scram (ATWS)
  - mid-loop operation
  - station blackout (SBO)
  - fire protection
  - inter-system loss-of-coolant accident (ISLOCA)
- Mitigative:
  - hydrogen control
  - core debris coolability
  - high-pressure core melt ejection
  - containment performance
  - dedicated containment vent penetration
  - equipment survivability
  - containment bypass potential resulting from steam generator tube ruptures

The Commission approved some of the staff positions stated in SECY-93-087 and provided additional guidance regarding others in an SRM dated July 21, 1993.

SECY-96-1 28. On June 12, 1996, the NRC staff issued SECY-96-128 which sought Commission approval for the staff's position pertaining to the AP600 reactor design. The issues involving severe accidents include the following:

- prevention and mitigation of severe accidents
- external reactor vessel cooling (ERVC)

The Commission provided additional guidance concerning prevention and mitigation of severe accidents and approved the staff's position concerning ERVC in an SRM dated January 15, 1997.

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SECY-97-044. On February 18,1997, the NRC staff issued SECY-97-044 which provided the Commission with additional information regarding prevention and mitigation of severe accidents. This paper responded to the Commission's SRM dated January 15, 1997, and provided additional information regarding the type of non-safety-related system that would achieve an appropriate balance between prevention and mitigation of severe accidents for the AP600 reactor design, which is also applicable to the AP1 000 design. The Commission approved the staff's position in an SRM dated June 30, 1997.

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Appendix B

Probabilistic Risk Assessment To Support a Combined License Application

Standard Format and Content

[Note: This standard ***format*** is consistent with the guidance provided in Regulatory Guide 1.200, "An Approach For Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and adapted to the specific uses of the PRA to support a COL application.

The ***content*** of the applicant's submittal should include adequate information (e.g., in terms of models, results, and interpretation of results) to enable the NRC staff to conclude whether the objectives identified in Section C.II.1.2 of this guide are met. The requisite level of detail, technical adequacy, and risk insights to be included in the submittal are identified in Sections C.II.1.4, C.II.1.5, and C.II.1.6 of this guide, respectively.]

1.0 Introduction - General Overview

2.0 Core Damage Evaluation (includes internal and external events)

2.1 Methodology Overview

2.2 Internal Events at Full-Power

[Note: This section should provide the plant-specific PRA for internal initiating events under full-power operating conditions. In so doing, this section should identify and describe the internal events evaluated. If some internal events are screened out or incorporated into other evaluations (e.g., grouped events), the screening/bounding/grouping should be described in Subsection 2.2.1, below.]

2.2.1 Initiating Events

2.2.2 Success Criteria

2.2.3 Accident Sequence

2.2.4 Systems Analyses

2.2.5 Parameter Estimation

2.2.6 Human Reliability Analysis

2.2.7 Quantification (including results)

2.2.8 Importance, Sensitivity, and Uncertainty Analyses

This page contains no comments

2.3 External Events at Full-Power

[Note: This section should provide the plant-specific PRA for external initiating events under full-power operating conditions. In so doing, this section should identify and describe the external events evaluated. If some external events are screened out or incorporated into other evaluations, this section should describe the screening/bounding.]

2.3.1 Internal Floods

2.3.1.1 Methodology and Approach

2.3.1.2 Flood Identification

2.3.1.3 Flood Evaluation

2.3.1.4 Quantification (including results)

2.3.1.5 Importance, Sensitivity, and Uncertainty Analyses

2.3.2 Internal Fires

2.3.2.1 Methodology and Approach

2.3.2.2 Screening Analysis

2.3.2.3 Fire Initiation

2.3.2.4 Fire Damage

2.3.2.5 Plant Response Analysis and Quantification

2.3.2.6 Quantification (including results)

2.3.2.7 Importance, Sensitivity, and Uncertainty Analyses

2.3.3 Seismic Events

2.3.3.1 Methodology and Approach

2.3.3.2 Screening and Bounding Analysis

2.3.3.3 Hazard Analysis

2.3.3.4 Fragility Analysis

2.3.3.5 Accident Sequence and System Model Modification

2.3.3.6 Quantification (including results)

2.3.3.7 Importance, Sensitivity, and Uncertainty Analyses

[Note: Other external events that are evaluated should be provided in subsections that follow the same format and content of information as above.]

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2.4 Events During Other Modes of Operation

[Note: This section should provide the plant-specific PRA for modes of operation other than full-power (including shutdown). This section should identify and describe the other (non-full-power) modes of operation evaluated. If the evaluation of some modes is incorporated into (or bounded by) the evaluations of other modes, this section should describe the grouping/bounding.]

2.4.1 Shutdown Events

2.4.1.1 Initiating Events

2.4.1.2 Success Criteria

2.4.1.3 Accident Sequence

2.4.1.4 Systems Analyses

2.4.1.5 Parameter Estimation

2.4.1.6 Human Reliability Analysis

2.4.1.7 Quantification (including results)

2.4.1.8 Importance, Sensitivity, and Uncertainty Analyses

[Note: Other modes of operation (other than full-power) that are evaluated should be provided in subsections that follow the same format and content of information as above.]

2.5 Conclusions and Insights Related to Core Damage Evaluation

2.5.1 Significant Accident Sequences

2.5.2 Integrated Insights from the Importance, Sensitivity, and Uncertainty Analyses

2.5.3 Significant Design Features and Operator Actions

[Note: Include a discussion of features that contribute significantly to the reduced risk, by initiating event category, as compared to operating plant designs, if applicable.]

3.0 Containment Performance & Radionuclide Release Assessment

3.1 Severe Accident Treatment

3.1.1 Treatment of Physical Processes/Phenomena (including evaluations in accordance with SECY-93-087)

3.1.2 Severe Accident Analysis Methods/Models

3.1.3 Severe Accident Progression for Significant Core Damage Sequences

3.2 Containment Event Tree Analysis

3.2.1 Interface with Core Damage Evaluation

3.2.2 Containment Event Tree Top Events and Success Criteria

3.2.3 Release Category Definitions

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3.3 Containment Ultimate Pressure Capacity and Conditional Containment Failure Probability

3.4 Quantification of Release Frequency and Source Terms

3.5 Importance, Sensitivity, and Uncertainty Analyses

3.6 Interpretation of Results and Insights (including comparisons with goals)

3.7 Conclusions and Insights Related to Containment Performance Assessment

4.0 Offsite Consequence Evaluation

[Note: applicable if such information is included in applicant's PRA]

4.1 Methodology Overview

4.2 Interface with Containment Performance Assessment

4.3 Evaluation of Fission Product Source Terms

4.4 Dose Consequence Modeling

4.5 Quantification and Results

4.6 Importance, Sensitivity, and Uncertainty Analyses

4.7 Conclusions and Insights Related to Offsite Consequences Evaluation

5.0 Use of PRA in the Design Process

[Note: Address how the PRA was used in the design process to achieve the following objectives (and provide examples): (1) identify vulnerabilities in operating reactor designs and introduce features and requirements to reduce or eliminate those vulnerabilities; and (2) quantify the effect of new design features and operational strategies on plant risk.]

6.0 PRA Conclusions

[Note: Address how the purpose and objectives are met.]

6.1 CDF, LRF, and Offsite Dose from Internal, External, and Low-Power/Shutdown Events

6.2 Important Features for Reducing Risk

6.3 PRA input to Regulatory Processes and Programs (e.g., RAP, RTNSS, Tier 1, COL action items, man-machine-interface, EOPs, SAMG)

7.0 PRA Maintenance Program/Process

C.IV.10. Regulatory Treatment of Non-Safety Systems

COL applicants that do not reference a certified design and are proposing a design that includes passive safety systems should define the active systems relied upon for defense-in-depth and necessary to meet passive advanced light water reactor (ALWR) plant safety and investment protection goals. This process is referred to as regulatory treatment of non-safety systems (RTNSS). The background and the implementation of the RTNSS process is provided below. The RTNSS process is considered for advance reactor designs on a case-by-case basis.

For COL applicants that reference a certified design, the certification will have addressed the implementation of the RTNSS process.

This information is based on NUREG-1793, Volume 3, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design," issued in September 2004.

C.IV.10.1 ***Background***

The ALWR Utility Requirements Document (URD) for passive plants, issued by the Electric Power Research Institute (EPRI), includes standards related to the design and operation of active, non-safety-related systems. The URD recommends that the plant designer specifically define the active systems relied upon for defense-in-depth and necessary to meet passive ALWR plant safety and investment protection goals. Defense-in-depth systems provide long-term, post-accident plant capabilities. **Passive systems should be able to perform their safety functions, independent of operator action or offsite support, for 72 hours after an initiating event. After 72 hours, non-safety or active systems may be required to replenish the passive systems or to perform core and containment heat removal duties directly.** These active systems are the first line of defense in reducing challenges to the passive systems in the event of transients or plant upsets.

In existing plants, as well as in the evolutionary ALWR designs, many of these active systems are designated as safety related. However, by virtue of their designation in the passive plant design as non-safety related, credit is generally not taken for the active systems in the licensing design-basis accident analyses that are described in Chapter 15 of the generic design control document for the certified designs (except in certain cases where operation of a non-safety-related system could make an accident worse). In SECY-90-406, "Quarterly Report on Emerging Technical Concerns," dated December 17, 1990, the staff listed the role of these active systems in passive plant designs as an emerging technical issue. In SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor Designs," dated April 2, 1993, the staff discussed the issue of RTNSS and stated that it would propose a process for resolution of this issue in a separate Commission paper. The staff subsequently issued SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs," dated March 28, 1994, which discusses that process. SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs (SECY-94-084)," dated May 22, 1995, was essentially a revised version of SECY-94-084 issued to respond to Commission comments on that paper and to request Commission approval of certain revised positions. However, the staff's position on RTNSS as discussed in SECY-94-084 was approved by the Commission (staff requirements memorandum (SRM) dated June 30, 1994), and was unchanged in SECY-95-132.

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In SECY-94-084, the staff cited the uncertainties inherent in the use of passive safety systems because of limited operational experience and the relatively low driving forces (e.g., density differences and gravity) in these systems. The uncertainties relate to both system performance characteristics (e.g., the possibility that check valves could stick under low differential pressure conditions) and thermal-hydraulic phenomena (e.g., critical flow through ADS valves). In some cases, the system performance issues were addressed by design enhancements. For example, check valve performance was improved by using biased-open check valves in the core makeup tank (CMT) discharge lines. In addition, the check valves in the in-containment refueling water storage tank (IRWST) injection lines and containment recirculation lines were designed to ensure that the pressure differential across these valves would be small during normal plant operation. The design certification applicant also addressed uncertainties associated with the passive system reliability, as well as thermal-hydraulic uncertainties, by virtue of the design certification test programs. The NRC has also performed confirmatory integral systems testing and analyses over a broad range of conditions to help determine the thermal-hydraulic "boundaries" within which the plant responds in an acceptable manner for both design-basis events and accidents beyond the licensing design basis. These activities have reduced, but not eliminated, the thermal-hydraulic uncertainties associated with passive system performance.

The residual uncertainties associated with passive safety system performance increase the importance of active systems in providing defense-in-depth functions to back up the passive systems. Recognizing this, the NRC and EPRI developed a process to identify important active systems and to maintain appropriate regulatory oversight of those systems. This process does not require that the active systems brought under regulatory oversight meet all safety-related criteria, but rather that these controls provide a high level of confidence that active systems having a significant safety role are available when they are challenged.

The ALWR URD specifies standards concerning design and performance of active systems and equipment that perform non-safety-related, defense-in-depth functions. These standards include radiation shielding to permit access after an accident, redundancy for the more probable single active failures, availability of non-safety-related electric power, and protection against more probable hazards. The standards also address realistic safety margin analysis and testing to demonstrate the systems' capabilities to satisfy their non-safety-related, defense-in-depth functions. However, the ALWR URD does not include specific quantitative standards for the reliability of these systems.

SECY-94-084 and SECY-95-132 describe the scope, criteria, and process used to determine regulatory treatment of non-safety systems in the passive plant designs.

The following five key elements make up the process:

(1) The ALWR URD describes the process to be used by the designer to specify the reliability/availability (R/A) missions of risk-significant structures, systems, and components (SSCs) needed to meet regulatory requirements and to allow comparisons of these missions to NRC safety goals. An R/A mission is the set of requirements related to the performance, reliability, and availability of an SSC function that adequately ensures the accomplishment of its task, as defined by the focused probabilistic risk assessment (PRA) or deterministic analysis.

(2) The designer applies the process to the design to establish R/A missions for the risk-significant SSCs.

(3) If active systems are determined to be risk-significant, the NRC reviews the R/A missions to determine if they are adequate and whether the operational reliability assurance process or simple technical specifications (TSs) and limiting conditions for operation can provide reasonable assurance that the missions can be met during operation.

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(4) If active systems are relied upon to meet the R/A missions, the designer imposes design requirements commensurate with the risk significance of those elements involved.

(5) The design certification rule does not explicitly state the R/A missions for risk-significant SSCs. Instead, the rule includes deterministic requirements for both safety-related and non-safety-related design features.

The following two sections discuss the steps of the RTNSS process to address the five key elements described above.

C.IV.10.2 ***Scope and Criteria for the RTNSS Process***

The RTNSS process applies broadly to those non-safety-related SSCs that perform risk-significant functions, and therefore, are candidates for regulatory oversight. The RTNSS process uses the following five criteria to determine those SSC functions:

(1) SSC functions relied upon to meet deterministic NRC performance requirements such as Part 50.62 of Title 10 of the Code of Federal Regulations (10 CFR 50.62) for mitigating anticipated transients without scram (ATWS) and 10 CFR 50.63 for station blackout (SBO)

(2) SSC functions relied upon to ensure long-term safety (beyond 72 hours) and to address seismic events

(3) SSC functions relied upon under power-operating and shutdown conditions to meet the Commission's safety goal guidelines of a core damage frequency (CDF) of less than $1x10^{-4}$ each reactor year, and a large release frequency (LRF) of less than $1x10^{-}$ each reactor year

(4) SSC functions needed to meet the containment performance goal, including containment bypass, during severe accidents[1]

(5) SSC functions relied upon to prevent significant adverse systems interactions

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Why not other external events?

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Subject: Note
Date: 11/19/2006 11:27:32 AM
Not "each." Should be "per."

Author: apostolakis
Subject: Note
Date: 11/19/2006 11:13:41 AM
When did this become so low?

Author: apostolakis
Subject: Note
Date: 11/19/2006 11:14:28 AM
Why isn't this covered by the LRF goal?

[1] This issue was discussed in detail in SECY-93-087. This criterion for assessing containment performance is the degree to which the design comports with the Commission's probabilistic containment performance goal of 0.1 conditional containment failure probability (CCFP) when no credit is provided for the performance of the non-safety-related, defense-in-depth systems for which there will be no regulatory oversight. The CCFP is a containment performance measure that provides perspectives on the degree to which the design has achieved a balance between core damage prevention and core damage mitigation.

C.IV.10.3 *Specific Steps in the RTNSS Process*

The following specific steps were established for design certification applicants to implement the process described above. These steps would be applicable to COL applicants not referencing a certified design.

C.IV.10.3.1 Comprehensive Baseline Probabilistic Risk Assessment

The RTNSS process starts with a comprehensive Level-3 baseline PRA, which includes all appropriate internal and external events for both power and shutdown operations. The process also includes adequate treatment of R/A uncertainties, long-term safety operation, and containment performance. A margins approach is used to evaluate seismic events. In addressing containment performance, the PRA considers the sensitivities and uncertainties in accident progression, as well as inclusion of severe accident phenomena, including explicit treatment of containment bypass. In the PRA, mean values are used to determine the availability of passive systems and the frequencies of core damage and large releases. The process estimates the magnitude of potential variations in these parameters and identifies significant contributors to these variations using appropriate uncertainty and sensitivity analyses. Finally, the RTNSS process calls for an adverse systems interaction study to be performed and its results to be considered in the PRA.

C.IV.10.3.2 Search for Adverse Systems Interactions

The RTNSS process includes systematic evaluation of adverse interactions between the active and passive systems. The results of this analysis are used to initiate design improvements to minimize adverse systems interactions and are considered in developing PRA models, as noted above.

C.IV.10.3.3 Focused PRA

The focused PRA is a sensitivity study, which includes the passive systems and only those active systems necessary to meet the safety goal guidelines approved by the Commission in SECY-94-084 (see Criterion 3 in Section C.IV.10.2 of this guide). The focused PRA results are used in several ways to determine the R/A missions of non-safety-related, risk-significant SSCs.

First, the focused PRA maintains the same scope of initiating events and their frequencies as identified in the baseline PRA. As a result, non-safety-related SSCs used to prevent the occurrence of initiating events will be subject to regulatory oversight commensurate with their R/A missions.

Second, following an initiating event, the event tree logic of the comprehensive, Level-3 focused PRA will not include the effects of non-safety-related standby SSCs. At a minimum, these event trees will not include the defense-in-depth functions and their support, such as onsite ac power. This will allow the COL applicant to determine if the passive safety systems, when challenged, can provide sufficient capability (without non-safety-related backup) to meet the NRC safety goal guidelines for a CDF of $1 \times 10^{-}$ each reactor year and an LRF of $1 \times 10^{-}$ each reactor year. The applicant will also evaluate the containment performance, including bypass, during a severe accident. If the applicant determines that non-safety-related SSCs must be added to the focused PRA model to meet the safety goals, these SSCs will be subject to regulatory oversight based on their risk significance.

Although not discussed explicitly in these steps, an important aspect of the focused PRA is the evaluation of uncertainties, particularly those inherent in the use of passive safety systems. Because of limited data and experience with the passive systems, thermal-hydraulic uncertainties could impact the PRA results. Specifically, thermal-hydraulic uncertainties can directly impact the determination of success criteria for accident sequences in the PRA. As noted above, this was one of the primary reasons for the development of the RTNSS process.

Page: 4

Author: apostolakis
Subject: Note
Date: 11/19/2006 12:10:08 PM
The goals are in terms of CDF and LRF (and containment performance). What is the use of the Level-3 PRA? Besides, Section C. II.1.3 ***Scope does not require a Level-3 PRA.***

Author: apostolakis
Subject: Highlight
Date: 11/19/2006 11:16:22 AM

Author: apostolakis
Subject: Note
Date: 11/19/2006 11:20:40 AM
including model uncertainties? How? Similar to the NUREG-1150 treatment?

Author: apostolakis
Subject: Note
Date: 11/19/2006 11:20:43 AM
Why limit it to margins?

Author: apostolakis
Subject: Highlight
Date: 11/19/2006 11:22:58 AM

Author: apostolakis
Subject: Highlight
Date: 11/19/2006 11:26:15 AM

Author: apostolakis
Subject: Highlight
Date: 11/19/2006 11:26:35 AM

This page contains no comments

C.IV.10.3.4 Selection of Important Non-Safety-Related Systems

The RTNSS process includes the identification of any combination of non-safety-related SSCs that are necessary to meet NRC regulations, safety goal guidelines, and the containment performance goal objectives. These combinations are based on criteria 1 and 5 in Section C.IV.10.2 of this guide, for which NRC regulations are the bases for consideration, and criteria 3 and 4 in Section C.IV.10.2 of this guide, for which PRA methods are the bases for consideration. To address the long-term safety issue in criterion 2 of Section C.IV.10.2 of this guide, the applicant should use PRA insights, sensitivity studies, and deterministic methods to establish the ability of the design to maintain core cooling and containment integrity beyond 72 hours. Non-safety-related SSCs required to meet deterministic regulatory requirements (criterion 1), resolve the long-term safety and seismic issues (criterion 2), and prevent significant adverse systems interactions (criterion 5) are subject to regulatory oversight.

The staff expects regulatory oversight for all non-safety-related SSCs needed to meet NRC requirements, safety goal guidelines, and containment performance goals, as identified in the focused PRA model. Using the focused PRA to determine the non-safety-related SSCs important to risk involves the following three steps:

(1) Determine those non-safety-related SSCs needed to maintain the initiating event frequencies at the comprehensive baseline PRA levels.

(2) Add the necessary success paths (an event sequence in the PRA event tree which results in no core damage) with non-safety-related systems and functions to the focused PRA to meet safety goal guidelines, containment performance goal objectives, and NRC regulations. Choose the systems by considering the factors for optimizing the design effects and benefits.

(3) Perform PRA importance studies to assist in determining the importance of these SSCs.

C.IV.10.3.5 Non-Safety-Related System Reliability/Availability Missions

Upon completion of the selection steps described in the previous section of this guide, the applicant should determine and documents the functional R/A missions of those active systems needed to meet safety goal guidelines, containment performance goals, and NRC performance requirements. The applicant should also propose regulatory oversights as discussed in Section C.IV.10.3.6 of this guide. The applicant should repeat the steps described in Sections C.IV.10.3.4, C.IV.10.3.5, and C.IV.10.3.6 of this guide to ensure that it selects the most appropriate active systems and associated R/A missions.

As part of this process, the applicant should establish graded safety classifications and graded requirements based on the importance to safety of their functional R/A missions.

This page contains no comments

C.IV.10.3.6 Regulatory Oversight Evaluation

Upon completing the steps detailed in the previous five sections, the COL applicant should conduct the following activities to determine the means of appropriate regulatory oversight for the RTNSS-important non-safety systems:

- Review the final safety analysis report (FSAR), the PRA, and audit plant performance calculations to determine whether the design of the risk-significant, non-safety-related SSCs satisfies the performance capabilities and R/A missions.
- Review the FSAR information to determine whether it includes the proper design information for the reliability assurance program, including the design information for implementing the maintenance rule.
- Review the FSAR information to determine whether it includes proper short-term availability control mechanisms if required for safety and determined by risk significance.

C.IV.10.4 *Other Issues Related to RTNSS Resolution*

SECY-94-084 discussed several other issues related to overall passive plant performance or the performance of specific passive safety systems. The COL applicant not referencing a certified design should address these issues as applicable.

From: David Fischer
To: ACRS Members
Date: 01/22/2007 5:05:09 PM
Subject: DRAFT MINUTES OF 11-30-06 SUBCOMMITTEE MEETING ON DG-1145

Attached for your information is a working copy of the minutes of the November 30, 2006, Future Plant Designs Subcommittee meeting to discuss DG-1145, the COL Application Guidelines. The original hard copy of the minutes has been sent to Dr. Kress for his review/certification. If you have any comments on these minutes please forward them to me and Tom. Thank you,
Dave

CC: Cayetano Santos

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

January 22, 2007

MEMORANDUM TO: Thomas Kress, Chairman
Future Plant Designs Subcommittee

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS/ACNW

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS FUTURE PLANT DESIGNS SUBCOMMITTEE MEETING ON DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS" NOVEMBER 30, 2006, ROCKVILLE, MARYLAND

A working copy of the minutes of the subject meeting is attached for your review. Please review and comment on them at your earliest convenience. If you are satisfied with these minutes please sign, date and return the attached certification letter.

Attachment: Certification Letter
Minutes (Working Draft)

cc w/o Attachment:
F. Gillespie
C. Santos
S. Duraiswamy

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

Working Draft

Issued: January 22, 2007

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
FUTURE PLANT DESIGNS SUBCOMMITTEE MEETING MINUTES
NOVEMBER 30, 2006
ROCKVILLE, MARYLAND

INTRODUCTION

The ACRS Subcommittee on Future Plant Designs met on November 30, 2006, at 11545 Rockville Pike, Rockville, Maryland, in Room T-2B3. The purpose of this meeting was to hear presentations by and hold discussions with representatives of the NRC staff, Nuclear Energy Institute (NEI) and other meeting participants regarding DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)." The Subcommittee gathered information, analyzed relevant issues and facts, and formulated proposed positions and actions, as appropriate, for deliberation by the full Committee. The entire meeting was open to public attendance. Mr. David C. Fischer was the cognizant staff engineer and the Designated Federal Official for this meeting. The Subcommittee received no written comments, or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 8:30 am and adjourned at 3:36 pm.

ATTENDEES

ACRS

Thomas S. Kress, Chairman
Said Abdel-Khalik, Member (via teleconference)
J. Sam Armijo, Member
Mario V. Bonaca, Member
David C. Fischer, ACRS Staff
Michael Corradini, Member
William J. Shack, Member
John D. Sieber, Member
Graham B. Wallis, Member

NRC

David Matthews, NRR/DNRL
Eric Oesterle, NRR/DNRL
Joe Colaccino, NRR/DRA
Donnie Harrison, NRR/DRA
Nick Saltos, NRR/DRA
Stephen Tingen, NRR
Jerry Wilson, NRR/DNRL
Mark Rubin, NRR/DRA
Bob Palla, NRR/DRA
Bruce Musico, NSIR/DPR

ATTENDEES (CONT'D)

OTHERS

Leslie Kass, NEI
Andrea Sterdis, Westinghouse
Meghan Goldman, DOE
Martha Shields, DOE
Jerry Mauck, South Texas Project
Eddie R. Grant, NuStart/EXCEL Services
Joe Mihalcik, UniStar Nuclear/Constellation
Ryusi Iwasaki, Toshiba

A complete list of attendees is in the ACRS Office file and will be made available upon request. The presentation slides and handouts used during the meeting are attached to the Office Copy of these minutes.

OPENING REMARKS BY THE SUBCOMMITTEE CHAIRMAN

Dr. Thomas S. Kress, Chairman of the Future Plant Designs Subcommittee, stated that the purpose of this meeting was to summarize and discuss the technical content of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," discuss the public comments that the staff received on DG-1145, and summarize how the staff plans on resolving the public comments. He explained that because of the document's formidable size, the committee assigned different chapters to individual members that may have some knowledge of that particular area. He said that individual member comments were developed, provided to the staff, and would be discussed during the DG-1145 overview portion of the meeting.

STAFF PRESENTATIONS

Mr. David Matthews, Director of NRO's Division of New Reactor Licensing provided the staff introductory comments. He said that DG-1145 development effort is being done in parallel with, and is meant to be consistent with, the proposed revisions to Part 52, currently being considered by the Commission. He said that these efforts needed to be completed in a timely manner in order to support the 13 COL applications expected in the beginning of fiscal year 2008, and a total of 20 possible COL applications by the end of fiscal year 2008. Mr. Matthews said that DG-1145 was developed with a high level of external stakeholder participation (e.g., numerous public workshops). He said that DG-1145 was developed to support the staff's expectation that COL applications will be of a high-quality and will be complete. He also said that DG-1145 is formatted in such a way to facilitate applications being prepared under all of the options that are outlined in 10 CFR Part 52 (e.g., a COL application supported by a design certification, a COL application supported by an early site permit, both or neither. The development of DG-1145 was an intensive, expedited, and committed effort on the part of the staff and management with a high level of Commission interest. Mr. Matthews said that the staff is looking to have DG-1145 out within a couple of weeks of publishing the revised Part 52. Mr. Matthews then suggested that the subcommittee not get a presentation on the regulatory treatment of non-safety systems (RTNSS). Mr. Colaccino (NRO) said that the guidance in DG-1145 on RTNSS was taken directly from Chapter 22 of the AP1000 design certification safety evaluation (NUREG-1793), which the Committee has already reviewed. He said that

this guidance is not new and is consistent with SECY-94-084 and SECY-95-132 and their associated SRMs. He said that while there are no RTNSS requirements in the revised version of Part 52 currently before the Commission, the concept of RTNSS is not going away (referring to a recent meeting on RTNSS associated with the staff's ESBWR design certification review). Dr. Bonaca and Dr. Shack said that the guidance on RTNSS should be retained in DG-1145 since the concept of RTNSS is not going away.

DG-1145 Overview

Mr. Oesterle (NRR/DNRL), the lead project manager for the development of DG-1145, provided an overview and status of DG-1145. He said there won't be presentations on each and every section of DG-1145, as that would take too long. Rather, he said that time had been reserved time at the end of his overview presentation for the Subcommittee to ask questions on specific sections of DG-1145. To support that Q&A session, he said that many of the staff members who were involved in development of DG-1145 are here to respond to questions. Mr. Oesterle noted that the draft DG-1145 which the Subcommittee reviewed was based on the proposed Part 52 rule that was issued in March of 2006. He acknowledged that changes to DG-1145 will need to be made to make it comport with the final rule that is ultimately approved by the Commission. Dr. Wallis expressed concern that more time was not allotted on the agenda for the Subcommittee to dialogue with the staff.

For several years prior to the development of DG-1145, the staff was engaged with the industry and NEI in their effort to develop guidance for COL Applications (NEI 04-01). Revision E of NEI 04-01 contains much useful guidance for COL applicants that reference both an ESP and a certified design, specifically the AP1000 design. With the passage of Energy Policy Act of 2005 and the resulting potential increase in the number of COL applicants, the staff recognized the need for broader guidance to cover any COL application scenario permitted by Part 52. While the staff did not anticipate receiving a COL application for a custom (non-certified) plant design, the staff provided guidance for this scenario because it could also be used by an applicant for a certified design and because it provides insights to COL applicants referencing a certified design.

Mr. Oesterle said that the development of DG-1145 began in earnest in January 2006. He said to develop DG-1145, the staff started with Reg Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition). So, DG-1145 also applies to light water reactors and does not provide guidance on gas-cooled reactors or other non-LWR type reactors. The various sections of RG 1.70 were updated or revised based on information from the 1996 draft of the SRP, guidance contained in draft NEI 04-01, experience from NRC certification of standard designs, experience from NRC reviews of ESP applications, and numerous SECY papers and associated SRMs related to new reactor licensing. Then these revised sections were provided to staff technical reviewers to update, refine, and include any additional applicable technical guidance. Draft work-in-progress sections of DG-1145 were plased on the NRC's public website. Monthly public workshops were held between March and September 2006. Public comments and feedback were solicited during these workshops and over 500 comments were received and dispositioned (see Appendix I to DG-1145). Drafts of all section of DG-1145 were on the NRC's public website by June 30, 2006. DG-1145 was published in the *Federal Register* (71 FR 52826) on September 7, 2006, for a formal 45-day

public comment period. The public comment period ended on October 23, 2006.

Section C of DG-1145 outlines the appropriate content of COL applications. Section C.I is intended to provided guidance to a COL applicant that references neither a design certification nor an ESP. This section is consistent with the requirements in proposed Part 52.79, Contents of applications; technical information in final safety analysis report. That is, it is structured like the chapters of a licensee's Final Safety Analysis Report (FSAR) and the staff's SER. Section C.II was developed to be consistent with the requirements in proposed Part 52.80, Contents of applications; additional technical information. Section C.III was developed to provide guidance to COL applicants referencing a certified design and an early site permit and to provide guidance associated with topics unique to that scenario. Section C.IV provides guidance on miscellaneous topics associated with COL applications and new reactor licensing (e.g., limited work authorizations, RTNSS). Dr. Armijo asked what additional information needed to be submitted by a COL applicant that referenced both an ESP and a design certification. Messrs. Oesterle and Matthews explained that such an applicant would need to address and resolve COL Action items; any design acceptance criteria (DAC); Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC); and site specific features, such as security and the ultimate heat sink.

Mr. Oesterle described the format and structure of DG-1145. Section C provides the guidance on the content of COL applications. Part C.I provides guidance for a COL applicant that references neither a CD nor an ESP (consistent with proposed 10 CFR Part 52.79). This Part is further subdivided, by chapters and similar to the way a Final Safety Analysis Report (FSAR) is organized. However, a new introductory subsection and a new subsection on probabilistic risk assessment were added. Part C.II provides additional technical guidance (consistent with proposed 10 CFR Part 52.80). Part CII is further subdivided to address PRA; Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC); and Environmental Report. Mr. Oesterle explained that this section will need to be revised to reflect the fact that the latest Part 52 rule (currently before the Commission) no longer requires the submittal of a PRA. Part CIII provides guidance for a COL applicant that references just a CD as well as those that reference both a CD and an ESP. This section also provides guidance related to ITAAC, design acceptance criteria (DAC), and COL Action Items. Part CIV provides guidance on miscellaneous topics associated with a COL application [e.g., operational programs, limited work authorizations, generic issues, regulatory treatment of non-safety systems (RTNSS)]. Mr. Oesterle said that the information needed to get a COL will generally consist of information provided for the CD, information provided to get an ESP, and remaining information (e.g., plant-specific design information, information on operational programs).

Mr. Oesterle also provided a brief status of the development of DG-1145. He said the public comment period closed on October 23, 2006, and that approximately 700 individual comments were received. The staff is currently working to resolve the public comments. He emphasized that DG-1145 will be revised to comport with the final revision to 10 CFR Part 52 as approved by the Commission. Mr. Oesterle said that there was a process in place to ensure consistency between DG-1145 and the proposed Regulatory Guide and SRP Section updates. The staff plans to publish DG-1145 (as Regulatory Guide 1.206) after incorporation of public comments

and after final issuance of the Part 52 rule. The staff is considering additional public forums to update external stakeholders on Regulatory Guide 1.206 prior to publication.

Mr. Oesterle also provided a brief status of the development of DG-1145. He said the public comment period closed on October 23, 2006, and that approximately 700 individual comments were received. The staff is currently working to resolve the public comments. He emphasized that DG-1145 will be revised to comport with the final revision to 10 CFR Part 52 as approved by the Commission. Mr. Oesterle said that there was a process in place to ensure consistency between DG-1145 and the proposed Regulatory Guide and SRP Section updates. The staff plans to publish DG-1145 (as Regulatory Guide 1.206) after incorporation of public comments and after issuance of the final Part 52 rule. The staff is considering additional public forums to update external stakeholders on Regulatory Guide 1.206 prior to publication, such as use of the NRCs public website to post completed sections of RG 1.206, and additional public meetings (perhaps in the mid- to late January time frame) to share status and progress on RG 1.206 efforts.

Mr. Oesterle showed a time line depicted the development of DG-1145 in relation to issuance of the Energy Policy Act of 2005, revision to Part 52, revisions to RGs and SRP Sections, and anticipated receipt of COL applications. Dr. Wallis expressed concern that DG-1145 needs to be technically complete and accurate and not just be a process document. Mr. Matthews explained that DG-1145 is merely a roadmap for COL applicant to guide them in terms of what information should be included in their application. He said that DG-1145 imposes no new requirements and also said it will be revised to be consistent with the final (not the proposed or proposed final) Part 52 rule approved by the Commission. DG-1145 identifies the information required to accept a COL application. By insuring that applications contain all of the information the staff believes it needs to complete it review it should minimize the need for requests for additional information (RAIs). Then the COL application will be reviewed against the regulations, other RGs, and SRP Sections.

ACRS Member Comments on DG-1145

Dr. Kress asked the ACRS members in attendance to ask the staff any questions or comments they might have on DG-1145, particularly on any chapter to which they were assigned to review. Dr. Shack noted that the regulatory guide on BWR water chemistry, RG 1.56, is obsolete and should be replaced. Mr. Koenick said that the related SRP section was being revised to reference the EPRI water chemistry guidelines. Dr. Shack also noted that DG-1145 had a good discussion on leak-before-break, but questioned why there wasn't a separate regulatory guide on the issue. Mr. Chan of the NRC staff said that work had begun several years ago on the development of a regulatory guide on leak-before-break, but that they decided to put that regulatory guide in abeyance because of concerns related to primary water stress corrosion cracking (the staff wanted to rethink its position which required two mitigative methods to address PWSCC in light of active degradation in piping that might be a candidates for leak-before-break). Dr. Shack also noted that there considerable variability in the level of detail from chapter to chapter in DG-1145 (e.g., section on feedwater piping which recommends that cast stainless steel be volumetrically inspect able as compared to the section on Class 1 piping which simply references the Code). Mr. Colaccino said that before the staff finalizes DG-1145 they would try to rectify these inconsistencies.

Dr. Armijo suggested that materials degradation issues (materials and environment) be addressed together in one section of DG-1145 as opposed to being spread out in the various system-related sections of DG-1145. Mr. Oesterle suggested that it may be more appropriate to have a separate RG on materials degradation issues.

Mr. Sieber said that he thought there should be more description in DG-1145 of what the licensee proposed to do as far as reactor coolant system (RCS) pipe and component hangers, snubbers, and supports. He also expected to see more in DG-1145 on the applicants fatigue analysis and a description off the design limitations for hydrostatic testing of the reactor coolant pressure boundary. Mr. Seiber also suggested that reviewers might also need additional information on RCS weld material, geometry, etc., particularly for ferirtic-to-austenitic welds where buttering is used. Mr. Oesterle noted that some of the details that Mr. Sieber was looking for may be verified during the construction phase by ITAAC or by engineering design verification efforts or by first-of-a-kind engineering inspections.

Dr Corradini said that he checked chapter 6 against the contents of an old FSAR and found the level of detail of the information requested to be very detailed and consistent with the Kewaunee. He said he also agreed with NEI's editorial comments. Dr. Wallis noted that DG-1145 asked applicants to analyze the effects of small particles that penetrate the sump screen but expressed scepticism over an applicant's ability to do such an analysis as well as the staff's ability to evaluate it. Dr. Wallis said that subject of fan coolers draining and refilling following an accident, and the resultant potential for water hammer effects, should be addressed in DG-1145. Subcommittee members discussed the difference between primary and secondary leakage rates.

Dr. Abdel-Khalik said that the chapter on digital instrumentation and control (I&C) systems asks applicants to statistically validate computer system functional requirements. Specifically, "The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated." He asked the staff why 95%. Mr. Li, from NRR's Instrumentation and Control Branch, said that industry also question why the staff specified a specific confidence level, said that the guidance was going to be revised to delete the specific value and, rather, ask for documentation to demonstrate compliance with the ITAAC requirement. Mr. Sieber noted that the I&C section does not provide sufficient information to understand the staff's guidance that there be "independence of protection systems from control systems" and that digital I&C systems have "redundancy, diversity and defense in depth." He questioned whether additional regulation was needed in this area and whether additional regulation would constitute a backfit. Dr. Wallis agreed with Mr. Sieber that the words in the I&C section were vague. Dr. Wallis also thought the I&C section should address cyber-security. Mr. Li indicated that the staff is working with industry to revise Regulatory Guide 1.152 to provide additional guidance on cyber-security.

With regard to the Electrical Power chapter of DG-1145, Mr. Sieber said he thought it might by unreasonable or impractical for system operators to perform real-time analysis regarding grid stability. He also questioned the meaningfulness of the supposedly worst case analysis the applicant would need to submit to describe the means for doing the real-time analysis. He did think it was good to promote a relationship between the licensee and the system operator. Mr. Sieber also said that the staff, in its review, should pay attention to the power supplies to

microprocessor control devices (e.g., timers, relays) because they are sensitive to DC power surges which can result in equipment failures (e.g., diesel generator load sequencers, breakers). Dr. Wallis also said the Electrical Power section was well done because it was technology-neutral, applicable to any reactor type.

Dr. Kress indicated that comments of ACRS members, not present at today's Subcommittee meeting, would be provided to the staff.

Dr. Abdel-Khalik expressed concern that there needed to be more consistency or cross-correlation between the Steam and Power Conversion System chapter and the other chapters of DG-1145 (e.g., BWR water chemistry in Chapter 3 and PWR water chemistry in Chapter 10). Mr. Koenick said that the staff would try to address this in its conformancy and consistency check.

Dr. Bonaca said that the Human Factors Engineering Chapter was excellent. He said the industry comments on the chapter were good and that the staff was working to bring industry's issues to closure.

Probabilistic Risk Assessment (PRA)

Mr. Harrison described the guidance contained in DG-1145 related to PRA and severe accident evaluations. He said that the proposed10 CFR 52 rulemaking included a requirement for COL applicants to submit a plant-specific PRA to the NRC for review. After completion of DG-1145, the NRC position changed to accept the industry comment to delete this requirement. Rather, final 10 CFR Part 52 now requires that the PRA be maintained available for staff inspection at the applicant's office. Dr. Wallis questioned why, if it is available, doesn't the staff just ask applicants to send in their PRA with the COL application? He expressed his opinion several times during the meeting that the PRA should be made available to the public. Mr. Rubin explained that late in the concurrence process, there was a decision by senior management to remove the requirement that the PRA be submitted as part of a design certification or COL application. The requirement to submit the PRA was deleted throughout Part 52, including the existing requirement for design certification applicants to submit a design-specific PRA. Mr. Harrison said that DG-1145 will need to be revised to reflect the change in the NRC position i.e., to conform to the final rule. Specifically, he said that the majority of the guidance currently in Section C.II.1 (PRA) will need to be incorporated into C.I.19 (FSAR Chapter 19). Since FSAR Chapter 19 is a qualitative, summary description of the PRA, results, insights, uses, etc., staff audits will be necessary to fully understand, review, and confirm the bases for the PRA results and insights and adequacy for the PRA uses/applications [e.g., RTNSS, Reliability Assurance Program (RAP)]. Mr. Harrison said that the requirement to submit a design-specific or plant-specific PRA with the DC or COL application is separate and distinct from the requirement to submit PRA updates to the NRC. Mr. Rubin noted that Part 52 is the first place in the regulations that actually requires that a PRA be done, but it does not require that it be maintained or updated. Mr. Harrison pointed out that the development of PRA standards is ongoing and evolving process.

Mr. Harrison stated that the basis for the PRA guidance in DG-1145 is taken from: NRC Policy Statements, SECY Papers and related SRMs; experience with design certification reviews for

CE System 80+, ABWR, AP-600, and AP-1000; and 10 CFR 52.79 PRA/Severe Accident requirements.

Mr. Harrison said that the staff intends to use the applicant's PRA and severe accident evaluations to conclude that 9 objectives (derived from NRC Policy Statements, SECY Papers, and related SRMs) are met. The COL applicant will specifically address how each objective is met. Both the 0.1 conditional containment failure probability (CCFP) and the 10^{-6}/yr large release frequency (LRF) metrics were derived from SECY Papers and approved by the Commission. Mr. Rubin explained that objectives are guidelines and not strict regulatory requirements. He said that applicants should not artificially or intentionally increase PRA results associated with one objective or metric simply to meet one of the other objectives. Dr. Kress noted that the conditional containment failure probability metric of 0.1 is weighted by the core damage frequency and that that automatically took care of the issue. Dr. Kress asked the staff why it used a 10^{-6}/yr metric on LRF as opposed to on LERF. Dr. Palla of the NRC staff said that for the AP600 design certification, Westinghouse's LERF calculation picked up late failures. He explained that Westinghouse did not look at early fatalities in calculating LERF. Rather, Westinghouse took all release frequencies that did not result in an intact containment to contribute to LERF. While Westinghouse called it large, they did not try to distinguish between the release magnitudes that would cause fatalities and those which would not. Mr. Harrison said that several of the nine objectives are used to identify and assess the balance of preventive and mitigative features (including operator actions) such that the plant design reflects a reduction in risk compared to existing plants (contemporary with the Severe Accident Policy Statement of 1985). Several other objectives are in support of specific uses and applications of the PRA results for programs [e.g.,, RTNSS, ITAAC, COL and interface requirements]. Mr. Harrison said that none of theobjectives would require an applicant to do a Level 3 PRA and that the guidance on RTNSS in DG-1145 would be revised to clarify thaat a Level 3 PRA is not required. Mr. Rubin clarified that while a Level 3 PRA is not required, NEPA requires that a severe accident management design assessment (SAMDA) study be conducted and that some vendors have chosen to do a bounding Level 3 assessment to meet that requirement. Dr. Bonaca said that some of the near term operating license plants licensed after the TMI accident (e.g., Seabrook) were required to do a Level 3 PRA in order to get their license. Dr. Kress indicated that he felt that the guidance on population density near nuclear power plant site is adequate. Finally, Mr. Harrison outlined the regulatory guidance provided in DG-1145 to assist COL applicants in the development of Chapter 19 of the FSAR.

Reliability Assurance Program (RAP)

Steve Tingen with NRR's Quality Assurance Branch described the guidance in DG-1145 on Reliability Assurance Programs (RAPs). He said that the guidance is based on Commission direction in SECY-95-132, Item E, "Reliability Assurance Program." He said the purpose of RAP is twofold, first to design reliability into the plant (i.e., design RAP), and second to maintain reliability (i.e., operational RAP). The scope of a RAP includes both safety-related and non-safety-related structures, systems, and components (SSCs) and plant/design-specific as well as site-specific information. RAP activities for the operational phase are integrated into existing programs i.e., not a new separate program. Mr. Tingen said that the information the staff asks for in DG-1145 related to RAP is consistent with the RAP-related SRP sections (Section 17.4, which is the RAP section and Section 19, which is the PRA section). Specifically, DG-1145

asks applicants to describe the scope, purpose, and objectives of their RAP. It also asks for a description of any deterministic or probabilistic methods (e.g., use of importance measures) they will use for prioritizing SSCs. Mr. Tingen said that DG-1145 asks a description of the quality controls they used for the development of their design RAP (e.g., organization, design control procedures, and instructions, corrective actions, ad audit plans). Finally, he said there is an ITAAC associated with the design RAP that could be reviewed with the COL application.

Operational Programs

Mr. Colaccino said that guidance on operational programs is provided in Sections C.I.13.4 and C.IV.4 of DG-1145. He said there was an issue as to whether operational programs should have an ITAAC associated with them and that this was discussed in two earlier SECY Papers and ultimately resolved in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." The staff decided that if an operational program could be fully described in a COL application then an ITAAC for that program was unnecessary. Mr. Colaccino said that, by statute, there is a generic ITAAC related to emergency planning. This ITAAC was developed with input from industry and is described in SECY-05-0197. It is a generic template type ITAAC that can accommodate the site-specific aspects of emergency planning. The proposed revision to the emergency planning SRP Section13.3 is consistent with the generic emergency planning ITAAC. Mr. Musico (NSIR) said that SRP Section 13.3 has an additional ITAAC table in it, that goes slightly beyond generic ITAAC in SECY-05-0197 because the SRP Section expands the use of the ITAAC beyond COL applications to include ESP applications as well. Mr. Musico said that the staff could not make a reasonable assurance finding on emergency planning at the ESP stage, because the plant was not physically there, even if the ESP applicant proposed a complete and integrated emergency plan, unless the plan was bolstered by an additional ITAAC. Operational programs that can be fully described in a COL application must be required by regulation, reviewed as part of the COL application review, and inspected to verify implementation. Because a substantial portion of operational programs will occur after the COL is issued, the program description (FSAR level) in the COL application should include implementation milestones. Mr. Colaccino showed a slide which identified 20 or so operational programs. He said that the NRC intends to inspect operational program implementation during construction. He said that the proposed final Part 52 rule has included implementation milestones for some operational programs and that there are license conditions associated with operational program (i.e., scheduling and implementation) that are not specifically covered in rule.

ITAAC/DAC

Mr. Oesterle said that ITAAC were first mentioned in an Atomic Industrial Forum (AIF) Report on "Standardization of Nuclear Power Plants in US" (1986). In that report nuclear industry representatives proposed ITAAC so that licensees would know in advance the specific inspections and acceptance criteria for those inspections. He said ITAAC were codified in Part 52 in 1989. Part 52 requires COL applicants to include ITAAC to ensure the facility has been constructed and will be operated in accordance with the license. Section C.II.2 of DG-1145 provides generic guidance on ITAAC. Guidance on ITAAC and the methodology by which

the applicant determines which SSCs they are going to include in the ITAAC are supposed to be included in the application. Mr. Oesterle said the staff wants cross-references between key aspects of the PRA, safety analyses, and features of the design, including risk significant SSCs, to be included in ITAAC. He said the applicant must include ITAAC for the entire facility including site-specific features not addressed during the design certification, ITAACS from the referenced certified design, and ITAAC for security design features. Mr. Oesterle showed a table that highlighted ITAAC with varying degrees of complexity as well as the general format of an ITAAC. He said that ITAACs are proposed by the design certification, ESP or COL applicant, then reviewed and approved by the NRC. Completion of the ITAAC will be a license condition. COL holders will need to complete all ITAAC before the Commission can make a finding allowing the plant to operate.

Design Acceptance Criteria (DAC) are used for design areas that include rapidly changing technology or require as-built or as-procured information (e.g., digital I&C, control room, leak-before-break, radiation shielding). DAC are approved by the Commission on a case-by-case basis and are only used to certify a new reactor design. DAC, like ITAAC, must be completed prior to plant operation. There are two elements necessary to close out a DAC: 1) completion and acceptance of the design and 2) verification that the as-built plant conform with the approved design. DAC were approved for the ABWR, CE System 80+, AP600, and AP1000 certified designs. Mr. Oesterle said it would be prudent for COL applicants to resolve DAC as part of their COL application, even though it is not required. He said the the certified design vendors are currently working on completion of DAC (i.e., via the approval of topical reports). The NRC will inspect the completion of all DAC.

COL Action Items

Mr. Oesterle said that COL action are specific items that have been deferred to COL applicants that reference either a certified design, an ESP, or both. They may include operational aspects which are in the purview of the licensee but they also include certain aspects of the design that are site specific. COL action items can be associated with either a certified designs or an ESP and are documented in the staff's final Safety Evaluation Report. COL applicants referencing a certified design are required to provide information that addresses the COL action items associated with the referenced design. It is anticipated that the terms and conditions for an ESP will include addressing COL action items. Mr. Oesterle said that COL action items als vary in their range of complexity and provided a couple of examples of COL action items. He said that is prudent for COL applicants to provide resolution for COL action items as part of their application, even though it is not required. Some COL action items may be completed after the license is issued. Mr. Oesterle said that DG-1145 identifies a number of mechanisms by which completion or resolution of COL action items can be closed out or verified and those are ether by ITAAC, by a license condition, or by an operational program. He said that COL action items must also be closed out prior to operation. Mr. Fischer said that he thought it would be useful for the staff and COL applicant to knew, before COL applications are actually submitted, which COL action items needed to be resolved (as opposed to just addressed) at the COL application stage and which COL action items could be deferred to prior to plant operation.

Workshop Issues

Mr. Oesterle said that the development of DG-1145 began in earnest in January 2006. He said that draft work-in-progress sections of DG-1145 were posted on the NRC's website following completion to facilitate public workshop discussions. Monthly public workshops on DG-1145 were held from March 2006 to September 2006. Major issues discussed during the workshops include:

DESIGN FINALITY

Workshop discussions focused on areas of DG-1145 where addition information was requested in areas where a design had already been certified (e.g., radiation protection). The concern was that the certified design should not be re-evaluated under a COL application.
Mr. Oesterle said that this was one of the most challenging areas for the staff in terms of being able to negotiate the paradigm shift from the Part 50 licensing process to the Part 52 licensing process.

COL INFORMATION AVAILABILITY

Due to use of RG 1.70 as the basis for DG-1145 and the staff's experience in licensing plants using the Part 50 process, workshop discussion also focused on areas of the guidance document in which information was requested that would not be available at the time of COL application (but would have been available to the staff under the OL review period under Part 50).

VERIFICATION ACTIVITIES

Mr. Oesterle said that there was considerable discussion as to whether certain verification activities should be performed as part of the construction inspection program (a sampling activity) as opposed to by a more formal ITAAC.

FIRST-OF-A-KIND ENGINEERING (FOAKE)

Workshop discussions also focused on the translation of high level design information (e.g., FSAR level) in DCDs and COLs into detailed design and construction documents. The issue was whether this first-time translation activity needed to be inspected (FOAKE inspections) and whether issuance of the COL should be dependent on the results of these inspections. What level of detail does the staff need to look at in order to make its reasonable assurance finding?

ENGINEERING DESIGN VERIFICATION (EDV)

Mr. Oesterle said there was also discussions focused on the COL applicant's engineering QA and QC controls and whether issuance of the COL should be dependent on the inspection of these activities, and when such inspections might occur.

PASSIVE DESIGNS

Mr. Oesterle said there were discussions at the workshops as to whether DG-1145 should provide guidance specific to passive plant designs. He said that in drafting DG-1145, the staff was initially reluctant to provide any such guidance, because it wanted the guidance to be

broadly applicable. After receiving public comments on the draft and addition internal staff discussions, he said the staff is considering providing limited guidance related to passive plant designs (e.g., in the electrical systems area).

MAINTENANCE RULE

Mr. Oesterle said that workshop participants expressed concern that the information requested in DG-1145 related to the Maintenance Rule went far beyond what should be required for a COL applicant (i.e., initially DG-1145 asked for everything). He said that discussions during dedicated breakout sessions and additional workshop discussion allowed the staff and stakeholders to reach mutual agreement on the appropriate content of the guidance document in this area.

ENVIRONMENTAL REPORT AND FINALITY

Mr. Oesterle said that DG-1145 initially contained outdated guidance on the format and content of the environmental report (taken from Regulatory Guide 4.2). It also failed to recognize the finality of the environmental impact statement associated with an early site permit (ESP) unless, as provided for in Part 52, there was new and significant information. He said that DG-1145 also needed to provide better guidance on how to transition from an ESP environmental report to a COL environmental report.

PRA

According to Mr. Oesterle there were discussions about the format, content, and timing of the PRA submittal. He said that timing was an issue because the peer-review lagged the COL application by a few months. He said that there were discussions as to whether the PRA needed to be kept up to date (i.e., a living-PRA updated to include changes during construction and after operation) and discussions about the appropriate metric to be use for licensing new reactors (i.e., LRF versus LERF and CCFP).

HUMAN FACTORS ENGINEERING

How and when the 12 elements of the human factors engineering DAC would be addressed or completed was also discussed at the workshops. This was somewhat difficult or controversial because some elements are design and some elements are implementation. Discussions also focused on ensuring the guidance in DG-1145 on human factors engineering did not extend beyond what is already provided in NUREG-0711 (which it apparently did initially).

RADWASTE TREATMENT SYSTEMS

Mr. Oesterle said that they discussed radioactive waste treatment during the workshops. The discussions focused on the level of information COL applicants needed to submit to ensure that any mobile or temporary (e.g., skid mounted) radioactive waste treatment equipment brought onsite would remain within the bounds of the license in terms of leakage and offsite dose.

DIGITAL I&C

Mr. Oesterle said there were two separate breakout sessions on digital instrumentation and

control (I&C). They discussed the proposed guidance in DG-1145 and in the revised SRP Section on I&C. They discussed the issue of bidirectional communication between computers in different safety channels or between computers in safety channels and non-safety channels. They also discussed refinement of cyber-security guidance (i.e., as contained in in RG 1.152) and adjustment of technical specification surveillance requirements based on self-testing or monitoring. He said that staf an industry have come to resolution on some of the digital I&C issues and that DG-1145 would be updated to reflect resolution of the issues. Mr. Sieber said that one of the critical issues that needs to be addressed is the degree to which one requires separation between protection channels and control channels and between accident instrumentation and protection channels. He asked, do you use the same sensor and run different wires or do you run everything through a single processor and then branch off?

Characterization of Public Comments

Mr. Oesterle said that following an intensive and open effort to develop the many sections of DG-1145, and respond to approximately 500 public workshop comments, the staff formally issued DG-1145 for a 45-day public comment period on September 7, 2006. Prior to that, on September 1, 2006, the staff had made the formal draft of DG-1145 available to external stakeholders on the NRC's public website. He said the public comment period closed on October 23, 2006. Approximately 700 public comments were received. He said the bulk of comments came from NEI, as they acted as the focal point for compilation and consolidation of industry comments. In addition, the staff received public comments from AREVA, GE, Burns & Roe, ANS, and a few nuclear industry consultants. He said the staff is also working on resolving the 700 public comments on DG-1145 and conforming DG-1145 with the updated SRPs and the proposed final Part 52 rule. Dr. Wallis asked if the staff got any meaningful feedback from non-industry participants during the workshops. Mr. Colaccino said he did not know but added that the workshops were public meetings. He also said that the development of DG-1145 was a collaborative effort between the staff and industry.

As summarized below, Mr. Oesterle characterize the more significant public comments.

COL INFORMATION AVAILABILITY

There were several areas where the guidance document requested information that commenters said would not be available when the COL application is submitted or during the COL application review phase. For example, the guidance for Onsite DC Power Systems requested battery characteristic curves. These battery characteristic curves will not be available until batteries have been procured which will be after submittal of the COL application and could likely be after issuance of the license. As another example, he said the guidance on determination of pipe rupture locations and dynamic effects associated with the postulated pipe ruptures requested that applicants provide,, in addition to their design criteria, detailed information on containment penetrations and protective assemblies or guard pipes to be used for piping penetrations of containment areas. This detailed information is not expected to be available at the time the COL application is submitted.

GUIDANCE ON PASSIVE DESIGN FEATURES

Several commenters requested specific or additional guidance in areas where the requirements for SSCs in plant designs that incorporate passive safety systems differ significantly than those

plant designs that incorporate the more traditional active safety systems. For example, DG-1145 did not provide any specific requirements for offsite AC power systems for passive plant designs that rely on Class 1E batteries for emergency power and non-safety related diesel generators for battery charging. Similarly, the guidance did not provide any specific requirements for diesel generator support systems, such as the fuel oil storage and transfer system, cooling water system, starting air system, lubrication system, and air intake and exhaust systems, for passive plant designs that rely on Class 1E batteries for emergency power.

DESIGN FINALITY

The staff also received comments that DG-1145 inappropriately requested design information from the COL applicant in some areas that have already been certified. For example, DG-1145 requested information related to diesel generator support systems that should have already been addressed in a certified design.

INSPECTIONS vs. ITAAC

Mr. Oesterle said the staff got the comment that DG-1145 contained guidance for a COL applicant that does not reference a certified design or an ESP. In areas where the guidance document requested information that was either not available at the time the COL application was submitted or required an update to verify that as-built or as-procured information conformed with the design, the guidance document also requested the applicant to ensure or identify that appropriate ITAAC existed or was proposed. Commenters suggested that construction inspections rather than ITAAC were the more appropriate verification mechanism.

PLANT SPECIFIC PRA

Mr. Oesterle said that several comments were related to the guidance provided on plant-specific PRAs. He said the guidance on plant-specific PRAs will be revised based on the changes in the Part 52 rule that was sent to the Commission. He said that by and large, the guidance provide in DG-1145 on PRAs is consistent with Commission policy.

ITAAC

Mr. Oesterle said numerous comments were received in the guidance provided on ITAAC. These comments generally focused on the use of ITAAC for verification of items that were considered more detailed than "top-level performance requirements or design requirements". He said that many ITAAC comments were focused on the guidance provided for development of ITAAC for instrumentation and control.

ER and FINALITY of an EIS

Comments on the environmental report guidance focused primarily on the fact that Regulatory Guide 4.2 is outdated and that better guidance on use of NUREG-1555 should be provided. Other comments focused on the importance of resolving finality of an environmental impact statement (EIS) associated with an ESP and that this was pending the release of final proposed Part 52 rule language.

GUIDANCE FROM PUBLIC WORKSHOP QUESTIONS

Mr. Oesterle said that during development of the draft work-in-progress guidance document which was posted on the NRCs public website, the staff received approximately 500 public workshop comments. The staff developed responses to these comments and included these in Appendix I of draft DG-1145 issued for public comment. In areas where the staff agreed with the comment and agreed to change DG-1145, either the guidance failed to get revised, the basis for staff agreement failed to get incorporated into the document, or both. As an example, he said the guidance on meteorological data requested at least 2 years of data. Workshop questions suggested that it should be acceptable for an applicant to provide 1 years worth of meteorological data at the time of COL Application submittal and supplement the data with an additional years worth of data from the same site after it has been collected (and prior to issuance of the license). This was intended to apply to a green field site that did not have a pre-existing meteorological tower and meteorological program, comparable to a Regulatory Guige 1.23 program, in place for a sufficient period of time prior to application submittal to acquire such data. The staff agreed that this flexibility for acquiring and submitting the meteorological data was acceptable but it was not reflected in the body of DG-1145.

INDUSTRY COMMENTS

Ms. Leslie Kass, representing NEI, said Mr. Oesterle had done a very good job characterizing industry's comments. She commended the staff for its efforts in developing DG-1145 and for conducting the workshops. Ms. Kass said that NEI had the help of several utilities and vendors in preparing NEI's comments on DG-1145. She said DG-1145 will help promote standardization and will make the COL process go smoother. She acknowledged DG-1145 as a guidance document that contains no new requirements. She said that in some instances DG-1145 provided guidance that inappropriately went beyond the regulations. Ms. Kass said that the size or number of NEI's comments on DG-1145 did not reflect on adversely on the quality of the document. She said that there is significant industry interest in DG-1145 and expressed a desire to interact with the staff again on DG-1145, before it is published in final form (e.g., during another workshop). The NRC staff seemed amenable to such an interaction, but said a date for another workshophas not been finalized.

Mr. Sieber suggested that the first users of DG-1145 capture any lessons learned from the COL application process, so follow-on utilities are not prone to making the same mistakes. Ms. Kass noted that there are consortia participating in the first COL application, so they have multiple utilities participating which gives them broader exposure, and therefore, to some extent, they all learn together. Mr. Oesterle said the staff recognizes the need to revise Regulatory Guide 1.206 based on lessons learned and don't plan on letting it solidify. Ms. Sterdis indicated that Westinghouse has been very involved with NEI's review of DG-1145 and with the workshops. She said that the staff and industry appear to be converging on the satisfactory resolution of the major issues but would like to see the document again before it goes final. Ms. Kass said there are still issues to be worked out in the digital I&C area.

SUMMARY / PLANS FOR FULL COMMITTEE PRESENTATION

The Subcommittee suggested that the staff address the following topics during the December Full Committee meeting:

- The Staff's Overview of DG-1145
- Information Availability at the COL Application Stage
- PRA Guidance in DG-1145
- Industry Comments/Concerns
- Conformance with Part 52, Completeness, and Consistency of the Guidance in DG-1145
- Any Significant Comments from ACRS Members not in Attendance at the Subcommittee Meeting

Agreements

None.

Staff/Industry Follow-up Actions

Mr. Oesterle agreed to consider individual member comments (provided to the staff in advance of the November 30, 2006, Future Plant Design Subcommittee meeting) in revising DG-1145. A complete list of individual member comments is in the ACRS Office file and will be made available upon request.

Subcommittee's Action

The staff plans to provide a briefing on DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)" to the full Committee during the December 7-8, 2006, ACRS meeting.

Documents Provided to the Subcommittee

1. Memorandum dated September 1, 2006, from David B. Matthews, Director, Division of New Reactor Licensing, NRR to John T. Larkins, Executive Director, ACRS, Subject: Transmittal of Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)" (ML062440120)
2. Letter dated October 20, 2006, from Adrian Heymer, Nuclear Energy Institute to Rules and Directives Branch, Office of Administration, NRC, Subject: Notice of Availability Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)." ("DG-1145") 71 Fed. Reg. 52,826 (Sept. 7, 2006) (ML063000204)
3. Memorandum dated November 15, 2006, from David C. Fischer, ACRS Staff, to Tom Kress, Chairman, Future Plant Designs Subcommittee, Subject: Status Report for the Meeting of the Future Plant Designs Subcommittee, November 30, 2006, in Rockville, Maryland

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NOTE : Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at http://www.nrc.gov/reading-rm/adams.html or http://www.nrc.gov/reading-rm/doc-collections/ can be purchased from Neal R. Gross and Co., 1323 Rhode Island Ave., N.W., Washington, DC 20005 (202) 234-4433.

NRC FORM 587
(9-2004)

U.S. NUCLEAR REGULATORY COMMISSION

REQUEST FOR COURT REPORTING SERVICE

WORK ORDER NUMBER: NRC

DATE OF REQUEST: 11/01/2006

REQUESTING OFFICE: ACRS	REQUESTER: Barbara Jo White
NAME AND TYPE OF PROCEEDING: Future Plant Designs	DOCKET NUMBER(S):
LOCATION OF PROCEEDING: 11545 Rockville Pike Rockville, Maryland Room: T-2B3	NRC POINT OF CONTACT: David C. Fischer TELEPHONE NUMBER: 301-415-6889 BACKUP POINT OF CONTACT: Barbara Jo White TELEPHONE NUMBER: 301-415-7130
CONTACT ON LOCATION: Barbara Jo White TELEPHONE ON LOCATION: 301-415-7130	CHAIRMAN / MEMBERS (ASLBP ONLY):
DATE(S) OF PROCEEDING: Thursday, November 30, 2006	TIME(S) OF PROCEEDING (FROM - TO): 8:30 a.m. until 5:00 p.m.

ADDITIONAL INFORMATION

Reminder: 3-copies of Handouts should be given to the Court Reporter (1-original, 1-extra and 1-working copy).

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CONTENTS OF THE G:\ACRS SUBCOMMITTEE MEETING DOCUMENTS\ FOLDER

Title: Future Plant Designs Subcommittee Date: November 30, 2006

A template to store electronic copies of documents used during subcommittee meetings is located in G:\ACRS Subcommittee Meeting Documents. There is a README/explanation document at the following location: G:\ACRS Subcommittee Meeting Documents\READ ME - Explanation of this template.wpd which explains the structure of the template, and the sort of documents to include. There are also folders set up for each month from now till June 2007 to put your documents into. Just (1) copy the template into the appropriate folder, (2) rename it to reflect the date and subject matter of the subcommittee meeting, and (3) populate it with the documents, At the end of each month, OSB can burn the entire folder to a CD, and then it can be copied and distributed to the members.

- ☐ The meeting status report, in both WP and .pdf format
- ☐ The meeting agenda, in both WP and .pdf format
- ☐ The introductory remarks by the chairman of the meeting
- ☐ The conflict-of-interest memo for the meeting
- ☐ The draft meeting minutes, after the meeting, in both WP and .pdf format
- ☐ The incoming documentation from the licensee/applicant/vendor. The staff provides these documents in electronic format on a disk, and usually they include the original application, licensee responses to the RAIs, and licensee supplemental submittals. These are usually in .pdf format, so everyone can read them. If the subject of the meeting is a vendor topical report, it will go here, rather than in the reference section.
- ☐ Staff SER and supporting documents such as RAIs. I include every draft of the SER, unless there is good reason to leave one out. I include both WP and .pdf versions of these documents, as well as the transmittal letter from the staff, which is normally a separate document
- ☐ Presentations at the meeting by the staff, the licensee/vendor/applicant/industry, and by other interested parties. The presentations from each source are in their own folders. Licensee presentations are usually Powerpoint, but the staff also uses Corel Presentation. If someone uses overheads, then they need to be scanned into .pdf format.
- ☐ Transcripts of the meetings are located in one folder, as they come from the court reporter.
- ☐ If members send me comments before the meeting, I transfer them into individual files, and include them in a separate folder of member comments.
- ☐ References that do not fit into any of the above categories go into another folder. These might include topical reports that have some relevance to the subject at hand, NUREG or contractor reports, other similar SERs, previous letters from the ACRS and staff responses. I will build a small subdirectory tree here if the documents are complex.
- ☐ Consultant documents, including the consultant request form and the reports from the consultants after the meeting.

ACRS Subcommittee on Future Plant Designs

Presentation on DG-1145

November 30, 2006

ACRS Subcommittee on Future Plant Designs

David Matthews, Division Director
NRO/DNRL

Draft Regulatory DG-1145, "Combined License (COL) Applications for Nuclear Power Plants (LWR Edition)"

Developed in response to external stakeholder need for timely guidance

High level of external stakeholder participation during development

Draft Regulatory DG-1145, "Combined License (COL) Applications for Nuclear Power Plants (LWR Edition)"

Intensive, expedited, and committed staff effort

High level of NRO/NRR management support

High level of Commission interest

Draft Regulatory DG-1145, "Combined License (COL) Applications for Nuclear Power Plants (LWR Edition)"

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145 Overview

Purpose

- Provide guidance to potential applicants on format and content for a combined license (COL) application pursuant to 10 CFR 52
- COL referencing neither a certified design (CD) nor an early site permit (ESP)
- COL referencing a CD but not an ESP
- COL referencing a CD and an ESP

DG-1145 Overview (cont'd)

Background and Developmental Basis

- Industry guidance for COL applications (NEI 04-01)
- NEI 04-01 provided guidance for "base case" COL application
- NRC interactions with external stakeholders identified several COL application scenarios
- Staff recognized the need for more comprehensive guidance for COL applicants

DG-1145 Overview (cont'd)

Development Basis

- RG 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)
- Updated SRP revisions (including draft 1996 updates)
- Draft NEI 04-01 guidance for COL applications
- NRC design certification and ESP experience
- SECY papers and associated SRMs

DG-1145 Overview (cont'd)

Development Basis (cont'd)

- Proposed Part 52 rule issued on March 13, 2006 (71 FR 12782)
- Monthly public workshops (March 2006 – September 2006) ~ 500 comments
- All draft work-in-progress sections publicly available via NRC's website by June 30, 2006
- DG-1145 issued for 45-day public comment period on September 7, 2006 (71 FR 52826)

DG-1145 Overview (cont'd)

Format and Structure

- Part C.I – guidance for a COL applicant that references neither a CD nor an ESP (consistent with proposed 10 CFR Part 52.79)
- Part C.II – additional technical information (consistent with proposed 10 CFR Part 52.80)
- Part C.III – COL applicants referencing CDs and ESPs
- Part C.IV – Miscellaneous Topics

DG-1145 Overview (cont'd) Format and Structure – Part C.I

C.I.1 Introduction and General Plant Description*
C.I.2 Site Characteristics
C.I.3 Design of Structures, Systems, Components and Equipment
C.I.4 Reactor
C.I.5 RCS and Connected Systems
C.I.6 Engineered Safety Features
C.I.7 Instrumentation and Control
C.I.8 Electrical Power
C.I.9 Auxiliary Systems
C.I.10 Steam and Power Conversion System
C.I.11 Radioactive Waste Management
C.I.12 Radiation Protection
C.I.13 Conduct of Operations
C.I.14 Verification Programs
C.I.15 Transient and Accident Analyses
C.I.16 Technical Specifications
C.I.17 Quality Assurance and Reliability Assurance
C.I.18 Human Factors Engineering
C.I.19 Probabilistic Risk Assessment Information and Severe Accidents*

DG-1145 Overview (cont'd)

Format and Structure – Part C.II

C.II.1 - Probabilistic Risk Assessment (PRA)
C.II.2 - Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)
C.II.3 - Environmental Report

DG-1145 Overview (cont'd)

Format and Structure – Part C.III

C.III.1 - Information Needed for a COL Application Referencing a CD (consistent format with C.I)

C.III.2 - Information Needed for a COL Application Referencing a CD and an ESP (consistent format with C.I)

C.III.3 - Finality of an EIS Associated with an ESP

C.III.4 - COL Action Items

C.III.5 - Design Acceptance Criteria

C.III.6 - COL Application Timing

C.III.7 - ITAAC for COL Applications Referencing a CD and/or an ESP

DG-1145 Overview (cont'd)

Format and Structure – Part C.IV

C.IV.1 - COL Application Acceptance Review Checklist
C.IV.2 - Submittal Guidance for COLs
C.IV.3 - General Description of Change Process
C.IV.4 - Operational Programs
C.IV.5 - General and Financial Information
C.IV.6 - Limited Work Authorizations and Site Redress Plan*
C.IV.7 - Pre-Application Activities
C.IV.8 - Generic Issues
C.IV.9 - deleted
C.IV.10 - Regulatory Treatment of Non-Safety Systems (RTNSS)
C.IV.11 - relocated to App. I (responses to public workshop questions)
C.IV.12 - Applicability of Industry Guidance*

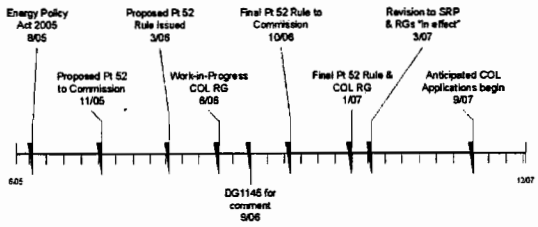
DG-1145 Overview (cont'd)

Status

- Comment period on DG-1145 closed on October 23, 2006
- Approximately 700 total comments received
- Staff is currently working to resolve public comments and revise DG-1145, as appropriate, and conform to proposed final Part 52 rule
- Process in place to ensure consistency between DG-1145 and the SRP and Reg. Guide updates
- Plan to publish final (RG 1.206) after incorporation of public comments and final issuance of the Part 52 rule
- Staff considering additional public forums to update external stakeholders on RG 1.206 prior to publication

DG-1145 Overview (cont'd)

New Reactor Licensing Infrastructure Timeline



DG-1145 Overview (con't)

ACRS Subcommittee questions on individual DG-1145 sections

DG-1145
PRA & Severe Accident Evaluations

ACRS Presentation

Donnie Harrison
Senior Reliability & Risk Analyst
NRR Division of Risk Assessment (DRA)

November 30, 2006

Discussion Topics

- Recent Change to Proposed 10 CFR Part 52
- Bases for Regulatory Guidance
- Objectives of PRA & Severe Accident Evaluations
- Chapter 19 Regulatory Guidance

2

Recent Change to Proposed 10 CFR Part 52

- Proposed 10 CFR Part 52 rulemaking included new 52.80(a) requirement for COL applicants to submit plant-specific PRA
- After completion of DG-1145, the NRC position changed to accept the industry comment to delete this requirement - PRA maintained available for staff inspection at the applicant's office
- Requirement deleted throughout Part 52, including the existing requirement for design certification applications

3

Impact of Change to Proposed 10 CFR Part 52

- DG-1145 will need to be revised to reflect the change in NRC position
  - Majority of guidance presented in C.II.1 (PRA) will need to be incorporated into C.I.19 (FSAR Chapter 19)
- Since FSAR Chapter 19 is a qualitative, summary description of the PRA, results, insights, uses, etc., staff audits will be necessary to fully understand, review, and confirm the bases for the PRA results and insights and adequacy for the PRA uses/applications

4

Bases for Regulatory Guidance

- NRC Policy Statements and SECYs/SRMs
- Experience with Design Certification reviews for CE System 80+, ABWR, AP-600, and AP-1000
- 10 CFR 52.79 PRA/Severe Accident Requirements

5

Objectives of PRA & Severe Accident Evaluations

- Derived from NRC Policy Statements and SECYs/SRMs
- Two Groups of Objectives
  - Identify and assess the balance of preventive and mitigative features (including operator actions) such that the plant design reflects a reduction in risk compared to existing plants(contemporary with Severe Accident Policy Statement of 1985)
  - Specific uses and applications of the PRA results and insights in support of other programs (e.g., RAP, RTNSS, ITAACs, COL and interface requirements)

6

Chapter 19 Regulatory Guidance

19.1 Introduction
19.2 PRA Results and Insights
19.3 Severe Accident Evaluations
19.4 PRA Maintenance
19.5 PRA-Related ITAACs, COL Action Items, & Other Commitments
19.6 Conclusions

7

DG-1145, Section C.IV.10 Regulatory Treatment of Non-Safety Systems (RTNSS)

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145 - RTNSS

- Plant designs that incorporate passive safety systems should define the active systems relied upon for defense-in-depth and necessary to meet passive ALWR plant safety and investment protection goals
- Process to identify these systems and equipment and determine regulatory treatment is referred to as RTNSS
- Guidance provided in Section C.IV.10

DG-1145 – RTNSS (cont'd)

- Commission policy on RTNSS described in SECY-94-084 and SECY-95-132 and associated SRMs
- High level of confidence that active systems having a significant safety role are reliable
- Process described in Section C.IV.10 taken from NUREG-1793, Volume 3 (AP1000 FSER) and is consistent with above SECY's

Sections C.1.17.4 and C.III.1.17.4 - Reliability Assurance Program

1

Reliability Assurance Program

- SECY-95-132, Item E, "Reliability Assurance Program"
- Design phase/operational phase
- Scope includes plant and site-specific SSCs
- Reliability assurance activities for operational phase integrated into existing programs

Reliability Assurance Program

- COL application
  - Scope, purpose, objective of RAP
  - Deterministic/other methods for prioritizing SSCs
  - Probabilistic methods for prioritizing SSCs (Section 19)
  - Quality controls (organization, design control, procedures and instructions, corrective action, and audit plans)
  - ITAAC for implementation of design phase

DG-1145
Inspections, Tests, Analyses, and Acceptance Critieria (ITAAC) Design Acceptance Criteria (DAC)

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145: ITAAC

- 10 CFR 52.80(a) requires COL applicants to include ITAAC to ensure facility has been constructed and will operate in accordance with the license
- Generic guidance on ITAAC has been provided in Section C.II.2
- Guidance on ITAAC development and methodology for inclusion of SSCs in ITAAC by COL applicant
- Cross reference of key aspects, analyses, and features of the design for inclusion in ITAAC

DG-1145: ITAAC

COL applicant must include ITAAC for facility:

- ITAAC from referenced certified design
- EP-ITAAC from referenced ESP
- Site-specific ITAAC for design features not included in certified design
- ITAAC for security design features

DG-1145: ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
ASME Code piping retains pressure boundary integrity at design pressure	Report demonstrating piping meets ASME Code	A report exists and concludes piping meets requirements of ASME Code
RCP Flywheel can withstand design overspeed condition	Offsite test	Each flywheel passes overspeed condition of 125% of operating speed
RCS provides automatic depressurization during design basis events	Onsite inspection	Minimum elevation of ADS outlet valves is greater than plant elevation of 110'
RCS provides circulation of coolant to remove heat from core	Test with analysis	Calculated post fuel load RCS flowrate is ≥301,670 gpm
Safety related displays identified in table can be retrieved in MCR	Simple Inspection	Safety related displays identified in table can be retrieved in MCR

November 30, 2008 4

DG-1145: ITAAC

- Specific guidance on ITAAC for COL applicants referencing a certified design and/or early site permit provided in Section C.III.7
- ITAAC reviewed by NRC in conjunction with with COL application
- Completion of ITAAC to be license condition
- COL holder must successfully complete all ITAAC and prior to operation
- Commission finding per 10 CFR 52.103(g) required for facility operation

November 30, 2008 5

DG-1145: DAC

- For design areas that included rapidly changing technology or required as-built or as-procured information
- Digital I&C, control room design, leak-before-break, radiation shielding
- DAC limited to certified designs
- DAC has unique treatment in ITAAC

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DG-1145: DAC

- DAC contains an approved design completion process
- DAC includes verification of design implementation
- Approved on a case-by-case basis by Commission
- DAC included in ABWR, System 80+, AP600, and AP1000

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DG-1145: DAC

- Guidance provided in Section C.III.5
- Prudent for COL applicants to resolve DAC as part of application but not required
- Certified design vendors are currently working on completion of DAC
- DAC is included in ITAAC, therefore, must be completed prior to operation
- NRC will inspect completion of all DAC

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DG-1145, Section C.III.4
Combined License Action Items

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145
Combined License Action Items

- Guidance on Combined License (COL) Action Items is provided in Section C.III.4 and is also discussed in Sections C.III.1 and C.III.2
- COL action items are specific items that have been deferred to COL applicants that reference the CD and/or ESP
- COL action items are included in both certified designs (CDs) and early site permits (ESPs)

DG-1145
COL Action Items (cont'd)

- COL action items include items outside the scope of the CD and the ESP
- COL action items are documented in FSER associated for the CD and ESP
- COL applicants referencing a CD are required by Section IV.A.2 of the applicable Part 52 Appendix to provide information that addresses the COL action items
- It is anticipated that the terms and conditions for an ESP will include addressing COL action items

DG-1145
COL Action Items (cont'd)

Examples of COL Action Items from FSER on the AP1000:

2.5-10: "The COL applicant will provide site-specific information on allowable soil bearing capacities for static and dynamic loads."

3.6-4: "COL applicants referencing the AP1000 certified design will develop an inspection program for piping systems that are qualified for LBB."

11.2-1: "The COL applicant will provide information on how any mobile or temporary equipment used for storing or processing liquid radwaste conforms to RG 1.143."

DG-1145
COL Action Items (cont'd)

Examples of COL Action Items from AP1000 FSER (cont'd)

4.4-2: "Following selection of the actual plant operating instrumentation and calculation of the instrumentation uncertainties of the operating plant parameters, the COL applicant will calculate the design limit departure from nucleate boiling ratio (DNBR) values using the revised thermal design procedure with these instrumentation uncertainties and confirm that either the design limit DNBR values remain valid, or that the safety analysis minimum DNBR bounds the new design limit DNBR values plus DNBR penalties, such as rod bow penalty"

DG-1145
COL Action Items (cont'd)

Examples of COL Action items from Clinton ESP FSER:

2.3.2: "A COL or CP applicant should, as part of detailed engineering, assess the potential impact of natural and/or mechanical cooling towers on the design and operation of the new facility."

2.4.7.3: "The COL applicant should design the ESP facility UHS intake to maintain a minimum water temperature of 40°F at all times to preclude formation of frazil and anchor ice on the intake inlet."

11.1: "A COL or CP applicant should verify that the calculated radiological doses to members of the public from radioactive gaseous and liquid effluents for any facility to be built on the Exelon ESP site are bounded by the radiological doses included in the ESP application and reviewed by the NRC."

DG-1145
COL Action Items (cont'd)

- COL action items must be addressed by a COL applicant referencing a CD and/or ESP
- Prudent for COL applicants to provide resolutions for COL action items as part of their application
- Section C.III.4 provides guidance on mechanisms available for resolution of COL action items following issuance of combined license (e.g., ITAAC, license condition, operational program)
- COL action items must be resolved prior to operation

DG-1145
COL Action Items (cont'd)

- Development of Sections C.III.1 and C.III.2 was informed by the COL action items for CDs and ESPs
- C.III.1 provides guidance for COL applicants to cross-reference where in the application COL action items from a CD are addressed
- C.III.2 provides guidance for COL applicants to cross-reference where in the application COL action items from an ESP are addressed

DG-1145, Section C.IV.4
Operational Programs

Joseph Colaccino, Acting Branch Chief
NRO/DNRL/NCPM

DG-1145
Operational Programs

- Guidance on Operational Programs provided in Sections C.I.13.4 and C.IV.4
- SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria"
- COL applicants can fully describe operational program and its implementation

DG-1145
Operational Programs (cont'd)

Operational programs meet 3 criteria:

1) Required by regulation
2) Reviewed in a COL application
3) Inspected to verify implementation

DG-1145
Operational Programs (cont'd)

- ITAAC not required for implementation but may be appropriate for some programs (EP contains programmatic ITAAC)
- Substantial portion of operational program development will occur after COL issuance
- Program description should include implementation milestones in application

DG-1145
Operational Programs (con't)

- Containment Leak Rate Testing
- Emergency Planning
- Fire Protection
- Maintenance Rule
- Operator Training
- Operator Requalification
- Plant Staff Training
- Physical Security
- Safeguards Contingency
- Training and Qualification
- Radiation
- Reactor Vessel Material Surveillance
- Process and Effluent Monitoring and Sampling
- Quality Assurance Operation
- Preservice Inspection
- Inservice Inspection
- Preservice Testing
- Inservice Testing
- Equipment Qualification
- MOV Testing

DG-1145
Operational Programs (cont'd)

- NRC intends to inspect operational program implementation during construction
- Proposed final Part 52 rule has included implementation milestones for some operational programs
- License conditions on operational program implementation not covered in rule

DG-1145
Public Workshop Issues

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145
Public Workshop Issues

- Development of DG-1145 began in earnest in January 2006
- Draft work-in-progress sections posted on the NRC's website following completion to facilitate public workshop discussions
- Monthly public workshops on DG-1145 held from March 2006 to September 2006

DG-1145
Public Workshop Issues (cont'd)

Major issues discussed at public workshops:

- Design finality
- COL information availability
- Verification activities (inspections vs. ITAAC)
- First-of-a-kind-Engineering (FOAKE) inspections/audits
- Engineering design verification (EDV)

DG-1145
Public Workshop Issues (cont'd)

Major issues discussed at public workshops:

- Guidance for passive designs (e.g., offsite electrical power)
- Maintenance Rule (breakout session)
- Environmental report format and content
- Finality of an EIS associated with an ESP
- PRA guidance

DG-1145
Public Workshop Issues (cont'd)

Major issues discussed at public workshops:

- Human factors engineering
- Radwaste treatment facilities
- Digital I&C (breakout sessions)

DG-1145
Public Comments

Eric R. Oesterle, Lead PM
NRO/DNRL/NGIF

DG-1145: Public Comments

- DG-1145 issued for 45-day public comment period on September 7, 2006
- Public comment period on DG-1145 closed on October 23, 2006
- Approximately 700 public comments received
- Staff is currently working to resolve public comments and revise DG-1145, as appropriate, conform it to proposed final Part 52 rule and updated SRPs

DG-1145: Public Comments

Characterization of Public Comments

- COL information availability
- Guidance on passive design features
- Design finality
- Inspections vs. ITAAC
- Plant-specific PRA (LRF, CCFP, COL PRA Information)

DG-1145: Public Comments

Characterization of Public Comments (cont'd)

- ITAAC
- Environmental Reports and Finality of an EIS associated with an ESP
- Including guidance contained in responses to public workshop questions

From: Jessie Delgado
To: apostola@mit.edu; banerjee@engineering.ucsb.edu; CORRADIN@CAE.WISC.EDU; DanaPowers@msn.com; graham.b.wallis@dartmouth.edu; Jdsieber@aol.com; jsarmijo@msn.com; mvbonaca@snet.net; omaynard@charter.net; said.abdelkhalik@me.gatech.edu; tskress@aol.com; wjshack@anl.gov
Date: 09/13/2006 3:50:43 PM
Subject: Draft DG-1145

As a request from Dave Fischer, I am sending a CD containing the DG-1145 sections and will be sending hard copies (as requested) in the snail mail to each member. To view the Reg Guide now, click on the link below.

http://ruleforum.llnl.gov/cgi-bin/downloader/rg_lib/123-0197.htm

Any questions, please contact Dave at 415-6889 or dcf@nrc.gov.

Thanks

Jessie

CC: David Fischer; Michael Snodderly

A CD and Assignment table were also put in the mail to each member.
Hard copies of the entire document were sent to T. Kress
G. Apostolakis

Hard copy of assigned sections were also sent to. M. Corradini

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From: Jessie Delgado

Created By: JKD1@nrc.gov

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ACRS REVIEW OF COL REGULATORY GUIDE (DG-1145)

Chap.	Title	ACRS Member
1	Introduction and General Description of Plant	T. Kress
2	Sites Characteristics	D. Powers
3	Design of Structures, Components, Equipment, and Systems	W. Shack
4	Reactor	S. Amijo
5	Reactor Coolant System and Connected Systems	J. Sieber
6	Engineered Safety Features	M. Corradini
7	Instrumentation and Controls	S. Abdel-Khalik
8	Electric Power	J. Sieber
9	Auxiliary Systems	O. Maynard
10	Steam and Power Conversion System	S. Abdel-Khalik
11	Radioactive Waste Management	D. Powers
12	Radiation Protection	D. Powers
13	Conduct of Operations	O. Maynard
14	Initial Test Program and ITAAC-Design Certification	T. Kress
15	Accident Analysis	S. Bannerjee
16	Technical Specifications	O. Maynard
17	Quality Assurance	O. Maynard
18	Human Factors Engineering	M. Bonaca
19.1	PRA	G. Apostolakis
19.2	Severe Accidents	M. Corradini
19A	Seismic Margins Analysis	D. Powers
20	Generic Issues	T. Kress
21	Testing and Computer Code Validation	S. Bannerjee
22	Regulatory Treatment of Non-Safety Related Equipment	G. Apostolakis

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

ML07

November 15, 2006

MEMORANDUM TO: Tom Kress, Chairman
Future Plant Designs Subcommittee

FROM: David C. Fischer, Senior Staff Engineer

SUBJECT: STATUS REPORT FOR THE MEETING OF THE FUTURE PLANT DESIGNS SUBCOMMITTEE, NOVEMBER 30, 2006, IN ROCKVILLE, MARYLAND

The purpose of this memorandum is to forward written materials for your use in preparing for the meeting of the ACRS Future Plant Designs Subcommittee on November 30, 2006. The purpose of the meeting is to summarize and discuss the technical content of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," public comments on DG-1145, and public comment resolution.

Attendance by the following members and consultants is anticipated and reservations have been made at the following hotels for the nights of November 29 & 30, 2006, unless otherwise indicated.

Kress	RESIDENCE INN
Armijo	BETH. N. MARRIOTT
Banerjee	BETH. N. MARRIOTT
Bonaca	BETH. N. MARRIOTT
Corradini	BETH. N. MARRIOTT
Shack	RESIDENCE INN
Sieber	RAMADA INN
Wallis	RESIDENCE INN

Please notify Ms. Barbara Jo White at 301-415-7130 if you need to change or cancel the above reservations.

Attachments:
1. Agenda
2. Status report

cc: ACRS Members
cc w/o attach: J. Larkins
M. Snodderly
C. Santos
S. Duraiswamy

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
DRAFT REGULATORY GUIDE DG-1145
"COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION"
NOVEMBER 30 , 2006
ROCKVILLE, MARYLAND

TABLE OF CONTENTS

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I. Table of Contents 1

II. Proposed Agenda 2

III. Status Report for Review of DG-1145 3-12

Attachments:

1. S. Armijo's Specific Comments on DG-1145 (The e-mail version of the status report will also include Chapter C.I.4, "Reactor" of DG-1145 with Sam's embedded notes as summarized in Attachment 2)
2. Staff's draft vugraphs for the DG-1145 Overview Presentation for 11-30-06 Subcommittee meeting
3. Internet link to DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)"
   http://ruleforum.llnl.gov/cgi-bin/downloader/rg_lib/123-0197.htm
4. NEI Comments on DG-1145 dated October 20,2006

Cognizant ACRS Member: Dr. Tom Kress

Cognizant ACRS Staff Engineer: David Fischer

Advisory Committee on Reactor Safeguards
Future Plant Designs Subcommittee
Draft Regulatory Guide DG-1145
November 30, 2006
Rockville, MD

-PROPOSED AGENDA-

Cognizant Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

Topics		Presenters	Presentation Time
I	Opening Remarks	T. Kress, ACRS	8:30 am - 8:40 am
II	Staff Introductory Remarks	D. Matthews, NRR	8:40 am - 8:45 am
III	DG-1145 Overview - Purpose - Format and Structure - Developmental Basis - Status	E. Oesterle, NRR	8:45 am - 9:45 am
IV	PRA / RTNSS / RAP	D. Harrison, NRR P. Prescott, NRR	9:45 am - 10:30 am
	BREAK		10:30 am - 10:45 am
IV	PRA / RTNSS / RAP	D. Harrison, NRR P. Prescott, NRR	10:45 am - 11:30 am
V	COL Action Items	E. Oesterle, NRR	11:30 am -12:00 pm
	LUNCH		12:00 pm - 1:00 pm
VI	ITAAC / DAC	E. Oesterle, NRR	1:00 pm - 1:30 pm
VII	Operational Programs	E. Oesterle, NRR	1:30 pm - 2:00 pm
VIII	Workshop Issues - Design Finality - COL Information Availability - Inspections / ITAAC - FOAKE / EDV	E. Oesterle, NRR	2:00 pm - 3:00 pm
	BREAK		3:00 pm - 3:15 pm
IX	Characterization of Public Comments	E. Oesterle, NRR	3:15 pm - 4:00 pm
X	Industry Comments	Russell Bell, NEI	4:00 pm - 4:45 pm
XI	Summary / Plans for Full Committee	T. Kress, ACRS	4:45 pm - 5:00 pm

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.
- 35 copies of the presentation materials to be provided to the Subcommittee.

MEETING OF THE
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
FUTURE PLANT DESIGNS SUBCOMMITTEE
DRAFT REGULATORY GUIDE DG-1145
NOVEMBER 30, 2006
ROCKVILLE, MARYLAND

- STATUS REPORT -

The purpose of Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," is to provide guidance regarding the information to be submitted in a Combined License (COL) application for a nuclear power plant. As such, this guide is intended to address many, albeit not all, of the application options allowed by the Code of Federal Regulations, Title 10, Part 52. Although a COL applicant is not required to conform to this guidance, its use will facilitate both the applicant's preparation of a COL application and timely review of the application by the NRC staff.

The COL application is comprised of the various application items listed below:

Final Safety Analysis Report
Inspections, Tests, Analyses, and Acceptance Criteria
Probabilistic Risk Assessment
Environmental Report
Security Plan
General and Financial
Quality Assurance Program Description

This draft Regulatory Guide was made publicly available on September 1, 2006, on the NRC website and the 45 day public comment period officially began on September 6, 2006, upon posting in the Federal Register. The public comment period closed on October 23, 2006.

By and large, DG-1145 contains guidance on what to include in a COL application. It generally does not contain the acceptance criteria or review procedure for evaluating the information provided in the COL application. The acceptance criteria and review procedures would be contained in the related Regulatory Guides and Standard Review Plan Sections. The Committee underwent a separate effort to review the "high-priority" regulatory guides and standard review plan (SRP) sections being developed or revised in support of new reactor licensing. The staff has made, and will continue to make, every effort to ensure that the scope and level of detail of the information to be provided in the COL application (i.e., as described in DG-1145) is consistent with the guidance and acceptance criteria provided in the revised (or new) regulatory guides and SRP sections.

In the public meetings on September 22 and October 3, 2006, NEI discussed three steps for continuing the public engagement on DG-1145.

1. Hold public meetings in December 2006 and, if necessary, in January 2007, to discuss the disposition of the stakeholder comments and open items.

2. Post a draft final version that reflects the reconciliation of public comments on the NRC website as soon as possible.
3. Hold a final meeting following issuance of the final regulatory guide to explain changes made in finalizing the document, including those changes made to conform the guidance to the final Part 52 rule.

NEI said that the industry is committed to continue to work with the NRC staff on the development of guidance for COL applicants. This will assure clarity and a common understanding of the key elements of the regulatory infrastructure, including DG-1145, the Standard Review Plan, Part 52 and related NRC regulations. NEI said that this is essential for assuring the development of quality combined license applications and for assuring NRC reviews are conducted in the most effective and efficient manner.

STRUCTURE OF DG-1145

The regulatory positions presented in Section C of this guide are divided into four parts.

Part I, Col Applicants Who Are Not Referencing Certified Designs

Part I addresses the information requirements specified in 10 CFR 52.79, "Contents of Applications; Technical Information in Final Safety Analysis Report." Part I is intended to provide COL applicants with guidance regarding the information that the staff needs to resolve all safety issues related to the proposed combined license. Moreover, Part I is intended to be used by COL applicants who are ***not*** referencing certified designs. Part I includes 19 sections. Section C.I.1 provides broad generic guidance, although COL applicants have the option not to maintain some of this information in Chapter 1 of the final safety analysis report (FSAR). Sections C.I.2–C.I.17 are based on the existing guidance provided in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," although the NRC staff has updated the guidance in those sections to reflect the current information requirements for COL applications. By contrast, Sections C.I.18–C.I.19 present information requirements that are not addressed in Regulatory Guide 1.70. In addition, the reader should note that Sections C.I.2–C.I.19 correspond to Chapters 2–19 of NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants." The level of information needed for those sections depends on the complexity of the topic.

Part II, COL Applicant Referencing a Custom Design

Part II of Section C addresses the information requirements specified in 10 CFR 52.80, "Contents of Applications; Additional Technical Information." In particular, these information requirements include the probabilistic risk assessment (PRA); inspections, tests, analyses, and acceptance criteria (ITAAC); and the environmental report. Use of the guidance in Part II assumes that a COL applicant is referencing a custom design. Together, Parts I and II are intended to represent the bulk of the technical information that an applicant should include in a COL application.

Part III, COL Applicants Who Reference Either A Certified Design or Both a Certified Design and an Early Site Permit (ESP)

Part III of Section C is intended to be used by COL applicants who reference either a certified design or both a certified design and an early site permit (ESP). Part III includes seven sections. Section C.III.1 is intended to address the topics that the NRC staff will review in a COL application that references a certified design. By contrast, Section C.III.2 addresses the remaining review topics for applications that reference both a certified design and an ESP. The guidance provided in both of these sections was derived from information presented in Part I of this guide. Section C.III.3 addresses the finality of an environmental impact statement associated with an ESP. Section C.III.4 provides generic guidance on addressing COL action/information items in COL applications. Section C.III.5 provides recommendations for COL applicants who reference certified designs that include design acceptance criteria (DACs). Section C.III.6 provides recommendations for coordinating the submittal of COL applications with design certifications and/or ESP applications that are under NRC review at the time the COL application is submitted. Finally, Section C.III.7 provides a process for developing the additional ITAAC necessary for applications that reference a certified design.

Part IV, Miscellaneous Topics Of interest to Col Applicants

Part IV of Section C includes 12 sections that address a series of miscellaneous topics of interest to COL applicants. Section C.IV.1 includes the checklist that the NRC will use to perform its acceptance review of a COL application. Section C.IV.2 provides guidance and recommendations for the format of a COL application, with a particular focus on those that applicants submit electronically. Section C.IV.3 provides a general description of the change processes associated with custom COL applications and those that reference a certified design and/or an ESP. Section C.IV.4 provides guidance for use in implementing SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." Section C.IV.5 provides submittal guidance for the general and financial information that a COL application is required to include. Section C.IV.6 provides guidance regarding information to be included in the site redress plan and requests for limited work authorizations. Section C.IV.7 discusses pre-application activities that the NRC staff and the prospective applicant should perform before an application is submitted. Section C.IV.8 provides information on dealing with generic issues. Section C.IV.9 is reserved for future use. Section C.IV.10 provides guidance on handling the regulatory treatment of non-safety systems. Section C.IV.11 is reserve for future use. Finally, Section C.IV.12 discusses the applicability of industry guidance. Appendix A provides the questions and comments received during the public workshops on DG-1145 and the proposed staff responses.

Appendix I (or possibly A), Responses to Public Comments on DG-1145

The comments and draft responses in the Appendix are organized by their corresponding section in DG-1145 (e.g., C.I.1, C.I. 2, C.I.3, ... , C.II.1, CII.2, C.II.3, ... , C.III.1, CIII. 2, ...).

<u>NEI COMMENTS ON DG-1145</u>

The industry recognizes that the September 2006 draft is still a work-in-progress and the open issues are numerous, as reflected in our detailed comments that are described in the Enclosure. As a result, it is important that public interactions continue so that a common understanding is established between the NRC staff and the industry on what constitutes a complete, practical and quality combined license application.

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5) Plant-Specific PRA:

   a. *Large Release Frequency (LRF):* The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, PRA *Internal Events,* which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting.

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c. *COL PRA Information:* The guidance should clarify that no additional plant-specific PRA information is required to be included in the COL application where the design certification PRA bounds the site- and plant-specific parameters.

6) ITAAC:

a. Section C.11.2 contains numerous examples of incorrect criteria for establishing ITAAC. The proposed criteria do not meet the well established criteria for ITAAC described in SRP 14.3 and in Generic Design Control Documents, Section 14.3. ITAAC are established to verify top-level (Tier 1) design descriptions and performance standards. Examples of this problem are in Section C.II.2.2.5 and Section C.II.2, Attachment A, on ITAAC for Instrumentation and Controls, which-call for ITAAC on "cabinet layout and wiring" and other second-tier design information.

b. The guidance should not call for additional ITAAC at the COL stage on matters that were resolved through a referenced design certification. This would be contrary to the Part 52 design finality principle. At the time of COL, ITAAC are developed for emergency planning and the site-specific design, including physical security features, as appropriate, in accordance with the criteria in SRP Section 14.3. Moreover, whether a design certification is referenced or not, the lack of complete detailed design information in a COL application is not a basis for requiring ITAAC. Applications will contain sufficient information to support required NRC safety findings, recognizing the NRC staff will have an opportunity later to verify the design implementation through the Construction Inspection Program.

7) DG-1145 contains placeholders in Sections C.II.3 and C.III.3 for guidance on COL application environmental reports. Attaining a common understanding on environmental matters, including how Early Site Permit environmental finality will be assessed at the time of a COL, is critical for assuring an effective and efficient licensing proceeding. Also, the benefit and effectiveness of the Early Site Permit subpart in Part 52 will hinge on how this section will be interpreted by the industry and NRC staff. The importance of these two sections underscores the importance of having additional public meetings.

8) NRC rules and DG-1145 guidance for addressing Regulatory Guides, SRPs and operating experience require an applicant to address the guidance in effect six months before docket date. However, "six months before docket date" is not a fixed date known by either the NRC or applicant. The NRC staff has stated that it has been and will continue to be the NRC practice to implement this requirement as "six months before application date." DG-1145 and existing regulations should be modified to reflect NRC practice and intent going forward. (Comments C.I.1.10 and C.III.1.9)

9) Appendix I documents NRC responses to numerous comments raised in connection with the DG-1145 workshops. In many instances, the NRC staff agreed with the comment but declined to change or modify the guidance. For example, the NRC staff response to workshop Comment C.I.13.1.2.1-1 agreed that a high level organization chart is sufficient to provide in Section 13.1 of the FSAR. However, the staff declined to modify Section C.I.13.1, which currently seeks a more detailed organization chart than COL applicants will have developed at the time of application submittal.

   It is vital that DG-1145 document the understandings reached during the workshops and public comment process. Failure to do so will cause misinterpretations in the future, unnecessarily prolonging licensing proceedings.

The industry comments in Enclosure 1 to NEI's October 20, 2006, letter are organized by DG-1145 section and prioritized high, medium and low (1, 2 or 3). The comments fall into four general categories ("Basis Codes").

1) The guidance does not conform with the regulations
2) The guidance seeks information that will not be available at the time of COL application submittal and is not necessary to support required reasonable assurance findings
3) The guidance is not consistent with other NRC guidance
4) Clarification is needed

Where a comment is a follow-up to an NRC response provided in Appendix I of DG-1145, NEI included the NRC's Appendix I comment number for reference.

Attachment 1 to the Enclosure provides mark-ups of specific DG-1145 sections consistent with the comments in Enclosure 1. The specific sections are: C.III.8, Electric Power; C.I.11, Radioactive Waste Management; C.I.17.6, Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule; and C.I.18, Human Factors Engineering.

ACRS MEMBER COMMENTS

Jack Sieber 11/07/2006 3:44 PM

As you know, these sections are difficult to review, since we do not have a library of applicable codes and standards at home, and I need to use the NRC web site (which doesn't always work properly) to view the referenced Regulatory Guides. However, I am familiar with most of the applicable codes and standards which are referenced in the two sections assigned to me.

What I notice most are the things that seem to be missing. For example, in the reactor coolant system section, I did not see any requirement for the applicant to supply drawings of hangers, supports (both pipe and component supports) and restraints (whip (if any) and seismic restraints). Also, when describing the materials of the system, I think that iso drawings are very helpful, if they are annotated with base and weld metal compositions.

Also, besides knowing the chemistry, it is good to have a record of pre and post fabrication and weld heat treatments. Also, a description of any repairs made (and what sections of the ASME Code (or Code Cases) allow the repair to be made). There are other issues that should be elaborated on in this section, related to its fabrication, erection, testing and qualification of the

piping, components and supports.

In the area of Electric Power Systems, I would like to see the Applicant describe its plant electrical grounding system. I would like to see some typical three wire diagrams along with a full set of single line drawings which show the protection components.

I also believe that the analysis required for grid stability calcs does not fully bound all possible vulnerabilities. Perhaps what is asked for is the best that one can do, since we do not describe a real design basis as to what we expect the electric power grid to be able to do. Since many applicants do not have control of the grid to which their plant is connected. Again, perhaps this is the best that can be done.

Also, there is a standard referenced for coordinated electrical protection, but no description of the electrical protection scheme is requested. Since electrical protection is well understood, perhaps no further information is needed - except for single line drawings.

I did not find any reference to fire protection except a reference as to the separation criteria for electrical systems. Where does a description of the fire protection program come in?

I also reviewed the I & C section. I have some comments, but since this section was not assigned to me, I will not comment unless some missing piece is evident. Otherwise, the I & C section looks OK to me, without breaking new ground. The description matches the rules in place today.

I wonder if a one day meeting will be enough to review this document? I think that there is a lot of information contained in it and that the review is complex, since it has so many references. Does NRR plan to discuss each section individually? If so, in what detail? If not, are we just to show up with our list of questions?

I think that it would be a good idea for us to know exactly what NRR plans to say so that we can prepare properly.

Said Abdel-Khalik 11/12/2006 6:02 PM

I have reviewed Chapters 7 (Instrumentation & Controls) and Chapter 10 (Steam and Power Conversion System) of DG-1145. The following comments are offered:

I. Chapter 7 -- Instrumentation & Controls:

My questions pertain to items 6 and 7 of Appendix C.I.7-A (Digital Instrumentation and Control Systems Application Guidance).

Item 6 deals with life cycle process requirements; it specifies that " ... The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated."

Item 7 deals with software life cycle process design outputs; it specifies that ".... A statistically valid sample of software design outputs should be provided to confirm with at least 95% assurance that they address that they address the functional requirements and .... "

The questions in both cases deal with the specified 95% confidence level. Why was it selected?

and is it adequate for all systems including those important to safety?

II. Chapter 10 (Steam & Power Conversion System)

Section C.I.10.3.5 deals with Water Chemistry (PWR only). There is no section dealing with BWR water chemistry. Will that information be provided in a different Chapter?

Bill Shack 11/12/2006 11:31 PM

Agenda appears OK. It is hard to know without a better overview of the whole document than I have at the moment. Others will have similar problems. The information on pipe whip restraints, etc. that Jack was looking for in the reactor coolant section is in Chapter 3.

A few preliminary comments on Chapter 3, which seems to me quite comprehensive and has been updated to reflect recent experience.

The leak-before-break discussion is pretty good in terms of all the items that should be considered, but why after 20 years or so is there no RG on LBB. One appeared imminent about 5 years ago, but nothing appears to be even an official draft. I expect all applicants to try to take advantage of LBB as much as possible. Maybe licensees and the staff have enough experience after all the submittals that have been made and reviewed, but then it would possible to formalize it in a RG.

Discussion on flow induced loadings now includes acoustic modes as well as flow induced vibrations and steam dryers are highlighted.

Why no reference to the RG (and Draft RG) on tornado winds in 3.3?

Discussion of aircraft hazards is interesting but only addresses accidents:

"The aircraft hazard analysis should provide an estimate of the total aircraft hazard probability per year. Aircraft accidents that could lead to radiological consequences in excess of the exposure guidelines of 10 CFR 50.34(a)(1) with a probability of occurrence greater than an order-of-magnitude of 10^{-7} per year should be considered in the design of the plant. Provide and justify the aircraft selected as the design-basis impact event, including its dimensions, mass (including variations along the length of the aircraft), energy, velocity, trajectory, and energy density."

Tom Kress 11/13/2006 1:08 PM

I have reviewed my chapters of DG-1145 which are:

1. Introduction & General Description of Plant
14. Initial Test Program and ITAAC -- Design Certification
20. Generic Issues.

Believe it or not, I have no comments on these chapters. If the rest of the reviewers have the same reaction, it is going to be a dull meeting. I presume the process will be that the staff will give a very brief statement of what is in a chapter and then ask for any comments. I liked what Jack Sieber did in looking for what was missing rather than what was there. Perhaps I could persuade him and Otto to look at Chapter 14 which, by the way, is called Verification Program in

the DG. They both know a hell of a lot more about that subject than I do which is very little.

My only real issue with the DG is that there should be a requirement and guidance on having to do a site specific Level-3 risk assessment. This may very well be a part of the Environmental Impact Statement but I think it should be explicitly stated in this RG.

Michael Corradini 11/13/2006 1:42 PM

I have looked over my two sections (assignments are section 6 and 19.2) and my reactions are similar for section 6.

In the area of Engr. Safety Features, the guidance is very specific and complete and I really do not have any major issues. I must admit that I am not experienced on what had been specified in past documents, but it is my experience that this guidance is much more complete and is a result of experience from submittals.

My observations for section 19.2 is the exact opposite - there is nothing really there in any substantive way. I looked at 19.1 and I think that the two are a package and I would wonder what GA thinks? I do not see spending the whole day on this if all of our sections have these binary results.

Sam Armijo 11/13/2006 2:48 PM

I have reviewed Chapter 4 (Reactor) and have found it to be pretty complete. I have included my comments in the attachment (Attachment 1). I was not impressed with the level of information requested for materials in this chapter, but found a more complete list of requested information in Chapter 5 (Reactor Coolant and Connecting Systems) which Jack is reviewing. I will
take a closer look at this and send you my comments later.

It seems to me that Design Guide should have a special chapter that asks the applicant to identify all the materials degradation mechanisms that have plagued the industry and to describe what materials selections, fabrication steps, mechanical design, and water chemistry specifications they have put it place to prevent failures in new reactors. For example the chapter would list the known failure mechanisms each reactor type (for example, IGSCC, IASCC, FAC, PWSCC, Thermal Fatigue, denting, vessel embrittlement, etc) and describe why the new materials would not be subject to each mechanism. I think it would help the designers focus their materials efforts, demonstrate that they have put these problems to bed, and help the staff determine if the designs are complete and adequate. Right now it seems that material issues are sprinkled all over the DG.

The industry has spent billions fixing materials failure and degradation issues, and the DG should ask for a comprehensive treatment of these issues.

D. C. Fischer, ACRS Staff

Section C.II.1, "Probabilistic Risk Assessment (PRA)" identifies 8 objectives that the COL applicant's risk evaluation are supposed to meet. It is not clear to me how practical this guidance will be to COL applicants, inasmuch as neither the ASME PRA Standard (ASME RA-S-2002) nor Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of

Probabilistic Risk Assessment Results for Risk-Informed Activities" are not constructed in these terms. In addition, while DG-1145 provides PRA-related guidance on the content of a COL application, there does not appear to be review procedures and acceptance criteria (e.g., SRP guidance) for determining whether an applicant's submittal meets these objectives. Finally, the second objective, "Determine how the risk associated with design relates to the Commissions goals of less than 1 E-4/yr for core damage frequency (CDF) and less than 1 E-6/yr for large release frequency (LRF)," introduces what could be a technically challenging and potentially problematic metric (i.e., LRF). From an editorial perspective, this section often refers to "the COL applicant" when it should be referring to the "COL holder" (e.g., in discussing PRA updates).

Section C. IV.10, "Regulatory Treatment of Non-Safety Systems," provides guidance to COL applicants, that do not reference a certified design, on the process that should be used to determine which non-safety SSCs should receive regulatory treatment. However, there does not appear to be review procedures and acceptance criteria (e.g., SRP guidance) for assessing an applicant's RTNSS process. In addition, there does not appear to be any guidance for assessing the acceptability of an applicant's proposed reliability/availability missions, treatment, and regulatory oversight that should be applied to such equipment.

EXPECTED COMMITTEE'S ACTION

The Full Committee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, and may prepare a letter to the EDO on DG-1145.

References

1. Memorandum dated September 1, 2006, from David B. Matthews, Director, Division of New Reactor Licensing, NRR to John T. Larkins, Executive Director, ACRS, Subject: Transmittal of Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)" (ML062440120)
2. Letter dated October 20, 2006, from Adrian Heymer, Nuclear Energy Institute to Rules and Directives Branch, Office of Administration, NRC, Subject: Notice of Availability Draft Regulatory Guide DG-1145 "Combined License Applications for Nuclear Power Plants (LWR Edition)." ("DG-1145") 71 Fed. Reg. 52,826 (Sept. 7, 2006). (ML063000204)

November 13, 2006

S. Armijo's Specific Comments on DG-1145

C.I.4.2, Fuel System Design

Should include information related to effects of oxidation and hydriding on the mechanical properties of the fuel cladding.

C.I.4.2.3, Design Evaluation

(1) Cladding

(e) With regard to stress-accelerated corrosion:

This is a strange term for fuel cladding. Should use stress corrosion cracking due to pellet clad interaction (PCI)

(g) With regard to material wastage due to mass transfer:

I never heard of a mass transfer phenomenon. Are the authors talking about accelerated cladding corrosion due to excessive crud deposition and subsequent burnout? If so should ask for info on crud-related failure mechanisms.

Also discuss the following phenomenological models:

• fuel and cladding temperature distribution

Probably mean radial power distribution.

(1) Fuel system damage criteria for all known mechanisms:

Should insert "failure or performance limiting mechanisms".

(b) commutative number of strain fatigue cycles

Should be cumulative number of cycles.

Describe the processes, inspections, and tests used to ensure that austenitic stainless steel components are free from increased susceptibility to intergranular stress-corrosion cracking caused by sensitization. If special processing or fabrication methods subject the materials to temperatures between 800–1,500°F (427–816°C), or involve slow cooling from temperatures over 1500°F (816°C), describe the processing or fabrication methods and provide justification to show that such treatment will not cause susceptibility to intergranular stress-corrosion cracking. Indicate the degree of conformance to the recommendations of Regulatory Guide 1.44, "Control of the Use of Sensitized Stainless Steel," as well as Position C.5 of Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of

Water-Cooled Nuclear Power Plants," as it relates to controls for abrasive steel surfaces. Provide justification for any deviations from these recommendations.

This paragraph should be changed to read " Describe the processes, inspections, and tests used to ensure that austenitic stainless steels are highly resistant to intergranular stress corrosion cracking, and that fabrication or special processing methods such as heat treatment, cold work, welding or post-weld griding do not create IGSCC susceptibility in the reactor coolant environment."

A similar statement should be written to address PWSCC in PWR coolants.

NRCREP - Notice of Availability Draft Regulatory Guide DG-1145

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Date: 10/20/2006 7:52 PM
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October 20, 2006

Rules and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

PROJECT NUMBER: 689

SUBJECT: Notice of Availability Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)." ("DG-1145") 71 Fed. Reg. 52,826 (Sept. 7, 2006).

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Sincerely,

Adrian P. Heymer
Senior Director, New Plant Deployment
Nuclear Generation Division
Nuclear Energy Institute
(202) 739-8094
aph@nei.org

[1] The Nuclear Energy Institute ("NEI") is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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NUCLEAR ENERGY INSTITUTE

Adrian P. Heymer
SENIOR DIRECTOR, NEW PLANT DEPLOYMENT
NUCLEAR GENERATION DIVISION

October 20, 2006

Rules and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
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   A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how it would be applied. This would introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.

b. *Conditional Containment Failure Probability (CCFP):* The draft guidance proposes the CCFP of 0.1, given a core melt. For advanced designs, whose calculated internal event core damage frequency is approximately 10^{-7}/year, the CCFP would translate into a containment failure frequency of approximately 10^{-8}/year. It is impractical and unreasonable to attempt to design a containment structure to withstand naturally occurring ultra-low frequency events of this magnitude, for example a one in a 100 million-year earthquake. Hence, as interpreted by the industry, the proposed CCFP could not be met. There is a need for further industry-NRC interaction on developing a practical containment performance metric that could be used in operational licensing evaluations for designs that have very low core-damage frequency.

c. *COL PRA Information:* The guidance should clarify that no additional plant-specific PRA information is required to be included in the COL application where the design certification PRA bounds the site- and plant-specific parameters.

6) ITAAC:

a. Section C.II.2 contains numerous examples of incorrect criteria for establishing ITAAC. The proposed criteria do not meet the well established criteria for ITAAC described in SRP 14.3 and in Generic Design Control Documents, Section 14.3. ITAAC are established to verify top-level (Tier 1) design descriptions and performance standards. Examples of this problem are in Section C.II.2.2.5 and Section C.II.2, Attachment A, on ITAAC for Instrumentation and Controls, which call for ITAAC on "cabinet layout and wiring" and other second-tier design information.

b. The guidance should not call for additional ITAAC at the COL stage on matters that were resolved through a referenced design certification. This would be contrary to the Part 52 design finality principle. At the time of COL, ITAAC are developed for emergency planning and the site-specific design, including physical security features, as appropriate, in accordance with the criteria in SRP Section 14.3. Moreover, whether a design certification is referenced or not, the lack of complete detailed design information in a COL application is not a basis for requiring ITAAC. Applications will contain sufficient information to support required NRC safety findings, recognizing the NRC staff will have an opportunity later to verify the design implementation through the Construction Inspection Program.

7) DG-1145 contains placeholders in Sections C.II.3 and C.III.3 for guidance on COL application environmental reports. Attaining a common understanding on environmental matters, including how Early Site Permit environmental finality will be assessed at the time of a COL, is critical for assuring an effective and efficient licensing proceeding. Also, the benefit and effectiveness of the Early Site Permit subpart in Part 52 will hinge on how this section will be interpreted by the industry and NRC staff. The importance of these two sections underscores the importance of having additional public meetings.

8) NRC rules and DG-1145 guidance for addressing Regulatory Guides, SRPs and operating experience require an applicant to address the guidance in effect six months before docket date. However, "six months before docket date" is not a fixed date known by either the NRC or applicant. The NRC staff has stated that it has been and will continue to be the NRC practice to implement this requirement as "six months before application date." DG-1145 and existing regulations should be modified to reflect NRC practice and intent going forward. (Comments C.I.1.10 and C.III.1.9)

9) Appendix I documents NRC responses to numerous comments raised in connection with the DG-1145 workshops. In many instances, the NRC staff agreed with the comment but declined to change or modify the guidance. For example, the NRC staff response to workshop Comment C.I.13.1.2.1-1 agreed that a high level organization chart is sufficient to provide in Section 13.1 of the FSAR. However, the staff declined to modify Section C.I.13.1, which currently seeks a more detailed organization chart than COL applicants will have developed at the time of application submittal.

   It is vital that DG-1145 document the understandings reached during the workshops and public comment process. Failure to do so will cause misinterpretations in the future, unnecessarily prolonging licensing proceedings.

Attachment 1 to the Enclosure provides mark-ups of specific DG-1145 sections consistent with the comments in Enclosure 1. The specific sections are: C.III.8, Electric Power; C.I.11, Radioactive Waste Management; C.I.17.6, Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule; and C.I.18, Human Factors Engineering.

The industry comments in the enclosure are organized by DG-1145 section and prioritized high, medium and low (1, 2 or 3). The comments fall into four general categories ("Basis Codes").

1) The guidance does not conform with the regulations
2) The guidance seeks information that will not be available at the time of COL application submittal and is not necessary to support required reasonable assurance findings
3) The guidance is not consistent with other NRC guidance
4) Clarification is needed

Where a comment is a follow-up to an NRC response provided in Appendix I of DG-1145, we have included the NRC's Appendix I comment number for reference.

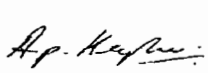
In the public meetings on September 22 and October 3, 2006, we discussed three steps for continuing the public engagement.

1. Hold public meetings in December 2006 and, if necessary, in January 2007, to discuss the disposition of the stakeholder comments and open items.
2. Post a draft final version that reflects the reconciliation of public comments on the NRC website as soon as possible.
3. Hold a final meeting following issuance of the final regulatory guide to explain changes made in finalizing the document, including those changes made to conform the guidance to the final Part 52 rule.

The industry is committed to continue to work with the NRC staff on the development of guidance for COL applicants. This will assure clarity and a common understanding of the key elements of the regulatory infrastructure, including DG-1145, the Standard Review Plan, Part 52 and related NRC regulations. This is essential for assuring the development of quality combined license applications and for assuring NRC reviews are conducted in the most effective and efficient manner.

If there are questions on these comments, please contact Russ Bell at 202-739-8087; rjb@nei.org or me at 202-739-8094; aph@nei.org.

Sincerely,



Adrian P. Heymer

Enclosure

c: Mr. David B. Matthews, NRC
Mr. Thomas A. Bergman, NRC
Mr. Eric R. Oesterle, NRC
Document Control Desk

ENCLOSURE 1

INDUSTRY COMMENTS

DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

PUBLISHED FOR COMMENT SEPTEMBER 7, 2006

The attached Excel Spreadsheet contains detailed comments on the draft Regulatory Guide, DG-1145, published September 7, 2006. Comments are identified by a comment number in the first column that includes the part and section number from the guide. The second column identifies the specific, applicable section or paragraph in the guide and the third column identifies the related NRC I. D. number from Appendix I, where applicable. Column 4 is the text of the comment that identifies the industry issue.

Columns 5 and 6 give a priority and basis for recommended changes. Priority 1 comments are the most significant and Priority 3 are the least significant. The Basis Categories are:

Basis Category	Description
1	The guidance does not conform with the regulations
2	The guidance seeks information that will not be available at the time of COL application submittal and is not necessary to support required reasonable assurance findings
3	The guidance is not consistent with other NRC guidance
4	Clarification is needed
5	Other - specify

Column 7 of the table indicates suggested changes to the guidance.

Attachment 1 provides proposed mark-ups of four sections of DG-1145 that reinforce the comments in the main body of the enclosure. The four sections are:

1) Section C.III.8, "Electrical Power"
2) Section C.I.11, "Radioactive Waste Management"
3) Section C.I.17.6, "Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule"
4) Section C.I.18, "Human Factors Engineering"

NEI COMMENTS - DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
Gen 1	Various		NON-FSAR MATERIAL REQUESTS - The document continues to identify in the FSAR information requests for material that does not belong in the FSAR documents. Some of these are listed below, but this should not be considered a comprehensive listing. It should be clear when "non-FSAR" material is requested, that it can be provided separately from the FSAR.: C.I.6.1.1.1, (2) test data & experience C.I.8.3.1.3, software C.I.8.3.1.3, e-copy of the model C.I.10.2.3.3, procedures C.III.1.10 – 2.3.3, met data C.III.1.10 – 2.5.2.5, database C.III.1.10 – 3.11.3, test results documents C.III.1.10 – 3.11.4, test results documents C.III.1.10 – 3.11.5, test results documents C.III.1.10 – 3.11.6, test results documents C.III.1.10 – 7.1.1 via C.I.7.1-A, Item (7) software design outputs C.III.1.10 – 13.1.1.3, resumes C.III.1.10 – 13.3.1, copy of referenced E plans and ETE C.III.1.10 – 13.3.1, cross-reference to requirements, guidance, other criteria, etc C.III.1.10 – 13.3.1, EPIPs C.III.5.1.1, item 3, reference documents C.III.5.1.1, item 4, implementation docs C.III.5.1.1, item 5, confirmation info and output documents C.III.5.1.1, item 6, documents that demonstrate EQ	1	4	Revise as indicated
Gen 1 (continued)	Various		C.III.5.1.1, item 7, demonstration info C.III.5.1.1, item 8, demonstration info C.III.5.1.1, item 9, reference documents Each of the C.III items likely has a similar counterpart request in the C.I section.	1	4	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.1	C.I.1		Guidance refers to the need to identify net electrical output for rated and design thermal power. Of what value is this information, and to what extent is it considered binding as part of the FSAR? The net electrical output will be influenced by many factors such as house loads that may not be known at the time of application. Also, what is the relevance of net "design" output if different from rated output?	2	4	Indicate this as approximate and provided for information only.
C.I.1.2	C.I.1.1.1		The phrase "whether the plant is colocated with existing operating nuclear power plants" should be clarified as to the parameters of interest. Does it apply to a new unit outside the protected area for the existing facility? Outside the exclusion area boundary? Does the unit's status matter in the definition of "operating"?	2	4	Replace with "...including the extent (if any) to which the plant is collocated and/or interfaces with a licensed, existing nuclear power plant (i.e., within the existing plant's protected area or exclusion area boundary)."
C.I.1.3	C.I.1.1.4		These requirements are less detailed than those in C.I.1.1 - while the value of this information and extent to which it is it considered binding as part of the FSAR is not clear, the information indicated as required should at least be consistent.	2	3	Delete section, or at least make two sections consistent
C.I.1.4	C.I.1.1.5		Absent a clear regulatory basis or relevance of the schedule information requested here, this requirement should be deleted.	1	4	Submitting a COL application is not a commitment to construct a plant. Rather than requesting a schedule for completion, this section should request a regulatory commitment for the COL applicant to provide construction and startup information when the decision is made to construct a plant.
C.I.1.5	C.I.1.1.6.1		(1) "guides" is plural but DG-1145 is the only guide indicated (2) should indicated conformance with DG-1145 ensures/obviates need to address RG-1.70 (3) "DG-1145" should be replaced with RG number when available	3	4	Consider replacing 1.1.6.1 with "conformance with format and content guidance of this regulatory guide."
C.I.1.6	C.I.1.1.6.2		Ambiguous reference to SRP conformance	2	4	Insert "...approved as of six months prior to submittal date of application" after "(NUREG-0800)"
C.I.1.7	C.I.1.2		In the last sentence change the word "problems" to "considerations." The example given and the context of the paragraph is to highlight issues needing special attention – these will not necessarily be problems.	3	4	Change the word "problems" to "considerations".
C.I.1.8	C.I.1.8		There are several examples of using a double negative sentence construction or missing words. Also several sentences are not clear. Revise the 3rd sentence to read: "By definition, there are no interface requirements between standard designs and site-specific designs for a complete facility". The 4th sentence needs to clarify what "these documents" refers to. Revise the 5th sentence: Certified design applications should reference the applicable documents. The 6th and 7th sentence: COL applicants that reference a certified design and/or early site permit are the only applicants that will have interface requirements. COL applicants that do not reference a certified design will need to submit design information on the new facility.	2	4	Revise as indicated

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.9	C.I.1.9.1		C.I.1.9.1 repeats the proposed regulation to provide an assessment of "regulatory guides" conformance. This guidance could be modified to reflect the specific RG Divisions and/or specific RGs expected to be addressed to comply with this regulation. For example, Division 2, Research and Test Reactors, would not be applicable; so, we should eliminate Division 2 assessments since they don't address design or operation of commercial power reactors. Further, within Division 4, RG 4.2 addresses Environmental Reports and is not an appropriate topic to be addressed in the FSAR. See also C.III.1 – 1.9.1.	2	4	Revise as indicated
C.I.1.10	C.I.1.9		To determine the scope of applicable RGs, SRPs, generic issues and operating experience to be addressed in the COLA, the staff has stated that it is their current practice and intent going forward that the standard applied will be six months prior to the application date, as the applicant has no control over when the application is docketed. (This comment is typical of several instances in C.I.1.)	2	4	Acknowledge standard to be applied as a matter of practice will be guidance in effect "six months prior to application date." The NRC should initiate a rulemaking to fix the regulations.
C.I.1.11	C.I.1.9.1		Use of "any" in "of any departures from the guidance contained in the NRC's regulatory guides," is unduly broad.	2	4	Change to say "...identification and description of significant departures..."
C.I.1.12	C.I.1.9.2		Use of "any" in "any differences in design features" is unduly broad	2	4	Change to say "...significant differences in design features..."
C.I.1.13	C.I.1.9.3		Generic Issues. Improvements regarding guidance for the review of generic issues is noted in C.IV.8 (9/1/06); however, as recognized by the Staff, other related sections in C.I and C.III.1/2 have not yet been updated and are, therefore, inconsistent. In addition, guidance in C.IV.8 also requires additional clarification regarding the use of NUREG-0933, Appendix B. Additional comments are provided on C.IV.8 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed. 3. In general, since guidance should be stated once and then referenced as needed, it is recommended that detailed guidance on the scope of generic issue review be included in C.IV.8. Section C.I.1.9.3 should only provide a summary and reference C.IV.8 for detailed guidance.	2	4	C.I.1.9.3 should be revised as follows: 1. Delete statement that C.IV.8 contains a listing of generic issues. 2. Clarify NRC guidance to say that the scope of generic issues to be included in the COLA is restricted to those issues for which a resolution has been reached. 3. Provide only summary guidance in Section C.I.1.9.3. Refer reader to C.IV.8 for more detailed guidance on generic issues.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.14	C.I.1.9.4.1		This section states "Applicants for certified designs or combined licenses are required to address comparable international operating experience in accordance with proposed 10 CFR 52.47(a)(19) [52.47(a)(22) in version released 27 Sep 2006] and 10 CFR 52.79(a)(37), respectively. To the extent that the design (or portions thereof), for which an applicant seeks a design certification or COL, originates or is based on international design, the application should address how international operating experience has contributed to the design process."	1	1	Revise C.I.1.9.4 to make it consistent with proposed 10 CFR Part 52 by: 1) eliminating subsection C.I.1.9.4.1; and 2) adding a statement at the end of C.I.1.9.4 indicating that an applicant may provide the necessary operating experience information by addressing international operating experience as an alternative to addressing generic letters and bulletins.
C.I.1.14 (continued)	C.I.1.9.4.1		NRC's own procedures (e.g., LIC-401) require them to factor in international OE into their own generic OE program; this is implicitly addressed in our evaluation of the NRC's OE documents. Therefore an additional requirement for the applicant to evaluate international operating experience in addition to generic letters / bulletins and should not be required. Further, the draft guide requires this information only from some applicants; those whose design originates or is based on international design. It is inequitable to impose this additional requirement on designs of "foreign" heritage, because any assessment of "heritage" (i.e., the extent to which a domestic design is "based on" a "foreign" design) is subjective, as is the assessment of applicability of international OE to any given domestically licensed design. NRC disposition of the industry's May 30 comment in this regard on the Part 52 rulemaking is pending.	1	1	see above
C.I.1.15	C.I.1.9.5		The following documents are listed twice: SECY-91-262 SECY-92-053 SECY-92-092 SECY-93-087 SECY-94-084 SECY-94-302	3	5	Delete redundant entries
C.I.2.1	C.I.2		The last sentence of the first paragraph is ambiguous and requires clarification in that it states that the "adequacy of site characteristics need to be addressed from a safety viewpoint. " The plant design and operation needs to be discussed from a safety viewpoint relative to site characteristics.	3	4	Clarify statement to indicate that information related to site characteristics such as frequency, probabilities and magnitude may be used to bolster statements pertaining to adequacy of facility design.
C.I.2.2	C.I.2.4.5.1		RG1.70 calls for the determination of a more severe meteorological wind system than actually recorded...based upon meteorological reasoning. DG1145 does not refer to the ability to utilize meteorological reasoning to exclude "incredible" events.	1	4	Request Guidance with respect to limits relative to use of meteorological reasoning as a basis to support conclusions.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.2.3	C.I.2.4.12.3	C.I.2.4-1	This section tends to comply with RG1.70 section 2.4.13.3 in terms of content requirements. DG1145 requires conservative analysis be performed of all groundwater pathways for a liquid effluent release; RG1.70 requires a conservative analysis of postulated accidental release of liquid radioactive material at the site. Liquid radioactive effluent may only be located in specific areas of the plant (holding tanks or along designated haul paths thereby only warranting an analysis in the general vicinity of groundwater flow. DG1145 requires analysis of al groundwater pathways.	1	4	Requires clarification as to intent. If we are required to evaluate all pathways then this could be a considerable effort.
C.I.2.4	C.I.2.4.12.5 (1)		This Section is compliant with the requirements of RG1.70 section 2.4.13.5 with the exception that DG1145 uses the terminology "Site Characteristics in lieu of the RG1.70 terminology "Design Bases" interchangeably. This is confusing.	2	4	Clarify use of "Site Characteristic " terminology in DG1145
C.I.2.5	C.I.2.4.12.5 (2)e		RG1.70 defines the design basis groundwater level whereas DG1145 does not.	3	4	Employ RG1.70 definition of groundwater level
C.I.2.6	C.I.2.1.3.1		The subject section calls for current "residential population" to be indicated on appropriate maps. Census data would generally be used for this population segment and would likely include not only "residential" (strictly speaking) but also other persons, such as those in boarding schools, colleges, universities, etc. A more appropriate and clearer term would be "resident population" consistent with the use of "resident" in Reg. Guide 4.2 and census bureau terminology	1	4	To better align this guidance with Reg. Guide 4.2 and census bureau terminology, change "residential population" to "resident population."
C.I.2.7	C.I.2.2.3.1		"Accident category (1)" discusses the consideration of potential missiles generated by explosions involving hazardous material. Category (1) in Section C.I.2.2.3.1 could be read to say that an evaluation of missiles should be considered regardless of the blast over-pressure prediction. However, per Reg. Guide 1.91, (referenced in Section C.I.2.2.3.1), "If the overpressure criteria of Reg. Guide 1.91 is exceeded, the effects of missiles must be considered." Furthermore, even if the blast overpressure criteria is not met, it is reasonable that missiles not be evaluated if the probability of occurrence is shown to be less than 10-7 per year, per C.I.2.2.3.1. A similar comment would pertain to accident category (2), delayed detonation of flammable vapor cloud as well.	2	4	It is recommended that Section C.I.2.2.3.1 be revised to clarify explicitly that missile evaluations need not be provided in the FSAR if the blast overpressure criteria is met or if the probability of occurrence of the subject event is less than 10-7 per year.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.2.8	C.I.2.3.3		Section C.I.2.3.3 prescribes the time for which data must be collected and "provided at docketing." Docketing occurs after submittal and completion of the Staff's acceptance review. It's assumed that the Staff intended "application" and not "docketing." Furthermore, as a practical matter, data collection must conclude well before the application submittal goal to allow sufficient time for data quality review, analysis, and development of required FSAR material.	1	4	Revise the subject section to say "provided at the time of the COL application." And clarify the guidance to recognize that actual data collection must be concluded in time to allow for appropriate data review, analysis, etc.
C.I.2.9	C.I.2.3.3		The industry concurs with the Staff response to comment C.I.2.3.3-1 regarding the COL applicant's providing at least one annual cycle of meteorological data with the application and subsequent submittal of the complete 2-year data set when collected. However, the Staff elected not to reflect this disposition via change in DG-1145.	2	4	It is anticipated that the subject approach, discussed by the Staff in response to comment C.I.2.3.3-1, will likely be often adopted by COL applicants proposing a site without an active meteorological tower (such as a green field or site with partial construction). Therefore, it is recommended that this disposition be explicitly described as an acceptable alternative in C.I.2.3.3 of the Guide.
C.I.2.10	C.I.2.5.1.2		The scale of the maps requested in the subject guidance is far too large for the needed purpose. the scale requested will require up to 4-6 large "D" size plates in the COLA FSAR. Reg. Guide 1.165 does not require such large scale maps. The guide provides the option for smaller scale maps, as appropriate.	3	1	Revise C.I.2.5.1.2 to say that maps of 1:50,000 or smaller, as appropriate, should be provided.
C.I.3.1	C.I.3.6.3	C.I.3.6.3-5	Statement of (2)(a) requires to "provide as built drawing(s) of piping geometry. It is impossible to address this requirement at the time of COL application.	2	2	Revise as follows: "Provide a general description and or references to applicable codes and standards to be used for piping design."
C.I.3.2	C.I.3.7.1.1.1		Typo: in (1), change "fee" to "free"	3	5	Revise as noted
C.I.3.3	C.I.3.7.2.1		Although this section and other sections use "Seismic Category II" as one of SSCs category of seismic design, the definition is not specified.	2	3	Add definition of "Seismic Category II".

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.4	C.I.3.7.1.1.1, C.I.3.7.1.1.2, & C.I.3.7.2.5		All these sections have requirements for ground motion time histories to meet spectrum matching for multiple damping values and to envelop a target PSD (Power Spectral Density). These requirements are applicable if site-independent RG 1.60 ground spectra are considered as design spectra. For COL plants a site-specific SSE ground spectrum will be developed from a PSHA (Probabilistic Seismic Hazard Analysis) in accordance with RG 1.165 or equivalent. In a recent NRC-sponsored study NUREG/CR-6728, Technical Basis for Regulatory Guidance on Design Ground Motions: Hazard- and Risk-Consistent Ground Motion Spectra Guidelines, spectrum matching for damping other than 5% and target PSD enveloping are not required.	2	4	Implement NUREG/CR-6728 recommendations
C.I.3.5	C.I.3.7.2.13 & C.I.3.7.3.8		These two sections address same subject for dams.	3	4	Eliminate either section.
C.I.3.6	C.I.3.7.4.6		Description of implementation program for the seismic monitoring program is not a requirement in the existing SRP.	1	2	This program would not be available at the time of COL application and is not necessary to support COLA.
C.I.3.7	C.I.3.8.4.5		ANSI/AISC N690-1984 is mentioned. Does it mean that only the 1984 edition is acceptable?	3	4	Please clarify.
C.I.3.8	C.I.3.2.1 (3rd para, 2nd sentence)		Clarify what sections of Regulatory Guide 1.29 provide recommendations for Seismic Category I SSCs.	3	4	Add "Positions C.1 and C.3" after Regulatory Guide 1.29 in the second sentence.
C.I.3.9	C.I.3.2.1 (3rd para, 5th sentence)		Clarify what sections of Regulatory Guide 1.29 provide recommendations for non-Seismic Category I SSCs whose failure could reduce the functioning of a Seismic Category I SSC or could result in incapacitating injury to control room personnel.	3	4	Add "Positions C.2 and C.4" after Regulatory Guide 1.29 in the fifth sentence.
C.I.3.10	C.1.3.2.2 (3rd para)		Add Regulatory Guide 1.151 to the 3rd paragraph to be consistent with the 2nd paragraph.	3	3	Add "and Regulatory Guide1.151" to the first and last sentence.
C.I.3.11	C.I.3.9.6.2		C.I.3.9.6.2 (4) states "and include this information in the technical specifications." This level of detail is no longer included in the Improved Technical Specifications, Section 5.5.	2	4	Delete portion of sentence containing "and include this information in the technical specifications."
C.I.3.12	C.I.3.9.6.3		C.I.3.9.6.3 (4) states "and include this information in the technical specifications." This level of detail is no longer included in the Improved Technical Specifications, Section 5.5.	2	4	Delete portion of sentence containing "and include this information in the technical specifications.".
C.I.3.13	C.I.3.2.2		Typographical error. The last sentence should read: "...Regulatory Guide 1.26 or Regulatory Guide 1.143."	3	5	Add correction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.14	C.I.3.5.1.2		The second sentence reads as follows: "These are the SSCs whose failure could lead to offsite radiological consequences, or those required for safe plant shutdown ***to a cold condition assuming an additional single failure.***" The words in italics are confusing and do not conform to existing regulation.	1	1	Delete "to a cold condition assuming an additional single failure" from the end of the second sentence.
C.I.3.15	C.I.3.5.1.2		The third sentence reads: "Missiles associated with over speed failures of rotating components..." The types of missiles should be clarified as those that are "credible."	1	1	Add "Credible" at the beginning of the third sentence.
C.I.3.16	C.I.3.6.2.1		The requested information in this provision (i.e. details of the containment penetrations (etc), the number of pipe breaks, their locations, the presence of postulated cracks, and rupture orientation) is not expected to be available for COL and is not necessary to support COLA.	1	2	The criteria to be used should be specified in the application and the detailed information would be available during plant construction.
C.I.3.17	C.I.3.6.2.2		Other than the design criteria, the requested detailed information for the guard pipe assemblies is not expected to be available for COL and is no necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.18	C.I.3.6.2.3		The requested information for the analyses results is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.19	C.I.3.6.2.5		The requested information (i.e. final configurations, locations, and orientations) is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.20	C.I.3.6.6		The requested information is not expected to be available in its entirely for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.21	C.I.3.7.1 C.I.3.7.1.1 C.I.3.7.1.1.1 C.I.3.7.1.1.2 C.I.3.7.1.2 C.I.3.8.1.3 C.I.3.8.2.3 C.I.3.8.3.3 C.I.3.8.4.3		Reference is made to the OBE. Designing for an OBE is no longer a requirement.	1	1	Remove reference to OBE.
C.I.3.22	C.I.3.8.2.7		Editorial. In first sentence, "Section HI" should read "Section III."	3	5	Correct "Section HI" to "Section III".
C.I.3.23	C.I.3.8.3.6		ANSI N45.2.5 is an inactive national standard. The replacement reference is to ASME NQA-1.	2	3	Change "ANSI N45.2.5" to "ASME NQA-1."
C.I.3.24	C.I.3.8.4.5		ANSI/AISC N690-1984 is a superseded edition. Use latest version	3	4	Delete "1984."
C.I.3.25	C.I.3.9.2.1		The requested information in items (1) to (5) is not expected to be completely available for COL and is not necessary to support COLA.	2	2	Add provision to make the detailed information available during construction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.26	C.I.3.9.3.1 C.III.1, Sec 3.9.3.1		C.I.3.9.3.1, second paragraph, item (3) seeks a summary of maximum stress, deformation, and cumulative usage factor values for all ASME Code Class I components. This information will not be available at the time of COLA and is not necessary to support COLA. The cumulative usage factor values will be contained in the ASME required design report, which requires reconciliation with the as-built configuration. Consistent with industry's position in NEI 04-01 Rev E, Appendix H, Item 3-18, the ASME required design specification and design report should be made available for NRC audit prior to fuel load. This comment also applies to C.III.3.9.3.1.	1	2	Modify C.I.3.9.3.1 and C.III.1, Sec.3.9.3.1 to state that the ASME required design specification and design report will be prepared according to ASME Code Section III for Class I components and made available for NRC audit prior to fuel load.
C.I.3.27	C.I.3.9.3.3		The requested information in paragraph 2 (i.e. program results, stresses, deformations, EQ, etc) is not expected to be completely available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.28	C.I.3.9.3.4		The requested information in the second paragraph (i.e. the results of the analysis and/or test programs) is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.29	C.I.3.12.6.1 C.I.3.12.6.9 C.I.3.12.6.12		Piping supports, supplementary steel, and instrumentation supports traditionally have been in compliance with ASME NF and AISC, with jurisdictional boundaries identified in the FSAR. These three sections should also address AISC N690 Code.	2	4	Add "and AISC N690" whenever the ASME NF provision is identified.
C.I.3.30	C.I.3.6.3	C.I.3.6.3-1 C.I.3.6.3-2 C.I.3.6.3-3 C.I.3.6.3-4 C.I.3.6.3-5 C.I.3.6.3-6	DG-1145, Appendix I provided response to a number of issues raised about the content of C.I.3.6.3. The NRC responded that, as a result of public comments, "Section 3.6.3(1)(a) will be modified", "Section 3.6.3(1)(b) will be modified", "Section 3.6.3(2)(a) will be modified", and "Section 3.6.3(2)(c) will be modified". DG-1145 has not been revised to incorporate any changes to the above referenced paragraphs.	2	4	Make the indicated modifications.
C.I.3.31	C.I.3.11		The reference in the first paragraph to 10CFR50.49 and mechanical equipment, is not correct. That is because 50.49 does not address mechanical equipment.	3	1	Remove reference to 10CFR50.49 from this paragraph.
C.I.3.32	C.I.3.11.2		The following comments/ observations for this section are: a. Inclusion of RG 1.30 is incorrect, as this RG pertains to QA requirements and not to EQ requirements and it is therefore, outside the scope of EQ. b. RG 1.151; same as above comment for b), regarding RG 1.30. c. RG 1.183; same as above comment for a) and b) regarding requirements of 10CFR50.67 and RG 1.30.	3	1	Remove reference to 10CFR50.67, RG 1.30, RG 1.151 and RG 1.83 from this paragraph.

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C.I.3.33	C.I.3.7.1		Sections 3.7.1 as written reflect pass requirements associated with use of generic design ground response spectra, e.g., RG 1.60 design ground response spectra. There are fundamental differences between generic SSE design ground response spectra and current methods to develop site-specific SSE design ground response spectra. Therefore these sections should be revised to reflect current state-of-the-art practice for developing site-specific SSE design ground response spectra being used by COL applications. COL SSE design response spectra are PSHA based following RG 1.165 or equivalent risk-performance base methodology. The PSHA and associated methodologies to develop the site-specific SSE are based on 5 percent damped spectra. The associated ground motion time histories therefore should only need to match the 5 percent design ground response spectra. The criteria to determine the adequacy of a give time history in spectral matching, adequate energy over the frequency range, component correlation characteristics, etc. are provided in NUREG/CR-6728.	1	4	Clarify as indicated.
C.I.3.33 (continued)	C.I.3.7.1		If response spectrum analysis instead of time history analysis is used to determine building response for design, then site-specific SSE design ground response spectra at appropriate damping values should be provided. Section 3.7.1 should clarify that there is a single location or control point for the SSE free-field ground motion response spectra at the free ground surface and that location depends on the soil characteristics at the site. That location, depending on site conditions, can either be the top of finish grade or an outcrop or hypothetical outcrop at a location of the top competent material for the site. NUREG-0800 provides this clarification.	1	4	see above
C.I.3.34	C.I.3.11		This section requires submittal of EQ testing requirements, accident environments, and milestone schedules that won't be available at the time the COLA is submitted. The EQ program information requirements are outlined in DG-1145, Section C.I.13.4	1	3	Revise this section to be consistent with Section C.I.13.4.
C.I.4.1	C.I.4	C.I.4-2	Given that the reactor vendors are constantly working to improve fuel and core design (Note INPO's objective of Zero fuel failure by 2010), the information requested by DG-1145 is too prescriptive. DG-1145 should clearly indicate that the information to be supplied is a reference or typical fuel design recognizing the actual fuel and core design will be developed using fuel and core design methods approved by the NRC for the intended application consistent with the Plant license. The actual fuel and core design may change, thus DG-1145 should acknowledge that any changes following a COL application should be consistent with the current process for refueling current (at the time of fuel loading) operating plants.	1	1	Revise the text of C.I.4 to refer to the information required to be submitted as reference, typical or bounding fuel design information, with final fuel design information to be supplied by the applicant prior to fuel loading, rather than at the time of COL application.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.4.2	C.I.4.2.2		Definition of "final (FSAR) design drawing" is unclear.	2	4	Revise the paragraph to read as follows: "Provide a description and final (FSAR) design drawing of the fuel rod components, burnable poison rods, fuel assemblies, and reactivity control assemblies showing arrangements, dimensions, critical tolerances, sealing and handling features, methods of support, internal pressurization, fission gas spaces, burnable poison content, and internal components."
C.I.4.3	C.I.4.2.3		The bulleted information under the headings "phenomenological models" and "fuel system damage criteria" contain typographical errors.	3	5-typo	Under the heading, "Also discuss the following phenomenological models:" In the first bullet, change "radical" to "radial;" In the 13th bullet, change "knudsen" to "Knudsen;" In the 14th bullet, change "contract" to "contact." Under the heading, "In addition, provide the following information," Item (1), "Fuel system damage criteria for all mechanisms:" Change "structured" to "structural" in paragraph (a); Change "commutative" to "cumulative" in paragraph (b); Change "production" to "products" in paragraph (d); Change "maintaining" to "keeping" in paragraph (h), and also add the word "maintain" between "to" and "control." In Item (3) of this heading, paragraph (b), change "systems" to "system."
C.I.4.4	C.I.4.6.3 to C.I.4.6.5		Sections are duplicated	3	5-typo	Remove duplicated sections.
C.I.5.1	C.I.5.2.1.1		In the fourth line of the paragraph under this section, please clarify why the component order date of each Class 1 component within the RCPB is required to be part of the COL application. It does not appear to be relevant information for this stage of the licensing process, nor, if required, will this information be available at the time the application is submitted.	1	2	Revise the third sentence of the paragraph to state, "The applicable component code and code edition and addenda of each Class 1 component within the RCPB, ..."
C.I.5.2	C.I.5.2.1.2		The fourth sentence of the paragraph discusses the use of Regulatory Guide 1.84 to identify those ASME Code Cases that are "**generally acceptable**" (emphasis added) to the NRC staff. The industry recognizes that RG 1.84 identifies Code Cases that are acceptable to the NRC, and that some Code Cases are acceptable only under conditions identified in RG 1.84. Additional specificity should be added to avoid ambiguity.	3	4	Delete the word, "generally," before the word, "acceptable," in the fourth sentence. Add, ", including conditions for approval identified in RG 1.84." at the end of the fifth sentence after "1.84."
C.I.5.3	C.I.5.2.3.1		In the last sentence of the paragraph, the requirement to "identify the final metallurgical condition" of the material placed in service is unclear. Please clarify what the term, "metallurgical condition," means or else delete the term.	2	4	Delete "and final metallurgical condition" from the last sentence of the paragraph

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C.I.5.4	C.I.5.2.3.2(4)		The third sentence of the fourth information request requires the provision of sufficient information on the concentration of chemical compounds to meet Regulatory Guide 1.36 requirements. This should be clarified to address the leachable concentrations, since only leachable ions pose a threat (Cl or F) or ameliorating benefit (Na or SiO3) to the promotion of stress-corrosion cracking of austenitic stainless steel, as described in the Regulatory Guide.	1	4	Add the word, "leachable," before the word, "concentrations."
C.I.5.5	C.I.5.2.3.3(1)		This section identifies the requirement to submit data, test results or information that may not be available at the time of COL application. Please clarify what the requirements are for this type of information, and whether it is required to be provided at the time of COL application or at a later date, if at all.	2	2	Add the following at the end of the section as a separate paragraph, as applicable: "It is acceptable to submit a general description of the data, test results, or other information not available at the time of COL application. When detailed information required in this section is not available at the time of submitting the application, the COL applicant should make a commitment in the application that such information will be provided at a later date for NRC review."
C.I.5.6	C.I.5.2.3.3 C.I.5.2.3.4		The numbering of the bulleted items in the listed paragraphs is incorrect.	3	5	In C.I.5.2.3.3, change (5) to (3) In C.I.5.2.3.4, change (4) to (2)
C.I.5.7	C.I.5.2.3.5(1)		The second sentence of the stated section is not correct. It implies that inservice inspections can demonstrate whether or not a material is susceptible to PWSCC. ISI cannot demonstrate that a material is susceptible or not, ISI can only determine if there is in-service degradation or not. The industry performs inspections of many components that are susceptible to PWSCC without finding degradation.	1	4	Reword the second sentence of C.I.5.2.3.5(1) to state, "Describe test results that demonstrate the nickel-based alloy materials are not susceptible to PWSCC, and identify the inservice inspections that will be performed to confirm that PWSCC is not occurring in the materials."
C.I.5.8	C.I.5.2.3.3 C.I.5.2.3.4 C.I.5.2.3.5 C.I.5.2.4.1 C.I.5.4.7.1 C.I.5.4.7.2		The numbering of the bulleted items in the listed paragraphs should be re-started from (1)	3	5	Renumber the bulleted items to start with (1)
C.I.5.9	C.I.5.2.4.1(7)		The industry does not have "exemptions" from Code requirements, but rather has Relief Requests and alternatives per 10 CFR 50.55a. The industry also works to Code Cases, as specified in Regulatory Guide 1.147. Please clarify if our understanding is correct and this item can be deleted. If this requirement is addressing components that are exempt from the inspection requirements of Section XI as defined in Section XI (usually based on size), please clarify and elaborate that this is the intent of this item.	2	4	Delete the following bulleted item" Code exemptions. Identify any exemptions from Code requirements.

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C.I.5.10	C.I.5.2.4.2		The second sentence of this paragraph appears to duplicate information on operational programs contained in Section C.I.13.4, but does not comprehensively define the information that is required to enable the staff to make a reasonable assurance finding regarding the acceptability of the program.	1	2	Revise the second sentence of the paragraph under C.I.5.2.4.2 to read, "The preservice inspection program is an operational program as identified in C.I.13.4 of this guide, and should be fully described as defined in SECY-05-197."
C.I.5.11	C.I.5.3.1.7		Please clarify the requirement to discuss the procedures used to perform nondestructive evaluations in the second sentence of this bullet. Procedures will not be developed by the time of COL application. Also, it does not seem to be advisable to submit detailed procedures which require a FSAR update if a change to the procedure is performed. We believe that a discussion of the methods and techniques used to perform nondestructive evaluations, that will be incorporated in procedures developed as part of an ITAAC, provides sufficient information for staff review.	2	4	Delete the word "procedures" after "nondestructive evaluation" in the second sentence, and substitute the word "techniques."
C.I.5.12	C.I.5.3.3		The third sentence of the paragraph in this section states, "Also identify the reactor vessel designer and manufacturer, and describe their experience." This requirement does not appear to be appropriate. Please clarify why this information needs to be supplied.	2	4	Delete the third sentence of the paragraph that reads, "Also identify the reactor vessel designer and manufacturer, and describe their experience."
C.I.5.13	C.I.5.3.3.2		Please clarify what is meant by the words used at the end of the first sentence, "...improve their properties or quality?" These words appear to imply that Code-acceptable materials need improvement in order to be acceptable to NRC.	2	4	Delete the phrase, "to improve their properties or quality."
C.I.5.14	C.I.5.4.2.1 (2)		Detailed information on fracture toughness properties may not be available at the time of COL	2	4	Revise the second and third sentences of this section to read: "Provide sufficient information on materials for Class 1 components to show how compliance with the requirements of Article NB-2300 and Appendix G to Section III of the ASME Code will be verified. For Class 2 materials, provide sufficient information to show how compliance with the requirements of Article NC-2300 of Section III of the Code will be verified."
C.I.5.15	C.I.5.4.6 C.I.5.4.7		These sections start with a general statement concerning the description of the pre-operational test programs. Section C.I.5.4 is supposed to identify component and subsystem design. Requirements for descriptions of pre-operational test programs for a subset of systems in C.I.5.4 appear to be out of place and better covered in C.I.14.	2	4	Delete the lead-in paragraphs describing pre-operational test program descriptions underneath the subsections in C.I.5.4.6 and C.I.5.4.7.
C.I.5.16	C.I.5.4.7.2		The last paragraph in C.I.5.4.7.2 states, "(for example, in a BWR, the RCIC condensing mode)". The RCIC condensing mode in a BWR is not a current design. For instance, the current BWR, i.e. ABWR, does not have such an outdated system. Therefore, the above description should be deleted.	3	3	Revise the paragraph to read as follows: "Provide a mode diagram showing temperatures, pressures, and flow rates for each mode of RHR operation.

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C.I.6.1	C.I.6		The C.I.6 lead-in information states "The applicant should state its intentions with regard to adopting risk-informed categorization, and treating structures, systems, and components in accordance with Title 10, Section 50.69, of the *Code of Federal Regulations(10 CFR 50.69)." Generally, this should be done once in Section 3.2, not in the various sections of the FSAR discussing the SSCs*	2	3	Omit this statement from Chapter 6, but address the use of §50.69 in Section 3.2 of the FSAR. 10 CFR 50.69 is currently not mentioned in C.I.3.
C.I.6.2	C.I.6		Lead-in info to C.I.6 states "Generic design control documents (DCDs) typically address the equipment and materials used to manufacture the components in the engineered safety feature (ESF) system. If applicable, this information may be incorporated by reference." Workshop discussions have led the industry to believe that the Staff interprets Part 52 to require that the COLA include the DCD information, not "incorporate by reference."	2	3	Be consistent with Staff interpretation of 10 CFR Part 52.
C.I.6.3	C.I.6		The 3rd paragraph, 2nd sentence, reads in part, "...to serve as ESFs systems."	3	3	ESF should be singular, not plural. Change to, "...to serve as ESF systems."
C.I.6.4	C.I.6.1.3.3.3 (e)(3)		Section states "Operating experience has indicated that certain nickel-chromium-iron alloys (e.g., Alloy 690 and Alloy 182) are susceptible to primary water stress corrosion cracking (PWSCC) attributable to corrosion. Alloy 690 has improved stress corrosion cracking resistance in comparison to Alloy 600..."	2	3	Re-word to state "Operating experience has indicated that certain nickel-chromium-iron alloys (e.g., Alloy 600 and Alloy 182)"
C.I.6.5	C.I.6.1.1.2(1)		The first sentence of the paragraph discusses the control of the pH of ESF coolants.	3	3	Change "coolants" to "fluids," to be consistent with the rest of the chapter.
C.I.6.6	C.I.6.2.1.1		Traditional PWRs drain water to the refueling canal and during recirculation post accident the SI pumps draw from the sump to continue cooling and depressurizing containment. Not all next generation designs have a traditional sump. Discussion of the refueling canal may be misleading. The discussion in DG-1145 should be revised to make it more generic.	2	4	Remove discussion relating to the refueling canal or make the discussion more general.
C.I.6.7	C.I.6.2.1.4		This section contains the statement "Consider smaller break areas of steam line breaks starting with the double-ended rupture, until no liquid entrainment is calculated to occur." The approved AREVA methodology does not include this verbiage. This is typical of the Westinghouse approach and shouldn't be part of DG 1145 because it is a vendor specific approach. AREVA runs a spectrum of break sizes, but if the results of the analysis are trending toward lower containment pressure we don't continue to reduce the break size. For certain break size liquid entrainment may occur. The discussion in DG-1145 should be revised to make it more generic.	3	4	Revise the discussion to state "Consider smaller break areas of steam line breaks starting with the double-ended rupture"

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C.I.6.8	C.I.6.2.1.2, item (3)(g) C.I.6.2.1.3,2nd Item (1) C.I.6.2.1.4, item (1) C.I.6.2.1.5, item (1)		Typographical errors in the mass units of measure.	3	3	Change the mass units of measure from lbm to lbm for the mass release rate and enthalpy of mass released in C.I.6.2.1.2, item (3)(g), for the mass release rate in C.I.6.2.1.3, 2nd item (1), for the mass flow rate in C.I.6.2.1.4, item (1), and for the mass release rate and enthalpy of mass released in C.I.6.2.1.5, item (1)
C.I.6.9	C.I.6.2.2		Section C.I.6.2.2 only includes fan coolers, sprays and passive systems to remove heat from the reactor containment for PWRs. The US EPR uses the passive heat structures and the Residual Heat Removal (RHR) Hx to remove energy from the In-Containment Refueling Water Storage Tank (IRWST) which is similar to a BWR removing energy from the suppression pool. The discussion in DG-1145 should be revised to make it more generic.	3	4	The section should be written to include the energy removal from the IRWST for more than just BWR designs.
C.I.6.10	C.I.6.2.2.2		§C.I.6.2.2.2 states "Compare the design of the recirculation intake structures to the positions in RG 1.82, Revision 3, "Sumps for Emergency Core Cooling and Containment Spray Systems."" This is no the correct title for this RG.	3	4	"Compare the design of the recirculation intake structures to the positions in RG 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident.""
C.I.6.11	C.I.6.2.2.3		C.I.6.2.2.3 refers to RG 1.83 for analysis of NPSH for recirculation pumps, but the title identified is that of RG 1.82. The reference should be RG 1.82. RG 1.83 is titled "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes." Also, correct the "Surfaces" in the title to "Sources"	3	4	"Provide analyses of the net positive suction head (NPSH) available to the recirculation pumps, in accordance with the recommendations of RG 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident.""
C.I.6.12	C.I.6.2.2.4		C.I.6.2.2.4 requests "Provide the results of tests performed, as well as a detailed updated testing and inspection program." Delete this statement on the same basis as indicated in comments C.I.6.2.3.4-1, C.I.6.2.4.4-1, C.I.6.2.5.4-1, and C.I.6.4.5-1, and agreed to in the responses to the comments.	2	2	Delete "Provide the results of tests performed, as well as a detailed updated testing and inspection program."
C.I.6.13	C.I.6.3.1		C.I.6.3.1 states "Describe how the ECCS design meets the relevant Commission policy, as described in SECY papers and corresponding staff requirement memoranda (SRMs)." It is generally not appropriate to request applicants to discern and comply with the Commission Policy from SECY papers and the corresponding SRMs. These documents have not been through the appropriate review processes for public and stakeholder comment to be considered guidance to the applicants.	2	4	Revise to clearly identify the "relevant Commission policy" and use the SECY paper as your reference.
C.I.6.14	C.I.6.3.1		Section C.I.6.3.1 refers to "GL 98-0". Should these references be to GL 98-04. Please confirm.	3	5	Change reference to GL 98-04

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C.I.6.15	C.I.6.3.2.5		Section C.I.6.3.2.5 states "describe how containment sump recirculation debris screen design meets the guidelines in RG 1.82, Revision 3". The statement about the screen for a BWR should be added according to the RG 1.82 Revision 3.	3	4	The DG-1145 should be revised to read "describe how containment sump and suppression pool recirculation debris screen design meets the guidelines in RG 1.82, Revision 3."
C.I.6.16	C.1.6.3.2.5		C.I.6.3.2.5 states "Describe how the regulatory oversight of the active nonsafety systems was considered in using the process of "regulatory treatment of non-safety systems" described in SECY-94-084." The results of the SECY document, and the SRM (which indicates that the Westinghouse comments on this item, as stated in the Attachment to NTD-NRC-94-4145 should be accommodated) should be documented in some form of clear guidance to the industry. This SECY, the SRM and the WEC comments, are not readily available to the public.	2	4	Revise to clearly identify the criteria for acceptable results "of the SECY document, and the SRM..." and use the SECY and SRM as your reference.
C.I.6.17	C.I.6.3.4.1		C.I.6.3.4.1 refers to RG .79. The reference should be RG 1.79.	3	5	"Justify any exceptions to the regulatory position in RG 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized-Water Reactors.'"
C.I.6.18	C.I.6.4		C.I.6.4 refers to "Section 15.X.X, paragraph 5." The reference should be Section 15.6.5, paragraph 5.	3	5	"Reference information and evaluations in other sections of the application that relate to adequacy of the habitability systems (see Sections 6.5.1, 9.4.1, and 15.6.5, paragraph 5)."
C.I.6.19	C.I.6.4.2.2		C.I.6.4.2.2 – Ventilation System Design. This section should identify the ventilation system components that are located outside the Control Room Envelope and interface with unfiltered air outside the envelope, and if they are at negative or positive pressure. This information is necessary since these components are typically the main sources of unfiltered air in-leakage in a pressurized Control Room.	2	4	Add the following item in this section for evaluation of control room system –(3) list of air flow components (ducts, dampers, fans, air handling units, etc.) that are located outside the Control Room Envelope and/or interface with unfiltered air outside the envelope. Also, indicate if these components are at positive or negative pressure.
C.I.6.20	C.I.6.4.2.4		C.I.6.4.2.4 – Interaction with other zones and pressure containing equipment. This section needs to specifically address the interaction with air conditioning components that are pressurized with refrigerant, and interface directly with Control Room Envelope atmosphere. It may not be possible to isolate these components if they are needed for Control Room cooling. Although, most refrigerants in current use are non-toxic, they can displace air and cause asphyxiation in a confined space.	2	4	Add the following item in this section to consider for interaction – (3) potential leak or release of refrigerant from the Control Room air conditioning systems that have the pressurized refrigerant components interfacing directly with the Control Room Envelope air, and cannot be isolated. The refrigerant gas can displace air and cause asphyxiation in a confined space, or it could be toxic.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.6.21	C.I.6.4.2.5		C.I.6.4.2.5 refers to "Section 15.X.X, paragraph 5." The reference should be Section 15.6.5, paragraph 5.	3	4	"Present the corresponding evaluation of DBA doses to control room operators in Section 15.6.5, paragraph 5."
C.I.6.22	C.I.6.4.4.2		C.I.6.4.4.2 states "If chlorine has been identified as a potential hazard to the operator, specific guidance is provided by RG 1.95, 'Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chlorine Release.'" This is no longer accurate as RG 1.78 Rev 1 has subsumed the RG 1.95 guidance.	3	4	"RG 1.78 also provides specific guidance if chlorine has been identified as a potential hazard to the operator."
C.I.6.23	C.I.6.4.4.2		C.I.6.4.4.2 – Toxic Gas Protection. Typically the toxic gas detector is located in the outside air intake with an isolation damper downstream. This section should identify if the air intake isolation damper is designed to close before toxic gas reaches it.	2	4	Add the following item in this section for evaluation of toxic gas protection – (3) provide the travel time of the toxic gas/ outside air intake flow, from the detector sample point to the isolation damper, and compare it with the detector response time plus isolation damper closing time.
C.I.6.24	C.I.6.6.1		C.I.6.6.1 requests "A detailed inservice inspection program, including information on areas subject to examination, method of examination, and extent and frequency of examination, should be provided in the technical specifications." This sentence should be deleted since ISI is no longer included in the Technical Specifications (as the information was generally a duplication of the requirements).	3	3	Delete the sentence.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.6.25	C.I.6.6.6		C.I.6.6.6 requests "Describe the method to be used in evaluating examination results for Class 3 components and, until publication of IWD-3000, indicate the extent to which these methods are consistent with requirements in Article IWA-3000 of Section XI." This guidance should be updated to reflect that IWD-3000 has now been published.	3	4	"Describe the method to be used in evaluating examination results for Class 3 components and, indicate the extent to which these methods are consistent with requirements in Article IWD-3000 of Section XI."
C.I.6.26	C.I.6.7		The Main Steam Line Isolation Valve Leakage Control System (BWRs) has been eliminated in new BWR plants. It is recommended that the description be modified to make consistent with section C.I.10.4.4 in DG 1145.	2	4	Per SECY 93-087, for new BWR plants that do not incorporate a main steam isolation valve leakage control system and for which turbine bypass system holdup and plateout of fission products is credited in the analysis of design basis accident radiological consequences, demonstrate consistency with the seismic analysis described in SECY 93-087.
C.I.6.27	C.I.6 Table 6-2		C.I.6, Table 6-2, Item IV.C refers to units of "106 Btu/hr." The units should be 10^6 Btu/hr.	3	5	"10^6 Btu/hr"
C.I.6.28	C.I.6, Table 6-4		C.I.6, Table 6-4 contains an outdated note * that states "*Provided best estimates of these heat sinks in the PSAR stage and a detailed listing in the FSAR." This note should be deleted.	3	4	Delete the note.
C.I.6.29	C.I.6, Table 6-4		C.I.6, Table 6-4 items (19) and (34) are both other. Item (19) should probably be removed.	3	4	Delete item (19)
C.I.6.30	C.I.6, Table 6-4		C.I.6, Table 6-4, Item B, states "The following data should be provided for the passive heat sinks listed in Table 6-4A (a detailed listing in the FSAR stage):" The parenthetical phrase should be omitted since there is only one phase under Part 52.	3	4	Delete "(a detailed listing in the FSAR stage)"

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C.I.6.31	C.I.6, Table 6-4		C.I.6, Table 6-4, item D, includes a column header for density with units of "1/bft^{3}" and a column header for Thermal Conductivity with units of "Btu/hr-ft EF". The units should likely be "lb/ft^{3}" and "Btu/hr-ft^{2} EF," respectively.	3	4	"Density, lb/ft^{3}" and "Thermal conductivity, "Btu/hr-ft^{2} EF"
C.I.6.32	C.I.6, Table 6-4		C.I.6, Tables 6-4B, 6-4C, and 6-4D have several inconsistencies with the similar table in RG 1.70.	3	4	Correct the inconsistencies.
C.I.6.33	C.I.6, Table 6-5		C.I.6, Table 6-5 Item B(11) use of "Resiction" should be Restriction.	3	4	"Restriction"
C.I.6.34	C.I.6, Table 6-11		C.I.6, Table 6-11 footnote indicates plots should include time periods "to at least 106 seconds." This should be "to at least 10^{6} seconds."	3	4	"...to at least 10^{6} seconds."
C.I.6.35	C.I.6, Table 6-13		C.I.6, Table 6-13 identifies two headers for differential pressure with units of "psig". These units should likely be "psid".	3	4	"psid"
C.I.7.1	C.I.7.2 thru C.I.7.9		In these sections, the uses of SAR and FSAR are inconsistent. For example, in 7.2, 7.3, and 7.4, the "SAR" is referenced but in 7.5, 7.6, 7.7 and 7.8, reference is made to the "FSAR." This seems to be a consistency issue throughout the new draft guide. In the previous revision of the draft guide, only the "SAR" term is used. The SAR and FSAR are related but some implications may be made if one uses SAR instead of FSAR or vice versa.	3	3	More consistency in the use of SAR and FSAR.
C.I.7.2	C.I.7.5		The first paragraph leads into a bulleted list with "These system functions are:". However the bulleted list is a list of systems (such as post accident monitoring system) instead of a list of functions. The intent of the wording lacks clarity.	3	4	Reword the bulleted list to be functions instead of systems or reword the first paragraph to list systems instead of functions.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.7.3	Appendix C.I.7 A		Under item (19), the second sentence states "A statistically valid sample of system requirements should be selected to confirm that the applicants/ licensee's life-cycle activities have been implemented as planned. The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated." This statement is an attempt to clear up the amount of information that needs to be submitted. However, the method of determining the sample size of the requirements is still ambiguous. Exactly what one requirement constitutes is debatable and the sample size to provide "95% assurance" is open to interpretation. There was discussion at the work shop in July that the NRC would require an inventory of documents to be made available to the reviewers when the application is submitted and the NRC would then review what they thought was a valid sample size. This approach would be more manageable.	1	4	It is recommended that DG 1145 be revised to state that the applicant should identify documentation available for NRC inspection that confirms implementation.
C.I.7.4	Appendix C.I.7 A		Under item (20), the second sentence states "A statistically valid sample of software design outputs should be provided to confirm with at least 95% assurance that they address the functional requirements and have been allocated to the software appropriately, and to confirm that the expected software development process characteristics are evident in the design outputs." This statement is an attempt to clear up the amoun of information that needs to be submitted that was during the review of the first draft. However, the method of determining the sample size of the design outputs is still ambiguous. The sample size to provide "95% assurance" is open to interpretation.	1	4	It is recommended that DG 1145 be revised to state that the applicant should identify documentation available for NRC inspection that confirms implementation.
C.I.7.5	Appendix C.I.7 B		In Appendix C.I.7-B, under item (6), the last sentence references SRP Appendix 7.1-D, "Guidance for Evaluation of Conformance to IEEE Std. 7-4.3.2. This SRP Appendix currently does not exist. It is understood that the SRP's are being updated, however reference to future guidance does not provide clear guidance to applicants.	2	4	Change reference to existing guidance.
C.I.7.6	Appendix C.I.7 B		In Appendix C.I.7-B, under item (6), the guidance on communication independence is ambiguous and the present guidance on this matter is conflicting. Physical and electrical independence is addressed in this item but not communication independence. It states that additional guidance is provided in SRP Chapter 7, Appendix 7.1-C. When reviewing the guidance provided in SRP Appendix 7.1-C, it states in section 5.6 that Annex G of IEEE Std. 7-4.3.2 describes an acceptable means for providing communications independence. The version of the IEEE 7-4.3.2 that the SRP references must be 1993 since the SRP was published in 1997. The verbiage in this annex is exactly the same as that found in Annex E of the 2003 version of IEEE 7-4.3.2. However, RG 1.152, rev. 2, explicitly states that the NRC has not endorsed Annex E of IEEE 7-4.3.2 -2003. The regulation is conflicting.	2	4	Correct conflicting NRC guidance and provide clear guidance on communication independence.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.7.7	Appendix C.I.7.C-1		In this section, under Software Life Cycle Process Implementation, there is a bulleted item labeled "Test". In BTP-14, which is the origin of this wording, the word "Validation" is used. All other items in the lists are exactly the same except this one. Why was this word changed? Also, the numbering of the items starting with Software Life Cycle Process Planning should be labeled as (a), (b), (c) instead of (1) (2) (3)	3	4	Change the "Test" to "Validation" for consistency of wording with BTP-14. Change the numbering to be consistent with the rest of the Appendix.
C.I.7.8	Appendix C.I.7.C-1		Typographical error. Under item 12: Human Factors Considerations, there is a lone "e" in the text.	3	4	Eliminate "e" from text
C.I.7.9	Appendix C.I.7.C-1	C.I.7-1	In the first paragraph of this Appendix, reference is made to IEEE 603-1998. It states that IEEE 7-4.3.2 -2003 serves to amplify IEEE Std. 603-1998, yet there is no regulation that endorses IEEE Std. 603-1998. IEEE 7-4.3.2 -2003 is endorsed by Regulatory Guide 1.152 rev. 2 excep for Annexes B thru F.	2	4	Clarity is needed on the proper regulatory path to use IEEE Std 603-1998
C.I.7.10	C.I.7		The terminology in the second paragraph should be modified to be consistent with Regulatory Guide 1.97.	3	3	Delete "Information for post-accident" and substitute "Instrumentation for accident."
C.I.7.11	C.I.7.1.2		Since each system section (RTS, ESF, etc.) has a design basis sub-section, the third paragraph of C.I.7.1.2 is unnecessary.	3	4	Delete the third paragraph of C.I.7.1.2
C.I.7.12	C.I.7.4.1		Remote shutdown capability is not required to meet IEEE 603.	3	4	Make the last bullet about remote shutdown capability a separate paragraph.
C.I.7.13	C.I.7.5.1		The terminology in the first bullet should be modified to be consistent with Regulatory Guide 1.97.	3	4	Delete "post-accident monitoring (PAM) systems" and substitute "Accident monitoring instrumentation."
C.I.7.14	C.I.7.5.1		The fourth and fifth bullets do not have references to regulatory requirements for the safety parameter display system and information to be transmitted to the emergency response facilities and nuclear data link.	2	4	Add the appropriate references to the fourth and fifth bullets.
C.I.7.15	C.I.7.5.2		The first sentence of C.I.7.5.2 discusses only Regulatory Guide 1.97 type A instrumentation (i.e., required manual safety functions and essential operator actions). However, the examples listed include non-safety functions (e.g., monitoring the status of safety equipment). In developing a suggested revision to this sentence, it was realized that there is no need for a separate discussion of this subset of information systems important to safety.	2	4	Delete the first paragraph of this section and add a new sentence at the end of the section that reads, "The applicant should identify appropriate design criteria in the FSAR and demonstrate compliance with these criteria."

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C.I.7.16	C.I.7.6.1		This section requires submittal of schematic diagrams, while all other instrument and controls sections require submittal of logic diagrams, piping and instrument diagrams, and location layout drawings.	2	4	Delete the last sentence of section C.I.7.6.1 and substitute, "The applicant should provide logic diagrams, piping and instrumentation diagrams, and location layout drawings of interlock systems important to safety in the SAR."
C.I.7.17	C.I.7.7.2		Defense-in-depth and diversity is covered adequately in section C.I.7.1.8.	3	4	Delete the ninth bullet in C.I.7.7.2.
C.I.7.18	C.I.7.9.2		This section applies to both safety and non-safety communications systems. Since there is only one list of design basis information, it is unclear which criteria should be discussed for non-safety systems. Also approximately half of the design considerations listed will have already been discussed in the SAR section that describes the supported system in which the communications components are used	2	4	The list of design considerations should be limited to those items unique to communications systems by deleting the first, second, sixth, seventh, eighth, ninth, and eleventh bullets.
C.I.7.19	C.I.7.9.2		Miscellaneous editorial changes	3	4	In the fourth bullet, delete "DCA" and substitute "DCS." In the last sentence of the sixth bullet, delete "supported systems" and substitute "safety systems." In the eighth bullet, delete "protection system" and substitute "safety system." In the tenth bullet, delete "portion of a system" and substitute "portion of a safety system." In the tenth bullet, delete "from another system" and substitute "from a non-safety system."
C.I.7.20	C.I.7.9.3		The references to GDC 1 and 10 CFR 50.55a(a) (i.e., quality standards and records) appear out of place in a section about communications systems.	2	1	Delete the current section and replace it with "The applicant should provide analyses to demonstrate that the communications systems conform to the guidelines in the regulatory guides and industry codes and standards applicable to these systems."
C.I.7.21	C.I.7.B-1(4)		The third sentence states "The applicant/licensee should confirm that there is independence between environmental control systems and sensing systems which would indicate the failure or malfunctioning or environmental control systems." It is agreed that the single failure criterion must be met if the environmental control system is required to ensure a particular environment. However, independence is required between redundant portions of the environmental control system, not between the environmental control system and the sensing system that indicates failure or malfunction of the environmental control system.	1	1	Delete the third sentence of C.I.7.B-1(4).

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.7.22	C.I.7.B-1(5)		NRC comment C.I.7.39 on the preliminary version of this section identified that the statement, "Failure of computer system hardware or software should not inhibit manual initiation of protective functions or the operator performance of preplanned emergency or recovery actions" is not a requirement of IEEE Standard 603 and should be deleted. This previous comment stated that the requirements of Section 6.2 of IEEE Standard 603 are sufficient to ensure proper manual control. The NRC response to the comment was to make no change based on the justification that "This guidance comes from BTP 7-19 acceptance criteria...BTP 7-19 is developed based on Commission SECY-93-087...dated July 15, 1993." It is noted that SECY-93-087 and BTP 7-19 were developed prior to incorporation of IEEE Standard 603 into 10 CFR 50.55a(h) in 1998. Hence, this portion of these documents in not supported by current regulations. The guidance promulgated by these documents related to manual controls is inappropriate in the subject appendix entitled "Conformance with IEEE Std. 603."	1	1	Delete the fifth bullet of section C.I.7.B-1(5).
C.I.7.23	C.I.7.B		Miscellaneous editorial changes	3	5	Delete "protection system" and substitute "safety system" in the following places: Third sentence of section C.I.7.B-1(7) First sentence of section C.I.7.B-1(9) Second sentence of section C.I.7.B-2(1) First sentence of section C.I.7.B-2(3) First bullet of section C.I.7.B-2(3) Last bullet of section C.I.7.B-2(3) First sentence of section C.I.7.B-2(4)
C.I.7.24	C.I.7.B-2(3)		Editorial change	3	3	In the second sentence, delete "protection functions" and substitute "safety functions."
C.I.8.1	C.I.8.1 (C.III.1, Sec.8.1)		Introduction states the need to show compliance with various regulations and standards (e.g. Reg Guides, GLs). This is a similar requirement to section 1.9 of the DG	3	4	Provide documentation for compliance with Reg Guides, etc in this section (C.I.8.1), and have section C.I.1.9 refer to this section. This is a generic item for DG-1145, so resolution should be consistent with other sections. Enercon has developed a FSAR Writer User Guide which addresses how to handle section 1.9 compliance discussion
C.I.8.2	C.I.8.1		Reg. Guide 1.29 is out of order.	3	4	Place reg. guides in numerical sequence

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C.I.8.3	C.I.8.1 C.III.1 Section 8.4		Introduction & section 8.4 refers to AAC as part of SBO response. Not all plant designs will need an AAC. Part of "bigger picture" issue on GDC 17 and passive plants. See comments for section C.I.8.2	2	4	This sentence should be revised, e.g.; "... the onsite electric system should be described briefly in general terms, and a brief description provided for station blackout mitigation, and the..."
C.I.8.4	C.I.8.1		Introduction discusses systems "important to safety"; A more specific definition / scope needs be provided.	2	4	For passive plants, offsite power is not safety related but may be RTNSS. Staff will consider providing a definition. No discussion on relation to passive designs. This is a generic issue since the ITS term is used multiple times in the DG. Definition of ITS is important since in PRA space ITS is risk significant category 3. Assigning equipment this category may impact M-rule and RTNSS issues.
C.I.8.5	C.I.8.2.1,2 C.III.1 Section 8.2 C.I.8.4.1	C.I.8.2.1-2 C.I.8.2.1.2-1	These sections require a significant amount of detail on the offsite transmission system, much of which appears to be predicated upon the GDC 17 requirement for two physically independent circuits. Examples; (1) Section should require a Failure Modes and Effect Analysis (FMEA) for the switchyard. This requirement should only apply to sites that must comply with GDC 17 (i.e. exclude passive plants). (2) FMEA and Stability Analysis may not be complete at time of COLA submittal due to availability of information for switchyard design. (3) Local power sources and transmission paths for re-supply may be under the control of a Transmission System Operator (TSO) that is independent of the licensee. This information may not be available at the time of COLA submittal.	1	1	For COL applications that reference a DCD for a design that has been granted an exemption to the requirement for two offsite sources, provide direction for the required subset of information on the transmission system that is required. Provide the basis for the requirement for this information. Big picture question is what is required of passive plants with an exemption to GDC 17. For plants that require FMEA, provide methodology and schedule in COLA. FMEA provided when completed prior to fuel load. Issue also applicable to transmission stability study . See Attachment 1- proposed guidance markup
C.I.8.6	C.I.8.2.2		This section identifies a requirement to: "Describe how the stability of the grid is continuously studied as the loads grow and additional lines and generating lines are added."	1	1	Provide basis for this requirement or delete.
C.I.8.7	C.I.8.3.1.1 C.I.8.3.2.1	C.I.8.3.1.1-1	The requirement to discuss how RG 1.75 recommendations are met is redundant to section 8.1 requirements. Same comment applies for DC cables. (This comment applies to two entire paragraphs on each section and not just the sentence containing RG 1.75.)	3	4	Discuss compliance in section C.I.8.1 and refer to discussion in sections C.I.8.3.1.1 & C.I.8.3.2.1
C.I.8.8	C.I.8.3.1.1	C.I.8.3.1.1-2	System Capacity & Capability section discusses suitability of diesel generators for standby power source. Not all plant designs utilize diesels, thus the wording should be more generic.	3	4	e.g.; "...suitability of the standby power sources to ensure sufficient..."

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C.I.8.9	C.I.8.3.1.3 C.I.8.3.2.3		Codes may change over life of plant; "Electronic models" of software are not typically submitted to the NRC as a part of the application. Models will be available for inspection by NRC. Comment also applies to DC sections.	3	4	Provide "input decks" for electronic models to allow NRC independent analysis. Identify codes used independent of COLA. Section C.III.1 Ch 8.3 does not require codes for designs based on DCD.
C.I.8.10	C.I.8.3.1.3		(1) Section 4 for Equipment Protection does not specify that it only applies to safety-related equipment. (2) It is unclear if this section should cover "associated circuit analysis" type issues that are required by the Fire Protection plan. (3) Section 4 is under AC, but includes discussion on DC fuses.	3	4	(1) Specify "...what safety related equipment needs to be considered for equipment protection..." (2) State that associated circuit analysis for response to fire (e.g. separation) is covered in section C.I.9.5.1 (3) Add separate section for DC system protection (C.I.8.3.2), or make section "common".
C.I.8.11	C.I.8.3.1.3 C.I.8.3.2.3		Section on Power Quality (AC & DC) is a new requirement. Section does not specify any industry guidance (e.g. IEEE 519, RG 1.180); What parameters are concerns, e.g. frequency, voltage, harmonic content (THD)? What acceptance criteria for VFDs are a concern (THD, notch depth)? NRC concern on impact of VFD operation on any class 1E power systems, but no criteria provided.	2	4	Section C.III.1 Ch 8.3 does not require discussion on power quality for designs based on DCD. Power quality not discussed in AP-1000 DCD.
C.I.8.12	C.I.8.3.2.1	C.I.8.3.2.1-1	Section 4 requires battery characteristic curves; Characteristic curves will not be available until batteries are purchased, which will be after COLA submittal.	1	2	Discuss generic battery characteristic curves, and schedule for submittal of specific curves prior to COLA approval.
C.I.8.13	C.I.8.3.2.3		Page C.I.8-15 editorial changes; Wording under Short Circuit Studies and Monitoring and Testing	3	5 editorial	The second sentence should be;"Identify the potential effects that must be considered during testing, and the margins that are being applied." Under monitoring and training, delete the word existing in the first sentence.
C.I.8.14	C.I.8.4.2		Last sentence on passive system designs should be moved to the beginning of this section.	2	4	More general discussion about passive plants should also be included in other applicable sections (e.g. Offsite & Onsite AC requirements not all applicable to passive designs). See markup in Attachment 1.

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C.I.9.1	C.I.9.1.1.1, C.I.9.1.2.1		These paragraphs address "means for maintaining a sub-clinical array." The context of the paragraph suggests that the word "clinical" should be replaced by the word "critical."	3	5	Replace the word "clinical with the word "critical."
C.I.9.2	C.I.9.1.4.2		The third sentence of the paragraph, which deals with the system description of the Fuel Handling System, states, "Component drawings, building layouts, and illustrations of the fuel handling procedures should also be provided." Please clarify what is meant by "illustrations of the fuel handling procedures."	3	4	By comparison with the requirements of C.I.9.1.5.2, it appears that the word "procedures" should be replaced with "components" or "devices."
C.I.9.3	C.I.9.1.5.1		Section C.I.9.1.5.1, "Design Basis", for Overhead Heavy Load Handling Systems: This section should be expanded to define "heavy	3	1	Add the following: "A heavy load is defined as a load weighing more than one fuel assembly and its associated handling device."
C.I.9.4	C.I.9.1.5.1		Section C.I.9.1.5.1, "Design Basis", for Overhead Heavy Load Handling Systems: This section should be expanded to clarify what is being protected from a heavy load drop.	3	1	Revise the opening sentence to read (italics added where new provision is added: "Provide the design bases...cause the greatest damage to safety related structures, systems or components; the areas..."
C.I.9.5	C.I.9.1.5.2		Section C.I.9.1.5.2, "System Description," for Overhead Heavy Load Handling Systems: The opening sentence requires that illustrations of special lifting devices be submitted. At the time the COL application is being submitted, this information would generally not yet be available. Conformance to National Standards, such as ANSI N13.2 that is for the design of special lifting devices, should be all that is required. This provision is spelled-out in other regulatory guidance i.e. NUREG-0612.	1	2	Delete "and illustrations of special lifting devices" from the opening sentence.
C.I.9.6	C.I.9.4.1		This section should use the terminology "Control Room Envelope" (CRE), consistent with Habitability Section C.I.6.4.2. Add the requirement to provide details on missile protection of outside air intake and exhaust louvers in Section C.I.9.4.1.1 Add "unfiltered air inleakage" in the examples given for testing in Section C.I.9.4.1.4.	2	3	This section should include a definition of the CRE (areas included) or reference Section C.I.6.4.2 for the definition and cover the system serving the CRE.
C.I.9.7	C.I.9.3.4.3		Eighth bullet regarding Failure Modes and Effects Analysis (FMEA). The text states "results of failure modes and effects analyses vis a vis single failure criteria for safe shutdown and prevention/mitigation of postulated accidents." Does this imply that if the CVCS system provides no safety-related function for safe shutdown or design basis accident mitigation, then no FMEA is required?	2	4	N/A
C.I.9.8	C.I.9.3.4.4		C.I.9.3.4.4 Inspection and Testing Requirements Recommend the second sentence be transferred to C.I.9.3.4.2 System Description as it does not pertain specifically to Inspection and Testing.	2	4	Move "Outline the operating procedures for the CVCS, including the controls for boron addition and primary coolant dilution." To Section C.I.9.3.4.2.

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C.I.9.9	C.I.9.5.1.1		The 4th bullet item pertains to Operator Manual Actions (OMAs), or recovery actions, that may need to be taken to mitigate spurious actuations of equipment due to fire-induced circuit failures, or may otherwise be needed to achieve and maintain safe shutdown during and after a fire. The draft guidance states that the "acceptance criteria" for OMAs should be provided, along with the analyses (including thermal-hydraulic analysis) to demonstrate that safe shutdown can be achieved and maintained. Applicants may lack the [scenario-specific] technical input requirements developed to the necessary level of detail to adequately demonstrate the feasibility of OMAs at the COL submittal stage.	2	2	Regulatory provisions should be established in the DG for the COL applicant to develop reasonable bases for the acceptability of OMAs as a post-COL submittal activity. On this basis, the feasibility of OMAs could be assessed by the NRC as part of the plant inspection process. Meanwhile, the NRC and industry should work to develop a minimum set of acceptance criteria for OMAs moving
C.I.9.10	C.I.9.5.4 through C.I.9.5.8	C.I.9.5-1	Sections discuss detailed information requirements for diesel generator subsystems	2	4	Provide a discussion of what decreased level of information is required for plants that do not have safety-related diesel generators.
C.I.10.1	C.I.10.1		Section C.I.10.1 states "In addition, for all of the following sections, include a discussion of how the system design meets the applicable regulatory requirements and is consistent with the regulatory guidance available". This statement is more appropriate for general statement of C.I.10 (before section C.I.10.1).	3	3	Relocate statement and add at the end "six months prior to application submittal".
C.I.10.2	C.I.10.3.6.1		For non-code components, provide expected plant-specific material property data such as chemistry, yield strength, fracture toughness data (KIC), Charpy V-notch energy, nil-ductility temperature, and fracture appearance transition temperature. Identify appropriate ITAAC to verify the plant-specific material property data, including identification of manufacturer/fabricator, and heat number(s).	1	4	It is unclear what is meant by a "non-code component". The first paragraph under C.1.10.3.6 states that this section is only applicable to ASME Section III, Class 2 and 3 components. This is reinforced in the lead sentence to C.I.10.3.6.1. In this context, a non-code component may refer to a component installed in the Class 2 and 3 portion of the system that is not ASME code stamped. If "non-code component" is referring to components installed outside of the ASME Section III, Class 2 and 3 (non-safety related) portions of the system, the information requested appears to be beyond the requirements of the current SRP.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.10.3	C.I.10.3.6.1		For non-code components, provide plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s). Per past practice for design certification and Section C.II.2, ITAAC are not established to verify material properties of non-code components in the steam and feedwater systems. Rather, NRC may verify actual material properties through normal design implementation inspections.	1	1	Suggest deletion of individual ITAAC requirements in this and other sections. The more global guidance on ITAAC identification and construction is provided in C.II.2 of DG-1145. This global guidance will provide for consistent ITAAC selection based on the overall safety philosophy of the design. As noted in C.II.2: "The type of information and the level of detail included in the ITAAC is based on a graded approach that is commensurate with the safety-significance of the facility's SSCs. Top-level design information selected for verification in the ITAAC should contain the principal performance characteristics and safety functions of the SSCs, their importance in various safety analyses, and their functions for defense-in-depth considerations."
C.I.10.4	C.I.10.4.7		The corresponding section of C.III.1 differentiates between the PWR and BWR issues.	3	3	For clarity, please consider separate phrasing of BWR and PWR requirements.
C.I.10.5	C.I.10.4.9		Section discusses detailed information requirements for auxiliary feedwater systems	2	4	Provide a discussion of what decreased level of information is required for plants that do not have safety-related auxiliary feedwater systems or no auxiliary feedwater systems.
C.I.11.1	C.I.11, C.III.1, Ch.11		The highest priority for a nuclear plant is the safe, efficient generation of electricity. Liquid and solid effluent processing can usually be provided as an off site vendor service more competitively and with less distraction to the safe, efficient generation of electricity. Safety analyses for off site vendor activities is addressed as part of the vendor facility license and is not appropriate to address in the nuclear plant SAR. Moreover, the option of when to use off site processing, which waste to process off site, what quantity is processed off site, and what off site processing techniques might be selected at any given time is a business competitive and economic issue which has no bearing on the plant SAR.	1	1	Add a paragraph at the beginning of this section which recognizes off site vendor processing of liquid and solid effluents as a normal, competitive business option and which does not require further discussion or clarification in the SAR nor any related flowcharts. It is appropriate to capture on site waste processing data and information in the nuclear plant SAR, and it is reasonable to expect that a fixed and/or mobile processing capability is incorporated in the plant design for each waste type and appropriately addressed in the SAR. Off site processing activities at independently licensed facilities are not appropriate to address in the plant SAR.
C.I.11.2	C.I.11, C.III.1, Ch.11		There is some confusion as to the requirement for P&IDs to be included in the COLA or SAR. Established precedence allows P&IDs to be referenced in the SAR without actual inclusion of the P&IDs in the SAR. It seems reasonable to apply this precedent to the COLA.	1	4	Add a comment that P&IDs are to be referenced in the COLA and SAR without actual inclusion of the P&IDs in the COLA and SAR.

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C.I.11.3	C.I.11, C.III.1, Ch.11		In advanced nuclear plants, mobile (including skid-mounted) systems are expected to be a key, common component of the plant design. Since the systems and their connections are addressed in the engineered design drawings and SAR, and since the connections for such systems are included in the P&IDs, the word "temporary" and "temporary connections" adds a layer of confusion which will adversely impact routine installation, use, maintenance and replacement of such systems and connections.	2	4	Remove all references to "temporary" waste systems, relying on the term "mobile (including skid-mounted)." Remove all references to "temporary connections" and replace with "engineered, flexible connections." Reference should be made to RG 1.143 and ANSI 40.37.
C.I.11.3 (continued)	C.I.11, CIII.1, Ch.11		The problem arises because the term "temporary" as applied to nuclear plant systems is strongly associated with temporary modifications and narrowly defined time limits for temporary modifications and temporary installations. Therefore, in most nuclear plants, the word "temporary" suggests an immediate engineering review and classification as a temporary modification with clear time constraints. In sharp contrast, the mobile system concept and design is intended for short term (e.g., outage) and long term (e.g., up to 20 or more years) installations, as wel as inter-unit shuttle capability. With further regard to "temporary connection" points included in the plant design for mobile systems; a more accurate and appropriate term would be "engineered, flexible connections." Reference should be made to RG 1.143 and ANSI 40-37.	2	4	see above
C.I.11.4	C.III.1, Ch.11		It should be sufficient for a plant to state that waste will be disposed when an acceptable disposal option is available. If the plant recognizes that such an option is not available at the time the SAR is submitted or at a subsequent date, then the SAR should provide appropriate information for an interim storage facility or ISFSI, as applicable. The ALWR design is intended for a 60-year licensing period, plus at least 10 years for decommissioning. This is beyond the initial application life of a commercial waste disposal facility, which means that every new plant faces a potential for having to store some waste for short periods of time. If a disposal option is available, waste will normally go from the processor to a disposal facility. If no disposal option is available, then the waste will be processed and returned or sent to an off site vendor storage facility. If the process and return option materializes as a matter of normal operation, then the SAR should address it along with the interim storage consideration. If the disposal-site-available situation is active, then this requirement need not be addressed.	1	1	Consistent with the preceding comment, each occurrence of the following passage or similar passage should be deleted: "Indicate what fraction, if any, of all solid waste processing will be contracted out to waste brokers or specialized facilities. Describe the disposition of solid wastes generated by the plan once processed in such a manner. Indicate whether such processed wastes will be returned to the plant for subsequent disposal or will be shipped directly by the processor to an authorized low-level radioactive waste disposal facility under 10 CFR Part 61 or equivalent Agreement State regulations."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.11.4 (continued)	C.III.1, Ch.11		Equally important, the "fraction of waste processing contracted out" will vary as a matter of competitive routine based on disposal fees, waste characteristics, on site processing costs, and off site processing costs. It cannot be predicted reliably more than one year in advance, so it would never be reliable if stated in the SAR and would constantly need to be updated. It should be sufficient to recognize – without stating it in the SAR – that the plant will rely on safe, licensed and efficient off site processing at the discretion of the plant operator and prevailing economics.	1	1	see above
C.I.11.5	C.I.11		The plant should describe the equipment to be used and provide any appropriate data. At present, very few USA nuclear plants rely on in-house solidification, compaction, shredding, or crushing.	1	1	All references to specific processing equipment (e.g., compactors, shredders, solidifying units) and processing methods (e.g., solidification) should be deleted where they might suggest a requirement for the plant to rely on such systems.
C.I.11.6	C.I.11		Many paragraphs and passages in DG-1145 appear to require details related to specific processes, equipment and procedures that may not be available or accurately defined at the COLA. For example the types of training, specific procedures, process control program. Such data and documentation should be incorporated in the FSAR by reference and made available for review prior to start-up.	1	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA.
C.I.11.7	C.I.11		There are several references to "10 CFR 20.1302" dose limits. 10 CFR 20.1301 is the correct reference for the 10CFR20 dose limits.	3	1	Change 10 CFR 20.1302 to 10 CFR 20.1301
C.I.11.8	C.I.11		NRC Information Notice IN 91-40, Contamination of Nonradioactive System And Resulting Possibility For Unmonitored, Uncontrolled Release To The Environment, should be included along with IE Bulletin No. 80-10 throughout these documents in discussions of contamination of non-radioactive systems. Based on industry Operational Experience (OE), IN 91-40 updates information published in IE Notice 80-10, and should be appropriately referenced.	2	1	Include references to IN 91-40 and IE Bulletin 80-10 where appropriate. Include also in Section C.I.11.6 as references. Consideration should also be given to including references to Reg. Guide 1.11 where appropriate.
C.I.11.9	C.I.11.2.1 pg 3, para 1 and General Comment		All references to "site-specific cost benefit analysis, regardless of purpose or liquid effluent type, should be deleted. This includes any requirement to show that the proposed systems contain all items of reasonably demonstrated technology that, when added to the system in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio affect reductions in dose to the population or comparing equipment to outdated technology. Additionally requires an isotopic analysis that pertains only to surface waters. 10 CFR50 provides for an alternative approach.	1	1	This item is suggestive of "best available technology" and could lead to numerous, subjective challenges on the acceptability of the licensee approach. Some alternative language which could minimize the impact might be: "10CFR50, Appendix I, para D. and Regulatory Guide 1.143 Rev 2 provide the language and an acceptable alternative approach". Extensive references, discussion and justification are provided in Attachment 1 to this Table.

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C.I.11.10	C.I.11.2.1 pg 3, para 2		The required information is basically equivalent in SRP 11.2 Draft Rev. 3, Section III.2.c & Section IV.3; SRP 11.3 Draft Rev 3, Section III.2.b & SectionIV.3, plus it's associated ETSB 11-5, Section B.1.b; SRP 11.4; DG-1145 Section C.I.11.3 and DG-1145 Section C.I.3.1. However, it conflicts with Regulatory Guide 8.8 Revision 3, 1978, Section C.2 on page 8.8-7. SRP 11.2 Draft Rev. 3 Section III.2.c states: "The system capability to process wastes at design basis fission product leakage levels, i.e., from 1% of the fuel producing power in a PWR or, in a BWR, consistent with a noble gas release rate of 3.7 MBq/sec per MWt (100 Ci/sec per MWt) measured after 30 minutes delay." In conflict, Regulatory Guide 8.8 Revision 3 states: "Fission product source terms should be estimated using these bases: (1) an offgas rate of 100,000 Ci/sec after 30 minutes delay for BWRs and (2) 0.25% fuel cladding defects for PWRs."	2	1	Please note that this applies in multiple locations throughout DG-1145.
C.I.11.11	C.I.11.2.1 pg 3, para 3		"Excessive" suggests an unplanned event or accident; the focus of the SAR is on "normal operation, including anticipated operational occurrences."	3	1	In the last line of the paragraph, replace the word "excessive" with "peak."
C.I.11.12	C.I.11.2.1 pg 3, para 5 AND C.III.1, Sec 11.2.1 pg 116, bullet 1		RG 1.143 also applies to in-plant systems (i.e., not just mobile equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.2 on page 2 and C.III.11.2, ensuring that it is linked to in-plant systems as well. This same comment applies to C.I.11.3, C.I.11.4, C.III.11.3 and C.III.11.4.
C.I.11.13	C.I.11.2.1 pg 3, para 5 AND C.III.1, Sec. 11.2.1 pg 116, bullet 1		With regard to plant interface, skid-mounted systems are mobile, and all mobile and skid-mounted systems have the same plant interface (connection) considerations in terms of the SAR. Confusion arises when DG-1145 provides extensive discussion on mobile systems, then it separately addresses skid-mounted systems with the same requirements.	3	4	The term "mobile" should be clarified as "mobile (including skid-mounted)."
C.I.11.14	C.I.11.2.1 pg 4, para 4 AND C.III.1, Sec. 11.2.1 pg 116, bullet 7		At most plants, the Liquid Radwaste System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	2	2	This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. It should be deleted as a requirement or clarified as to intent and applicability.

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C.I.11.15	C.1.11.2.1 pg 4, para 5 AND C.III.1, Sec. 11.2.1 pg 116, bullet 9		A significant aspect of environmental contamination relates to groundwater contamination. EPRI has developed groundwater documents which capture the latest industry guidance, as well as industry lessons learned and technical references. These references will be very useful in responding to this requirement.	3	4	Add references to EPRI Groundwater documents
C.I.11.16	C.I.11.2.2, pg 4, Para 7 AND C.III.1, Sec. 11.2.2 pg 117, para 1		Some systems are not normally considered Radioactive Waste systems, e.g., PWR turbine drains and steam generator blowdown.	3	4	Clarify last sentence regarding processing as follows: "Indicate the processing to be provided for all liquid radwaste (e.g., the systems indicated in Regulatory Guide 1.143)."
C.I.11.17	C.I.11.2.3, pg 5, para 4 AND C.III.1, Sec. 11.2.3 pg 117, para 5		It is not clear why the NRC is pushing SI units, especially as a priority over USA units. Becquerels are routinely required and as more desirable than curies (or perhaps the NRC is requiring both); other passages in the SAR call for kg/yr and m3/yr. If the NRC is seeking an across-the-board change, then it should do so for all licensees and all regulatory requirements. It is not appropriate to seek such a change within a new DG.	1	1	On line 5 of this paragraph, change "...and the becquerel (curie) and radionuclide content (the activity and expected radionuclide distribution..." to "and the activity and radionuclide (expected radionuclide distribution..." This same comment applies throughout C.I.11 and C.III.11
C.I.11.18	C.I.11.2.3, pg 5, Para 3		This is an operational consideration, requires specific knowledge of liquid waste processes and reactor water chemistry, and is not a regulatory consideration.	1	1	Delete the first sentence.
C.I.11.19	C.I.11.2.3 pg 5, para 5 AND C.III.1, Sec. 11.2.3 pg 117, para 6		This section states that Regulatory Guide 1.109 should be used to calculate doses to members of the public, and then to compare the doses to 10CFR20 dose limits. The problem with this requirement is that RG 1.109 and 10CFR20 are based on different ICRP dose methodologies and can not be directly compared. Moreover, RG 1-109 is out of date. Federal Register Vol. 56, No.98, 5/21/91 which issued a revised 10CFR20, states that demonstrating compliance with the design objectives on 10CFR50, Appendix I, and the limits of 40CFR190 will demonstrate compliance with the 0.1 rem 10CFR20 dose limit.	1	1	Remove the requirement to compare RG 1.109 calculated doses to the 10CFR20 dose limits, and/or provide more guidance on how to demonstrate compliance with the 10CFR20 dose limits such as what was provided in the Federal Register. Alternatively, replace RG 1-109 with Federal Guidance 11 and 12..
C.I.11.20	C.I.11.3.1 pg 7, para 2 AND C.III.1, Sec. 11.3.1 pg 117, para 1		RG 1.143 also applies to in-plant systems (i.e., not just to mobile or temporary equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.3 on page 6, ensuring that it is linked to in-plant systems as well.

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C.I.11.21	C.I.11.3.1 pg 8, para 4 AND C.III.1, Sec. 11.3.1 pg 118, para 5		This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. Also, at most plants, the Gaseous Effluent System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	1	1	Delete as a requirement or clarify as to intent and applicability.
C.I.11.22	C.I.11.3.3 pg 9, para 6 AND C.III.1, Sec.11.3.3 pg 119, para 5		Same comment as above for C.11.2.3 with regard to RG 1-109.	1	1	Remove the requirement to compare RG 1.109 calculated doses to the 10CFR20 dose limits, and/or provide more guidance on how to demonstrate compliance with the 10CFR20 dose limits such as what was provided in the Federal Register. Alternatively, replace RG 1-109 with Federal Guidance 11 and 12..
C.I.11.23	C.I.11.3.3 pg 9, para 6 AND C.III.1, Sec. 11.3.3 pg 119, para 5		This section requires that, for gaseous radioactive releases, the licensee must "demonstrate compliance with regulations by comparing the calculated effluents with the concentration limits of 10 CFR Part 20, Appendix B, Table 2, Column 1". Showing compliance with the EC values in 10CFR20, App. B, Table 2 is currently being performed only for liquid effluents per NUREG-1301 and NUREG-1302. As stated in NUREG-1301, for gaseous effluents, site boundary dose limits provide reasonable assurance that the gaseous EC values in 10CFR20, App. B, Table 2 will not be exceeded.	1	1	Remove the sentence, "Demonstrate compliance with regulations by comparing the calculated effluents with the concentration limits of 10 CFR Part 20, Appendix B, Table 2, Column 1" and/or provide NUREG-1301 and NUREG-1302 information that clarifies how the 10CFR20 gaseous EC requirement can be met.
C.I.11.24	C.I.11.4.1 pg 10, para 5		SI unit discussion again; should not be preferential	1	1	Delete SI units or make them non-preferential (i.e., do not list them first).
C.I.11.25	C.I.11.4 pg 10, para 3 AND C.III.1, Sec. 11.4 pg 119, para 6		Mobile systems do not need to be skid-mounted	3	4	Delete the phrase "skid-mounted"
C.I.11.26	C.I.11.4.1 pg 10, para 7 AND C.III.1, Sec. 11.4 pg 120, para 1		RG 1.143 also applies to in-plant systems (i.e., not just to mobile or temporary equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.4 on page 10 and C.III.11.4 on page 119, ensuring that it is linked to in-plant systems as well

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C.I.11.27	C.I.11.4.1 pg 11, para 3		As used in this paragraph, the word "cleaning" is unclear. Clarification is recommended. It is also recommended that the phrase "and ANSI 55.1" be added after "Regulatory Guide 1.143" along with an appropriate reference to ANSI 55.1 in Section C.I.11.6.	2	4	Clarification needed. Reference to be added.
C.I.11.28	C.I.11.4.1 pg 11, para 3		The intent of the paragraph is not clear, specifically in reference to the term "cleaning." Also add reference to ANSI 55.1.	2	4	Clarify to avoid inadequate responses. ANSI 55.1 provides clarity and supports the connection to RG 1.143.
C.I.11.29	C.I.11.4.1 pg 11, para 6 AND C.III.1, Sec. 11.4.1, pg 120, para 5		This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. Also, at most plants, the Solid Radwaste System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	1	1	Delete as a requirement or clarify as to intent and applicability.
C.I.11.30	C.I.11.4.2 pg 12, para 5, line 1 AND C.III.1, Sec. 11.4.1, pg 120, para 8		Discussed previously; technologies may not be used and are not required.	2	1	Delete any reference to solidification, shredders, compactors, crushers.
C.I.11.31	C.I.11.4.2 pg 12, para 5, line 1 AND C.III.1, Sec. 11.4.1, pg 120, para 8		This is vendor specific, would vary over the life of the plant, varies more often if mobile systems are used, and varies as often as annually if off site vendors used.	1	2	Delete the sentence "List the system components and their design parameters..."
C.I.11.32	C.I.11.4.2 pg 12, para 5, line 7		Clarification; resolution of SI confusion.	3	1	Change "...and radionuclide and becquerel (curie) content." to "...activity and radionuclide distribution."
C.I.11.33	C.I.11.4.2 pg 12, para 1, lines 8-12		This business option was discussed previously as a General Comment in C.I.11.9	1	1	Delete lines 8-12 beginning with "Indicate what fraction..."
C.I.11.34	C.I.11.4.2 pg 12, para 2		This is adequately addressed in Section C.I.11.3.	2	3	Delete paragraph which begins with "For plant using offgas treatment systems..." Also delete all references anywhere in the DG to kg/yr and m3/yr.

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C.I.11.35	C.I.11.4.2 pg 12, para 3 AND C.III.1, Sec. 11.4.2, pg 121, para 1		Solidification may not be used and is not required. The process control program is an NRC requirement and will automatically address this information. A requirement for compliance with the PCP appears on the top of page 14, paragraph 2, and should suffice.	1	1	Change "...method and solidification media to be used for solidifying each..." to "...method for converting wet waste to a solid waste for each..."
C.I.11.36	C.I.11.4.2 pg 12, para 4 AND C.III.1, Sec. 11.4.2, pg 121, para 1		Solidification not required and may not be used; fraction of off site waste processed is addressed above as a business option and as not being appropriate in the SAR.	1	1	Delete paragraph which begins "Describe methods for solidification..."
C.I.11.37	C.I.11.4.2 pg 12, para 4		This is a solid waste section. Liquid wastes aren't processed by solid waste systems only wet wastes (resins, liquid filters, evaporator concentrates, membrane rejects) are processed.	2	3	If paragraph is not deleted as recommended in previous comment, then change "...processed wet and liquid wastes..." to "... processed wet wastes..."
C.I.11.38	C.I.11.4.2 pg 12, para 5 AND C.III.1, Sec. 11.4.2, pg 121, para 2		These shipping requirements are called out in the next section. They should not be stated in this paragraph. The Process Control Program only addressed disposal waste form issues and cannot demonstrate compliance with shipping regulations	2	3	Delete "10 CFR Part 71, and applicable U.S. DOT regulations (49 CFR Parts 170-180)."
C.I.11.39	C.I.11.4.2 pg 12, para 5 AND C.III.1, Sec. 11.4.2, pg 121, para 2		SECY 94-198 superseded GL 81-038.	2	1	In the last line of the paragraph, the reference to GL-038 should be replaced with SECY 94-198.
C.I.11.40	C.I.11.4.2 pg 13, para 1, lines 4-9		This business option was discussed previously as a General Comment in C.I.11.9	1	1	Delete lines 4-9 beginning with "Indicate what fraction..."
C.I.11.41	C.I.11.4.2 pg 13, para 1		Compaction and baling may not be used and is not required	1	1	In the first sentence, replace "compaction and baling" with "processing."
C.I.11.42	C.I.11.4.2 pg 13, para 2		Clarification needed as to when applicable	3	1	Change "...Part 61.56." to "...Part 61.56 (Stability)"
C.I.11.43	C.I.11.4.2 pg 13, para 4		Flexibility is needed to preclude constant, non-valuable updates to SAR.	3	1	In the first line, replace "Describe the type and size" with "Describe the typical type and size..."
C.I.11.44	C.I.11.4.2 pg 13, para 5		Filling and handling are not methods to obtain loose contamination or measure radiation levels.	3	1	Change "...method of filling, handling and monitoring" to "... method of monitoring."

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C.I.11.45	C.I.11.4.2 pg 13, para 6		There is no 5 year limit for on-site storage. This former requirement of GL 81-038 was superseded by SECY 94-198, which specifically deleted the 5-year limit. SRP 11.4 contains outdated guidance on this topic.	1	1	Delete "(up to 5 years)". Also update SRP 11.4, Append 11.4.-A, pg 11.4-22.
C.I.11.46	C.I.11.4.2 pg 13, para 7		Paragraph is unclear. Moreover, it is not common in current SARs and should be considered for deletion or should be entirely rewritten.	1	1	The following is recommended: "Discuss provisions for moving waste containers to storage and shipping areas. Also discuss the potential for loss of radioactive contents due to dropping containers from cranes, forklifts, monorails, etc. Describe provisions for collecting and processing any lost contents and decontaminating containers. Describe provisions for waste storage prior to shipping, including storage provisions, storage capacity, etc." Delete the balance of the paragraph.
C.I.11.47	C.I.11.4.2 pg 13, para 8		Clarification; resolution of SI confusion.	2	4	Change "...and radionuclide and becquerel (curie) content." to "...activity and radionuclide distribution."
C.I.11.48	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		P&IDs and process flow diagrams: Only one or the other should be required, based on the specific plant design.	1	4	On line 1, change "P&IDs and process flow diagrams" to "P&IDs or process flow diagrams"
C.I.11.49	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		Clarification; minimizes ambiguity and potential for expanded scope of analysis to "all possible anticipated events."	3	1	On line 5, change "anticipated" to "expected"
C.I.11.50	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		This information applies to liquid wastes; it should not appear in the solid waste section.	2	3	Delete last two sentences on lines 5-8 where the paragraph states "Provide information on instrumentation..."
C.I.11.51	C.I.11.4.2 pg 14, para 2-3		This information applies to liquid wastes; it should not appear in the solid waste section.	2	3	Delete paragraphs 2-3, which begin with "Provide P&IDs which indicate..." and "In addition, provide

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C.I.11.52	C.I.11.4.3 pg 14, para 6		For clarification purposes. This section is for solid waste, and releases tends to be (1) generally applicable to liquid and gaseous effluents; and (2) focused on clearance (unrestricted release) rather than the extensive listing near the bottom of the same page.	2	4	In the subsection title and in all paragraphs which follow within this subsection, change the word "releases" to "effluents" or "release points" to "effluent release point
C.I.11.53	C.I.11.4.3 pg 15, para 3		(1) clarification; and (2) typo.	3	5	In the last sentence of the paragraph, change "For release points disposal methods..." to "For effluent release points and disposal methods..."
C.I.11.54	C.I.11.4.3 pg 15, para 3		Mention of liquid and gaseous waste not applicable to solid waste section.	2	3	In item 2 following paragraph 6, delete "liquid, gaseous,"
C.I.11.55	C.I.11.4.3 pg 15, para 1 AND C.III.1, Sec.11.4.3, pg 121, para 4		The requirements in C. I.11.4.3 and C.III.11.4.3 should be identical at this point, but they are worded differently for some unclear reason. This leads to confusion by the user.	2	4	Match the two paragraphs
C.I.11.56	C.I.11.4.3 pg 15, para 1 AND C.III.1, Sec. 11.4.3, pg 121, para 4		A copy of the PCP is required, but this will not be available during the COLA phase. The PCP should NOT be required, as it is primarily an operational business decision which will likely change or only be known very near the time the plant is commissioned. This same concept applies to the ODCM. In addition, the PCP does not apply to transport.	1	2	Delete the requirement. This same concept applies to any requirement for submittal of the ODCM. Also delete reference to "NRC and DOT shipping regulations (Part 71, and 49 CFR 171-180)"
C.I.11.57	C.I.11.5 pg 15, para 5		Clarification.	3	4	Replace "summarized here, including flow diagrams and essential design features" with "referenced here."
C.I.11.58	C.I.11.5 pg 15, para 6		The information in EPRI report TR-101965 satisfies these guidance documents.	2	4	Include a reference to EPRI Report TR-101965 as an acceptable approach to meeting the guidance in RG 1.21, 1.33 and 24.15.
C.I.11.59	C.I.11.5.2 pg 17, para 2		This refers to the second paragraph from the bottom of the page. Regulatory Guide 1.109 is outdated.	2	1	Regulatory Guide 1.109 should be replaced with a current reference.
C.I.11.60	C.I.11.6		General comment – review all references in the document and (1) ensure they appear in the References in C.12.6; (2) delete any References which are not used in the basic text; (3) delete any references which are out of date, superseded, etc.	2	4	Clarification and completeness of references

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C.I.11.61	C.I.11.6		References are addressed without specific revision numbers. It is critical that those developing and reviewing each document know which regulatory or other references applied. This is especially true for frequently or annually revised RGs and NUREGs, as well as for periodically revised ANSI standards and industry standards (including the EPRI URD).	2	4	1) Add a requirement for a table of references to be included in the COLA which contains the specific revision number used by the applicant for each reference. 2) It is requested that the NRC provide industry with a discussion regarding which reference revision numbers are to be used in developing the COLA and the SAR (e.g., NUREG-1307 rev 11, "most current"). This discussion would be expected to apply throughout current and future COLA and SAR development.
C.I.11.62	C.I.11.6		Clarification and completeness of references routinely used by industry (e.g., NEI, EPRI or other guidance documents). Similarly, embedded references within other DG-1145 references should be included. For example, if a Regulatory Guide is referenced as the source of a requirement, but within the RG is an explicit related or controlling reference to an ANSI standard, then the ANSI standard is considered as an "embedded" standard" and should be referenced in DG-1145.	2	4	General comment --Add an "Industry Standards" section to identify NEI, EPRI or other guidance documents and key technical reports which are routinely used by industry and/or recognized by NRC as an acceptable approach. Add all applicable embedded references.
C.I.11.63	C.I.11.6, pg 18		The conversion factors in RG 1.109 are outdated. Those contained in the Federal Guidance are based on more current guidance and models.	3	1	Replace Regulatory Guide 1.109 with Federal Guidance Reports 11 and 12.
C.I.11.64	C.I.11.6, pg 18		Regulatory Guide 1.110 is outdated	3	1	Delete Regulatory Guide 1.110
C.I.11.65	C.I.11.6, pg 18		RG 1.113 has been incorporated into RG 1.143	3	1	Delete Regulatory Guide 1.113.
C.I.11.66	C.I.11.6, pg 19		GL-81-038 replaced by SECY 94-198.	1	1	Delete Generic Letter 81-038; add SECY 94-198
C.I.11.67	C.I.11.6, References		Additional references	3	4	IN 91-40 IE Bulletin 80-10 Regulatory Guide 1.11 ANSI 40.37
C.I.11.68	C.1.11.2.3 pg 5, para 5 AND C.1.11.3.3 pg 9, para 6		Compliance with EPA 40CFR190 is required as part of section 11.2. Compliance with this standard has typically been part of the Offsite Dose Calculation Manual.	2	4	Delete this reference from here (also section C.1.11.3.3) and include it as part of the ODCM discussion in C.1.11.5.2.
C.I.11.69	C.1.11.3.2 pg 9, para 3		Identification of the types of adsorbent media to be used is required. However, the detailed type of this media will be determined based upon performance and availability throughout the plant operation. Technology improvements should not be precluded from adoption by requiring excessive detail here.	2	2	Require identification of only the general type of adsorbent media, along with performance characteristics assumed.

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C.I.12.1	C.I.12 General 1		Many of the requirements in this document appear to require details related to specific processes, equipment and procedures that may not be accurately defined at the COLA. For example the types of portable and in-plant radiation protection instrumentation, training, specific procedures, as well as discussion of routine survey frequencies, etc.	1	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA.
C.I.12.2	C.I.12.1.2, Para. 1		At the end of the first paragraph of this section: "These descriptions should be detailed in the SAR, including an indication of whether and, if so, how the plant will implement and follow the design consideration guidance provided in Section C.I of Regulatory Guide 8.8, as well as other industry-developed design guidance that includes ALARA criteria. Conversely, if the plant will not follow such guidance, describe the specific alternative approaches to be used." It is important to define the documents referred to in general terms in the DG-1145. For example when it says "as well as other industry developed design guidance that includes ALARA criteria." This is open ended and dependent on the NRC reviewer can entail compliance with a multitude of various documents. This goes back to the idea of making sure that the COL applicants have all the documents and regulations they need to follow on hand so as to decrease the number of RAIs.	2	4	Define which document they are referring to. OR deleted "as well as other industry developed design guidance that includes ALARA criteria"
C.I.12.3	C.I.12.1.2, para 3		"Include a general discussion of the plant's approach to meeting the requirements by specifying the selected design concept and the supporting design bases and criteria. Demonstrate that the design concept is technically feasible and within the state-of-the-art, and that reasonable assurance exists that the requirements will be properly implemented prior to the issuance of operating licenses."	2	4	Needs clarification and definition of "requirements."
C.I.12.4	C.I.12.1.3		First paragraph of this section requested information, such as "Describe the methods to be used to develop the detailed operational plans, procedures, and policies." This data may not be available during the design and construction phase. This information may not be available until the fueling begins.	2	2	Refer to General Comment 1.
C.I.12.5	C.I.12.2.1		Specify what kind and the detail of information is being asked for, i.e. what kind of isotopes at what dose ranges, what detail is meant by "location" of the source.	3	4	Specify what kind and the detail of information is being asked for, i.e. what kind of isotopes at what dose ranges, what detail is meant by "location" of the source.
C.I.12.6	C.I.12.2.1		It is not clear how N-16 sources from BWR operation are contained sources.	3	4	Requires clarification.
C.I.12.7	C.I.12.2.1		Instrument calibration methods and radiation sources used for calibration may change from the time of design and construction to the time of operation. If this information is provided at the apparent detailed level requested will a license change be required to use different methods and sources than reported?	2	2	Requires clarification.

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C.I.12.8	C.I.12.2.1		Revise this to provide separate requirements that are dependent on source origination (owner license, other license, etc.) and plant status.	2	4	This section should specify separate requirements depending on criteria such as during operation conditions, sealed sources, accident sources, site boundaries, button sources, etc.
C.I.12.9	C.I.12.2.1		"Provide a listing of isotope, quantity, form, and use of all sources in this latter category that exceed 100 millicuries." Is this only for sealed sources? Is this for any non-reactor generated source in the plant. What is the regulatory basis for the 100 millicuries limit?	3	4	Please provide clarification for this requirement. Is this applicable only to portable/installed sources.
C.I.12.10	C.I.12.2.2		"This description should include those airborne sources that are created by leakage, opening formerly closed containers, storage of leaking fuel elements, and so forth."	2	4	This is a very broad statement that requires clarification. Please define how we would define leakage – is this design leakage? What are closed containers? Waste? Tanks?
C.I.12.11	C.I.12.4.2 & C.I.12.3		The referenced sections refer to NUREG 0737. Since this NUREG was written significant regulatory work has been done that changes many of the requirements or allows for alternate ways to meet the intent of the guidance.	2	4	NUREG 0737 should be reviewed to ensure that the industry does not re-commit to requirements resolved following publication of the document.
C.I.12.12	C.I.12.3.1, para 2		"Also, include descriptions of methods for reducing the production, distribution, and retention of activation products through design, material selection, water chemistry, decontamination procedures, and so forth."	2	2	Specify the time frame when this information is expected.
C.I.12.13	C.I.12.3.1, para 3		This is a complex paragraph that asks for a significant volume of information. "Provide scaled layout and arrangement drawings of the facility. On these drawings, show the locations of all sources described in Section 12.2 of the SAR and identify those sources in a manner that can easily be related to tables containing the pertinent and necessary quantitative source parameters. Accurately locate positions, indicating the approximate size and shape of each source. On the layout drawings, provide the radiation zone designations, including zone boundaries for normal operations, refueling outages, and post-accident conditions (based on the applicable guidance in Regulatory Guides 1.3, 1.4, 1.7, and 1.183). Reference other chapters of the SAR, as appropriate. The layout drawings should show shield wall thicknesses; traffic patterns (including post-accident access routes to and from vital areas); and locations of controlled access areas (including locked	2	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA. Items 1 and 2 below also address this same paragraph but are three "Proposed Alternates" that address different issues. The concerns are as follows: 1) this complex paragraph should be split up so that it is easier to read and follow the requirement, 2) portable and fixed equipment should be addressed separately, 3) if the level of required detail is not clarified, changes to these items following COLA submission and/or unit startup will require a 10 CFR50.59 evaluation. This requires a significant effort

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C.I.12.13 (continued)	C.I.12.3.1, para 3		high and very high radiation areas), personnel and equipment decontamination areas, personnel locker and changeout rooms, contamination control areas, radiation protection facilities, airborne radioactivity, area and portal radiation monitors, the solid radwaste processing area and control panels for radwaste equipment and components, the onsite laboratory for analysis of chemical and radioactive samples, the independent spent fuel storage installation (where applicable), the counting room, and the control room and Technical Support Center. Specify the design-basis radiation level in the counting room during normal operation and anticipated operational occurrences. Describe the facilities and equipment (such as hoods, glove boxes, filters, special handling equipment, and special shields) related to the use of sealed and unsealed special nuclear, source, and byproduct material."	2	2	on the part of the licensee solely due to inadequate initial guidance.
C.I.12.14	C.I.12.3.5 and C.III.1, Sec. 12.4		C.III.1 retains the section header "12.4 Dose Assessment", whereas C.I removes the 12.4 numbering completely. This creates a different sub-section numbering for the last section between C.III.1 and C.I	3	5	C.III should revised to be consistent with C.I.
C.I.12.15	C. I.12.4, second # (3)		Prior to initial loading of fuel in the reactor, the program described in this section will be fully implemented, with the exception of the organization, facilities, equipment, instrumentation, and procedures necessary for transferring, transporting or disposing of radioactive materials in accordance with 10 CFR Part 20, Subpart K, and applicable requirements in 10 CFR Part 71.	3	4	Requires clarification
C.I.12.16	C. I.12.4, last para		"Identify the staffing levels, instrumentation and equipment, facilities, procedures, and training necessary to ensure radiation safety of workers and the public for each phase of implementation." This information will not be available until before the start of operation.	2	4	Revise to indicate that criteria used for defining these parameters should be provided in the application.
C.I.12.17	C.I.12.4.2		This section appears to address fixed and portable instrumentation and also facilities. Fixed instrumentation is addressed in 12.3.1 and 12.3.4. Facilities are addressed in sections 12.3.1 and in part in others.	2	3	Modify this section to clarify that only portable instrumentation and radiation protection facilities are addressed in this section.
C.I.12.18	C.I.12.4.2, para 2		Current language is too restrictive and would require an SAR revision for every new instrument type, quantity, etc.	2	4	Change "Describe the types of detectors and monitors, as well as the quantities..." to "Describe the typical types of detectors and monitors, as well as the minimum quantities..."
C.I.12.19	C.I.12.4.2 "Facilities", para 1		C.I.12-11 applies to non-DCD COLA only. There will be no DCD to refer to.	3	4	Delete first sentence: "This section of the SAR need not include..."
C.I.12.20	C.I.12.4.3, Contamination Control, para 1		Use of the term disposal in the last sentence of the first paragraph implies that it will be disposed at a licensed burial facility.	2	4	Modify last sentence to use the term disposition in lieu of disposal.

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C.I.12.21	C.I.12.4.3, Contamination Control, para 2		IN 91-40 uses industry experience to update IE 80-10	3	1	Reference IN 91-40 here
C.I.12.22	C.I.12.4.3, Personnel Monitoring and Dose Control, para 3		The detailed procedures for refueling, etc., are not appropriate for inclusion in this section. This should address only the ALARA aspects.	3	4	Clarify second sentence: "Include a description of the ALARA aspects of the radiation protection procedures used in refueling..."
C.I.12.23	C.I.12.4.3, Radioactive Material Control, para 1		Significant typo	3	5 typo	In sentence 3, change "position control" to "positive control."
C.I.12.24	C.I.12.5		Add RG 1.140	3	1	Referenced document in main text
C.I.12.25	C.I.12.5 (25)		Outdated.	3	1	Delete RG 8.28
C.I.12.26	12.5		Sub-numbers are not correct (start with 49)	3	5 typo	Change to 1 - 3
C.I.12.27	C.I.12.5		Many documents referenced in this guidance direct the user to other supporting documents. The guidance document reference list does not appear to list all of those cross referenced documents and therefore is an incomplete reference list.	3	4	Add cross referenced documents to the Reference list.
C.I.12.28	C.I.12.3.3 2nd para.		It is stated in the first paragraph of this section that the intent of the section is to address those items "not addressed in Chapter 11 or described in Chapter 9", however the statement to that effect is not concise nor in the optimal location in that paragraph.	2	3	Reformat Para 1 to move the following to the 1st sentence: "Section 12.3.3 of the SAR should describe any ventilation system protective features that are not addressed in Chapter 11 or described in Chapter 9."
C.I.12.29	C.I.12.4.3 Respiratory Protection 2nd para. 1st bullet		Bioassays is redundant. Monitoring bioassays is covered completely in the previous section of C.I.12.4.3 under the heading "Personnel Monitoring and Dose Control." See the 1st para, 2nd sentence.	2	3	Delete bioassays from this requirement
C.I.13.1	C.I.13.1		NRC should consider changing the required format for section 13.1 to include an appendix in which would be placed all the design and construction information currently required in subsection 13.1.1. This information becomes historical after construction/startup and is generally removed from site FSARs.	3	5	Placing it in an appendix would make it simpler for the applicant in the future to maintain the FSAR as a living document.
C.I.13.2	C.I.13.1	C.I.13.1-1	NRC should consider changing the required format for section 13.1 to include a table or appendix which would contain information which is site specific or different from a standard/generic FSAR section 13.1. Industry and NRC are currently attempting to make much of the FSAR generic.	2	5	Removing the site specific information to an appendix would allow the NRC to perform only one required review of the required information in the FSAR and if the applicant adopted the previously reviewed FSAR section the only new reviews required for the NRC would be that information in the suggested table or appendix.
C.I.13.3	C.I.13.1		Items 13.1.1, d. and e. seem to be asking for the same information except that d. uses the adjective "general".	2	4	Clarify the expectations or combine items d. and e.

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C.I.13.4	C.I.13.1.1		The section requests detail that does not impact public health and safety. Presentation of the numbers is highly variable considering contractor or utility experience and task duration. All requests for numbers of people should be eliminated.	1	2	Delete any reference to numbers of people or percentage of time assigned to the project in the opening paragraph, item 3 and item 6.
C.I.13.5	C.I.13.1.1		This section requests detail that does not impact public health and safety. Organizational alignments do not add value to the descriptions and are not useful. For the industry to provide consistent descriptions in the SARs this section should only address responsibilities and qualifications. Numbers of people and organization design should not be included. Delete reference to Technical Support Organization from this section, too much of the information belongs in 13.1.2 relative to Operating Organization.	1	2	Combine and reword items 1-7 to address two issues only; 1) describe functional responsibilities of the design, construction, and operating organization, 2) provide general educational and experience requirements for required functions, 3) change the title of the section to address only "Management of Design and Construction", 4) consider an alternative solution, have 13.1.1 address design, 13.1.2 address construction, and 13.1.3 address operations for easier reference and less duplication.
C.I.13.6	C.I.13.1.1.1		Pre-Operational Responsibilities – This item indicates that a description of the proposed plans for the development and implementation of staff training programs should be included and should be substantially accomplished before preoperational testing begins.	3	4	This item is more appropriately relocated to Subsection 13.2, Training.
C.I.13.7	C.I.13.1.1.1		This section is too large because it includes Design, Construction and Operating Responsibilities. Organization alignment information is provided that does not impact public health and safety. As an example, delete the requirement for organization charts. Simplify the presentation of information and focus only on functions and qualifications.	1	2	Change section 13..1.1.1 to only address Design related functions and qualifications. Change 13.1.1.2 to only address Construction related functions and qualifications.
C.I.13.8	C.I.13.1.2		It is not necessary to differentiate between an operating organization responsibility and support organization responsibility at the site. Pull site operational functions out of 13.1.1 and place in 13.1.2. Only address function and qualification. Remove organization charts and organization alignment descriptions. Only include a description of required functions and qualifications.	2	2	Add qualifications to the function descriptions for the Operating Organization in 13.1.2. No need for section 13.1.3 so this section can become reference section.
C.I.13.9	C.I.13.1.2.1	C.I.13.1.2.1-1	Plant Organization, first sentence– This sentence requires an applicant to provide an organization chart showing the title of each position, number of persons assigned, etc. An industry comment proposed that a high-level organization chart be provided in the COL application since the details needed for the requested chart would not be known at the time the application was filed. The industry understanding of the discussion of this issue is that the NRC agrees that a high-level organization chart is adequate for the application and that the regulatory commitments associated with the applicant organization could be confirmed through inspections after the COL application is filed. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.1.2.1 was not revised to reflect the adequacy of the alternate approach.	1	2	It is recommended that subsection 13.1.2.1 be revised to reflect that a high-level organization chart is adequate for the application and that the regulatory commitments associated with the applicant organization could be confirmed through inspections after the COL application is filed.
C.I.13.10	C.I.13.2		Change the title of 13.2 to Training Program	3	4	

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C.I.13.11	C.I.13.2		Too much detail is being requested for submittal in the training program descriptions. None of this can be entered until the systematic approach to training is followed and materials are actually developed.	1	2	Revise guidance to indicate that the application should include a commitment to SAT and applicable regulatory requirements.
C.I.13.12	C.I.13.2		The second sentence of the first paragraph refers to requalification programs as required in 10 CFR 50.54 (i)(l-1). This section of 50.54 states "Within three months after issuance of an operating license, the licensee shall have in effect an operator requalification program which must as a minimum, meet the requirements of § 55.59(c) of this chapter."	1	1	The industry believes that the proposed part 52 rule language published in the federal register on March 13, 2006 should be incorporated in this section. Specifically "Within three (3) months after either the issuance of an operating license or the date the Commission makes the finding under §52.103(g) of this chapter for a combined operating license, as applicable, the licensee shall have in effect an operator requalification program."
C.I.13.13	C.I.13.2.1		First paragraph – at the end of this paragraph, reference is to Section 13.2.3. Following renumbering from initial draft, the correct reference is 13.2.2.	3	5	Modify as indicated
C.I.13.14	C.I.13.2.1.1	C.I.13.2-6	These items specify that license applicants should identify the proposed training course durations in the COL application. The industry provided comments that they believed it was not possible to prescribe course durations prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course durations is inconsistent with the systems approach to training and that the reference to training course durations should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.2.1.1 was not revised to delete the reference to training course durations. It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.	2	4	It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.
C.I.13.15	C.I.13.2.1.1		Too much descriptive detail is requested in this section. Schedules are not needed, it is enough to say that sufficient operators shall be licensed prior to fuel load. Items 1 -6 request too much description on what is required by 10CFR55. No need to add this level of detail. For items 1-10 too much detail is requested for 10CFR50.120 programs.	1	2	Add a reference to section 13.4 that describes the operational program requirements. Delete detail requested in 1-6 for OPS programs. Reviewer just needs a commitment to meet the CFR. Delete detail requested in 1-10 for non-OPS programs. Reviewer just needs a commitment to meet the CFR. Remove requirement to provide a schedule.
C.I.13.16	C.I.13.2.1.1		For clarity, add additional level of numbering for this section: 13.2.1.1.1 for licensed plant staff, 13.2.1.1.2 for non-licensed plant staff	3	4	

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C.I.13.17	C.I.13.2.1.1		These items specify that license applicants should provide the subject matter including a syllabus or course description for the proposed training courses in the COL application. The industry provided comments that they believed it was not possible to prescribe syllabi or similar detailed course descriptions prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course content is inconsistent with the systems approach to training and that the reference to syllabi of equivalent course descriptions should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC making no distinction between course topics and a syllabus.	1	2	It is recommended that the references to proposed training syllabi or equivalent course descriptions be removed from Subsection 13.2.1.1.
C.I.13.18	C.I.13.2.1.1		Licensed Plant Staff Item 4 identifies RG 1.149 along with several regulations and refers to all of them as "requirements." The NRC RG is only guidance, not a requirement.	3	1	Separate RG 1149 from the regulations cited and refer to it explicitly as guidance.
C.I.13.19	C.I.13.2.1.1		Non-Licensed Plant Staff Item 2 indicates that the application should include "a commitment to meet the requirements of 10 CFR 50.120 at least 18 months before fuel load." There is no need to commit to a regulation. Regulations are already required to be met, with or without a commitment	3	1	N/A
C.I.13.20	C.I.13.2.1.1 (1) and 13.2.1.2	C.I.13.2-6	Text refers to development of a schedule including course durations for the licensed operator training program and each part of the training program for each functional group of employees. NRC concurred with the industry's comment that the predetermination of the course durations is inconsistent with the systems approach to training (SAT) as described in 10 CFR 55.4 and required in this section.	3	2	Industry recommends removal of requirements for course durations and timelines from the FSAR
C.I.13.21	C.I.13.2.1.1 (1) and 13.2.1.2		Text specifies the development of program implementation timelines. The industry believes the level of detail requested in these FSAR section is beyond that necessary to support required COL findings. Consistent with SECY-05-0197, industry believes that timeline information should be supplied as part of program implementation materials separately from the FSAR.	1	2	Remove section 13.2.1.2 and references to timeline in 13.2.1.1
C.I.13.22	C.I.13.2.1.1 (9)		Text specifies evaluation of training program effectiveness for all employees in accordance with SAT. Industry believes that the FSAR section 13.2 only includes specific training programs for personnel detailed in the section (e.g. licensed personnel and personnel covered by 10 CFR 55.120.)	2	4	Revise text to include only training programs for licensed employees and personnel covered by 10 CFR 55.120.
C.I.13.23	C.I.13.2.1.1(1)		First sentence requires that course length be identified. This information will not be known at the time of COL application	1	2	Remove from text.
C.I.13.24	C.I.13.2.1.1(10)		This section discusses the training provided to all employees regarding physical security. This information will be included in section 13.6. Additional information will also be included in the Physical Security Plan, which is a separate document that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.25	C.I.13.2.1.1(2)		First sentence refers to the inclusion of 10 CFR 55.31 (how to apply for a license) as needing to be described in the FSAR training program description. This is an administrative requirement that should not be included in the FSAR	2	4	Delete reference to 10 CFR 55.31

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.26	C.I.13.2.1.1(3)		First sentence – subject matter, course description and durations will be developed using SAT post-COL application	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL
C.I.13.27	C.I.13.2.1.1(4)		Reference is made to 10 CFR 55.31 (how to apply). This is not related to description of simulator capability and should be deleted.	2	4	
C.I.13.28	C.I.13.2.1.1(4)		Paragraph requires the COL applicant to state how its program will meet regulatory requirements and guidance, including fidelity to the plant and control room. This information will be contained in plant administrative procedures that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.29	C.I.13.2.1.1(4)		The fire protection program description will be included in FSAR section 9.5.1. The fire protection training program will be developed to meet the requirements of NFPA Standard 600. Training program information detailed in this section of DG-1145 will be developed post-COL application.	1	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL
C.I.13.30	C.I.13.2.1.1(7)	C.I.13.2.1.1-13	This section discusses Emergency Plan training. Emergency Plan training will be included in the Emergency Plan, which is a separate document that will be developed post-COL application	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.31	C.I.13.2.1.1(8)		Paragraph requires the COL applicant to state how its program will meet regulatory requirements and guidance, including fidelity to the plant and control room. This information will be contained in plant administrative procedures that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.32	C.I.13.2.1.2		These items specify that license applicants should identify the proposed training course durations in the COL application. The industry provided comments that they believed it was not possible to prescribe course durations prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course durations is inconsistent with the systems approach to training and that the reference to training course durations should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.2.1.1 was not revised to delete the reference to training course durations.	1	2	It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.
C.I.13.33	C.I.13.2.1.2		The first sentence of the section contains conflicting text.	3	4	Revise by deleting the last three words of the sentence "following plant criticality".
C.I.13.34	C.I.13.2.2		NUREG-0711, "Human Factors Engineering Program Review Model", should not be listed as a reference for this section. This NUREG is applicable to detailed development of training programs, but is not applicable to the high-level program description provided by FSAR 13.2.	1	4	Delete the reference.
C.I.13.35	C.I.13.2.2		RG-1.134,"Medical Evaluation of Licensed Personnel at Nuclear Power Plants", should not be listed as a reference for this section. The information in this RG applies to the licensed operator training program, but not to the high-level program description.	1	4	Delete the reference.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.36	C.I.13.3		The emergency class definitions have been revised to include security events.	1	1	The emergency plan should include the Emergency Classification definitions contained in NRC BL 2005-02 or those developed by NEI and endorsed by the NRC in RIS 2006-12.
C.I.13.37	C.I.13.3		This confirmation of agreement does not need to be a permanent part of the E-plan. Also, the letter showing offsite agency agreement is needed whether or not there are other reactors at the site.	2	4	The applicant should provide some form of confirmation of the agreement, such as a letter signed by State and local governmental authorities, with the application.
C.I.13.38	C.I.13.3		This should be able to be provided by reference to other sections.	2	2	Add the following sentence after the second paragraph on page C.I.13-11:"It is acceptable to reference the sections in the FSAR that address site characteristics to satisfy this requirement."
C.I.13.39	C.I.13.3		Existing regulations do not require submittal of State and local emergency response procedures, just plans. (10 CFR 50.33(g))	1	1	In addition to the NRC's regulations (described above), the COL application needs to include the applicable State, Tribal, and local plans that address the relevant DHS requirements contained in 44 CFR Parts 350, 351, and 352, as well as associated REP guidance documents.
C.I.13.40	C.I.13.3.1	C.I.13.3.1-1	It is permissible for the Emergency Plan to be a stand alone document.	3	2	This plan should be a physically separate document *referenced by* Section 13.3 of the FSAR, and may incorporate by reference various State and local emergency plans or other relevant materials.
C.I.13.41	C.I.13.3.1		The requirement of 10CFR 73.71(a) should be addressed under security, not EP.	1	4	The cross-reference should indicate where the specific criteria in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), Appendix E to 10 CFR Part 50, and NUREG-0654/FEMA-REP-1, Rev. 1 are addressed in the applicant's plans.
C.I.13.42	C.I.13.3.1		Explicitly state what type of documents must be addressed - GL, BL, Orders. This should not include IN's as these are not supposed to set new requirements.	1	1	The applicant should address the various generic communications and Commission Orders that are in effect...explicitly state what type of documents must be addressed - GL, BL, Orders.
C.I.13.43	C.I.13.3.1		The EAL information should be in the stand alone Emergency Plan.	3	3	The *emergency plan* should also address an emergency classification and action level scheme, as required by 10 CFR 50.47(b)(4).
C.I.13.44	C.I.13.3.1		For security-related aspects of EP to be addressed, explicitly reference BL 2005-02 and RIS 2006-12, not just the 2002 orders.	2	4	The applicant should address the NRC Orders issued February 25, 2002, *BL 2005-02 and RIS 2006-12*, as well as any subsequent NRC guidance (or any NRC endorsed industry guidance developed in response to issues related to implementation of the Orders), to determine what security-related aspects of emergency planning and preparedness must be addressed in the emergency plan.
C.I.13.45	C.I.13.3.1		10 CFR 2.390 gives the requirements for marking information to be withheld from public disclosure.	3	1	Any information submitted to the NRC that is proprietary, sensitive, or safeguards information should be marked *as required by 10 CFR 2.390.*

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.46	C.I.13.3.3		Refer to the table at it is labeled - Table C.II.2.B-1.	1	3	Additional plant-specific emergency planning ITAAC (i.e., beyond those listed in Table C.II.2.B-1.) may be proposed, and they will be examined to determine their acceptability on a case-by-case basis.
C.I.13.47	C.I.13 Table 13.3		Section 7.1 states that the TSC and OSC may be combined. Section7.1.6 states that the OSC be separate from the TSC.	2	3	Revise 7.1.6 to be consistent with 7.1.
C.I.13.48	C.I.13.3.1		C.I.13.3.1 states: "The application should also include a table of contents and a cross reference to applicable regulatory requirements, guidance documents, generic communications, and other criteria that are used to develop the application and emergency plan." C.I.13.3.1 defines "generic communications" by directing the reader to C.I.13.3.4. The C.I.13.3.4 listing of generic communications includes not only generic letters and bulletins but also NRC IN, RIS, EPPOS, and CR documents. The C.I.13.3.1 use of the term "generic communications" appears to be inconsistent with requirements in proposed Part 52.79(a)(37) which limits this scope to bulletins and generic letters (which is specifically noted in Footnote 3 in C.I.13.3.1). Inclusion of documents beyond GL and bulletins is also inconsistent with C.I.1.9.4 which justifies "The significance of limiting this review to generic letters and bulletins is that these documents pertain to issues that were considered to have risen to a level of safety-significance such that they required responses and resolutions from nuclear operating plant license	2	1	C.I.13.3.1 should be revised as follows: "The application should also include a table of contents and a cross reference to applicable regulatory requirements, guidance documents, generic letters and bulletins, and other criteria that are used to develop the application and emergency plan." "The applicant should address the various generic letters and bulletins and Commission Orders that are in effect and applicable to emergency planning in support of an Operating License (see Generic Communications identified in Subsection 13.3.4, below)."
C.I.13.48 (continued)	C.I.13.3.1		Furthermore, 52.59(a)(37) and C.I.1.9.4 limits this scope to how the subject operating experience insight is incorporated into facility design. In public workshop discussions, this listing in C.I.13.3.4 was discussed; however, it remains unclear as to why emergency planning would be given different requirements in contrast with any other area that may involve operational aspects.	2	1	see above
C.I.13.49	C.I.13.4		The first two paragraphs refer to two different documents for definition and discussion of the term "fully described". NRC should change the first reference from "SECY-05-0197" to "C.IV.4" and remove the second reference such that the third sentence in the second paragraph would read "Descriptions of operational programs, consistent with the definition of "fully described" as discussed in Section C.IV.4, should be provided..."	3	3	Revise as described
C.I.13.50	C.I.13.3		Reference 23 is a proposed Reg. Guide revision that dates back to 1986 that has never been finalized.	1	2	Replace with reference to the appropriate approved Reg. Guide version.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.51	C.I.13.3		Typo in document title for reference 104.	3	5	Change "Date" to "Data"
C.I.13.52	C.I.13.3		Reference 125 is a duplicate of 124	3	5	Delete Reference 125
C.I.13.53	C.I.13.4		NRC should change the third sentence of the second paragraph and state that "Descriptions of operational programs ... should be provided in this the chapter of the FSAR or in other, applicable to the operational program sections of the FSAR.			Revise as described
C.I.13.54	C.I.13.4, Table 13.4-x, Item 1		FSAR section is incorrectly stated as 3.9.6. ISI is actually covered in two places.	3	3	Change to '5.2.4 and 6.6'
C.I.13.55	C.I.13.4, Table 13.4-x, Item 1		Implementation requirement listed could be clarified	3	4	Add "ASME XI 2004 IWA 2430(b)"
C.I.13.56	C.I.13.4, Table 13.4-x, Item 2		Based on ASME OM 2004, ISTA 3120(c)(1), the milestone shown is not correct	2	4	Change to 'Generator on-line by nuclear heat'
C.I.13.57	C.I.13.4, Table 13.4-x, Item 3		The implementation milestone states 'Authorization for fuel load'. There is no compelling reason to tie implementation to an authorization	2	4	Change to read 'Fuel load'
C.I.13.58	C.I.13.4, Table 13.4-x, Item 3		The implementation requirement listed is not correct. 10 CFR 50.49(a) does not specify when the program is to be initiated.	2	1	In accordance with C.IV.4, this should read 'License Condition'
C.I.13.59	C.I.13.4, Table 13.4-x, Item 5		The milestone is listed as 'None specified'	2	4	Change to 'Fuel load'
C.I.13.60	C.I.13.4, Table 13.4-x, Item 6		PST requirements are only covered in DG-1145 section 3.9.6	2	3	Change FSAR section to '3.9.6'
C.I.13.61	C.I.13.4, Table 13.4-x, Item 8		There is only one milestone listed. The FP program will be implemented in two phases: (1) Fuel receipt (for building storing new fuel and adjacent areas that could affect fuel storage area) (2) Fuel load (for remaining areas)	2	5 - Not consistent with SRP	Changed to indicate phased implementation 1. Fuel receipt 2. Fuel load
C.I.13.62	C.I.13.4, Table 13.4-x, Item 11		Missing regulation	2	1	Add 10 CFR 52.78

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.63	C.I.13.4, Table 13.4-x, Item 11, 12 and 13		FSAR section indicated is not correct	3	3	Depending on final outline of DG-1145 Section 13.2, renumber these
C.I.13.64	C.I.13.4, Table 13.4-x, Item 12		Milestone is not reasonable. States Ops training program to begin within 3 months after COL issuance. Should be tied to need for operators on-shift	2	2	Change to '18 months prior to fuel load'
C.I.13.65	C.I.13.4, Table 13.4-x, Item 13		A capital I is used instead of a lower case i for 10 CFR 50.54(i)	3	1	Change to read 10 CFR 50.54(i)
C.I.13.66	C.I.13.4, Table 13.4-x, Item 13		Implementation milestone states 'Within 3 months after authorization for fuel load'. There is no compelling reason to tie the implementation to an authorization	2	4	Remove the words 'authorization for'
C.I.13.67	C.I.13.4, Table 13.4-x, Item 13		Implementation requirement is specified as 10 CFR 50.54(i-1). The time required by this CFR (within 3 months of issuance of plant operating license) can not be met under part 52.	2	2	Change to 'License Condition', which will be consistent with C.IV.4
C.I.13.68	C.I.13.4, Table 13.4-x, Item 14		Implementation milestone states '...180 days prior to authorization for fuel load'. There is no compelling reason to tie the implementation to an authorization	2	4	Remove the words 'authorization for'
C.I.13.69	C.I.13.4, Table 13.4-x, Item 15		Use of the words 'Program' and 'Plan' is not consistent with typical industry usage	3	5-inconsistent with industry stds.	As indicated on the markup, change: 'Security' to 'Security Program' 'Physical Security Program' to 'Physical Security Plan' 'Safeguards Contingency Program' to 'Safeguards Contingency Plan' 'Training and Qualification Program' to 'Training and Qualification Plan'

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.70	C.I.13.4, Table 13.4-x, Item 15		17. Improve correspondence with other documents by listing the appropriate 'programs' from SECY-05-0197, as they are listed in C.IV.4	3	3	Under the Physical Security Plan, list • Access Authorization • Vehicle Control • Fitness for Duty Under the Training and Qualifications Plan, list • Weapons Training • Weapons Qual/Requal
C.I.13.71	C.I.13.4, Table 13.4-x, Item 15		Implementation milestone states 'Prior to fuel being on-site'. This could be simplified to be consistent with the rest of the table	3	5-inconsistent with industry stds.	Change to read 'Fuel receipt' or 'Fuel on-site'
C.I.13.72	C.I.13.4, Table 13.4-x, Item 16		Implementation requirement quotes 10 CFR 50.54(a), but the regulation does not include any such specification.	2	1	Change to read 'License Condition'
C.I.13.73	C.I.13.4, Table 13.4-x, Item 17		Milestone states 'No later than 30 days prior to scheduled date for fuel load'. This is not consistent with the draft Final Part 52 Rule.	1	1	Change to read '30 days prior to fuel load'
C.I.13.74	C.I.13.4, Table 13.4-x, Item 17		Implementation requirement quotes 10 CFR 50.65, but the regulation does not include any such specification.	2	1	Change to read 'License Condition'
C.I.13.75	C.I.13.4, Table 13.4-x, Item 17		Program title shown is cumbersome and does not match C.IV.4 wording or typical industry terminology	3	5 – Conformance to typical language	Change the program title to 'Maintenance Rule', or just add the words "Maintenance Rule"
C.I.13.76	C.I.13.4, Table 13.4-x,		Equivalent terms are used: fuel on-site, fuel receipt, receipt of fuel, etc	3	5 - consistent language	Use either 'fuel receipt' or 'fuel on-site' consistently

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.77	C.I.13.5.1		Section C.I.13.5.1 indicates that the FSAR should specifically indicate whether the "applicable portions" of Regulatory Guide 1.33 concerning plant procedures will be followed. As Regulatory Guide 1.33 is not directly applicable to the AP1000 design, and this has been accepted by the Staff, the Staff should provide specific guidance as to which portions of Regulatory Guide 1.33 are applicable to the task delineated in Section C.I.13.5.1, or remove this wording allogether as indicated in the mark-up following.	2	1	The FSAR should describe specific alternative methods that will be used to implement procedural programs. and the manner of implementing them."
C.I.13.78	C.I.13.5.1(3)(1)		Plant-specific technical guidelines are also known a Emergency Response Guidelines (ERGs). This language should be included in DG-1145	2	1	"Plant-specific technical guidelines (P-STGs), or Emergency Response Guidelines (ERGs), which are guidelines based on analysis of...."
C.I.13.79	C.I.13.5		Section 13.5.2.1(2) has incorrect information in parentheses.	3	5	Section 13.5.2.1(2) should read (1.a-e above)
C.I.13.80	C.I.13.5		Typographical error – delete the 'close' parentheses at end sentence.	3	5	Revise as described
C.I.13.81	C.I.13.5	C.I.13.5.2.1-2	NRC should consider removing requirement of the second sentence in section 13.5.2.1 to describe the "format" of procedures in the FSAR. Section 13.5 should be a generic section of the FSAR for all plants. Since applicants will/do not have the exact same format requirements for their procedures complying with this requirement would probably prevent the section from being generic. The format of procedures can be developed as part of the station procedure writer's guide. NRC agreed with this approach in response to Comment C.I.13.5.2.1-2.	2	4	Change the second sentence to read "The general content for each class should be described."
C.I.13.82	13.5.1.1		Similar to fire protection, flooding and HELB are common mode events that require a methodical operations strategy to manage the transient. Most plants have procedures that address these events.	2	4	Under the list of Category (a) procedures that discuss controls suggest adding two additional procedures for consideration – these would include Flooding and HELB.
C.I.13.83	13.5.2.1.A.1		For completeness – maintenance would be a leading reason for having to refill and vent systems.	3	4	Add the words "or maintenance" after the word testing.
C.I.13.84	13.5.2.1A.		These are not specifically covered in the types of procedures already listed and typically make up a large percentage of plant procedures.	2	4	In this list of procedures we omit surveillance procedures and special test procedures. Recommend adding these as another classification of procedures.
C.I.13.85	13.5.2.1		The industry commented that the general content of each class of procedures should be available at the time the application is filed. However, the industry comment indicated that the format of procedures would be developed as part of the procedure writers' guide and would occur after the application was filed. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their agreement with the comment and stating that detailed procedures would be verified during construction. However, DG-1145 was not revised to reflect this agreement.	2	4	Indicate that detailed procedures will be available for verification during construction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.86	13.5.2.1		The industry commented that the part of the organization responsible for maintaining procedures and the general content of procedures could be identified at the time of application. However, the industry comment indicated that the specific group(s) responsible for procedure maintenance and the format of procedures would be developed subsequent to the application filing. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their agreement with the comment and stating that detailed procedures would be verified during construction. However, DG-1145 was not revised to reflect this agreement	2	4	Indicate that detailed procedures will be available for verification during construction.
C.I.13.87	13.1.2		Parts (5) and (6) appear to conflict. Part (5) allows an applicant to be consistent with one of the options in the commission's Policy statement on Engineering Expertise on Shift, however, part (6) specifically requires an applicant have an STA. Note that NUREG-0737 acknowledges that STA is an interim position until other control room staff has the requisite engineering expertise. In current plants, an STA is not specifically required. In the Policy statement< NRC states a preference for a combined SRO and STA position.	3	1	Delete the words "shift technical advisor" from part (6).
C.I.14.1	C.I.14.2.2 C.III.14.2.2	C.I.14.2.2-2	Section C.I.14.2.2 specifies that license applicants "should develop a training program for each fundamental group in the organization, with regard to the scheduled pre-operational and initial startup testing, to ensure that the necessary plant staff are ready for commencement of the test program."	2	4	The industry believes the level of detail requested in these FSAR section is beyond that necessary to support required COL findings. This sentence should be modified consistent with SECY-05-0197 to make clear that training program information should be supplied as part of program implementation materials separately from the FSAR.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.14.2	C.I.14.2.4 C.III.1, Sec.14.2.4	C.I.14.2.4-1	We appreciate the clarification that detailed procedures are not expected to be provided with the COLA. However, this section continues to seek description of "*specific administrative controls* that will be used to ensure that necessary prerequisites are satisfied for each major phase and for individual tests," and "methods that will be used to ensure retesting following [modifications or maintenance]." This language raises questions about the level of detail expected by the NRC staff.	2	4	The COL applicant should describe the administrative controls that will govern the conduct of each major phase of the test program. ~~This description should include the specific administrative controls that will be used to~~ and ensure that necessary prerequisites are satisfied for each major phase and for individual tests. The COL applicant should also describe the methods to be followed in initiating plant modifications or maintenance that are determined to be necessary to conduct the test program~~. This description should include the methods that will be used to ensure~~ and provisions for retesting following such modifications or maintenance.
C.I.14.3	C.I.14.2.4 C.III.1, Sec.14.2.4	C.I.14.2.4-2	The staff agreed with our earlier comment that post work testing and/or analysis may be as varied as the ITAAC themselves and thus is not practical to describe in the FSAR, however no change was made to the guidance. The guidance should be modified.	2	4	The description should also ~~include methods~~ identify provisions to ensure that retesting that is required for modifications or maintenance remains in compliance with ITAAC commitments."
C.I.14.4	C.I.14.2.5 C.III.1, Sec. 14.2.5	C.I.14.2.5-1	Appendix I says the last two sentence of Section 14.2.5 have been moved to 14.2.6. They have not.	3	3/4	Move the sentences.
C.I.14.5	C.I.14.2.10 C.III.1, Sec. 14.2.10	C.I.14.2.10-1	The NRC staff has acknowledged that COLAs need not contain procedure-level information. This section still calls for COLAs to "describe the procedures" that will guide initial fuel loading and initial criticality.	2	2	The COL applicant should describe its plans for ~~describe the procedures that will guide~~ initial fuel loading and initial criticality.
C.I.14.6	C.I.14.2.11 C.III.1, Sec. 14.2.11	C.I.14.2.11-1	The fourth sentence states that each test required to be completed before initial fuel load or designed to satisfy the requirements for completing ITAAC should be identified, cross-referenced and provided with the COL application or be made available for audit during NRC COL application review. This sentence should be deleted. ITAAC completion info is not required to be included in COLAs or made available prior to COL issuance. Indeed, proposed new Section 52.99(a) requires licensees to submit within one year after COL issuance a schedule for completing ITAAC. The suggested crossreference may be part of such a submittal; this should be the subject of further industry-NRC discussion.	1	1	Delete 4th sentence or modify it to refer to the proposed new requirement in Section 52.99(a).
C.I.14.7	C.I.14.2.11 C.III.1, Sec. 14.2.11	C.I.14.2.11-2	The NRC staff agreed with our previous comment regarding the likelihood that approved startup test procedures may change in the last 60 days prior to their use, but no change was made to the guidance.	2	3/4	Approved test procedures should be [available] at least 60 days prior to fuel loading for fuel loading and startup test procedures. Licensees should provide timely notification to NRC of changes in approved test procedures that have been made available for NRC review.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.15.1	C.I.15		The text in this section lists applicable USIs and GSIs which should be considered. The lists begins with the following USIs. USI-A-9 (ATWS) USI-A-47 (Safety Implications of Control Systems) USI-B-17 (Criteria for Safety-Related Operator Actions) USI-C-4 (Statistical Methods for ECCS Analysis) However, a review of the November 2005 version of NUREG-0933 indicates that the above USIs have all been resolved. Has the status of USIs and GSIs been modified for the purpose of COL applications?	1	1	Clarify the need to address resolved USI/GSIs
C.I.15.2	C.I.15.1		Anticipated transients without scram (ATWS) should not be included in this section. This section groups and summarizes design-basis accidents into categories by the type of thermal-hydraulic fault or phenomena which initiates the event. A table in this section identifies the following initiating event categories. (1) increase in heat removal by the secondary system (2) decrease in heat removal by the secondary system (3) decreases in reactor coolant system flow rate (4) reactivity and power distribution anomalies (5) increase in reactor coolant inventory (6) decrease in reactor coolant inventory (7) radioactive release from a subsystem or component (8) anticipated transients without scram (ATWS)	1	1	Move the ATWS discussion to a separate section.
C.I.15.2 (continued)	C.I.15.1		An anticipated transient is not a thermal-hydraulic fault type. Designating a transient as an anticipated transient identifies the frequency grouping which should be assigned. The frequency of occurrence is discussed later in Section C.I.15.2. Failure assumptions of the protection system used in the mitigation of a transient are not initiating event categories. Additionally the assumption of the inability of the protection system to generate a scram on demand requires a beyond design basis common mode failure of the protection system to occur. Similarly, Appendix A to Section C.I.15 included ATWS giving it the status of a design basis accident (DBA). ATWS is not a design basis accident and should not be included in this list	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.15.3	C.I.15.6.2		Text states that only safety related systems can be used and then in the next sentence identifies when non-safety related systems can be used. "Only safety-related systems or components can be used to mitigate transient or accident conditions. However, non-safety related systems or components may be assumed operable in analyses for the following cases: ..."	3	3	"Only safety-related systems or components ~~can~~ should be used to mitigate transient or accident conditions. However, non-safety related systems or components may be assumed operable in analyses for the following cases: ..."
C.I.15.4	C.I.15.6.2		Text states "The applicant should provide a discuss of how the definitions..."	3	4	Should be "The applicant should provide a discussion of how the definitions..."
C.I.16.1	C.I.16		C.I.16, fourth paragraph, third sentence, states "No bases are required for the TS sections related to TS usage rules (definitions, logical connectors, required action completion times, and surveillance requirement frequencies) and the TS section for design features." This listing should also include the section for Administrative Controls. Bases are not required for the Administrative Controls.	2	4	Revise the quoted sentence to state, "No bases are required for the TS sections related to TS usage rules (definitions, logical connectors, required action completion times, and surveillance requirement frequencies), design features, or administrative controls.
C.I.17.1	C.I.17.4.2		The guidance should distinguish between the purpose of RAP and how i is accomplished	2	4	Clarify last paragraph, sentence 5, as follows: "The goal of Reliability Assurance during this stage is to ensure that the operation of the plant meets the purposes identified above throughout the operations phase. Implementation of Reliability Assurance activities during the operations phase is accomplished through existing operational programs (e.g., maintenance rule, surveillance testing, inservice inspection, inservice testing, and quality assurance)."
C.I.17.2	C.I.17.4.2		See also comment for C.III.1.17.4.2. SECY 95-132 rejected the establishment of a separate PROGRAM called Operational Reliability Assurance Program (O-RAP). In the staff's SECY response (Att. 1, Item E,) the staff agreed that operational reliability assurance ACTIVITIES would be incorporated into existing programs. The staff further stated that the Maintenance Rule Program and the QA Program together with a limited-scope COL action item covering the gap were sufficient to meet the objectives of operational reliability assurance.	2	4	Remove references to O-RAP. State that "Operational reliability assurance objectives and activities are incorporated into the QA Program and Maintenance Rule Program; therefore no further description is required. Per SECY 95-132, non-safety-related, risk-significant SSCs that have reliability concerns caused by design or operations-related problems are outside the scope of the existing maintenance and quality assurance regulatory framework. The staff will establish a COL action item for the evolutionary designs to address this "gap," and will evaluate this approach for the passive designs"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.17.3	C.I.17.4.3		This is Part 1 guidance; the guidance should not presume a design certification. In addition, 10 CFR 52 uses the term design control document (DCD) for certified designs. The guidance in Part 1 should also allow for the situation in which a DCD has been submitted to the NRC for approval, but has not been approved.	2	3	Modify sentences 4 and 5, and added sentence 6 to state: "The design ~~certification~~ control document, certified or not, addresses this phase. The design ~~certification~~ control document also addresses a ~~non-system based*~~ Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. If no design control document is referenced, then the COL applicant is responsible to implement the design phase of the RAP." *Delete unnecessary descriptor.
C.I.17.4	C.I.17.4.3		Last sentence states "COL applicant is also responsible for implementing...	2	4	This should be COL licensee or holder. The applicant describes what the licensee will do during the operational phase.
C.I.17.5	C.I.17.4.4		These two bullets are overly broad. • The design and operational information used for plant reliability assurance activities. • Procurement, fabrication, installation, construction and testing requirements for risk-significant SSCs.	2	4	Provide examples of the type of information to be described in the FSAR. The examples should reflect the type of summary-level information appropriate to describe in the FSAR, recognizing that more detailed information would be contained in program implementation documents maintained by the licensee.
C.I.17.6	C.I.17.4.5		The discussion of the second phase of the Program implementation (sentence 6) indicates that this 'site-specific' phase is the responsibility of the COL Applicant, and then identifies actions that are required. Some of these actions may not occur until after the COL is issued; therefore it is appropriate to identify that this phase is a COL applicant/holder responsibility. The COL Applicant should provide a description in the FSAR of the information identified in Section C.I.17.4.4. At the time of COLA, the SSC list will be essentially unchanged from the DCD SSC list; site-specific changes to the DCD SSC list will not be identified until later in the design implementation process.	1	2	The second phase is the site-specific phase, which introduces the plant's site-specific design information to the RAP process. The COL applicant/holder performs this phase. At this phase, the RAP is modified or appended based on considerations specific to the site. The COL applicant/holder establishes the probabilistic, deterministic, and other methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Applicant should describe in the FSAR the information identified in Section C.I.17.4.4. The COL applicant holder is also responsible for completing the incorporation of site-specific information into the RAP and for implementing the RAP using existing operational programs.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.17.7	C.I.17.4.4		These following bullet is a COL Holder action versus A COL Applicant action: • A prioritized list of site-specific SSCs designated as risk-significant. At the time of the COL Application, the list of SSCs will be (essentially) the same as the DCD list; site-specific SSCs cannot be developed until later as the site specific design elements are finalized and the EOPs are written, etc. At this time the Expert Panel will append the DCD list, and the site-specific list will form the basis for the M-Rule program	2	2	The Bullet should be modified as: Describe the process for completing the prioritized list of site-specific *SSCs designated as risk-significant. This process* should discuss the use of the DCD SSC list and how it will be supplemented by the site-specific PRA and the Expert Panel. (This may be described in the Maintenance Rule Program description)
C.I.17.8	C.I.17.5		The guidance in this section references a new SRP 17.5 as the document that will contain the detailed QA program description to be included in COLA. Industry is currently working to provide input to the Staff on the content of the SRP. It is anticipated that industry comments will be resolved in that process.	N/A	N/A	N/A
C.I.17.9	C.I.17.6		The COL application will provide required information to support NRC staff reasonable assurance findings. Applicants are not required to explain in the FSAR why other information is not known or estimate when the information will become available. Consistent with SECY-05-0197, operational program descriptions will identify the milestone(s) by which the program or portions thereof will be implemented. More detailed schedule info about program implementation, including when additional program implementation documents will be available, will be provided to the NRC separately from the FSAR. Attachment 1 is a markup of the NRC draft guidance that includes Industry input.	1	2	Delete the sentence: ~~For requested information that is not known at the time of COL application, explain why it is not known and estimate when the information will become available.~~
C.I.17.10	C.I.17.6.1.1		The COL application will provide required information to support NRC staff reasonable assurance findings. Delete guidance to provide info "to the extent that this information is known at the time of the COL application." Also, delete reference to "information on structures, systems, and components (SSCs)" and the subsequent detailed listing of SSC specific information since this will not be available at the time of the COL application. The scoping description in the COL application should only include a description of the scoping method consistent with NUMARC 93-01 and RG 1.160	1	2	Replace this section with a reference to NUMARC 93-01 and RG 1.160 as the basis for identifying SSCs in the scope of the MR.
C.I.17.11	C.I.17.6.4		The description of program procedures for compliance with 10 CFR 50.65(a)(4) includes statements about information "known at the time of COL application" and repeats guidance in existing NUMARC and RG documents.	2	2 AND 4	Replace this section with text that references the existing NUMARC and RG documents associated with 10 CFR 50.65(a)(4).

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C.I.17.12	C.I.17.6.6	C.I.17.4.1-1	Consistent with SECY/SRM-94-084, there is no requirement to establish an "*Operational* RAP." As described in Section 17.4, RAP during the operational phase is accomplished through existing operational programs, including the MR. To avoid confusion and to be consistent with Commission guidance, DG-1145 should refer to "RAP during the operational phase," not to "ORAP."	2	3	Modify the section as follows: "Describe the relationship and interface between MR Program implementation and ~~the Operational~~ Reliability Assurance Program (ORAP) implementation during the operational phase (See Section C.I.17.4), including how functions are coordinated and procedures overlap and/or are cross referenced. Note: If the scope of the ORAP is enveloped by the Maintenance Rule Program's SSCs classified as HSS, the Maintenance Rule Program is an acceptable method of implementation of the ORAP during the operational phase."
C.I.18.1	C.I.18	C.I.18-4	Do not rephrase existing regulatory guidance.(NUREG-0711)	1	4	Incorporate existing regulatory guidance by reference.
C.I.18.2	C.I.18		At the July 2006 public workshop, several issues were discussed where the industry believes additional guidance is needed in both NUREG-0711 and SRP Chapter 18. NRC staff agreed with the industry comments in terms of there being issues that need further definition. Neither the industry re-draft of C.I.18 nor the 9/06 SRP draft addressed these issues. Thus, these issues remain open, and further priority interaction between NRC staff and stakeholders is necessary to ensure proper resolution. The issues include: what minimum inventory of fixed position and continuously available indicators and controls is appropriate? What technical and regulatory requirements are appropriate for qualified HSIs for accident mitigation, display evaluation, soft controls, computerized procedures, automation, etc? What criteria should be applied to assure appropriate teamwork between operating crew members and between automation and operators?	1	4	NRC and industry must reach agreement on the issues that need to be addressed, their priorities, and a clear path forward that supports the new plant schedules.
C.I.18.2 (continued)	C.I.18		What types of verification and validation (V&V) are appropriate for human factors features, and how should their scope and rigor be graded based on complexity and/or safety significance and/or other criteria? What criteria govern the use of a single HSI to interface with both safety and non-safety equipment to ensure that the HIS will not become a single point of failure that can disable the safety function entirely?	1	4	see above
C.I.18.3	C.I.18.7.3.2		Enhancement language recommended to ensure Sections 7 and 18 are closely coordinated with respect to HSI	3	4	Section C.I.18.7.3.2, Safety Aspects of the HIS – At the beginning of the section, delete "The FSAR should describe" and substitute "This section of the FSAR should be coordinated with the instrumentation and controls discussions in FSAR Section 7 and should describe."

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C.I.18.4	C.I.18		NRC staff has indicated during public interactions that additional research is being initiated on systems communications issues associated with "glass control rooms." In addition, ACRS noted in a November 21, 2005 letter to the EDO, "The (Digital I&C) research plan includes a program to investigate advanced nuclear power plant digital systems (Section 3.6), but this work has not begun. Due to the rapidly increasing interest in new reactors and the anticipated regulatory needs, this research should be given higher priority than it currently has." Industry is concerned that the research the staff considers necessary to support new plants may result in new design requirements.	1	4	NRC and industry need to closely coordinate research activities to ensure the needs of new plants are addressed in a timely manner such that developing designs are not adversely impacted.
C.I.18.5	C.I.18		Disposition of Public Comments C.I.18-1 & -10 [11 elements completed by COL application]: Disposition, as shown in the 9/06 drafts of C.I.18 and C.III.1, resolves the issue.	2	4	To be consistent with these changes, a similar rewording of the last paragraph in C.II.2.2.9 (ITAAC for HFE) is suggested.
C.I.18.6	C.I.18		Disposition of Public Comments C.I.18-2 & -11 [Inspection of implementation vs. review of submittals]: Disposition, as shown in the 9/06 draft of C.I.18, resolves part of the issue by reference to ITAAC.	1	4	Adding a cross reference here to C.II.2.2.9 (ITAAC for HFE) is also suggested. More generally, guidance on inspection vs. submittal is discussed further in the next comment. Public Comment C.I.18-5 & C.I.18.7.2.4-1
C.I.18.7	C.I.18		Industry Re-draft of C.I.18 (Attachment 1): Various marginal comments are included to explain or justify changes. Note that colors in the comments are a product of the track changes feature in MS Word, and are irrelevant to the contents of the comments.	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.8	C.I.18		Disposition of Public Comments C.I.18-3 & -12 [Restated review guidance]: As proposed in the Staff response, Industry re-drafted C.I.18 using citations to available Staff guidance. The re-draft treats each PRM element in three parts: Purpose - Presents a brief description of the element based on similar summaries in SRP Ch.18. Contents - Presents citations to Staff review guidance with clarifications of submittal contents and levels-of-detail. Added Review Guidance - Presents technical guidance from the original draft that did not map well to existing Staff review guidance, and so could not be properly cited under Contents (such as the cases identified in Public Comment C.I.18-4). The re-draft aims to avoid disparity with the available Staff review guidance and to provide the practical clarifications sought by Industry in a clear and concise manner.	1	4	Incorporate changes into guidance as shown in Attachment 1.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.18.9	C.I.18		Public Comment C.I.18-4 & -13 [Added review guidance]: The Staff response to C.I.18-4 noted that NUREG-0711 & NUREG-0800 give guidance for Staff reviews but not for Applicant submittals. This may be true, but from a technical standpoint, the Industry finds the available Staff review guidance to be equally suited to either role. However, it is understood from the 7/06 workshop that the Staff expects NUREG-0711 review guidance to be revised again soon. Thus, where C.I.18 text aims to anticipate such changes, this should be clearly indicated. The "Added Review Guidance" sections in the Industry re-draft provide a controlled means to do so. These sections in the re-draft include the cases of added Staff review guidance noted in the prior C.I.18 draft, with corresponding comments by Industry	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.10	C.I.18		Disposition of Public Comment C.I.18-5 & C.I.18.7.2.4-1 [FSAR contents & level of detail]: The Industry re-draft (Att. 4) provides an implemented approach for identifying the necessary contents and the acceptable levels of technical detail in COL applicant submittals.	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.11	C.I.18		Public Comment C.I.18-6 & -14 [Minimum Inventory]: It was understood from the 7/06 workshop that the Staff acknowledged the need for additional guidance in this area, but it was not clear that the Industry re-draft of C.I.18 was expected to address it. Thus, no guidance was proposed by the re-draft in this area, and the issue remains open.	2	4	
C.I.18.12	C.I.18		Disposition of Public Comment C.I.18-7 [Should vs. May]: The final guide as issued will resolve this comment by default. It is understood that such wording in the final guide will be governed by regulatory conventions.	3	5	
C.I.18.13	C.I.18		The issued guide should define the following terms with respect to Applicant review and inspection material, if such terms are used in C.I.18 text or key references: Application, On-the-docket, FSAR, Submittal, Reference, Retained-but-available (i.e. for audit/inspection), etc. In addition, the impact of referencing (i.e., from the FSAR or the submittal) on the status of a reference (i.e., on/off the docket) should be clear. These are generic issues which, if addressed elsewhere, may be incorporated in C.I.18 by reference.	2	4	
C.I.18.14	C.I.18		Disposition of Public Comment C.I.18-8 [Conflicts of interpretation]: By using citations, conflicts of interpretation with Staff review guidance are generally avoided in the Industry re-draft. However, some of the items in the "added review guidance" sections remain a potential source of conflict. Each of these should be reviewed and replaced by the appropriate citation, if possible.	2	4	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.1	C.I.19		Issue: 4th paragraph, 1st sentence reads "The applicant should use the results and insights of its PRA and severe accident evaluations to establish specifications and performance objectives for the plant design, construction, inspection, and operation." Comment: PRA does not establish design specifications and performance objectives for the plant design, construction, inspection and operation.	2	1	Delete sentence **or replace "should use" with "should consider."**
C.I.19.2	C.I.19		Issue: 4th paragraph, last sentence reads "The information in Chapter 19 should enable the NRC to conclude that the applicant has performed sufficiently complete and scrutable analyses, and the results support the COL application and will maintain acceptable risk throughout the life of the plant." Comment: Chapter 19 does not include detailed technical information. This sentence is unnecessary and should be deleted.	3	4	Delete sentence.
C.I.19.3	C.I.19		Issue: Last paragraph, 1st sentence reads: "To support the NRC staff's timely review and assessment, the applicant should adhere to the recommended format and content for Chapter 19 provided herein." Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.7-1 Section C.II.1.7, The third paragraph in Section C.II.1.7 states: "To support the NRC Staff's timely review and assessment of the documentation, applicants should adhere to the recommended format and content identified in Appendix B, ---." This section should address how this guidance is consistent with proposed Section 52.80(a) which requires the combined license (COL) application to use the design certification probabilistic risk assessment (PRA) (which may not be in the format of Appendix B).	1	1	Add after this sentence "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design DCD would be incorporated by reference. An exemption would not be required."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.3 (continued)	C.I.19		Response: The NRC staff disagrees with this comment. It should be noted that this part of DG-1145 applies to COL applicants that do not reference a certified design and thus, there may not be a design certification PRA upon which to develop the COL application PRA. Further, for a COL application that references a certified design, the format of the PRA information to be submitted per Appendix B is not a requirement of 10 CFR 52.80(a), which requires the COL applicant that references a certified design to submit a plant specific PRA that "...must use the PRA for the design certification ... as applicable, and must be updated to account for site-specific design information and any design changes, departures, or variance." This requirement does not mandate the format of the submittal to be identical to that submitted under 10 CFR 52.47 for the design certification PRA, but does require that the COL applicant's plant-specific PRA be derived from the actual design certification PRA and updated and upgraded, as appropriate. Disposition: No change to DG-1145. Comment: Industry needs formal concurrence that changes to the format of Chapter 19 and the plant-specific PRA will not require an exemption.	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.4	C.I.19		Issue: Last paragraph, 2nd sentence reads "Chapter 19 should reference the applicable analyses and evaluations, as well as provide a summary description of the supporting information, needed to demonstrate compliance with the above identified regulatory requirements and Commission policies." Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.I.19-1 The last sentence in the last paragraph in Section C.I.19 Probabilistic Risk Assessment and Severe Accidents, states, "Chapter 19 should reference the applicable analyses and evaluations and the necessary supporting information to demonstrate compliance with the above requirements and Commission policies." Please clarify the use of the language "should reference." We assume that a summary description of supporting information is an acceptable alternative to including all references. Response: The NRC staff agrees with this comment. The staff does not expect the applicant to reference all supporting information that may be applicable. A summary description of the supporting information is acceptable. Disposition: Section C.I.19 has been revised to provide clarification	2	2	Replace "as well as" with "or". Add "(Chapter 19 does not need to reference all documents supporting the summaries provided in this chapter.)"
C.I.19.4 (continued)	C.I.19		Comment: Language noted continues to lack clarity. One of the main reasons to require a PRA report that is separate from Chapter 19 is so that the PRA can remain a living document. The PRA should be able to evolve without causing unnecessary FSAR updates unless the specific information contained in Chapter 19 itself is changed.	2	2	see above
C.I.19.5	C.I.19.2.1		Issue: 1st paragraph, 2nd sentence reads "This section should summarize the scope and process used to develop the plant-specific PRA. This summary should include a reference to the plant-specific PRA and associated analyses that are available for review or docketed separately." Comment: See comment on Section C.I.19 on references.	2	2	Add "(Chapter 19 does not need to reference all documents supporting the summaries provided in this section.)"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.6	C.I.19.2.3.1		Issue: 3rd sentence reads "If some internal events are screened out or incorporated into other evaluations (e.g., grouped events), this section should describe the screening/bounding/grouping." Comment: This information is not relevant for Chapter 19. It is part of the PRA submittal per C.II.1. If grouping is described in Chapter 19 as an attribute of the design, then that grouping would need, unnecessarily, to be maintained. This could cause maintenance of more than one PRA model: one that is grouped as described in the FSAR and others that are grouped differently according to how they were used in various applications.	2	4	The requirement for this information in Chapter 19 should be removed; especially when it is already submitted elsewhere as part of the license application. Delete sentence
C.I.19.7	C.I.19.2.3.1		Issue: Fourth bullet reads "Identify important assumptions (including PRA key assumptions[3] and PRA-based insights[4])" Footnote 4 reads ""PRA-based insights" are those insights identified during design certification that ensures assumptions made in the PRA will remain valid in the as-to-be-built, as-¬to-be-operated plant and includes assumptions regarding SSC and operator performance and reliability, ITAACs, interface requirements, plant features, design and operational programs, etc. The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP-600 and AP-1000 Design Control Documents (DCDs)." Comment 1: "(including PRA key assumptions3 and PRA-based insights4)" is inconsistent with other subsections, for example, subsection 19.2.3.1.2 Comment 2: An acceptable alternative to providing PRA-based insights in many subsections is to provide the insights in one section, for example in section C.I.19.2.5. Comment 3: Is it appropriate to reference the AP-600 or AP-1000 DCD in a regulatory guide?	2	4	Replace noted bullet with "Identify important, key assumptions[3]" Add bullet "Document PRA-based insights4" Address consistency among subsections. Replace footnote 4 with ""PRA-based insights" are those insights identified during the analyses conducted for the COL application (which may have been developed during design certification) that ensures assumptions made in the PRA will remain valid in the as-to-be-built, as-¬to-be-operated plant and includes assumptions regarding SSC and operator performance and reliability, ITAACs, interface requirements, plant features, design and operational programs, etc. The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP-600 and AP-1000 Design Control Documents (DCDs). These may be collected in Section C.I.19.2.5 instead of each section."
C.I.19.8	C.I.19.3		Issue: 3rd paragraph reads "If a specific feature is described and analyzed elsewhere in the FSAR, this section should provide the relevant cross-references. and need not be repeated in this section. Comment: Many of the topics included in the DG were addressed in other sections on the certified design DCDs. For example, Anticipated Transients without scram, Mid-Loop Operation, Station Blackout. Add "and need not be repeated in this section." to the end of the sentence.	2	3	Add "and need not be repeated in this section." to the end of the sentence.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.9	C.I.19.3		Issue: 1st paragraph, 2nd sentence reads "This description and analysis should specifically address the issues identified below, as well as other issues identified in SECY-90-016 and SECY-93-087, which the Commission approved in related staff requirement memoranda (SRMs), dated June 26, 1990, and July 21, 1993, respectively." Comment: Sentence should be clarified to include "as appropriate."	3	4	Add ", as they are appropriate." To end of sentence.
C.I.19.10	C.I.19.3		Issue: 3rd paragraph reads "If a specific feature is described and analyzed elsewhere in the FSAR, this section should provide the relevant cross-references." Comment: For efficiency add "and need not be repeated in this section" to the end.	2	3	Add "and need not be repeated in this section" to the end.
C.I.19.11	C.I.19.4.1		Issue: 2nd paragraph, 1st sentence reads "The NRC staff expects the plant-specific PRA to reasonably reflect the plant as it was constructed, in preparations for startup, and therefore, the plant-specific PRA should be upgraded prior to initial operations to incorporate those changes that were deferred (i.e., screened as not being significant) during the design, COL application, and construction phases, and to address findings during the PRA-related plant walkdowns." Comments: For clarity replace "findings during" with "results of"	3	4	Replace "findings during" with "results of"
C.I.19.12	C.I.19.4.1		Issue: Last paragraph, last sentence reads " For example, in addressing the frequency of scheduled maintenance updates following initial operations, the FSAR section may state "the plant-specific PRA will be updated to reflect plant, operational, experience (data), and PRA modeling changes, consistent with the NRC-endorsed standards appropriate for the uses and applications of the plant-specific PRA and the information available 6 months prior to the issuance of the maintenance update, which will be scheduled to occur every other fuel cycle, not to exceed 5 years."" Comment 1: For consistency insert "reasonably" before "reflect." Comment 2: A more reasonable example for "6 months prior to the issuance of the maintenance update " is "6 months prior to the start of the maintenance update "	2	3	Add "reasonably" before "reflect" Replace "issuance" with "start"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.13			Large Release Frequency (LRF): The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, PRA Internal Events, which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting. A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how i would be applied. This would			
C.I.19.13 (continued)			introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.			
C.II.1.1	C.II.1.2	C.II.1.2-4	Issue: Paragraph reads "Determine how the risk associated with the design compares against the Commission's goals of less than 1E-4/yr for core damage frequency (CDF) and less than 1E-6/yr for large release frequency (LRF). These goals were established in the Commission SRM dated June 26, 1990 in response to SECY-90-016. In addition, the Commission approved the use of a containment performance goal (CPG), which includes (1) a deterministic goal that containment integrity be maintained for approximately 24 hours following the onset of core damage for the more likely severe accident challenges and (2) a probabilistic goal that the conditional containment failure probability (CCFP) be less than approximately 0.1 for the composite of all core damage sequences assessed in the PRA. It should be noted that these are goals and not regulatory requirements and applicants should not artificially (or intentionally) increase PRA results associated with one metric simply to meet the goal associated with another metric. Rather, the applicant should compare their plant-specific PRA results and insights against these goals and address how their plant features properly balance severe accident prevention and mitigation."	1	2	The draft should be changed to reference the QHOs and subsidiary goals appropriately

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.1 (continued)	C.II.1.2	C.II.1.2-4	Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.2-4 In Section C.II.1.2, the following language is provided: "Determine how the risk associated with design relates to the Commission's goals of less than 1 E-4/yr for core damage frequency (CDF) and less than 1 E-6/yr for large release frequency (LRF).2 " The objective is to demonstrate that the QHOs are met. This can be demonstrated using the subsidiary objectives for CDF (1E-4/yr.) and LERF (1E-5/yr.). LRF is not defined in the regulations and a LRF goal is not appropriate for a regulatory guide. The draft should be changed to reference the QHOs and subsidiary goals appropriately.	1	2	see above
C.II.1.1 (continued)	C.II.1.2	C.II.1.2-4	Response: The NRC staff disagrees with this comment. The Commission directed the staff in the SRM on the proposed revisions to the 10 CFR Part 52 rule to include specific guidance regarding the PRA in the regulatory guide. In addition, there are numerous objectives for the use of the PRA, as identified in Section C.II.1.2. Demonstration that the QHOs are met is not an explicit objective, and has not been addressed in prior design certification reviews. The use of the 1E-6/year large release frequency (LRF) goal is consistent with Commission guidance. Meeting the LRF goal will generally assure that the early fatality QHO is met. As explained in the referenced footnote, the cited Commission goals of less than 1E-4/year for CDF and less than 1E-6/year for LRF were established in the Commission SRM dated June 26, 1990, in response to SECY-90-016. All certified designs approved by the NRC to date have addressed the LRF metric. Although not explicitly defined in the regulations, LRF represents the broader set of releases of which LERF is a subset. The difference between LRF and LERF is that LRF addresse LRF-related containment failures into two types: (1) initially failed contair the integrity of the containment is either failed due to the initiating event Disposition: No change to DG-1145. Comment: We continue to disagree with the basis provided. This "expectation" for LRF and CPG should not be included in a regulatory guide.	1	2	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.2	C.II.1.2	C.II.1.2-2	Issue: Paragraph reads "Determine whether the plant design, including the impact of site-specific characteristics, represents a reduction in risk compared to existing operating plant designs" Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.2-2 In Section C.II.1.2, what is the regulatory basis for the combined license (COL) application to show that a design represents a reduction in risk over existing plants? Response: The NRC staff's basis for requiring a COL applicant to show that a design represents a reduction in risk over existing plants, is provided by the Commission's policy statement, entitled "Severe Reactor Accidents Regarding Future Designs and Existing Plants," issued on August 8, 1985. This policy statement, which is discussed in Appendix A, focuses on the guidance and procedures that the Commission has been using to certify new designs for nuclear power plants that have evolved from light water reactor (LWR) technology existing at that time.	1	1	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.2 (continued)	C.II.1.2	C.II.1.2-2	This policy statement affirms the Commission's belief that a new design for a nuclear power plant can be shown to adequately address severe accident concerns by demonstrating compliance with the requirements of Commission regulations, including the appropriate TMI requirements and the resolution of applicable unresolved safety issues (USIs) and generic safety issues (GSI). Therefore, the Commission expects new designs to achieve a higher standard of severe accident safety performance than plants contemporary with the issuance of the Commission's Severe Accident Policy Statement on August 8, 1985. The fact that severe accident concerns have been adequately addressed in the new design should be reflected in the PRA results as a reduction in risk. Disposition: No change to DG-1145.	1	1	Comment: We continue to disagree with the basis provided. The guidance should not call for COLAs to demonstrate that the plant design represents a reduction in risk compared with existing plants. At a minimum, the guidance should be modified to indicate that this information requirement is considered to be met if a certified design is referenced, and the COL applicant need provide no additional information.
C.II.1.3	C.II.1.2		Issue: Paragraph reads "Support, as a minimum, regulatory oversight processes [e.g., Mitigating Systems Performance Index (MSPI), Significance Determination Process (SDP)] and programs that will be associated with plant operations (e.g., technical specifications, reliability assurance, human factors, Maintenance Rule)." Comment: Clarify by adding language which notes that the PRA used to support operational programs may differ from the PRA provided as part of the COL application.	2	2	Add "Note that the PRA used for support of operational programs (MSPI, SDP, maintenance rule, for example) may differ from the PRA provided as part of a COL application. For such uses the PRA would be retained by the licensee and available for inspection."
C.II.1.4	C.II.1.2		Issue: Paragraph reads "The review objectives are drawn from 10 CFR Part 52, the Commission's Severe Reactor Accident Policy Statement regarding future designs and existing plants, the Commission's Safety Goals Policy Statement, the Commission-approved positions concerning severe accidents contained in SECY-93-087, and NRC interest in the use of PRA to help improve future reactor designs. In general, the PRA and the NRC staff's review achieve these objectives." Comment: Language "and NRC interest in the use of PRA to help improve future reactor designs. In general, the PRA and the NRC staff's review achieve these objectives." Seems unnecessary.	3	4	Delete noted language

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.5	C.II.1.4		Issue: 1st paragraph, 1st sentence reads "The level of detail of the applicant's PRA should be commensurate with the purpose and objectives discussed in Section C.II.1.2 (i.e., sufficient to gain risk-informed insights and use such insights, in conjunction with assumptions made in the PRA, to identify and support requirements important to the design and plant operation). Comment: Language "(i.e., sufficient to gain risk-informed insights and use such insights, in conjunction with assumptions made in the PRA, to identify and support requirements important to the design and plant operation)." is redundant and should be deleted.	3	4	Delete noted language
C.II.1.6	C.II.1.4		Issue: 1st paragraph, 2nd sentence reads "The PRA should reasonably reflect the actual plant design, planned construction, anticipated operational practices, and relevant operational experience of the applicant and the industry." Comment 1: Delete "actual" before the word "plant" as this is redundant. Comment 2: language "relevant operational experience of the applicant" is unclear. An example would be useful.	3	4	Delete "actual." Provide example
C.II.1.7	C.II.1.4		Issue: The statement "Additional guidance on the level of detail that should be included in the PRA is provided in Regulatory Guide 1.200, "An Approach For Determining The Technical Adequacy Of Probabilistic Risk Assessment Results For Risk-Informed Activities,"..."needs clarification. Comment: This statement may lead one to believe that the technical requirements documented in ASME PRA Standard RA-S-2002 Addendum B, RA-Sb-2005, which is endorsed, with exceptions, by DG-1161 (Regulatory Guide 1.200 Revision 1), is applicable to advanced LWRs. In fact, Table A-1, Item 1.1 of DG-1161 states that RA-Sb-2005 is applicable to "current" light water reactors. Furthermore, many of the requirements of the ASME PRA Standard relate to the "as-built, as-operated" plant, which cannot be met at the time of COL application.	2	4	Section C of Regulatory Guide 1.200 provides more general requirements for PRA level of detail. Recommend changing the statement to read: "Additional guidance on the level of detail that should be included in the PRA is provided in Section C of Regulatory Guide 1.200..."
C.II.1.8	C.II.1.4		Issue: Last paragraph, 2nd sentence reads "However, the risk models should still be able to be used to identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." Comment: Replace "identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." With "achieve the purpose and objectives discussed in Section C.II.1.2" to ensure consistency.	2	3	Replace "identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." With "achieve the purpose and objectives discussed in Section C.II.1.2" to ensure consistency.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.9	C.II.1.4		Issue: Last paragraph, last sentence reads "In addition, the bounding assumptions should not mask any risk-significant information about the design and its operation." Comment: Add ", as this information is known during the licensing and operational phases of a plant's lifetime" so as to recognize the evolving nature information during the design, construction, and operational phases.	2	2	Add ", as this information is known during the licensing and operational phases of a plant's lifetime" so as to recognize the evolving nature information during the design, construction, and operational phases.
C.II.1.10	C.II.1.5	C.II.1.5-1	Issue: 1st paragraph, 2nd sentence reads "The methods acceptable to the NRC staff to ensure that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that the PRA is sufficient to be used in demonstrating that the objectives identified in Section C.II.1.2 of this guide are met, include:" Comment: The "requirements of Appendix B to 10 CFR Part 50" are inappropriate. In Regulatory Guide 1.174, which is the reference for this language, the following language is provided: "As stated in Section 2.2, the staff expects that the quality of the engineering analyses conducted to justify proposed LB changes will be appropriate for the nature of the change. In this regard, it is expected that for traditional engineering analyses (e.g., deterministic engineering calculations) existing provisions for quality assurance (e.g., Appendix B to 10 CFR Part 50, for safety-related SSCs) will apply and provide the appropriate quality needed. Likewise, when a risk assessment of the plant is used to provide insights into the decisionmaking process, the staff expects that tl been subject to quality control.	1	1	Delete "the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that"
C.II.1.10 (continued)	C.II.1.5	C.II.1.5-1	To the extent that a licensee elects to use PRA information to enhance or modify activities affecting the safety-related functions of SSCs, the following, inconjunction with the other guidance contained in this guide, describes methods acceptable to the NRC staff to ensure that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that the PRA is sufficient to be used for regulatory decisions." Appendix B is not relevant to a COL application or the PRA. The applicability is limited to specific applications which support changes to the licensing basis as described in RG 1.174.	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.11	C.II.1.5		Issue: 2nd paragraph, 1st sentence reads "Toward this end, the applicant's PRA submittal should be consistent with the prevailing PRA standards, guidance, and good practices, as needed to support its uses and applications, and as endorsed by the NRC (e.g., Regulatory Guide 1.200)." Comment: As standards, guidance, good practices, and RG 1.200 do not fully apply to plants without operational experience, add "as appropriate" after "as needed."	3	3	Add "as appropriate" after "as needed."
C.II.1.12	C.II.1.5		Issue: 2nd paragraph, 2nd sentence reads "The adherence to the recommendations provided in Regulatory Guides 1.200 and 1.174 pertaining to quality and technical adequacy will result in a more efficient and consistent NRC staff review process." Needs clarification. Comment: This language may lead one to believe that the technical requirements documented in ASME PRA Standard RA-S-2002, Addendum B RA-Sb-2005, which is endorsed, with exceptions, by DG-1161 (Regulatory Guide 1.200 Revision 1), is applicable to advanced LWRs. In fact, Table A-1, Item 1.1 of DG-1161 states that RA-Sb-2005 is applicable to "current" light water reactors. Furthermore, many of the requirements of RA-Sb-2005 relate to the "as-built, as-operated" plant, which cannot be met at the time of COL application.	2	4	Section C of Regulatory Guide 1.200 provides more general requirements for PRA technical adequacy. Recommend changing the statement to read: "The adherence to the recommendations provided in Section C of Regulatory Guides 1.200 and 1.174 pertaining to quality and technical adequacy will result in a more efficient and consistent NRC staff review process."
C.II.1.13	C.II.1.6		Issue: 1st paragraph, 2nd sentence reads "Such analyses provide important information about (1) areas where certain design features are the most effective in reducing risk with respect to operating reactor designs; (2) major contributors to risk, such as hardware failures and human errors; (3) major contributors to maintaining the "built-in plant safety and ensuring that the risk does not increase unacceptably; (4) major contributors to the uncertainty associated with the risk estimates; and (5) sensitivity of risk estimates to uncertainties associated with failure data, assumptions made in the PRA models, lack of modeling details in certain areas, and previously raised issues Comment: Item 3 lacks clarity and is unnecessary.	3	4	Delete item 3 or clarify.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.14	C.II.1.6	C.II.1.6-1	Issue: 2nd paragraph, 1st sentence reads "For designs that have evolved from current plant technology, through the incorporation of several features intended to make the plant safer, more available, and easier to operate, the results of the PRA should indicate that the design represents a reduction in risk compared to existing operating plants.2" Comment: Per previous comments, language on the expectation "that the design represents a reduction in risk..." is inappropriate.	1	1	Delete language related to "represents a reduction in risk compared to operating plant designs."
C.II.1.15	C.II.1.6		Issue: 4th paragraph, 2nd sentence reads "Such studies provide very useful insights about (1) the systems that contribute the most in achieving the low risk level assessed in the PRA, (2) events (e.g., component failures or human errors) that contribute the most to decreases in the "built-in" plant safety level, and (3) events that contribute the most to the assessed risk." Comment: Item 2 lacks clarity. Please clarity or delete, as this item is not needed.	3	4	Clarify or delete item 2.
C.II.1.16	C.II.1.7		Issue: 1st paragraph, last sentence reads "The submitted PRA should include adequate information, in terms of both models (initiating events, fault and event trees, success criteria, data, important assumptions and calculations) and results (minimal cut sets, importance, sensitivity, and uncertainty analyses)." Comment: Please replace "models" with modeling" as computer models should not be included.	3	4	Replace "models" with "modeling"
C.II.1.17	C.II.1.7		Issue: 2nd paragraph, last sentence reads ". Documentation of the PRA process and findings should be provided and, additionally, should include a description of the applicant's provisions to ensure adequacy in accordance with Regulatory Guide 1.200. Comment 1: Please replace "findings" with "results" for clarity. Comment 2: Please add the word "technical" before "adequacy" for clarity. Comment 3: Please add "as applicable" to the end of the sentence for consistency with previous comments on the applicability of RG 1.200.	3	4	Please replace "findings" with "results" Please add the word "technical" before "adequacy" Please add "as applicable" to the end of the sentence.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.18	C.II.1.7	C.II.1.7-1	Issue: 3rd paragraph reads "To support the NRC staff's timely review and assessment of the documentation, the applicant should adhere to the recommended format and content identified in Appendix B, Probabilistic Risk Assessment to Support a Combined License Application: Standard Format and Content." Comment: Please address per previous comments (e.g., Comment C.I.19.3) on consistency with certified design DCD to preclude the uncertainty on the need for an exemption request.	1	1	Clarify that an exemption request would not be required. Add language such as "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of part 52 appendices , as the certified design DCD would be incorporated by reference. An exemption request would not be required."
C.II.1.19	C.II.1.7		Issue: Last paragraph, last sentence reads "Documentation of the analyses should be maintained as lifetime quality records in accordance with Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)." Comment: Per RG 1.174, this only applies to changes to a plant's LB. Please delete as this language is inappropriate.	1	1	Delete "Documentation of the analyses should be maintained as lifetime quality records in accordance with Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation).""
C.II.1.20	C.II.1.8	C.II.1.7-2	Issue: 2nd paragraph, 1st sentence reads "The NRC staff expects the plant-specific PRA to reasonably reflect the plant as it was constructed, in preparations for startup, and therefore, the plant-specific PRA should be upgraded prior to initial operations to incorporate those changes that were deferred (i.e., screened as not being significant) during the design, COL application, and construction phases, and to address findings during the PRA-related plant walkdowns." Comment: Please replace "findings during" with "results of" per our previous comments.	3	4	Replace "findings during" with "results of" per our previous comments.
C.II.1.21	C.II.1, App. B	C.II.1.7-1	Issue: 1st paragraph reads "[Note: This standard format is consistent with the guidance provided in Regulatory Guide 1.200, "An Approach For Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and adapted to the specific uses of the PRA to support a COL application." Comment 1: Please address per previous comments on consistency with certified design DCD to preclude the uncertainty on the need for an exemption request. Comment 2: The suggested standard format is different than that of the AP1000 DCD. Regulatory Guide 1.200 suggests the type of information required for a Risk-Informed application, but does not specify the format in which this information is submitted.	2	1	Address uncertainty on exemption. Recommend changing the statement to read: "[Note: This suggested format is consistent with the guidance provided in Regulatory Guide 1.200, "An Approach For Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and adapted to the specific uses of the PRA to support a COL application. A licensee referring to a Certified Design should maintain the format of the Certified Design PRA.] Add language such as "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of part 52 appendices , as the certified design DCD would be incorporated by reference. An exemption request would not be required."

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C.II.1.22	C.II.1, App. B		Issue: 2nd paragraph, 1st sentence reads "The content of the applicant's submittal should include adequate information (e.g., in terms of models, results, and interpretation of results) to enable the NRC staff to conclude whether the objectives identified in Section C.II. 1.2 of this guide are met." Comment: Please replace "models" with "modeling" per our previous comment.	3	4	Replace "models" with "modeling"
C.II.1.23	C.II.1, App. B		Issue: Internal Floods is included in 2.3 "External Events at Full Power." Comment: Why is internal flooding included in external events section?	3	4	N/A
C.II.1.24	C.II.1, App. B		Issue: Section 6.1 includes "LRF" Comment: Please consider our comment C.II.1.1 on LRF. The objective is to demonstrate that the QHOs are met. This can be demonstrated using the subsidiary objectives for CDF (1E-4/yr.) and LERF (1E-5/yr.). LRF is not defined in the regulations and a LRF goal is not appropriate for a regulatory guide.	1	1	Modify language to address LERF instead of LRF
C.II.1.25	C.II.1		Large Release Frequency (LRF): The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, PRA Internal Events, which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting. A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how i would be applied. This would	1	3	Further discussion needed.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.25 (continued)	C.II.1		introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.	1	3	see above
C.II.1.26	C.II.1		Conditional Containment Failure Probability (CCFP): The draft guidance proposes the CCFP of 0.1, given a core melt. For advanced designs, whose calculated internal event core damage frequency is approximately 10-7 /year, the CCFP would translate into a containment failure frequency of approximately 10-8 /year. It is impractical and unreasonable to attempt to design a containment structure to withstand naturally occurring ultra-low frequency events of this magnitude, for example a one in a 100 million-year earthquake. Hence, as interpreted by the industry, the proposed CCFP could not be met. There is a need for further industry-NRC interaction on developing a practical containment performance metric that could be used in operational licensing evaluations for designs that have very low core-damage frequency.	1	3	Further discussion needed.
C.II.2.1	C.II.2.1		C.II.2.1 states "in a table provided in FSAR Section 14.3, COL applicants should cross-reference the important design information and parameters from these analyses to their treatment (i.e., inclusion or exclusion) in the ITAAC."	3	3	This FSAR section 14.3 guidance should be included in C.I.14 and in C.III.1-14.3.
C.II.2.2	C.II.2.1		New nuclear power plants likely will be constructed through the use of modular construction techniques. Since construction modules may be constructed offsite, it may be appropriate for some ITAAC to be performed at the site of manufacturing of the construction modules rather than the reactor site.	1	4	Modify the seventh paragraph of this section to indicate that ITAAC testing may include testing of construction modules at the vendor's shop. This testing should be distinguished from "type tests", in that type tests are not necessarily performed on the components to be installed in the plant, whereas tests of construction modules would be for the modules that will actually be installed in the plant.
C.II.2.3	C.II.2.2		The 10th paragraph says that ITAAC should not reference the COLA, while the 3d paragraph says ITAAC should reference the FSAR portion of the COLA.	3	3	Modify the 3d sentence in the 10th paragraph as follows: Except in the case where no design certification is referenced and no separate ITAAC design descriptions are developed, the ITAAC should not reference the [COLA]....

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C.II.2.4	C.II.2.3		As indicated earlier in DG-1145, ITAAC should be reserved for "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." A design feature may be site-specific and unique, and yet have little or no safety function. A design feature does not warrant greater consideration for inclusion in an ITAAC, merely because it is unique or site-specific.	1	3	Delete bullet #1 to "Carefully consider design-specific and unique features of the facility for inclusion in ITAAC."
C.II.2.5	C.II.2.1 Bullets		As indicated earlier in DG-1145, ITAAC should be reserved for "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." Not all resolutions of USIs/GSIs, NRC bulletins and generic letters, and operating experience rise to that level. For certain designs, the resolution of a particular generic issue may have little or no safety significance. Therefore, similar to other information, the determination which resolutions should be included in ITAAC should be based upon a graded approach, depending upon the significance of the resolution to safety.	1	3	Delete Bullet #3 to "Ensure that ITAAC reflect the resolutions of technically relevant USIs/GSIs, NRC generic correspondence such as bulletins and generic letters; and relevant industry operating experience." In the alternative, modify the language to refer to "safety significant resolutions" rather than "resolutions of technically relevant [issues]"
C.II.2.6	C.II.2.1 Bullets		Typo	3	5	Last bullet should modified as follows "Systems ~~SSCs~~ for which there is no discernable ..."
C.II.2.7	C.II.2.1.1		New nuclear power plants likely will be constructed through the use of modular construction techniques. Since construction modules may be constructed offsite, it may be appropriate for some ITAAC to be performed at the site of manufacturing of the construction modules rather than the reactor site.	1	4	Modify the definition of "as-built" to include construction SSCs/modules at the vendors shop that are intended for installation at the reactor in question.
C.II.2.8	C.II.2.1.1		The definition of Design Description includes an inaccurate description of Tier 1. Tier 1 is not intended to summarize the FSAR. Instead, as indicated in Section C.II.2.1 of DG-1145, Tier 1 is the "top-level design information" from the FSAR.	2	4	In the definition of Design Description, delete the last sentence, which states that Tier 1 information is a summation of the detailed design information in the FSAR.
C.II.2.9	C.II.2.1.1		The term "Design Description" is not needed and should be deleted. The use and definition of the two similar terms, Design Description and ITAAC Design Description, are confusing and problematic. "Design Description" is a term that is commonly used in both ITAAC and non-ITAAC contexts. It may be helpful to define the term "Tier 1 Design Description."	1	4	Define a single term, "ITAAC Design Description," to mean the equivalent of Tier 1 Design Description when no design certification is referenced, and provide two alternatives for presenting ITAAC Design Description in COLAs, as follows: "ITAAC Design Description" for a COL application that does not reference a design certification means the top level design information that pertains to the principal performance characteristics and safety functions of SSCs. This information is equivalent to Tier 1 Design Description for certified designs (see appendices to 10 CFR Part 52 for definitions associated with certified designs). COL applicants may choose to provide ITAAC Design Description in a document separate from the FSAR or directly in the FSAR. ITAAC Design Description may, at a minimum, consist only of tables and figures that are referenced in the ITAAC."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.9 (continued)	C.II.2.1.1			1	4	Whether presented in a separate document or included in the FSAR, ITAAC Design Description is the proper term to describe the top-level design information referenced in ITAAC when a certified design is not referenced.
C.II.2.10	C.II.2.1.1		Clarify definition of Design Requirement/Commitment.	2	4	Modify the 1st sentence of the definition as follows: "Design Requirement/Commitment means the specific ~~that portion of the detailed~~ design information provided in the COL application that is verified by ITAAC."
C.II.2.11	C.II.2.1.1		As literally worded, the definition of "Exists" would require an SSC to satisfy all of the provisions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the SSC must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the SSC.	2	4	Change the definition of "Exists" to state as follows: "Exists means that the item is present and meets the Design Requirement/Commitment."
C.II.2.12	C.II.2.1.1		As literally worded, the definition of Functional Arrangement would require a system to satisfy all of the design descriptions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the system must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the system.	2	4	Change the definition of Functional Arrangement to delete the reference to system design description and instead refer to the Design Requirement/Commitment.
C.II.2.13	C.II.2.1.1		The definition of ITAAC should more closely track the language in proposed 10 CFR 52.80.	2	4	Change the definition of ITAAC to state as follows: "ITAAC means the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations."
C.II.2.14	C.II.2.1.1		As literally worded, the definition of Physical Arrangement would require a structure to satisfy all of the design descriptions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the structure must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the structure.	2	4	Change the definition of Physical Arrangement to delete the reference to design description and instead refer to the Design Requirement/Commitment.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.15	C.II.2.2.2		GDC 1 pertains to quality assurance (QA). As the NRC has long recognized, ITAAC are not needed or appropriate for the QA Additionally, with respect to codes and standards, not all codes and standards are sufficiently important to rise to the level of "top level design information." Therefore, it is not appropriate in general to have ITAAC that verify implementation of codes and standards in general.	1	3	Delete Bullet (20) "codes and standards (GDC 1)." Why do these bullets start from (13)?
C.II.2.16	C.II.2.2.2		The 2nd bullet under the heading Pressure Boundary Integrity should be changed to be consistent with the ITAAC for the existing design certifications and clarifies the scope of the NDE to be performed under the ITAAC.	2	4	Modify the second bullet to insert the words "for welds" after NDE.
C.II.2.17	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Normal Loads, pertaining to as-built stress reconciliation reports).	2	4	Delete the first bullet under the heading Normal Loads, which states that ITAAC should verify that normal and accident loads have been appropriately combined.
C.II.2.18	C.II.2.2.2		The 3d bullet under the heading Normal Loads should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the third bullet to refer to "ASME Code-required stress reports."
C.II.2.19	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Seismic Loads pertaining to as-built stress reconciliation reports).	2	4	Under the heading Seismic Loads, delete the first bullet, which states that ITAAC should verify that structures and systems have been designed for seismic loads.
C.II.2.20	C.II.2.2, Sec. 14.3.2		This section contains numerous statements similar to "COL applicants should provide ITAAC to reconcile the as-built plant with the structural design basis." Reconciliation between as-built configuration and structural analysis is neither performed nor required unless there is a deviation from the design drawings used in the analysis. As-built configurations are checked against design drawings to verify compliance with the design basis. There is no regulatory basis for this requirement and it is not consistent with precedent (none of the existing certified designs have these ITAAC). This comment is also applicable to draft SRP Section 14.3.2.	1	1	This section should be revised to remove all statements that imply a requirement for as-built reconciliation with analysis and replace it with reconciliation of as-built configuration with design drawings.
C.II.2.21	C.II.2.2.2		The 4th bullet under the heading Seismic Loads, should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the fourth bullet to refer to "ASME Code-required stress reports."
C.II.2.22	C.II.2.2.2		Under the heading Seismic Loads, to the extent that the 6th bullet is intended to refer to safety-related buildings, the ITAAC is inappropriate because safety-related buildings are designed to withstand seismic events without collapse. To the extent that this bullet is intended to refer to non-safety-related buildings, the subject is addressed by the seventh bullet and is therefore redundant.	2	4	Under the heading Seismic Loads, delete the sixth bullet related to the collapse of buildings.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.23	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading related to the Suppression Pool pertaining to as-built stress reconciliation reports).	2	4	Under the heading related to the Suppression Pool, delete the first bullet, which states that ITAAC should verify that structures and systems have been designed for hydrodynamic loads.
C.II.2.24	C.II.2.2.2		The 4th bullet under the heading related to the Suppression Pool should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the fourth bullet to refer to "ASME Code-required stress reports."
C.II.2.25	C.II.2.2.2		Determining load is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Flood, Wind, etc., pertaining to as-built stress reconciliation reports).	2	4	Under the heading Flood, Wind, etc, delete the first bullet which states that ITAAC should verify that structures and systems have been designed for natural phenomena loads.
C.II.2.26	C.II.2.2.2		The 3d bullet under the heading Pipe Break makes no sense as written. RPVs are not postulated to experience LOCAs. Perhaps the reference to RPVs should be to the "reactor coolant pressure boundary," or "reactor coolant system."	2	4	Delete the third bullet related to reactor pressure vessel (RPV) LOCA analysis.
C.II.2.27	C.II.2.2.2		This topic of Codes and Standards is redundant of the bullets under the other headings and therefore should be deleted.	2	4	Delete the heading and bullet related to Codes and Standards.
C.II.2.28	C.II.2.2.2		This topic of As-Built Reconciliation is redundant of the bullets under the other headings and therefore should be deleted.	3	4	Delete the heading and bullets related to As-Built Reconciliation.
C.II.2.29	C.II.2.2.2		Consistent with the practice for the ITAAC for the existing design certifications, a single ITAAC may address the as-built stress reconciliation for all loads applicable to a system, rather than having a separate ITAAC for each load.	3	4	Add a paragraph at the end of this section to state that ITAAC for the various topics discussed in this section may be combined into one or more ITAAC, and that a separate ITAAC is not needed for each topic.
C.II.2.30	C.II.2.2.3		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Modify the statement preceding the second series of bullets in this section to delete reference to verifying piping and component "classification."
C.II.2.31	C.II.2.2.3		It will not always be possible to simulate design basis conditions in the plant. Therefore, in some cases, it will be necessary to perform an analysis that extrapolates the results of tests at actual conditions to determine whether the MOVs will be able to perform their functions at design basis conditions.	2	4	Modify the last bullet of this section to indicate that the capability of installed MOVs at design basis conditions should be verify by in-situ testing and analysis.
C.II.2.32	C.II.2.2.3, Sec. 14.3.3		This section requires as-built analyses to be performed. See above comment on C.II.2.2.2, Section 14.3.2 concerning as-built reconciliation. As-built reconciliation is performed by confirmation that the as-built configuration conforms to the design drawings. Structural analyses are only revised if necessary to reconcile deviations that are identified. If the design uses LBB methods there should be an ITAAC developed to require that a report exists and concludes that the material properties in the certified material test reports are consistent with the material properties assumed in the LBB analysis.	1	1	This section should be revised to remove all statements that stipulate the structural analyses have to be revised to verify as-built configuration. The bullet on LBB reconciliation should be revised to reflect that the only input needed is the certified material test reports.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.33	C.II.2.2.4		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Delete Item # 2 under the last bullet, which indicates that ITAAC should be developed to verify seismic and code classification.
C.II.2.34	C.II.2.2.4		Item # 9 under the last bullet is too vague to be meaningful. Not all numeric performance values need to be verified. Instead, only the "top-level" performance values need to be verified.	2	4	Delete Item # 9 under the last bullet, which states that ITAAC should verify "numeric performance values."
C.II.2.35	C.II.2.2.5		Some of the topics listed do not relate to the as-built plant, but instead pertain to the licensing analyses that will be reviewed and approved by the NRC in the COL proceeding (e.g., "identification of design basis events;" "minimum criteria for manual initiation and control of protective actions"; "single failure criterion"). Such topics are not appropriate subjects for ITAAC, as indicated by Attachment A.II.10 of DG-1145. Some of the topics listed pertain more to operation than the design of the as-built plant (e.g., "repair"; "control of access"). Such topics are not appropriate subjects for ITAAC.	2	4	Consistent with the principal that ITAAC pertain only to the top-level design and performance requirements, delete or substantially reduce items 2-33 related to verification of each section of IEEE 603.
C.II.2.35 (continued)	C.II.2.2.5		Much of the information listed in this paragraph is not "top-level information" and/or not "principal performance characteristics and safety functions of the SSCs" (e.g., capability for test and calibration"; maintenance bypasses"). Therefore, in accordance with the principles in Section C.II.1 of DG-1145, such topics are not appropriate for ITAAC. Furthermore, the information requested in this section is not necessary for ITAAC as evidenced by the ITAAC for the existing design certifications (which are by definition adequate for COL).	2	4	see above
C.II.2.36	C.II.2.2.5		This paragraph merely lists the relevant GDC and provides no useful information regarding the content of the ITAAC that are needed to verify the GDC. In this regard, the ITAAC for the existing design certification are not developed or structured on a GDC-by-GDC basis. Instead, they were developed and structured on a system-by-system basis. DG-1145 should reflect such a structure.	2	4	Delete or substantially reduce Items 34-46 in this section related to the GDC.
C.II.2.37	C.II.2.2.5		As indicated in SECY-05-197 and the associated Staff Requirements Memorandum, ITAAC are not appropriate for operational programs.	2	4	Under Items 48-50, delete the references to plans that do not pertain to design and construction (e.g., maintenance, training, operations, start-up tests).
C.II.2.38	C.II.2.2.6		Most non-safety-related systems either have no safety function or minor safety functions. Therefore, it would be inappropriate to require ITAAC related to the electrical power for such systems. Instead, such ITAAC should be limited to those non-safety-related systems that have significant safety functions.	2	4	Modify Item 10 of this section to indicate that ITAAC should verify the functional arrangement of electrical power for non-safety systems to the extent that those systems perform a significant safety function.
C.II.2.39	C.II.2.2.7		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Delete Item #3 under the last bullet in this section, which indicates that ITAAC should be developed to verify seismic and code classification.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.40	C.II.2.2.7		Item 10 is too vague to be meaningful. Not all numeric performance values need to be verified. Instead, only the "top-level" performance values need to be verified.	2	4	Delete Item #10 under the last bullet in this section which states that ITAAC should verify "numeric performance values."
C.II.2.41	C.II.2.2.7, Sec. 14.3.7		Some of the discussion in this section specifies ITAAC for as-built reconciliation with analyses. As noted in the comments above, the as-built reconciliation is not performed with analyses, it is performed with the design drawings.	2	4	This section should be revised to remove reference to performing as-built reconciliation with analyses and replace it with as-built reconciliation with design drawings.
C.II.2.42	C.II.2.2.8		Equipment leakage is a relatively minor detail that is not appropriate for ITAAC (which pertain to "top-level information"). In this regard, the ITAAC for the existing design certifications do not in general address equipment leakage characteristics (except for a few significant leakage issues, such as integrated containment leakage).	2	4	Delete the fourth bullet in this section pertaining to equipment leakage characteristics.
C.II.2.43	C.II.2.2.8		The ITAAC for the existing design certification do not require that radiation protection equipment be environmental qualified (except as necessary to satisfy 10 CFR 50.49).	2	4	Modify the fifth bullet in this section pertaining to environmental qualification of radiation protection equipment. The scope of the ITAAC should be limited to that equipment that needs to be qualified under 10 CFR 50.49.
C.II.2.44	C.II.2.2.8		The application will describe the liquid and gaseous radwaste systems and will evaluate offsite releases to verify that the limits in Part 190 are met. The ITAAC should not be focused on reverification of compliance with Part 190. Instead, the ITAAC should be focused on verification of the important design features and functions of the liquid and gaseous radwaste that were the basis for the analyses in the application.	2	4	Modify the ninth bullet of this section to delete the reference to 40 CFR Part 190. Instead, ITAAC should require verification of the important design features and functions of the liquid and gaseous radwaste systems.
C.II.2.45	C.II.2.2.8		The ITAAC should focus on the important design features and performance characteristics relied upon in the accident evaluations. ITAAC should not be established to re-verify analytical assumptions such as delay times.	2	4	In the last bullet in this section, delete the parenthetical statement that references issues such as maximum delay time, maximum time for drawing negative pressure, etc.
C.II.2.46	C.II.2.2.9		The ITAAC for the existing design certification, and the generic emergency ITAAC accepted by the NRC in Section C.I.13 of DG-1145, do not address HFE for the TSC or EOF. Such information does not rise to "top-level information."	2	4	Delete the bullets that pertain to human factors engineering (HFE) for the technical support center (TSC) and emergency operations facility (EOF).
C.II.2.47	C.II.2.2.11		The ITAAC for the existing design certifications provide for a CILRT rather than individual valve leakage tests. Limiting the ITAAC to the CILRT is appropriate, because safety is ensure if the integrated leakage is acceptable.	2	4	Modify the last bullet in this section to indicate that ITAAC should include a containment integrated leak rate test (CILRT), rather than tests of individual valve leakage.
C.II.2.48	Table C.II.2-1 SAMPLE ITAAC FORMAT		The ITAAC for the existing design certifications only require NDE for ASME welds, not NDE for all ASME components.	2	4	In ITAAC # 2 in this table, change the word "components" to "welds".
C.II.2.49	C.II.2; Appendix A.I.A.10		The ITAAC should focus on the results of type tests for equipment qualification, not whether there may be EQ documentation problems. In this regard, the ITAAC for the existing design certifications do not contain requirements to verify that the EQ documentation satisfies all of the requirements in 10 CFR 50.49.	2	4	Delete the sentence pertaining to equipment qualification (EQ) documentation. 50.49 documentation requirements should be addressed in DG-1145, Section C.I.3.11.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.50	C.II.2; Appendix A.I.A.11		Accessibility is not "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." The ITAAC for the existing design certifications do not in general address accessibility.	2	4	Delete this section, which pertains to accessibility to perform ISI and IST.
C.II.2.51	C.II.2; Appendix A.I.B.11		The ITAAC for the existing design certifications provide for a CILRT rather than individual valve leakage tests. Such provisions are appropriate, because safety is assured if the integrated leakage is acceptable.	2	4	Modify this section to indicate that ITAAC should include a containment integrated leak (CILRT) rate test (rather than tests of individual valve leakage).
C.II.2.52	C.II.2; Attachment A on I&C Systems		In general, this Attachment would require extremely detailed design information to be included in the ITAAC, without regard to its safety significance. For example, there is no basis for including "cabinet layout and wiring" in the ITAAC - - inclusion of such information in the ITAAC would be entirely inconsistent with the ITAAC for other types of systems, which do not contain such details. Similarly, much of the information sought by this Attachment (e.g., single failure analysis) will need to be included in the application and approved by the NRC - - there is no reason (and it would be inconsistent with the entire purpose of ITAAC, which is focused on as-built SSCs) to reverify that design analysis as part of ITAAC.	1	4	The comments applicable to Section C.II.2.2.5 are equally applicable to this Attachment. This entire attachment should be deleted.
C.II.2.52 (continued)	C.II.2; Attachment A on I&C Systems		In general, this attachment does nothing more than repeat the requirements of IEEE 603, the GDC, and SRP. The attachment does not distinguish between design information that needs to be reviewed and approved as part of the application, and as-built attributes that should be verified by ITAAC. Furthermore, this attachment makes no attempt to distinguish between top-level information on the principal performance characteristics and safety functions that are appropriate for verification by ITAAC, and detailed design information that is not appropriate for ITAAC. As a result, this attachment is not consistent with the principles that the NRC has established for development of ITAAC, and provides incorrect guidance for ITAAC. As a result, this attachment (in its current form and substance) should be deleted in its entirety.	1	4	see above
C.II.2.53	C.II.2, Appendix C.II.2-A, I&C and Control Systems, Section II, ITAAC:		Item C seeks submittal of the Software Test Plan. There is no regulatory basis for this requirement. The Software Test Plan is not mentioned in BTP-14.	2	4	This section should be revised to remove the Software Test Plan.

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C.II.2.54	C.II.2; Attachment A on Electrical Systems; Paragraph A.9		Not all recommendations in Regulatory Guides warrant treatment in ITAAC. For example, some recommendations simply call for analyses to be included in an application, but do not pertain to performance characteristics or safety functions. In other cases, the Regulatory Guides contain recommendations that pertain to detailed design information that does not rise to the level of "top-level information." Therefore, only those recommendations in Regulatory Guides that represent top-level information on the principal performance characteristics and safety functions should be included in the ITAAC.	2	4	The first sentence of this paragraph should be modified to indicate that the recommendations in Regulatory Guides should be verified through ITAAC, to the extent that they represent top-level information on the principal performance characteristics and safety functions.
C.II.2.55	C.II.2; Attachment A on Electrical Systems; Paragraph A.12		Not all new design features warrant treatment in ITAAC. For example, some new design features may be non-safety-related and have no significant safety function. Therefore, only those new design features that represent top-level information on the principal performance characteristics and safety functions should be included in the ITAAC.	2	4	The first sentence of this paragraph should be modified to indicate that new design features should be verified through ITAAC, to the extent that they represent top-level information on the principal performance characteristics and safety functions.
C.II.2.56	C.II.2; Attachment A on Building Structures; Paragraph I.3		Most of the dimensions requested by this paragraph are not critical to safety and should not be embedded in the ITAAC. In general, a licensee should be able to change these dimensions, without seeking prior NRC approval. However, if the dimensions are in the ITAAC, they cannot be changed without NRC approval. In this regard, the NRC certified the ABWR design, without requiring that the dimensions be verified by ITAAC (as provided in the footnote to ABWR Tier 1, Section 2.15.10). Although such information was required for the ITAAC for the AP1000, we recommend that the NRC reconsider that position and only require ITAAC for those key dimensions that cannot change without significant implications for safety. In this regard, we believe that it is appropriate to specify a wall thickness for protection against external floods as provided in paragraph II.3 of the Attachment, and are not recommending any change to that provision.	1	4	Delete this paragraph, which requires ITAAC for building dimensions. In the alternative, limit this paragraph to a few key critical dimensions.
C.II.2.57	C.II.2		Sentence 2 of paragraph 4 states that COLAs "must" include physical security ITAAC, in the same way that COLAs "must" include EP ITAAC. However, EP ITAAC are unique in the way they are called out in the regulation as required.	2	3	Modify sentence to be consistent with new Appendix C.II.2.C and Appendix I response C.III.7-2
C.II.3.1	C.II.3	C.II.3-1 C.II.3-4	In Pubic Comment C.II.3-1 and C.II.3-4, the Staff indicates that Reg. Guide 4.2 provides an acceptable approach for COL applicant ER work. However, as recognized by the Staff, Reg. Guide 4.2 is dated; it does not address a number of topics covered in NUREG-1555. [See also related comment and Staff response to Comment C.III.3-3. The Staff notes in this response it's consideration of using the ESRP as a format for its EIS. However, the industry question here deals with the expected format of the COLA ER.]	2	4	To establish a standard, consistent listing and presentation of issues and information to be addressed in a COLA ER, it is suggested that the Staff provide a simple table of contents for COLA ERs on C.II.3 (or appendix to the Guide). This could be based on NUREG-1555, Appendix A.

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C.II.3.2	C.II.3	C.II.3-5 C.II.3-7	Both Public Comments C.II.3-5 and 7 pertain to the SAMDA evaluation provided in a design certification and finality of the resulting NRC's EA. The issue of referencing a design still undergoing NRC review is also raised in the comments. In response to C.II.3-5, the Staff indicates that a response will be provided via the final rulemaking. In response to C.II.3-7, the Staff described a number of actions needed by the SAMA evaluation that go beyond SAMDA and DCD scope. The Staff stated no revision to the Guide was required. Depending on the level of detail in provided in the rulemaking and accompanying comments, the final complete guidance on this subject may not be clear or fully responsive to this comment	2	4	To offer a clear, single location for guidance on NRC expectations regarding SAMDA and SAMA evaluations, it is recommended that the final Guide in C.II.2 be revised to provide a specific reference ton the rulemaking and statements where these subjects are addressed. It is suggested that the NRC include its guidance on SAMA (response to Comment C.II.3-7) in Section C.II.3.
C.III.1.1	C.III General		C.III.1.x and Section 1.x of the "second half" of C.III.1 have the significant potential to become confused because of the format of DG1145.	3	3	Change C.III.1, C.III.2, etc.; to C.III.a, C.III.b., etc., or something analogous, to avoid two competing C.III.1.x citations
C.III.1.2	C.III.1 General		C.III.1 - General – Because C.III.1 pulls much information from the C.I sections, each comment on the C.I sections should also be checked against the corresponding C.III section, and vice versa.	2	3	N/A
C.III.1.3	C.III.1 Sec. 1.10		Section C.III.1 introductory material, in general, does not mention the specific guidance regarding incorporation of the rule and the DCD in the COLA. A reference to C.IV.2 is recommended, as a matter of completeness.	2	4	Add the following statement to C.III.1.10: "See Section C.IV.2 for guidance on referencing an design certification rule."
C.III.1.4	C.III.1 Sec. 1.1		Guidance refers to the need to identify net electrical output. Of what value is this information, and to what extent is it considered binding as part of the FSAR? The net electrical output will be influenced by many factors such as house loads that may not be known at the time of application.	1	4	Indicate this as approximate and provided for information only.
C.III.1.5	C.III.1 Sec. 1.1.1		The phrase "whether the plant is colocated with existing operating nuclear power plants" should be clarified as the parameters of interest. Does it apply to a new unit outside the protected area for the existing facility? Outside the exclusion area boundary? Does the unit's status matter in the definition of "operating"?	2	2	Replace with "...including the extent (if any) to which the plant is collocated and/or interfaces with a licensed, existing nuclear power plant (i.e., within the existing plant's protected area or exclusion area boundary)."
C.III.1.6	C.III.1 Sec. 1.1.6.1		(1) "guides" is plural but DG-1145 is the only guide indicated (2) should indicated conformance with DG-1145 ensures/obviates need to address RG-1.70 (3) "DG-1145" should be replaced with RG number when available	3	4	Consider replacing 1.1.6.1 with "conformance with format and content guidance of this regulatory guide."

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C.III.1.7	C.III.1 Sec. 1.1.6.2		Ambiguous reference to SRP conformance	2	4	Insert "...approved as of six month prior to submittal date of application" after "(NUREG-0800)"
C.III.1.8	C.III.1 Sec.1.4		C.I.1.4 call the NSSS vendor "the reactor designer." On the other hand, C.III.1.1.4 call the NSSS vendor "the certified plant designer."	3	5	C.III.1.1.4 – "The division of responsibility between the ~~certified plant~~ reactor designer, architect-engineer, constructor, and plant operator should be delineated."
C.III.1.9	C.III.1 Sec. 1.9		In several cases within 1.9, reference is made to the timing of conformance (e.g., RegGuides or SRP in place 6 months before docket date). In some cases, the requirement is ambiguous (i.e., "6 months before application"). Consistent with prior discussions and comments, it is expected that, either through changes to guidance and regulations, as applicable, or as a matter of practice, the standard applied here will be six months prior to the application date, as the applicant has no control over when the application is docketed.	2	4	Acknowledge standard to be applied as a matter of practice will be guidance in effect "six months prior to application date." The NRC should initiate a rulemaking to fix the regulations.
C.III.1.10	C.III.1 Sec. 1.9.1		The first sub-heading ("COL Applicants That Reference a Certified Design") is redundant to the entire C.III.1 section, and is unnecessary. Coupled with the first two sentences of the following paragraph, it unnecessarily confuses the context of the balance of the section. This comment also applies to 1.9.2, 1.9.3, and 1.9.4.	2	4	Delete subheading and first two sentences, such that second paragraph would begin, "Certified designs have already provided..."
C.III.1.11	C.III.1 Sec. 1.9.1	C.I.1.9-1	The latter half of the first paragraph under the subheading "COL Application Timing" is not completely accurate, and is somewhat redundant to information in the same paragraph, and while it attempts to clarify by example, it is not worth the confusion created. If a design was certified in December 2005, the obligation to "six-month" conformance would not be keyed off of the Dec 2005 date, but rather on the date of submittal or docketing of the original application. This comment also applies to 1.9.2, 1.9.3, and 1.9.4.	2	4	Delete from "For example, if a design was certified..." to the end of the paragraph.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.12	C.III.1 Sec. 1.9.1	C.I.1-6	The third paragraph in this section (that begins, "There may be cases where a certified design addresses SRP conformance...") seems inconsistent with the regulation. It states, in part, "where the SRPs applicable to the certified design have been revised/updated, the COL applicant may address conformance with the version of the SRP evaluated in the certified design even though a later revision of the SRP is in effect." This seems correct, i.e., allowable, but the paragraph goes on to say, "However, it is expected that the COL applicant, in this situation, will identify and justify a deviation or exception from conformance with the SRP in effect 6 months before the docket date of the COL application." The discussion is in the context of "design-related issues for which the COL applicant's operationally-related issues/programs are dependent (e.g., fire protection)," but this scenario is not well explained, nor is there any justification presented as to why design finality of a certified design should not be weighted more heavily than the operational programs that might be related to those approved design elements.	1	1	Delete this paragraph or, at a minimum, provide the regulatory basis for this apparent departure from design finalization.
C.III.1.12 (continued)	C.III.1 Sec. 1.9.1	C.I.1-6	The Staff needs to clarify the regulatory basis for requiring justification of conformance with the SRP that was in effect at the time the DCD was docketed.	1	1	see above
C.III.1.13	C.III.1 Sec. 1.9.1		C.III.1 discussion of FSAR 1.9.1 states "a COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design which are not included in the certified design. In addition, the COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application insofar as they pertain to operational aspects of the facility." Does this guidance indicate that the only regulatory guides that need to be addressed are those that address "facility design" or "operational aspects of the facility? For example, Division 2 is for Research and Test Reactors; so, can we eliminate Division 2 assessments since they don't address design or operation of commercial power reactors?	2	4	N/A

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C.III.1.14	C.III.1 Sec.1.9.3		Comment # C.I.1.18 on Section C.I.1.9.3 is applicable as well to C.III.1, Section 1.9.3. 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "Include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed.	2	4	See Comment #C.I.1.18. The proposed changes at C.I.1.9.3 apply as well to C.III.I, Section 1.9.3.
C.III.1.15	C.III.1 Sec. 1.9.4		The first sentence on the "international operating experience" section significantly overstates the regulatory requirement. DG1145 says "Applicants for certified design and applicants for a combined license are required to address comparable international operating experience," while the proposed regulation makes it clear that use of international experience is an alternative to use of domestic experience. Further, COL applicants will, in most cases, have no ability to discern the extent to which international experience is factored into the design, and international regulations and guidance may have no relevance to those in the US.	1	4	Clarify that the regulatory basis for use of international experience is in the context of an alternative to domestic experience, and clarify limits of what an applicant may be "required" to provide when he does not have direct access to information regarding extent of international experience considered in the certified design.
C.III.1.16	C.III.1, 2.1.3.6		Typo: Population density criteria is incorrectly stated as 500 persons/km2. C.I.2.1.3.6 correctly presents this as 500 persons / mi2.	3	3	Change to 500 persons/mi2 to be consistent with C.I.2.1.3.6 and Reg. Guide 4.7.
C.III.1.17	C.III.1, Sec. 2.4		Footnote 7, page C.III.1-27, pertains to changes from the referenced DCD. However, it is not clear as to the relevance of Footnote 7 to the referenced text which does not speak to changes from the DCD.	2	4	The Staff is requested to clarify the application of Footnote 7 to the referenced text or delete the footnote.
C.III.1.18	C.III.1 Sections 3.7.2.2 and 3.7.2.12		What are major Seismic Category I structures?	2	4	Provide clarification.
C.III.1.19	C.III.1 Section 3.7.2.8		What is the definition of Seismic Category II? Based on the text, it implies SSCs that meet Regulatory Guide 1.29 Position C.2 requirements are classified as Seismic Category II.	2	4	Delete the term "Seismic Category II" or define it and use it consistently throughout DG-1145.
C.III.1.20	C.III.1 Section 3.9.6.5		Typo.	3	5	Replace ASMC with ASME.

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C.III.1.21	C.III.1 Ch. 3.9.2.3		Currently, this section only addresses BWR reactor internals - PWR reactor internals need to be addressed as well.	2	3	Provide words similar to C.I.3.9.2.3
C.III.1.22	C.III.1, Sec. 5.2.3.2 (1), (2)		Please clarify if it will be acceptable to reference the EPRI Water Chemistry guidelines for the new plants, or will an applicant need to cut-and-paste much of the background information from those documents into the SAR? The last sentence in each item implies that incorporation by reference is acceptable, but there appears to be the opportunity for a lot of redundancy and downstream revision of the SAR every time those guidelines are updated.	2	4	Clarify that the EPRI Water Chemistry guidelines can be incorporated by reference
C.III.1.23	C.III.1, Sec. 5.2.4.1		Section C.I.5.2.4.1, "ISI and IST Programs": This section provides a list of 9 items to be provided in the COLA to allow the Staff to make a reasonable assurance finding. Some of the 9 items will not be available at the time the COLA is submitted. For example, items 11(1), 12(2), 17(7) and 18(8) would not be complete at COLA. Item 1 can be completed for major components of the RCPB. For item 2, it is not expected that all remote access equipment would be identified several years before the examinations. Also, items 17(7) and 18(8), code exemptions and relief requests will not be developed at the time the application is submitted. The list should be modified to recognize that al such items that have been identified may not be included in the application.	1	2	Add the following to the end of this section as a separate paragraph: "It is acceptable to submit a general description of the programs as long as it "fully describes" the programs, as defined in SECY-05-0197, and references any applicable standards regarding the ISI and IST programs. When some detailed information for the ISI and IST programs as required in this section is not available at the time of submitting the application, the COL applicant should make a commitment in the application that such information will be provided at a later date (at least one year prior to fuel load) for NRC review prior to fuel load."
C.III.1.24	C.III.1, Sec. 5.2.4.1		The numbering of the 9 items listed in this section start with 11, instead of 1.	3	5	Re-number the list of items starting with (1)
C.III.1.25	C.III.1, Sec. 5.2.4.1 (13)		Please clarify the requirement to discuss the procedures used to meet Code requirements in the second sentence of this bullet. Procedures will not be developed by the time of COL application. Also, it does not seem to be advisable to submit detailed procedures which require a FSAR update if a change to the procedure is performed. We believe that a discussion of the methods and techniques used to meet Section XI Code requirements provides sufficient information to enable the staff to make a reasonable assurance finding regarding the acceptability of the inservice inspection program.	1	2	Delete the words, "and procedures," from the second sentence of the third bullet under Section C.I.5.2.4.1, and replace the comma between "methods" and "techniques" with the word "and."

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C.III.1.26	C.III.1, Sec. 5.2.4.1 (7)		The industry does not have "exemptions" from Code requirements, but rather has Relief Requests and alternatives per 10 CFR 50.55a. The industry also works to Code Cases, as specified in Regulatory Guide 1.147. Please clarify if our understanding is correct and this item can be deleted. If this requirement is addressing components that are exempt from the inspection requirements of Section XI as defined in Section XI (usually based on size), please clarify and elaborate that this is the intent of this item.	2	4	Delete the following bulleted item" Code exemptions. Identify any exemptions from Code requirements.
C.III.1.27	C.III.1 Ch. 6		Lead-in info of section C.III.1- Ch. 6 states "The applicants should state its intentions with regard to its adoption of risk informed categorization and treatment of structures, systems and components in accordance with 10 CFR 50.69." Generally, this should be done once in Section 3.2, not in the various sections of the FSAR discussing the SSCs. [Duplicate of comment on C.I.6.]	2	3	Omit this statement from Chapter 6, but address the use of §50.69 in Section 3.2 of the FSAR. 10 CFR 50.69 is currently not mentioned in C.I.3.
C.III.1.28	C.III.1 Ch.6		Lead-in info of section C.III.1- Ch. 6 states "Generic DCDs typically address the equipment, the material used to manufacture the components in the ESF system. If applicable, this information may be incorporated by reference." Workshop discussions have led the Industry to believe that the Staff interprets Part 52 to require that the COLA include the DCD information, not "incorporate by reference." [Duplicate of comment on C.I.6.]	2	3	Be consistent with Staff interpretation of 10 CFR Part 52.
C.III.1.29	C.III.1 Ch.6 General		The section labeled "*General*" duplicates C.I.6. It should be written to identify what is necessary beyond the referenced DCD consistent with the intent of C.III.1.	2	3	Rewrite General info to identify what is needed beyond the referenced DCD.
C.III.1.30	C.III.1 Ch. 6 General		The section labeled "*General*" states "The General Design Criteria (GDC) 1, 4, 14, 31, 35, 41 and Appendix B of 10 CFR Part 50, and 10 CFR Part 50, §50.55a, require that certain systems be provided to serve as engineered safety features (ESFs) systems." This statement is not consistent with similar statement in C.I.6.	2	3	Make these statements consistent.
C.III.1.31	C.III.1, 6.2.2		According to RG 1.82 Rev.3, the design of the adverse effects, such as debris, chemicals from buffering agents and debris effects generated from the use of unqualified coatings (which may not adhere to the surface) should be considered. In general, this information should be provided at the COL stage for COL applicants that reference a certified design.	2	2	Add the following item in this section for evaluation of containment sump analysis – The design of the adverse effects, such as debris, chemicals from buffering agents and debris effects generated from the use of unqualified coatings (which may not adhere to the surface) should be considered at the COL stage.
C.III.1.32	C.III.1 6.2.7		C.III.1.6.2.7 states "COL applicant that reference a certified design do not need to include additional information" while there is no correspond section in C.I.6.2. There should be consistency within these sections.	2	2	Either section C.III.1.6.2.7 should be deleted, or a similar section should be included in C.I.6.2.
C.III.1.33	C.III.1 6.6.6		C.I.6.6.6 requests "Describe the method to be used in evaluating examination results for Class 3 components and, until publication of IWD-3000, indicate the extent to which these methods are consistent with requirements in Article IWA-3000 of Section XI." This guidance should be updated to reflect that IWD-3000 has now been published. [Duplicate of comment on C.I.6.]	2	4	"Describe the method to be used in evaluating examination results for Class 3 components and, indicate the extent to which these methods are consistent with requirements in Article IWD-3000 of Section XI."

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C.III.1.34	C.III.1, Sec 7.1.1		This section states: "Identify all instrumentation, control, and supporting systems that are not addressed in the design control document of the referenced certified design or other parts of the COL application." per C.I.1.7.1.1: "The application document should list all instrumentation, control, and supporting systems that are safety related, including alarm communication, and display instrumentation."			As worded, applicants referencing a certified design (C.III) must identify all instrumentation, control, and supporting systems not addressed in the DCD, including non-safety related instrumentation, control, and supporting systems, whereas applicants for non-certified design (C.I) are only required to address the safety related ones. Revise C.III.7.1.1 to be consistent with C.I.1.7.1.1.
C.III.1.35	C.III.1, Sec. 8.2.2		5th sentence has the phrase "accepting the" repeated twice in the sentence.	3	5	Modify to correct the duplication.
C.III.1.36	C.III.1 Sec. 9.1.3		This section describes additional information to be provided by a COL applicant referencing a certified design. The second and third bullets of this information require the following additional information: • Describe operational program to maintain spent fuel decay heat load within spent fuel pool cooling system heat removal capacity during refueling, including analytical methods used to calculate decay heat generation and heat removal capacity. • With respect to neutron absorber material, provide pool cleanliness requirements for normal operations in the design bases for the cooling and cleanup system for the spent fuel facilities. This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. These requirements appear to be inappropriate.	1	1	Delete the following from C.III.1.9.1.3: • Describe operational program to maintain spent fuel decay heat load within spent fuel pool cooling system heat removal capacity during refueling, including analytical methods used to calculate decay heat generation and heat removal capacity. • With respect to neutron absorber material, provide pool cleanliness requirements for normal operations in the design bases for the cooling and cleanup system for the spent fuel facilities.
C.III.1.37	C.III.1 Sec. 9..1.4		This section describes additional information to be provided by a COL applicant referencing a certified design. The additional information required is: • Describe the operational program governing fuel handling, including procedures and administrative controls. This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. This requirement appears to be inappropriate.	1	3	Modify the section to read as follows: Typically included as part of the referenced certified design. No additional information needs to be provided by a COL applicant referencing a certified design.

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C.III.1.38	C.III.1 Sec. 9.1.5		This section describes additional information to be provided by a COL applicant referencing a certified design. The second and third paragraphs of the section requires the following additional information: Describe the operational program governing heavy load handling, including: • A listing of all heavy loads and heavy load handling equipment outside the bounds of loads described in the certified design, and the associated heavy load attributes. • Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance. • Heavy load handling equipment maintenance manuals and procedures. • Heavy load handling equipment inspection and test plans. • Heavy load personnel qualifications, training, and control programs. • QA programs to monitor, implement, and assure compliance to heavy load handling operations. For heavy loads outside the bounds of loads described in the certified design that are handled by non-single-failure-proof handling systems, provide a safety evaluation demonstrating the consequences of potentia This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. These requirements appear to be inappropriate.	1	1	Modify the section to read as follows: Typically included as part of the referenced certified design. No additional information needs to be provided by a COL applicant referencing a certified design.
C.III.1.39	C.III.1 Sec. 9.2.5.1		Although the same design bases information is described, the list is worded differently between this section and the corresponding section in C.I.9. Specifically, the fifth bullet of the list reads as follows: The ability of essential components to withstand design loadings, provisions for inspection of essential structures and subsystems	3	3	Split the fifth bullet of the design bases to be provided into two bullets, as follows: • capability of essential components to withstand design loadings • provisions for inspection of essential structures and subsystems
C.III.1.40	C.III.1 Sec. 9.2.5.2		The reference to RG 1.29 for this section is incorrect. RG 1.29 deals with seismic classification. The reference instead should be to RG 1.27, Ultimate Heat Sink for Nuclear Power Plants.	3	3	Change RG 1.29 to RG 1.27.
C.III.1.41	C.III.1 Sec. 9.3.3		The first sentence of the third paragraph of this section states, "Describe how the final size of the drywell sump is determined."	1	1	Delete the following from the third paragraph of this section:

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C.III.1.42	C.III.1 Sec. 9.5.1.1	C.I.9.5.1.3-1	The 10th bullet of the information required to be submitted in the second paragraph of the section reads as follows: (10) Fire PRA peer review results - these should include all high-level Facts and Observations and their resolution, or plan and schedule for resolution if at a future date, as documented by an "independent" peer review (i.e., one performed according to an approved fire PRA standard by a group independent from the applicant) A similar comment, C.I.9.5.1.3-1, was addressed by NRC in Appendix I to DG-1145, wherein the reference to "fire PRA" was removed and reference made to PRA requirements in Section C.I.19 and C.II.1. The same revision should be made in this section.	3	3	Delete bullet (10) referencing the "fire PRA," and replace with the following at the end of the paragraph: Guidance for fire probabilistic risk assessments (PRAs) is provided in Sections C.I.19 (Probabilistic Risk Assessment Information and Severe Accidents) and C.II.1 (Probabilistic Risk Assessment).
C.III.1.43	C.III.1 Sec. 9.5.1.1(2)		Change the word "addition" to "edition."	3	4	See next comment
C.III.1.44	C.III.1 Sec. 9.5.1.1(2)		This section should be revised to address the fact that the design certification identifies the codes and standards applicable to the certified design.	1	1	The final list of industry codes and standards will be governed by the DCD (6 months prior to DCD) for items already certified. The COL will use industry codes and standards (6 months prior to COLA Application) for items not covered in the certified design, unless it results in a design change to the plant in which case the industry will ask for exemption (provided there is no NRC associated back fit).
C.III.1.45	C.III.1, Sec 9.1.5.1		5th bullet states "Heavy" instead of "Heavy."	3	5	
C.III.1.46	C.III.1, Sec 9.4.5		Section 9.4.5 is followed by Section 9.5.1. Section 9.4.5 should be followed by "9.5 Other Auxiliary Systems."	3	5	
C.III.1.47	C.III.1 Chapter 9		Numerous sections like 9.3.1, 9.3.3, 9.5.4, 9.5.5 should give credit to the noted items already having been addressed in the DCD. These sections do not do so as presently written.	1	4	Add the following sentence to these and other sections: "If this information is included in the DCD, COL applicants referencing a certified design do not need to include additional information."

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C.III.1.48	C.III.1 Sec. 10.2.3		Section states, "If not contained in the DCD, discuss how the environmental conditions, operational parameters, design features, fabrication, material properties, and maintenance are managed and considered to mitigate the following potential degradation mechanisms in the turbine rotor and buckets/blades: pitting, stress corrosion cracking, corrosion fatigue, low-cycle fatigue, erosion, and erosion-corrosion." "If not contained in the DCD," is not an appropriate criterion for requiring COLA info. Rather, COLAs will contain information required by the regulations that is sufficient to support NRC safety reviews and findings, and need not provide additional detail about the approved standard design. Moreover, the requested information is not practical or necessary to provide at time of COLA.	1	2 and 3	"Provide a general description and/or reference to applicable standards on how design, procurement, fabrication, maintenance and operations will be conducted so as to mitigate the following potential degradation mechanisms in the turbine rotor and buckets/blades: pitting, stress corrosion cracking, corrosion fatigue, low-cycle fatigue, erosion, and erosion-corrosion. The COL applicant should provide a schedule for making procurement specifications and related information describing design features, fabrication methods, and material properties available for NRC audit, but the schedule need not be part of the COLA. This information should be made available at least one year prior to scheduled fuel load."
C.III.1.49	C.III.1, Sec. 10.2.3		Section states, "Describe the turbine rotor inservice test and inspection program. In this description, include inspection frequency, scope (components/areas to be inspected), inspection method for each component, acceptance criteria, disposition of reportable indications, and corrective actions. Provide the technical basis for the inspection frequency."	1	2 and 3	Add statement consistent with C.1.10.2.3.3 as follows: "It is acceptable for the COL applicant to submit a general description and reference any applicable standards regarding in-service inspection of the turbine rotor; however, the COL applicant should provide a schedule for submitting the finalized in-service inspection procedures and acceptance criteria. This schedule will be subject to a license condition for implementation. The finalized information should be provided no later than one year before initial scheduled fuel load." When addressing the timing of this information need, note that the following was included in Section 10.2.6 o the AP1000 DCD: The Combined License holder will submit to the staff for review and approval within 3 years of obtaining a Combined License, 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 subsection 10.2.3.6.

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C.III.1.50	C.III.1, Sec. 10.3.6		Section states, "Develop flow-accelerated corrosion (FAC) monitoring program for carbon steel portions of the steam and power conversion system that contain water or wet steam." It is not necessary or practical to develop an FAC program at the time of COLA.	2	2	"Provide a general description and/or reference to applicable standards for developing a flow-accelerated corrosion (FAC) monitoring program for carbon steel portions of the steam and power conversion system that contain water or wet steam."
C.III.1.51	C.III.1 Sec. 10.3.6		For non-code components, provide plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s).	2	2	It is not clear what is meant by "non-code components" As utilized in the second bullet of C.I.10.3.6.3, the meaning of the term appears to apply to components outside of the ASME Section III portion of the MS/FW systems. However, based on the general statement in C.I.10.3.6 and the specific usage in C.I.10.3.6.1, it could be construed that the COLA applicant is only required to provide the indicated information "on materials used for ASME Boiler and Pressure Vessel Code, Section III, Class 2 and 3 components...". If the former definition is correct, that non-code components are components that are outside of the ASME Section III code boundaries, the requested information appears to go beyond the requirements of either the SRP or the draft SRP revision. In the SRP, fracture toughness requirements are only associated with ASME Section III, Class 2 and 3 components.
C.III.1.52	C.III.1, Sec. 10.3.6		Section states, "For non-code components, provide expected plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s)." Per past practice for design certification and Section C.II.2, ITAAC are not established to verify material properties of non-code components in the steam and feedwater systems. Rather, NRC may verify actual material properties through normal design implementation inspections.	1	1 and 3	Delete the second sentence regarding ITAAC.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.53	C.III.1, Sec. 10.4.9		Section states, "Discuss design and operational procedures for avoidance of steam binding on the AFW pumps" Design provisions will be described in the referenced DCD, as appropriate. Operational procedures will not be available at time of COLA so they cannot be discussed.	2	2	"Discuss ~~design and~~ operational ~~procedures~~ provisions for avoidance of steam binding on the AFW pumps."
C.III.1.54	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to verify that the system is capable of automatically initiating auxiliary feedwater flow upon receipt of a system actuation signal.	2	2	"Describe the inspection and testing ~~procedures~~ to verify that the system is capable of automatically initiating auxiliary feedwater flow upon receipt of a system actuation signal."
C.III.1.55	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to be performed to verify that the system satisfies the recommendations of Regulatory Guide 1.62 with respect to the system capability to manually initiate protective action by the auxiliary feedwater system.	2	2	"Describe the inspection and testing ~~procedures~~ to be performed to verify that the system satisfies the recommendations of Regulatory Guide 1.62 with respect to the system capability to manually initiate protective action by the auxiliary feedwater system."
C.III.1.56	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to be performed to verify that essential portions of the AFWS are isolable from non-essential portions, so that system performance is not impaired in the event of a failure of a non-essential component.	2	2	"Describe the inspection and testing ~~procedures~~ to be performed to verify that essential portions of the AFWS are isolable from non-essential portions, so that system performance is not impaired in the event of a failure of a non-essential component."
C.III.1.57	C.III.1, sec 10.2.3		Section states, "Describe the design features of the turbine rotor, shaft, couplings, and buckets/blades if these features were not described in the DCD. Provide drawings. Identify the manufacturer and model number. Discuss fabrication methods." "Describe ... if these features were not described in the DCD," is not an appropriate criterion for requiring COLA info. Design features of the turbine rotor, etc., will be described in the DCD as appropriate. COLAs will contain information required by the regulations that is sufficient to support NRC safety reviews and findings, and need not provide additional detail about the approved standard design. Moreover, manufacturer and model number are not practical or necessary to provide at time of COLA.	2	2	"Provide a general description of how design, procurement and fabrication of the turbine rotor, shaft, couplings, and buckets/blades will be conducted consistent with design certification requirements and applicable codes and standards. The COL applicant should provide a schedule for making procurement specifications and related information describing design features, fabrication methods, and material properties available for NRC audit. This information should be made available at least one year prior to scheduled fuel load."
C.III.1.58	C.III.1 sec. 10.3		Section states, "For BWRs, if an alternate leakage path is chosen, provide detailed drawings that show the MSIV alternate leakage path lines including the condenser, all applicable connections to the system and their seismic classification."	2	2	"For BWRs, if an alternate leakage path is chosen, provide drawings or detailed descriptions of the routing of MSIV alternate leakage path lines including the condenser, all applicable connections to the system, and their seismic classification."
C.III.1.59	C.III.1 sec. 10.3		Section states, "When cast austenitic stainless steel materials are used, discuss what measures have been taken to ensure that these materials can be adequately inspected by volumetric methods as required in the inservice inspection program."	2	2	"When cast austenitic stainless steel materials are used, discuss what component configuration and access provisions have been made to ensure that these materials can be adequately inspected by volumetric methods as required in the inservice inspection program."
C.III.1.60	C.III.1 Sec. 10.4.3		This section makes reference to RG 1.123 which has been withdrawn.	3	1	Correct reference
C.III.1.61	C.III.1 Sec. 10.4.6		Bullets one and four make reference to reactor water chemistry.	3	1	For clarity, please consider separate phrasing of BWR and PWR requirements

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.62	C.III.1, Sec 10.3		Section 10.3 is followed by Section 10.3.6. It appears that Section 10.3 should be followed by "10.3.5 Water Chemistry (PWR only)."	3	5	
C.III.1.63	C.III.1, Ch. 11		The objective and primary benefit of mobile systems is flexibility in terms of selection and replacement. Outage equipment (e.g., laundry processing system) may change with every outage, thereby requiring an SAR change. Outdated or defective equipment should allow replacement with an entirely different system without pursuing an SAR change. The objective of the SAR should be to identify what minimum operating characteristics will apply, ALARA objectives and minimum ALARA design features (as applicable), minimum instrumentation (monitoring) requirements, and minimum controls for governing critical or safety operation and termination functions. Minimum waste processing rates should only be required for liquid and gaseous effluent systems.	1	1	The requirements to describe mobile systems in terms of their "operating characteristics, ALARA design features, waste processing rates, instrumentation and controls that govern system operation and termination of process and releases" are too prescriptive and lock the plant operator into specific systems. More generic requirements should be specified.
C.III.1.64	C.III.1, Sec.12.5.1		Consistency.	3	3	Change "FSAR" to "SAR."
C.III.1.65	C.III.1, Sec. 12.2.2, para. 2		Current language is too prescriptive and would require an SAR revision for every new instrument type, quantity, etc.	2	4	Change "Describe the types of detectors and monitors, as well as the quantities..." to "Describe the typical types of detectors and monitors, as well as the minimum quantities..."
C.III.1.66	C.III.1 Sec. 12.2.1		Provide a description of any additional contained radiation sources not identified in Section 12.2.1 of the DCD for the referenced plant design, including radiation sources used for instrument calibration or radiography.	2	2	Since some of these sources may not be procured until nearer fuel loading, the exact quantities may be unknown at COL application. Revise to describe program for obtaining and controlling sources.
C.III.1.67	C.III.12.3.4		C.III.12.3.4 contains the two following items 1. "Describe the use of portable instruments, and the associated training and procedures, to accurately determine the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident, in accordance with the requirements of 10 CFR 50.4(f)(2)(xxvi) and criteria in Item III.D.3.3 of NUREG-0737" 2. "Address the use of portable instruments, and the associated training and procedures, to accurately determine the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident."	2	4	These passages need clarification. Discuss difference or delete duplication.
C.III.1.68	C.III.1, Sec.12.5.3, Radioactive Material Control, para 1		C.III.1.12.5.3, Radioactive Material Control, para	3	5 typo	In sentence 3, change "position control" to "positive control."

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C.III.1.69	C.III.1, Chapter 13		Numerous changes that were made to C.I.13 during the various iterations of 5/1 to 6/30 to 9/1 were not carried over to C.III.1, Chapter 13. Examples include: 1. The requirement for inclusion of resumes in the FSAR were removed in C.I.13.1, 9/01 version but not in C.III.1, Chap 13.1. 2. The last sentence of the first paragraph of section 13.2.1.1(1) in C.I.13 was changed from "The program should distinguish between classroom, on-the-job, and simulator training,..." to "The program should distinguish between formal instruction, on-the-job, and simulator training,...". This same change was not made in C.III.1, Chapter 13.	1	4	C.III should revised to be consistent with C.I.
C.III.1.70	C.III.1, Ch. 13		A "References" section was not included in section C.III.1-13 as is in section 13.1.4 of C.I.13	3	3	C.III should revised to be consistent with C.I.
C.III.1.71	C.III.1, Sec 13.1.2.2		1st sentence has the phrase "provide the" repeated twice in the sentence.	3	5	Correct the sentence
C.III.1.72	C.III.1 13.3		The emergency class definitions have been revised to include security events.	1	1	~~The emergency plan should include the emergency classification level scheme described in Appendix 1 and Supplement 3 to NUREG 0654.~~The emergency plan should include the Emergency Classification definitions contained in NRC BL 2005-02 or those developed by NEI and endorsed by the NRC in RIS 2006-12.
C.III.1.73	C.III.1 13.3		This confirmation of agreement does not need to be a permanent part of the E-plan. Also, the letter showing offsite agency agreement is needed whether or not there are other reactors at the site.	2	4	The applicant should provide some form of confirmation of the agreement, such as a letter signed by State and local governmental authorities, ~~in the emergency plan, if the applicant provides emergency action levels different from those for the existing reactor(s) on the site.~~ with the application.
C.III.1.74	C.III.1 13.3		This should be able to be provided by reference to other sections.	2	2	Add the following sentence after the second paragraph on page C.I.13-11:"It is acceptable to reference the sections in the FSAR that address site characteristics to satisfy this requirement."
C.III.1.75	C.III.1 13.3		Existing regulations do not require submittal of State and local emergency response procedures, just plans. (10 CFR 50.33(g))	1	1	In addition to the NRC's regulations (described above), the COL application needs to include the applicable State, Tribal, and local plans ~~and procedures~~ that address the relevant DHS requirements contained in 44 CFR Parts 350, 351, and 352, as well as associated REP guidance documents.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.76	C.III.1 13.3.1		It is permissible for the Emergency Plan to be a stand alone document.	3	2	This plan should be a physically separate document ~~identified as~~ *referenced by* Section 13.3 of the FSAR, and may incorporate by reference various State and local emergency plans or other relevant materials.
C.III.1.77	C.III.1 13.3.1		The requirement of 10CFR 73.71(a) should be addressed under security, not EP.	1	4	The cross-reference should indicate where the specific criteria in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), Appendix E to 10 CFR Part 50, ~~10 CFR 73.71(a),~~ and NUREG-0654/FEMA-REP-1, Rev. 1 are addressed in the applicant's plans.
C.III.1.78	C.III.1 13.3.1		Explicitly state what type of documents must be addressed - GL, BL, Orders. This should not include IN's as these are not supposed to set new requirements.	1	1	The applicant should address the various generic communications and Commission Orders that are in effect...explicitly state what type of documents must be addressed - GL, BL, Orders.
C.III.1.79	C.III.1 13.3.1		The EAL information should be in the stand alone Emergency Plan.	3	3	The ~~FSAR~~ *emergency plan* should also address an emergency classification and action level scheme, as required by 10 CFR 50.47(b)(4).
C.III.1.80	C.III.1 13.3.1		For security-related aspects of EP to be addressed, explicitly reference BL 2005-02 and RIS 2006-12, not just the 2002 orders.	2	4	The applicant should address the NRC Orders issued February 25, 2002, *BL 2005-02 and RIS 2006-12*, as well as any subsequent NRC guidance (or any NRC endorsed industry guidance developed in response to issues related to implementation of the Orders), to determine what security-related aspects of emergency planning and preparedness must be addressed in the emergency plan.
C.III.1.81	C.III.1 13.3.1		10 CFR 2.390 gives the requirements for marking information to be withheld from public disclosure.	3	1	Any information submitted to the NRC that is proprietary, sensitive, or safeguards information should be marked ~~appropriately~~ *as required by 10 CFR 2.390.*
C.III.1.82	C.III.1 13.3.2		This should be covered under Security, not EP.	2	1	~~(10) Describe the training program for employees and non-employees to assure the effective implementation of the physical protection program.~~
C.III.1.83	C.III.1, Sec. 13.5.2.1		Item (2), 1st sentence states "The FSAR or other submittal should describe the applicant's program for developing operating procedures (A.1-5 above)." It is not clear what "A.1-5 above" is referring to in the document.	3	5	
C.III.1.84	C.III.1, Sec. 13.5.2.1		Item (3) 1st sentence states "The FSAR or other submittal ... should describe the applicant's program for developing EOPs (A.4 above) ..." It is not clear what "A.4 above" is referring to in the document.	3	5	

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C.III.1.85	C.III.1, Sec.16.2		C.III.1 Chapter 16.2, second paragraph, states "The format and content of the technical specifications and bases for a COL or design certification should be based on approved certified designs listed as appendices to 10 CFR Part 52 (e.g., Appendix A to Part 52, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor," Appendix D to Part 52, "Design Certification Rule for the AP1000," etc.), or the following STS NUREGs developed for Part 50 licensees..." Reference to "design certification" or "design certification application" also occurs in other paragraphs of this section. It is not clear why the "or design certification" is addressed in this section that is intended to address a COL application that is referencing a certified design.	3	4	Delete references to "or design certification"
C.III.1.86	C.III.1, Sec.16.2		C.III.1 Chapter 16.2, second and third paragraphs, implies that the use of STS and incorporation of TSTF Travelers is an option for the COL application that is referencing a certified design. This is misleading, in that an applicant might be led to believe that this is an acceptable alternative without following the change requirements of Section VIII.C of the applicable design certification rule.	2	4	Provide clarification that a COL applicant referencing a design certification rule can only adopt revised generic Technical Specifications by following the change requirements of the applicable design certification rule.
C.III.1.87	C.III.1, Sec.16.2		C.III.1 section 16.2, last paragraph, states, in part, "Certain plant-specific information may need to be provided with the COL or design certification application to demonstrate compliance with 10 CFR 50.36. This information may include but should not be limited to: ... Manuals, reports, and program documents identified in the technical specifications administrative controls section." This guidance is not consistent with C.I.16 which states "Manuals, reports, and program documents identified in the administrative controls section of the TS or applicable governing regulations, are considered to be neither part of the FSAR, nor part of the TS or the associated bases. These documents (such as the Offsite Dose Calculation Manual and Core Operating Limits Report) are to be prepared and submitted to the NRC as required by the associated TS administrative control requirements and any applicable governing regulations."	3	4	The guidance in C.I.16 appears to be more appropriate; and should be reflected in C.III.1.CH16.2. However, if some "Manuals, reports, and program documents" are expected to be provided in the COLA, the specific documents should be identified in the guidance.
C.III.1.88	C.III.1, Sec.16.2		The second paragraph of this section provides a recommendation (i.e., "should") to base the plant-specific TS on the Generic TS rather than reflecting the regulatory requirement to comply with the applicable Design Certification Rule Section III.B or to invoke the change mechanism under Section VIII.C.	3	4	Revise "should" to "must"

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C.III.1.89	C.III.1, Sec.16.2		The first bullet in the list contained in the fourth paragraph should be separated into two topics: the first and second sentences are associated with completing COL Information Items based on a certified design which may have an impact on the generic Technical Specifications, and require changing in accordance with Section VIII.C of the applicable design certification rule. The third sentence deals with Technical Specifications derived from the STS NUREG documents, which can only be invoked by an applicant referencing a certified design by application of VIII.C of the applicable design certification rule.	2	4	Divide the first bullet in the fourth paragraph to separately address changes to generic Technical Specifications in a certified design, and use of generic Technical Specifications derived from the STS NUREG documents. Replace the words "departures" and "deviations" with "changes" or "exemptions," as appropriate.
C.III.1.90	C.III.1,Sec. 16.2		This section identifies NUREG 1431 Revision 3.1 as the basis for review. However, section C.I.16 documents the use of the current revision to NUREG 1431 without identifying a revision number.	2	3	These two sections (C.III and C.1) should point to the same reference revision numbers. Either both state Revision 3.1 or both state latest revision.
C.III.1.91	C.III.1,Sec. 16.2		This sections states that the applicant should consider incorporating the NRC approved TSTF Travelers where appropriate. Section C.I.16 does not discuss the consideration of these TSTF Travelers.	2	3	These two sections (C.III and C.I) should each recommend the use of TSTF Travelers or not.
C.III.1.92	C.III.1,Sec. 16.2		The recommendation associated with the TSTF Travelers is vague and requires clarification. Specifically, the issue remains unbounded with regard to when the NRC TSTF Traveler reviews will be completed. If these reviews are on going then up until the issuance of the documents by the applicant the NRC could be issuing approvals of these Travelers. In addition, the expectations of their use is vague. Will the applicant be required to document why they choose not to consider some as well as why they choose others.			The rules associated with the use of the TSTF Travelers need to be clarified. Provide cut off dates such as consider the use of NRC approved TSTF Travelers that have been approved six months prior to applicants submittal. Provide specific clarification as to whether the use of these TSTF Travelers is a requirement, and how their use or exclusion needs to be documented.

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C.III.1.93	C.III.1, Sec.17.4.2		The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity and to conform to SRM/SECY-95-132, the term O-RAP should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs.	1	3	Change to: "Reliability Assurance is implemented in two phases. The first stage is referred to as the Design Reliability Assurance Program and applies to reliability assurance activities that occur before the initial fuel load. The objective of this stage is to design reliability into the plant consistent with PRA assumptions. The second stage applies to reliability assurance activities for the operations phase of the plant life cycle. The goal of Reliability Assurance during this stage is to maintain reliability through existing operational programs, consistent with the overall PRA assumptions. Individual component reliability values are expected to change throughout the course of plant life because of aging and changes in suppliers and technology. Changes in individual component reliability values are acceptable as long as overall plant safety performance is maintained within the PRA assumptions and deterministic licensing design basis."

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C.III.1.94	C.III.1, Sec.17.4.3		Same comment as above regarding a DCD: The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs:	1	3	17.4.3 RAP Implementation The RAP is implemented in several phases. The first phase implements the aspects of the program that apply to the design process. During this phase, risk-significant SSCs are identified for inclusion in the program by using probabilistic, deterministic, and other methods. The design certification document addresses this phase. The design certification document also addresses a nonsystem based* Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. The second phase is the site-specific phase, which introduces the plant's site-specific design information to the RAP process. The COL applicant/holder performs this phase. At this phase, the RAP is modified or appended based on considerations specific to the site. The COL applicant/holder establishes the probabilistic, deterministic, and other methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Applicant should describe in the FSAR the information identified in Section 17.4.4. The COL applicant holder is also responsible for completing of site-specific information into the RAP and for implementing the RAP using existing operational programs.
C.III.1.95	C.III.1.17.4.2		In SECY 95-132, The Commission specifically disapproved the staff's proposal that an operational reliability assurance program (O-RAP) be continued for the life of the plant. SECY 95-132 states the following in the cover letter: "On Item E (reliability assurance program), the SRM approved a design reliability assurance program (D-RAP) subject to resolution of the recommendation by the Office of the General Counsel (OGC) to implement the D-RAP using the inspections, tests, analyses, and acceptance criteria (ITAAC) process. The SRM disapproved the staff's proposal that an operational reliability assurance program (O-RAP) be continued for the life of the combined license (COL). In response to the instructions of the SRM, the staff modified SECY-94-084 to: 1) revise the statement of purpose of the reliability assurance program; 2) require the use of the maintenance rule methodology for performance monitoring so that industry design reliability assumptions are not translated into new regulatory requirements; 3) require the D-RAP to be verified using the ITAAC process; 4) remove	1	1	Remove references to O-RAP. State that "Operational reliability assurance objectives and activities are incorporated into the QA Program and Maintenance Rule Program; therefore no further description is required. COLA action items must be addressed; specifically, the COL applicant will propose a method by which it will incorporate the objectives of the reliability assurance program into other programs for design or operational errors that degrade non-safety-related, risk-significant SSCs. If the staff now believes that, contrary to SECY 95-132, other activities must be added to and described in the QA and Maintenance Rules Programs in order to implement reliability assurance objectives, these should be presented to and approved by the Commission, and then added to DG-1145.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.95 (continued)	C.III.1.17.4.2		the requirement that a separate O-RAP exist for the life of the plant; and 5) incorporate the objective of the O-RAP into existing programs. These clarifications are reflected in the revised text of SECY-94-084 in Attachment 2."	1	1	see above
C.III.1.96	C.III.1.17.4.3		Same comment as above: The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs.	2	4	Reliability Assurance is implemented in several phases. The first phase implements the aspects that apply to the design process. During this phase, risk-significant SSCs are identified for inclusion in the program by using probabilistic, deterministic, and other methods. The design certification document addresses this phase which is referred to as Design Reliability Assurance Program (D-RAP). The design certification document also addresses a nonsystem based Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. The second phase of D-RAP is the site-specific phase, which introduces the plant's site-specific SSCs to the Reliability Assurance process. The COL Holder performs this phase. At this stage, the D-RAP is modified or appended based on considerations specific to the site. The COL Holder establishes the PRA importance measures, the expert panel process, and other deterministic methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Holder is also responsible for implementing the operational objectives of Reliability Assurance using existing operational programs (Maintenance Rule and QA) through the life of the plant.
C.III.1.97	C.III.1.17.4		Regarding 2nd bullet in list: the list of SSCs may not be complete for inclusion in the COLA since the detailed design will not be completed.	2	2	This bullet should state that the list of SSCs should continue to be revised as necessary as the design is completed. This is an ongoing activity to be completed prior to fuel load.
C.III.1.98	C.III.1.17.4.4		The Commission directed that there would not be a separate program called O-RAP	2	4	Replace "O-RAP" with "operational reliability assurance objectives"

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C.III.1.99	C.I.17.4-1, C.I.17.4.1-1		The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs:	2	4	Revise the responses to remove the term Operational Reliability Assurance Program. Use the precise language from SECY 95-132.
C.III.1.100	C.III.1, Sec. 17.4.4.		This list should be identical to C.I.17.4.4; the same comments for C.I 17.4.4 above apply.	1	3	Use the same bullets as in C.I.17.4.4, as modified by the comments above. To the extent the second to last bullet of C.III.17.4.4 is retained, change 'O-RAP' to 'RAP' consistent with the comments above.
C.III.1.101	C.III.1, Ch. 19.1		Issue: Paragraph 4 says "The COL applicant should include updated risk insights, identify all differences between the updated risk insights and the certified design risk insights, indicate which differences are important, and explain why the important differences have occurred (e.g., due to design changes, changes in PRA assumptions, or changes to PRA methodology). In this context, the "differences in risk insights" includes changes (either detrimental or beneficial) to the significant16 cutsets relative to sequences, significant cutsets relative to core damage frequency (CDF), significant cutsets relative to large release frequency (LRF), significant accident sequences, significant accident progression sequences, significant basic events, significant contributors, and significant containment challenges. The phrase "difference in risk insights" also includes any changes to the PRA-based insights.17 When identifying important differences between the plant-specific risk insights and the certified design risk insights, applicants should consider both quantitative changes (e.g., changes in risk metrics) and qualitative changes (e.g., revised or additional accident sequences)."	1	3	Comment: This paragraph calls for information which is not necessary or appropriate when site- and plant-specific COLA information is bounded by or not significantly different from the certified design PRA. Clarification is warranted to be consistent with understandings discussed during DG-1145 workshops and paragraph 2 of this section, which states, "Applicants referencing a certified design can meet this requirement by updating and upgrading, as appropriate, the certified design PRA (i.e., the "design-specific" PRA submitted pursuant to 10 CFR 52.47(b)(1), which has been evaluated and found acceptable by the NRC), to address relevant site- and plant-specific information, as well as changes to the certified design pursuant to 10 CFR 52.63(b) (e.g., refinements in design detail, resolution of COL action items, design changes or deviations, technical specifications, and plant-specific emergency operating procedures). The COL applicant may use, or incorporate by reference, the certified design PRA, however,

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C.III.1.101 (continued)	C.III.1, Ch. 19.1			1	3	the COL applicant should ensure the provided information is current, complete, and accurate relative to site- and plant-specific conditions and parameters. "Recommended wording: Add at the beginning of the 4th paragraph: "Additional information should be provided in the plant-specific PRA if the site- and plant-specific COLA information is not bounded by the certified design PRA insights and these differences are significant with respect to the PRA insights. Qualitative analyses rather than modifying the PRA may be used to demonstrate whether or not the differences are significant. If the differences are significant, ... [continue with 4th paragraph]"
C.III.1.102	C.III.1, Ch. 19		Issue: Section 19.1, para. 2, 1st sentence says "Applicants referencing a certified design can meet this requirement by updating and upgrading, as appropriate, the certified design..." Updating is the proper term to describe supplementation of the design PRA to consider site- and plant-specific information. The term "upgrading" is not necessary and should be deleted because it could be interpreted to imply more extensive changes to the PRA, which are not required for COLA.	2	4	Delete or modify the sentence to read "updating and/or upgrading".
C.III.1.103	C.III.1, Ch. 19.1		Issue: Section 19.1 5th paragraph last sentence reads "In addition, the certified design PRA should be updated and upgraded, as appropriate, prior to initial fuel load to reflect all changes in plant design and operational programs so that it reflects the as-built, as-to-be-operated plant." Comment: For consistency replace "all" with "relevant", and insert "reasonably" before "reflects"	2	4	"In addition, the certified design PRA should be updated and upgraded, as appropriate, prior to initial fuel load to reflect ~~all~~ relevant changes in plant design and operational programs so that it reasonably reflects the as-built, as-to-be-operated plant."
C.III.1.104	C.III.1, Ch. 19.1		Issue: Section 19.1 6th paragraph 1st sentence reads "The applicant should adhere to the guidance provided in Section C.II.1 of this guide for the plant-specific PRA, including the format and content identified in Appendix B to Section C.II.1 of this guide." Comment: Please see previous comments on changes to format of Section 19 from the format used in the certfied design PRA.	1	1	For example, See comment C.1.19.3 Add language " For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design would be incorporated by reference. An exemption request would not be required."

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C.III.1.105	C.III.1, Ch. 19.1		Issue: Section 19.1 Footnote 17 reads "Section 19.2 last sentence reads "The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP600 and AP1000 Design Control Documents (DCDs)." Comment: Please see previous comments.	3	4	See Comment C.I.19.7 Address if it appropriate to reference the AP-600 or AP-1000 DCD in a regulatory guide?
C.III.1.106	C.III.1, Ch. 19.1		Issue: Section 19.2 2nd sentence reads "To support the NRC staff's timely review and assessment, the applicant should adhere to the recommended format and content identified in Section C.I.19. Comment: Please see previous comments	1	1	For example, See comment C.1.19.3 Add language " For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design would be incorporated by reference. An exemption request would not be required."
C.III.2.1	C.III.2 Sec. 1.9.2		C.III.2 discussion of FSAR 1.9.2 states "ESPs have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application." This is not a true statement. Part 52 did not (prior to the proposed revision) require that the ESPs address SRP conformance. Indeed, the SRPs were not even used – the application was evaluated against RS-002 by the NRC. For these cases, would a statement such as "Alternate approach utilized. The ESP addressed this section and was evaluated against RS-002 rather than the SRP" be considered to fulfill the 50.34(h) conformance assessment?	1	4	N/A
C.III.2.2	C.III.2.2		The 1st paragraph of this section states: "*The specific information that the applicant should provide has been copied from the corresponding section in Part I and pasted into this section of the guide.*" However, this is not an accurate statement for Chapters 3 through Chapters 19 which refers the reader back to CIII.1	3	3	Clarify the wording in this section to state that for Chapters 3 through 19, those sections refer back to the corresponding sections in Part C.III.1.
C.III.2.3	C.III.2.2		First paragraph states: "For design topics that have been resolved in the design certification, the guide will state that the COL applicant does not need to include additional information. For topics related to approval of a specific site in an ESP, the guide will state that the COL applicant does not need to include additional information."	3	4	Deletion of future tense is recommended:"For design topics that have been resolved in the design certification, the guide ~~will~~ states that the COL applicant does not need to include additional information. For topics related to approval of a specific site in an ESP, the guide ~~will~~ states that the COL

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.2.4	C.III.2.2		The second paragraph in this section states: *"Depending on the technology, some design topics may not have been reviewed during the design certification. COL applicants will need to provide this information only if it was not covered in the design certification."* However, it is difficult for an applicant to determine what design topics were reviewed by the NRC and what were not reviewed for a specific Certified Design. A topic may have been reviewed by the staff but not addressed/discussed in the DCD or FSER. Or the design topic criteria may have changed between the time of certification and COL application. Requiring the applicant to address new design topics is inconsistent with design finality associated with a Certified Design.	2	2	Eliminate this paragraph and the corresponding paragraph in C.III.1
C.III.2.5	C.III.2.4		With regard to the pilot ESP applications, COL information items were not specifically identified. COL action items were generated as a result of the NRC review and are listed in the ESP FSER.Section C.III.2.4 mentions COL action or information items in the ESP. However, permits associated with the pilot ESP applications have not been made available (draft or final).	2	4	1. C.III.2.4 should be clarified to indicate the appropriate source for listing of ESP COL information or action times.2. It is also recommended that the NRC work with the industry on the content of ESP permit form and content to provide appropriate requirements on the treatment of ESP COL information items in future ESP applications. It is possible that DG-1145 may require update depending of the final form of the pilot early site permits. "
C.III.2.6	C.III.2.8		This section contains the statement: *"The NRC recommends that the COL application facilitate this review wherever possible."* It is not clear what the NRC expects from the COL applicant in this area.	2	4	Please clarify expectations regarding how the COL applicant could facilitate this review.
C.III.2.7	C.III.2.8		For consistency add the words " and the ESP" after "... is consistent with the certified design".	2	4	"... **is consistent with the certified design and the referenced ESP**"
C.III.2.8	C.III.2.9		1. Section C.III.2.9 (first paragraph) references Part 52 but does not provide a specific cite. In general, any reference to the regulation should include a specific, clear cite. 2. In addition, C.III.2.9 (second paragraph) cites 10 CFR 52.93. 3. In that 52.93 addresses both exemptions and variances, the specific cite should be provided in C.III.2.9.	3/4		Provide a specific cite to the Part 52 regulation reference in C.III.2.9 (first paragraph). General comment, for Staff's consideration throughout DG-1145.Revised C.III.2.9, the reference to 52.93 in the second paragraph to say: 10 CFR 52.93**(a).**
C.III.2.9	C.III.2.9		The second paragraph of C.III.2.9 indicates that if site characteristics do not fall within the site parameters specified in the design certification that the application should request an exemption or departure, as appropriate per Part 52.93. However, it is possible that should an actual site characteristic not fall within site parameters postulated in the design certification, a possible approach could be to request a variance from the ESP, as permitted by 52.79(b). This should be noted in C.III.2.9. This would depend of which parameter is involved, possible differences in methods, etc.	2	4	Revise C.III.2.9 to read: "If the COL application (FSAR) does not demonstrate that the **actual** site characteristics **established in the referenced ESP** fall within the site parameters specified in the design certification, the application shall include a request for an exemption or departure, **or variance from the ESP,** as appropriate, that complies with the requirements of the referenced design certification rule**, 10 CFR 52.79(b),** and 10 CFR 52.93."

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C.III.2.10	C.III.2.10		Section C.III.2.10 does not mention referencing the ESP, consistent with the purpose of C.III.2.	2	4	The section title should be changed to: "Portions of a Final Safety Analysis Report not Addressed by a Certified Design **and an ESP**" The 3rd sentence of the section should be revised to: "Additionally, if information listed in the following subsections is not needed – such as being already provided in the specific, referenced DCD **or ESP**, it is suggested that the applicant indicate so in the appropriate portion of their FSAR."
C.III.2.11	C.III.2.10		Generally speaking, DG-1145 guidance and Part 52 provide little specific guidance regarding the administrative aspects of how a reference ESP is treated in the COL application. Per the comment on C.IV.2, it is recommended that C.IV.2 be revised to address the administrative aspects of referencing an ESP in the COLA. It is recommended that C.III.2.10 include a statement that provides a reference to C.IV.2.	2	4	Add the following statement to C.III.2.10: **"See Section C.IV.2 for guidance on referencing a design certification rule or an ESP."**
C.III.2.12	C.III.2.11		C.III.2.11 provides a reminder of the requirements of 10 CFR 52.6 without offering additional guidance. However, given that regulations and related criteria vary from safety, to environmental, to emergency preparedness areas, guidance that would cover each area must be addressed separately. For example, as noted in Section 6.4 of NEI 04-01 (Draft Rev. E), no review or collection of data associated with reviewed and final provisions of an ESP SSAR is considered appropriate. However, if the COL applicant referencing that ESP became aware of significant changes, the provisions of 10 CFR 52.6 would be applied. It is recommended that the Staff consult Section 6.4 and consider incorporating appropriate elements of that guidance into DG-1145, Section C.III.2.11.	2	4	Review Section 6.4 of NEI 04-01, draft Revision E for possible incorporation of industry guidance into C.III.2.11 regarding changes to the ESP.
C.III.2.13	C.III.2.11		1st paragraph refers to 10CFR 52.6. This is a proposed rule change. *"COL applicants that reference a DC and/or an ESP are not required to revise the information included in the DC or ESP. However, pursuant to 10 CFR 52.6, each applicant or license that identifies information as having, for the regulated activity, a significant implication for public health and safety or common defense and security shall notify the Commission of this information."*	3	5	For consistency with other sections within DG-1145, add the word "**proposed**" in front of 10 CFR 52.6. This will help to identify any potentially affected sections when the proposed rule is finalized.

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C.III.2.14	C.III.2, Sec.1.5		This section states: *"The requirements for further technical information are included as part of the referenced certified design. The COL applicant that references a certified design and early site permit should identify any requirements for further technical information in their application for the portions of the facility that are not certified, including an estimated schedule for providing the additional technical information that may be necessary for issuance of a combined license."* Per C.1, 1.5 this section is for applicants not referencing a certified design. However, since C.III is for applicants referencing a certified design, it is not clear what additional information would be appropriate for this section	2	4	Reword this section to state: "**No additional information needs to be provided by a COL applicant referencing a certified design and an ESP.** "Also change the corresponding paragraph in C.III.1
C.III.2.15	C.III.2, Sec.1.8		Two new sentences were added to the second to last paragraph of this section. The newly added sentences read: *" In addition, COL applicants referencing an ESP should include information in the application that is sufficient to demonstrate compliance with any ESP permit conditions. Tabulated cross-references to this information should be provided in this section."* However, at the time an applicant submits a COL application, it is possible that the ESP would not have been issued by the NRC and therefore permit conditions would not have been identified.	2	4	Revise the wording in this sentence to: "ESP permit conditions **If available**".
C.III.2.16	C.III.2, Sec. 1.8		C.III.2.9 references C.III.2, Section 1.8. C.III.2.9 mentions the possible need for an exemption or departure should site characters not fall within site parameters specified in the design certification, citing § 52.93. However, Section 1.8 does not discuss the situation in which § 52.93 is applied. Section 1.8 should be revised to address not only the exemption process provided in § 52.93(a) but also to recognize that a variance from the ESP [per § 52.93(b)] may be an appropriate remedy, depending on the situation.	2	4	Add the following to C.III.2, Section 1.8 in the first paragraph: ".... If the FSAR does not demonstrate that design of the facility falls within the site characteristics and design parameters, the application shall include a request for variance that complies with the requirements of §§ 52.39 and 52.93**(b)**. The requirements of proposed 10 CFR 52.79(d) specify that COL applicants referencing a certified design must provide sufficient information to demonstrate that the characteristics of the site fall within the site parameters specified in the design certification and must contain information sufficient to demonstrate that the interface requirements established for the design under § 52.47 have been met. **If the FSAR's site characteristics do not fall with the certified design's site parameters, the applicant may need to request an exemption or departure. As discussed in C.III.2.9, a possible approach may also be to request a variance from the ESP per § 52.93(b).**"
C.III.2.17	C.III.2, Sec.1.9		Throughout this section, the phrase "....*6 months before the docket dates of the COL application*" is used to refer to the need to reconcile regulatory guides, standard review plans, generic issues and operational experience. However, the docket date cannot be determined by the COL applicant.	2	4	Change the guidance wording to read "....6 months before the **submittal date of the COL application**"

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C.III.2.18	C.III.2, Sec. 1.9		Throughout this section, the terms "deviation or variance" is used when determining when an applicant needs to evaluate conformance with regulatory guides, standard review plans, generic issues and operational experience. However, the lead-in sentences were all recently revised to use the term "departures". This occurs in many paragraphs throughout Section 1.9. For example:" *For a COL application that includes departures from the certified design, these departures should be evaluated for conformance with the Regulatory Guides in effect 6 months before the docket date of the COL application, unless the deviation or variance is included in a Topical Report.*"	2	4	Revise the words "deviation or variance" to "**departures**". This will also make these sections of C.III.2 consistent with the corresponding sections in C.III.1.
C.III.2.19	C.III.2, Sec. 1.9.1		C.III.1 discussion of FSAR 1.9.1 states: "*a COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design which are not included in the certified design. In addition, the COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application insofar as they pertain to operational aspects of the facility.*" Does this guidance indicate that the only regulatory guides that need to be addressed are those that address "facility design" or "operational aspects of the facility? For example, Division 2 is for Research and Test Reactors; so, can we eliminate Division 2 assessments since they don't address design or operation of commercial power reactors?	2	4	Provide specific guidance on what categories of Regulatory Guides need to be addressed in this section of the COLA.
C.III.2.20	C.III.2, Sec. 1.9.2		Section 1.9.2 currently states: "*Applicants for an ESP also have a requirement in proposed 10 CFR 52.17(a)(1)(xiii) to provide an evaluation of the site against applicable sections of the Standard Review Plan (SRP) revision in effect 6 months before the docket date of the early site permit application. ESPs have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application.*" Since this proposed requirement is new, not all prior "pilot" ESP applicants provided a review against SRPs. In addition, the "pilot" ESPs were reviewed against RS-002. The guidance should be clarified to address the special licensing case of ESPs reviewed prior to the proposed rulemaking.	2	4	Revise the subject paragraph of Section 1.9.2 as follows:"**ESP applications prior to the proposed rulemaking were reviewed against RS-002 but were not required to provide an evaluation against applicable sections of the SRP. Therefore, not all ESP applications prior to the rulemaking have provided the subject SRP evaluation. A COL application referencing these ESPs need not provide an evaluation against applicable sections of the SRP. For those ESPs following the proposed rulemaking, the respective applications** have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application."

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C.III.2.21	C.III.2, Sec. 1.9.3		Comment # C.I.1.18 on Section C.I.1.9.3 is applicable as well to C.III.2, Section 1.9.3. 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed. 3. In general, C.IV.8 guidance defines the broader scope of the generic issue review via the discussion and use of NUREG-0933, App. B. Guidance on scope should be provided in C.IV.8 (except for specific reductions in scope associated with referencing a DCD. This guidance should remain in C.III.1/2.	2	4	See Comment #C.I.1.18. The proposed changes at C.I.1.9.3 apply as well to C.III.2, Section 1.9.3. In general, guidance regarding the scope of generic issue review should only be summarized in C.III.1, Section 1.9.3. Detail guidance should be provided in C.IV.8.
C.III.2.22	C.III.2, Sec. 1.9.3		The last sentence of the last paragraph of this subsection states: "*.....to ensure the health and safety of the public is protected.*" For consistency with C.III.1, delete the words "is protected".	3	5	Reword to read: ".....to ensure the health and safety of the public."
C.III.2.23	C.III.2, Sec. 1.9.4		Second to last paragraph, last sentence contains a typo. Sentence currently reads: "*Applicants for design certification and combined license are responsible for procuring and international operating experience information.*'	3	5	Change: "procuring **and** international" to "procuring **any** international"
C.III.2.24	C.III.2, Sec. 2.2.2		The section indicates that additional information need not be provided. However, as noted in C.I.2.2.2.2, a description of hazardous materials stored onsite should be provided. Accident categories considered include explosions of onsite stored materials (C.I.2.2.2.1(1)).In that onsite hazardous material inventories may not have be known at the time of ESP application, this information would likely be required for the COL application. Section C.III.2, Section 2.2.2 should be revised to recognize this possibility.	2	4	Revise Section 2.2.2 as follows: "**In general,** COL applicants that reference an ESP do not need to include additional information. **However, if onsite hazardous material inventories and related information was not reviewed as part of the ESP, then that information would be included in the COL application as appropriate.**"
C.III.2.25	C.III.2, Sec. 2.2.3		In that onsite hazardous material storage may not have been reviewed at the ESP stage, such onsite storage would be discussed and evaluated as necessary in the COLA. This would include evaluation for explosive impacts (C.I.2.2.3.1) as well as toxicity limits for control room habitability.	2	4	Revise Section 2.2.3 as follows: **In general,** COL applicants that reference an ESP do not need to include additional information. **However, if onsite hazardous material inventories and related information were not reviewed as part of the ESP, then that information would be evaluated in the COL application as appropriate. See also guidance at C.III.2, Section 6.4.**"

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C.III.2.26	C.III.2, Sec. 2.3.3		Correct typo in last sentence: "Identify and justify **and** deviations from the guidance provided in Regulatory Guide 1.23."	3	5	Change: "**and** deviations" to "**any** deviations"
C.III.2.27	C.III.2, Sec. 2.4.8		Cooling water canal and reservoir design information may likely be provided in the ESP if the ESP is referring to a specific technology. Therefore, this section should be begin with the words "***If not provided in the ESP....***". This will make this section consistent with Section 2.3.3 and 2.2.4.In addition, similar lead-in wording should be added to the following sections which may likely have included the subject information in the ESP. These sections are: 2.4.7, 2.4.10, 2.4.12, 2.4.14	2	4	Revise the 1st sentence of the 1st paragraph to read: "**If not provided in the ESP**, present the design bases for the capacity and operating plan for ....." Also, revise Sections 2.4.10, 2.4.12 and 2.4.14 similarly.

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C.III.2.28	C.III.2, Sec.2.4.13		This section currently reads: "For an ESP with a permit condition precluding accidental liquid releases, provide information on how the DC complies with the permit condition." However, at the time of COLA submittal the ESP permit may not have been issued by the NRC and therefore permit conditions would not have been identified.	2	4	Reword to state: "**If ESP permit conditions preclude accidental liquid releases, provide information on how the certified design complies with the permit conditions.**"
C.III.2.29	C.III.2, Ch. 3		This section uses the phrase *"If not included in the ESP"*, while previous sections use the phrase *"If not provided in the ESP"* Also, the ESP may not have been issued by the NRC at the time of COLA submittal, therefore, *"ESP"* should be changed to *:"ESP application"*	3	5	To improve clarity, change the phrase to: "If not **provided** in the ESP **application**..." and apply it consistently throughout C.III.2.
C.III.2.30	C.III.2, Ch.6		C.III.2, Chapter 6 refers the reader to C.III.1, Chapter 6. C.III.1, Chapter 6 requires no additional information for a COLA referencing a certified design. However, for the COLA referencing an ESP, onsite chemical storage may not have been reviewed during the ESP stage. Therefore, in additional to demonstrating that the control room dispersion coefficients postulated in the certified design bound that established for the design at the selected site, the impact of hazardous materials stored onsite must also be evaluated in the COLA application. In addition, for new facilities proposed to be co-located onsite with existing facilities, the other units' hazardous materials must be considered in terms of control room habitability.	2	4	C.III.2, Chapter 6 should be revised as follows: "The information in this chapter is identical to the information in Chapter 6 of C.III.1. **In general,** COL applicants referencing a certified design and an early site permit should refer to Chapter 6 of C.III.1 for the information needed to prepare their COL applications. **However, in that onsite hazardous material inventories may not have been defined or reviewed at ESP, the onsite materials would be discussed per C.III.2, Section 2.2 of this guide. The impacts of these materials and that associated with other co-located facilities in terms of toxic or asphyxiating gases should be evaluated regarding the impacts to control room habitability.**"
C.III.2.31	C.III.2, Ch. 13		Information regarding details on Emergency Planning (Section 13.3) may have been included in the ESP application. Therefore, the COL applicant may not need to repeat this information in the COLA.	2	4	Add a new sentence: "**If Emergency Planning information as required by Section 13.3 of C.III.1 was previously provided in the ESP application, the COL applicant that references an ESP does not need to include additional information.**"

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C.III.3.1	C.III.3 (Applies to C.II.3 also)		Industry comments regarding ESP environmental finality were provided to the NRC in the NEI letter dated 5/16/06 (as part of the Part 52 rulemaking process). As noted in C.III.3, guidance regarding ESP finality will be provided following the final Part 52 rulemaking. As discussed with the Staff on several occasions (e.g., ESBWR DCWG-NRC mtg of 7/14/06), applicants developing COLAs that reference an ESP are proceeding at risk in preparing ER material, given the lack of industry-NRC agreement on COLA ER content requirements (and related supporting review processes). In addition to comments raised in the NEI 5/16/06 letter, the industry understands from DG-1145 workshop discussions as well as the 7/14/06 NRC-ESBWR DCWG meeting, that there is a lack of clarity and agreement regarding the expected level of design detail in the COLA ER, particularly in the case of an ESP using the PPE approach. Separate comments on Section C.III.3 are provided on this subject.	1	1	Both C.II.3 and C.III.3 require review and update consistent with the final Part 52 rule language and accompanying statements. The final draft Part 52 rulemaking language was made public on September 27, 2006. That information is under review with regard to the proposed treatment of ESP environmental finality issues. It is expected that NEI will coordinate industry communications with the NRC on this matter.
C.III.3.2	C.III.3 (Applies to C.II.3 also)		In addition to comments raised in the NEI 5/16/06 letter, the industry understands from DG-1145 workshop discussions as well as the 7/14/06 NRC-ESBWR DCWG meeting, that there is a lack of clarity and agreement regarding the expected level of design detail in the COLA ER, particularly in the case of an ESP using the PPE approach. It is recognized that C.III.3 can not be updated until the Part 52 rule is finalized. However, it is not clear if the rulemaking will address the required level of design detail in the COLA ER. C.III.3 should be revised to include guidance on the expected level of design detail in the COLA ER. It is also noted that while this issue of design detail has been discussed with the Staff primarily in the context of a COLA referencing an ESP, this issue likely applies more broadly to non-ESP COLAs. For example, even in the case where no ESP was referenced, the level of design detail to satisfy all aspects of NUREG-1155 may not be available at the time of COLA submittal due to limitations in the amount of design engineering and equipment procurement	1	4	C.III.3 should be revised to include the following: In general, the ESP would provide an environmental report that defines a facility design, sufficient to support the evaluation of environmental impacts of the potential facility's construction and operation at the proposed site. In some cases, the findings on impacts are conditional in the ESP FEIS in which confirmatory or supplemental information would be expected at COL. Such needs, deferred to COL, are identified in the FEIS. The COLA ER, following the proposed 10 CFR 51.50(c) requirements would "... demonstrate that that the design of the facility falls within the site characteristics and design parameters specified in the early site permit." Whether a PPE or specific reactor design was used for the ESP, the postulated design parameters used to evaluate environmental impacts

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.3.2 (continued)	C.III.3 (Applies to C.II.3 also)		specification work completed. While NUREG-1155 has been updated to reference Part 52 provisions, it generally does not recognize nor accoun for differences between Part 50 and Part 52 in the approach to COL application preparation, decision to procure and construct, timing of such decisions, and the wide variance in what engineering detail may be available at various stages of this process. Overall, even with no ESP, a COL applicant may not have the level of detail expected by NUREG-1155. Therefore, the issue regarding expected level of design detail in a COLA ER impacts guidance provided in Section C.II.3 as well.	1	4	would be specified in the ESP ER. In the case of a PPE approach, the PPE provides a surrogate design, representing the bounding values for a collection of designs considered. The subject demonstration should consist of confirming that the PPE (or specific design) postulated parameters bound the selected design's actual characteristics. In general, additional design detail should not be required in the COLA ER, where ESP finality applies, to support this demonstration. The exceptions would be in those instances in which confirmatory or supplemental information would be expected at COL. Such needs, deferred to COL, are identified in the FEIS. Given the expected level of design is not well defined for COLA with our without a referenced ESP, it is recommended that guidance on this subject be provided (or referenced) in C.II.3, as well.
C.III.3.3	C.III.3 (Applies to C.II.3 also)		C.IV.2.2 addresses the referencing of a design certification rule; however, neither C.IV.2 nor C.II.3 provides guidance on the referencing of and use of the ESP ER and/or FEIS. For that matter, it is recognized that neither the current nor proposed Part 52 provides requirements specifically address the incorporation or treatment otherwise of the ESP ER and/or FEIS. For the COLA referencing an ESP, the associated COLA ER must provide the information required by 10 CFR 51.50(c)(1). This includes (1) a demonstration that facility design falls within the site characteristics and design parameters established in the ESP, (2) issues deferred from the ESP, and (3) new and significant information. To the extent necessary, the COLA ER would reference, that is, cite the ESP ER and/or EIS, as needed, as a basis for COLA ER statements. The ESP ER and/or EIS is not required to be incorporated either by reference or by full integration unless helpful to understand context or support clarity.	1	4	C.II.3 should be revised to include: 1. The COLA ER may reference the NRC's ESP EIS. That is, the COLA ER may "cite" the ESP EIS conclusions and findings as a basis for its statements. The EIS need not be incorporated unless, for reasons of clarity and context, that is considered necessary. In general, given the concept of tiering, it would seem that such a need would be infrequent. 2. The COLA ER need not contain [repeat] information from the ESP ER. 3. The COLA ER, referencing an ESP, must include information that is required to satisfy the 3 items of 51.50(c)(1). However, no repeating or incorporation of the ESP ER (or EIS) is required (unless for reasons of clarity or context) this would be helpful.

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C.III.3.3 (continued)	C.III.3 (Applies to C.II.3 also)		C.III.3 should be clarified to address the administrative and licensing treatment of the ESP ER and EIS in the COLA ER. Given that C.II.3 address COLA ER format, it is recommended that C.II.3 be referenced to C.III.3 in regard to the appropriate administrative treatment of the ESP ER/EIS in the COLA ER.	1	4	4. The COLA ER, referencing a DCD, may incorporate by reference the DCD stage EA. However, this appears to be an inconsistent use of this method in that there is no analogous provision for incorporating (by reference or otherwise) for the ESP's EIS. A review of current and proposed Part 51 revealed no other applications of IBR pertaining to applications for licenses. Absent clarification or changes in proposed Part 51.50, the COLA ER will IBR the DCD's EA. Given this subject applies to ER format, guidance on this subject should be provided (or referenced) as well in Section C.II.3.
C.III.4.1	C.III.4.2		C.III.4.2, first paragraph, last sentence states "The NRC staff recommends that the applicant include this information in Chapter 1 of the COL application." The last sentence of the second paragraph states "For items that are addressed, the COL applicant should provide cross-references to where each item is addressed in Chapter 1 of the COL application." These references should be to Chapter 1 of the FSAR portion of the COL application.	3	3	Revise the last sentence of the first paragraph to state, "The NRC staff recommends that the applicant include this information in Chapter 1 of the FSAR portion of the COL application." Revise the last sentence of the second paragraph to state "For items that are addressed, the COL applicant should provide cross-references to where each item is addressed in Chapter 1 of the FSAR portion of the COL application."
C.III.4.2	C.III.4.2		Section C.III.4.2, last paragraph, last sentence states "The staff intends to review the FSER list of COL action items during its review of each COL application and may request additional information from the COL applicant to address issues described by the listed action items that the COL application did not adequately address." The last paragraph of this section should also refer to Section III.D of the pertinent design certification rule which states "If there is a conflict between the generic DCD and... NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," (FSER) and Supplement No. 1, then the generic DCD controls."	1	1	Add the following sentence at the end of the last paragraph: "In accordance with Section III.D of the applicable design certification rule, if there is a conflict between the generic DCD and the corresponding FSER for the certified design, then the generic DCD controls."
C.III.5.1	C.III.5.1.1, Item 15 C.I.7.B-2 Item (3)		The last bullet states "designing the communications path to be broadcast only from the protection system to the control system". There is no precedent or regulatory basis for this approach. This comment also applies to Section C.1.7, C.I.7.B-2, Item (3).	1	1	These sections should be revised to remove this statement.
C.III.5.2	C.III.5.1		Paragraph 3 of this section states: "compliance with DAC, including those intended to be verified early in the construction process, can be the subject of a hearing just prior to operation. This is another reason for the COL applicant to submit, early in its application, the detailed design information..." It is not clear how submitting this information early in the process will impact the likelihood of a hearing.	3	4	Please either elaborate on or eliminate this sentence.

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C.III.6.1	C.III.6.1		COL Applications Referencing a Design Certification Application Under Review, page CIII.6-2, first paragraph, third sentence To clarify which applicant (DC or COL) is referred to in this sentence; recommend that "design certification" be added in front of "applicant."	3	4	This sentence refers to the "applicant" updating documents associated with the design certification applications.
C.III.6.2	C.III.6.2.1		Early Site Permit, second paragraph, third sentence This sentence should be revised to also provide the same guidance with respect to applicable Topical Reports, the Environmental Report, and the Site Redress Plan	3	4	This sentence indicates that the COL application should reference and include a specific revision of the SSAR that is currently under review by the NRC.
C.III.6.3	C.III.6.2.2		Since 10 CFR 52 has been issued as a final rule, it is recommended that this sentence be clarified. The applicant's need this guidance as soon as possible. The COLA ERs are being written now	2	3	Environmental Report, second sentence. This sentence refers to additional guidance being provided when the final Part 52 rule is issued. The provisions of 10 CFR 52.80(c) specify that the COL application shall contain a complete environmental report, as required by 10 CFR 51.50(c). Additional guidance will be provided when the final Part 52 rule is issued." This statement is not consistent with the rest of the DG-1145 which is based on the proposed rule
C.III.7.1	C.III.7		Sentence 2 of paragraph 3 states that COLAs "must" include physical security ITAAC, in the same way that COLAs "must" include EP ITAAC. However, EP ITAAC are unique in the way they are called out in the regulation as required.	3	3	Modify sentence to be consistent with new Appendix C.II.2.C and Appendix I response C.III.7-2
C.III.7.2	C.III.7.2		Clarify first paragraph for consistency with 3d paragraph in this section	3	4	Modify the second sentence as follows: "ITAAC should be developed for the site-specific systems which are designed to meet the significant interface requirements of the standard certified design."
C.III.7.3	C.III.7.5		Clarification	3	4	Under the heading "Terminology," modify the 3d paragraph as follows: Compliance with that license condition renders the ITAAC inactive for that licensee .... However, ... they will not be removed from the design certification rule following completion buy a COL applicant and remain applicable to all future COLAs referencing that DCD.
C.III.7.4	C.III.7.3 C.III.7.4		C.III.7.3 states "The complete set of COL-ITAAC will be incorporated into the COL as a license condition to be satisfied prior to fuel load. As such, a COL holder may request a change in one or more of the EP-ITAAC, except those provided in the referenced certified design, via the license amendment process applicable to Part 52." C.III.7.4 makes a similar statement for SP-ITAAC.	1	1	Per 52.98(f), licensees may seek to modify, add or delete an ITAAC via the license amendment process. Accordingly, the identified statements in C.III.7.3&4 should be modified as follows: "As such, a COL holder may request a change in one or more of the [ITAAC] , ~~except those provided in the referenced certified design~~, via the license amendment process ~~applicable to Part 52~~ in accordance with Sections 52.63(b)(1) and 52.98(f)."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.1.1	C.IV.1 General		This section is entitled "Acceptance Review Checklist," but needs clarification as to its scope and intent. The introductory section includes the following passage: "The staffs [sic intent in using these checklists is to ensure that the application submitted for review is complete. The acceptance review focuses on whether there is sufficient information for the staff to perform a complete review. That is, acceptance review confirms that there is no missing information and there are no applicable regulatory requirements that have not been addressed. Upon docketing, the staff will perform a review of the application to determine the adequacy of the information submitted to resolve all safety issues. Sufficient information in the context of acceptance review is not interchangeable with adequate and acceptable information necessary for the staff to make a reasonable assurance finding. Therefore, the staff assumes that completing its review of the application may necessitate requests for additional information."	1	4	Revise as indicated
C.IV.1.1 (continued)	C.IV.1 General		This is a useful clarification in response to prior comments on earlier drafts of the checklist (i.e., regarding whether the acceptance review was focused on being able to begin the review or complete the review). However, recent experience indicates that the Staff may require information beyond that indicated in this checklist before an application will be accepted (i.e., requiring, as a condition of acceptance, submittal of information that might previously have been the subject of post-acceptance RAIs). Accordingly, then, this might be thought of not as an "acceptance checklist," because meeting the requirements in the regulation and this checklist does not appear to ensure acceptance. Rather, one could view this as a "rejection checklist," i.e., the criteria in this checklist represent a necessary, but not sufficient, set of criteria for acceptance of the application. If this is accurate, then the Staff should so clarify; further, the Staff is urged to clarify what is required in order for an application to be accepted.	1	4	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.1	C.IV.2.2		C.IV.2.2 states: "... The COL applicant must include the generic DCD in the application. Included in the application means that the actual document is provided with the application." The DCR (e.g., App. D in §IV.A.2a and 3) are read to understand that the application must include the plant specific DCD. However, Section IV.B states: "An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference ("IBR") and comply with the requirements of this appendix, including Tier 1, Tier 2." This is understood to mean that the plant specific DCD may "include" the generic DCD by the IBR method. Further, the current §52.79(b) explicitly states: "The final safety analysis report and other required information may incorporate by reference the final safety analysis report for a certified standard design." Thus, IBR is clearly allowed in the subject regulations. If this is an accurate understanding, the Staff should clarify this in C.IV.2.	2	1	C.IV.2.2 should be revised, consistent with DCR IV.A.2a, IV.A.3, and 52.79(b) to indicate that the generic DCD may be included in the plant specific DCD by using the incorporation by reference approach. The recommended wording is as follows: "The plant-specific design control document (DCD), as defined in the design certification rules which are set forth in **DCR II.C** ~~the appendices to 10 CFR Part 52~~ is a combination of the generic DCD and the plant specific departures and exemptions from the generic DCD. The COL applicant must include the generic DCD in the application. **However, per §52.79(b), the generic DCD may be included in the plant specific DCD using incorporation by reference.** ~~Included in the application means that the actual document is provided with the application.~~ **To facilitate staff review, the actual generic DCD (complete and current to the revision referenced in the COL application] should be physically included in the application package.** ~~For certain DCRs,~~ In accordance with the DCR IV.A.2.A, the COL applicant must include the plant-specific DCD in its application ...."
C.IV.2.2	C.IV.2.2		As noted in Comment #C.IV.2.1, the regulations (specifically the DCR, IV.A.2.a and D) are understood to mean that the generic DCD is not required by regulation to be physically included in the application. However, it is fully recognized that the Staff and public must have convenient access to the current and complete generic DCD that is referenced in the COL application.	2	1	The Staff (licensing and IT) is requested to consider and take necessary actions to establish a checked, fully complete and current electronic forms of generic DCDs, ESPs, etc. in ADAMS. C.IV.2.2 should be revised accordingly.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.2 (continued)	C.IV.2.2		The COL application will clearly identify the version of the generic DCD that is referenced. In the case of a certified design (by final rule), the COL application would reference the version cited in the rule. For a design in some phase of Staff review, the COL application would unambiguously cite the version of the design application currently before the Staff at the time of the COL application submittal. Given current electronic media capabilities, it is reasonable that a complete, current and checked version of the reference DCD could be available through ADAMS. In this manner, the generic DCD could be readily available to the Staff and public, on demand, similar to other documents so filed. This would preclude the need and value of physically including the referenced generic DCD with the application. While physically including the generic DCD with the application is certainly feasible, this seems to be a fully unnecessary step and adds unwarranted complexity to the already sizeable electronic submittal of the COL application itself.	2	1	see above
C.IV.2.3	C.IV.2.2		C.IV.2.2 discusses the referencing of a design certification rule; however, C.IV.2 (in general) provides no guidance on the expected format and treatment for referencing an ESP. In addition, it is noted that Part 52 (current or proposed) does not specifically address the incorporation method for the ESP application information. The proposed 10 CFR 52.79(b) provides that COLA's referencing an ESP need not repeat information and analyses submitted to the Commission in connection with the ESP. However, in Part 52, there is no analog to the DCR appendix, which provides specific requirements regarding the incorporation of the generic DCD. Moreover, as noted in recent DG-1145 workshops, the some Staff expressed the expectation that the ESP material should be included in the application package. While the industry agrees, there is no requirement or guidance on this topic.	1	4	It is the industry's understanding that the Staff intends to address this shortcoming in Part 52 via the upcoming rulemaking. It is expected that C.IV.2 will be revised to be consistent with the final rulemaking. In general, the ESP's SSAR is analogous to the FSAR material in the DCD Tier 2 material. It is suggested that 52.79(b) and C.IV.2 offer explicit provision for the ESP SSAR to be incorporated by reference into the COLA FSAR. Like emergency planning (addressed by the current 52.79(d), special guidance is needed for ESP ER and EIS since 51.50(c) defines the contents of the COLA ER. While not stated in guidance or 51.50(c), it is implied and understood that the COLA ER need not broadly incorporate the ESP ER or EIS, but rather, these ESP ER/EIS are to cited or incorporated only to the extent required by the COLA's supplemental ER material. (This subject is addressed in more detail in a separate comment on Section C.III.3.)

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C.IV.2.4	C.IV.2.2		As discussed in a separate comment on C.IV.2.2, the industry interprets Part 52 and DCR to allow incorporation by reference and consider statements accompanying the AP1000 rulemaking (SECY-05-0227) to be inconsistent with DCR IV.A.2a, IV.A.3, and 52.79(b). Since SECY-05-0227, there has been confusion regarding Staff interpretations of these Part 52 regulations and allowable methods for administratively handling the reference DCD in the COLA. With the publishing of C.IV.2.2, the Staff indicated a preference for full integration of the generic DCD as an effective means to facilitate staff review. It is recognized that full integration may well be appropriate and beneficial in cases for which contextual clarity would be preserved for the reviewer. However, this circumstance is considered to be rare. Full integration will demand that the applicant and Staff take steps to confirm (or even reconfirm) that the generic DCD is faithfully reproduced in the COLA FSAR. For those DCDs subject to revisions (which to varying degrees could apply to EPR, ESBWR, and AP1000 designs), the	1	4	It is understood that the Staff is considering rule changes to address DCD incorporation requirements. The Staff is strongly encouraged to preserve the historically proven method of incorporation by reference. Secondly, given industry concerns that full integration may, in fact, create conditions for a less efficient review, the Staff is asked to review it preference for full integration. Lastly, the industry has sought definitive guidance on this topic since SECY-05-0227. The Staff is encouraged to work expeditiously resolution that will result in clear guidance, consistent with the regulations. The industry stands ready to assist in any way that may be needed. In addition, related to this topic, see a separate comment (C.IV.2.2) regarding the suggestion that the Staff establish electronic files of DCDs and ESPs that may be referenced in COLAs.
C.IV.2.5	C.IV.2.2		C.IV.2.2, in the 2nd paragraph, states: "For certain DCRs, the COL applicant must include the plant-specific DCD in its application. This means that the COL applicant should include a copy of the generic DCD (updated to include all revision pages)..." This language implies that the DCRs differ in requirements on this point. Each DCR IV.A for the four current design certification appendices contain the same language in IV.A.2.a, namely, that a plant-specific DCD must be included in the COL application referencing that DCD. The meaning of this statement in C.IV.2.2 is, therefore, unclear and/or perhaps not consistent with the Part 52 DCRs.	2	1	C.IV.2.2, 2nd paragraph, should be revised as follows: "~~For certain DCRs~~ **In accordance with the DCR IV.A.2.a,** the COL applicant must include the plant-specific DCD in its application."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.6	C.IV.2.2		C.IV.2.2, 3rd paragraph states: "If a COL applicant does integrate the generic DCD into the FSAR submitted with the COL application, the applicant is strongly encouraged to clearly distinguish information extracted from the generic DCD from the plant-specific departures and exemptions to the DCD that the NRC will review in the COL application." Information provided in the COLA FSAR, as noted by the Staff, may originate in the referenced DCD. While not noted, information in FSAR Chapter 2 may originate as well from a referenced ESP. In addition, "new COLA information" may be presented for a variety of reasons (to address COL information items, replacement of conceptual design information, identify departures, et. al.). Thus, the need and importance of clearly identifying and distinguishing the source and purpose of information in the COLA FSAR is important regardless of whether the referenced DCD is incorporated by reference or fully integrated into the COLA FSAR. It is recommended that C.IV.2.2 be clarified on this point.	2	4	C.IV.2.2 should be revised as follows: "**Regardless of the incorporation approach selected for reflecting the generic DCD in the COLA FSAR** ~~If a COL applicant does integrate the generic DCD into the FSAR submitted with the COL application~~ the applicant is strongly encouraged to clearly distinguish information extracted from the generic DCD from the plant-specific departures and exemptions to the DCD that the NRC will review in the COL application."
C.IV.2.7	C.IV.2.3.3		A COL application will comprise several submittals for a variety of reasons (some documents comprising the application will be safeguard, some proprietary, etc.). Each submittal would contain a cover letter identifying the documents and files included and their relationship to the COL application. Each submittal may also contain multiple documents and multiple CDROMs. During the course of the review, there will likely be revisions of several of the documents which comprise the application Clarification is needed as to the staff's definition of "document." For example, a document could be all the files submitted with a single cover letter, it could be all files contained on a single CDROM, or it could be all files comprising a stand-alone previously-paper document like an FSAR or an Environmental Report.	2	4	For the purpose of revisions, please clarify that only the complete set of files associated with a document (e.g. an FSAR) need to be submitted upon revision of a portion of that document.
C.IV.2.8	C.IV.2.3.3		"Each page should include a change indicator (e.g., a bold vertical line at the margin adjacent to the portion that has been changed) and a page change identification including either the date of change, revision, or both." The application will contain pictures and drawings for which the use of vertical line revision bars may not be practical.	2	4	Clarify that alternative means of identifying changes may be acceptable when necessary for pictures and drawings.

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C.IV.3.1	C.IV.3.3.2		Industry Comment IV.3-4 sought confirmation that the replacement of conceptual design information did not constitute a departure (under the provisions of Design Cert. Rule VIII.B). The Staff response concurred but offered no change to DG-1145. Section C.IV.3.3.2 should be clarified to list those elements of "new COLA information" that do not constitute a departure from the certified design. The following are considered not to constitute a departure: (1) information added to address COL information items (DCD or ESP generated); (2) replacement of conceptual design information; (3) application specific information.	2	4	Per the Staff response to Comment IV.3-5, it is presumed that this will be clarified in Section C.IV.3.3.2. The following new COLA information should not be considered departures under DCR VIII.B: (1) information added to address COL information items (DCD or ESP generated); (2) replacement of conceptual design information; (3) application specific information. For consistency, the Staff should consider providing appropriate cross-references to this guidance in C.III.1.5, C.III.1.6, C.III.2.5, C.III.2.6.
C.IV.3.2	C.IV.3.3		If a departure only affects the bases and not the technical specifications themselves, the departure should be evaluated under the 50.59-like change process (similar to the process for licensed plants, in which changes to the bases are evaluated under 10 CFR 50.59).	2	1	After the sentence which states: "The TS referred to in B.5.a of this paragraph are the TS in Section 16.1 of the generic DCD, including bases, for departures made prior to issuance of the COL. After issuance of the COL, the plant-specific TS are controlling under paragraph B.5.", add the following sentence: If the departure only affects the bases and not the TS themselves, the departure should be evaluated in accordance with the criteria in Section VIII.B.5.b of the design certification rules.
C.IV.3.3	C.IV.3.3		When Section VIII.B.5 of the design certification rules was developed, it was recognized that the 50.59-like change process was not appropriate for PRA-information. Therefore, while the NRC needs to be informed of changes in the PRA information in Chapter 19 through periodic FSAR updates, such changes are not subject to the change process in Section VIII.B.5 and do not require NRC approval.	1	1	A paragraph should be added to this section which states as follows: Chapter 19 of the FSAR will provide qualitative information related to the probabilistic risk assessment (PRA), and a separate PRA report will be provided with the application that contain quantitative information. PRA information in Chapter 19 will be subject to the requirements related to periodic FSAR updates. However, PRA information in Chapter 19 is not subject to the 50.59-like change process in Section VIII.B.5 of the design certification rules.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.4	C.IV.3.3		Clarification should be added to DG-1145 to avoid any misconception that the NRC can change the generic TS based upon the existence of operating experience alone, without complying with Section VIII.C.3 of the design certification rules.	2	4	After the sentence which states: "Although the generic TS were reviewed by the NRC staff to facilitate the design certification review, the Commission intends to consider the lessons learned from subsequent operating experience during its licensing review of the plant-specific TS.", add the following sentence: If the NRC decides to change the generic TS to account for operating experience, it must determine that "special circumstances" exist in accordance with Section VIII.C.3 of the design certification rules.
C.IV.3.5	C.IV.3.1		C.IV.3.1, second paragraph states "When a COL is issued in this scenario, the 10 CFR Parts 2, 50, and 52 change processes apply to the entire FSAR. These include, but are not limited to:" and includes within the listing "10 CFR 52.63 Finality of standard design certifications." It is not really clear how or why the change processes in 52.63 would apply to a custom design.	2	3	Delete the reference to 10 CFR 52.63 in the bulleted list in the referenced paragraph.
C.IV.3.6	C.IV.3.1		Section C.IV.3.1, second paragraph states "When a COL is issued in this scenario, the change processes established in 10 CFR Parts 2, 50, and 52 apply to the entire final safety analysis report (FSAR). These include, but are not limited to, the following regulations:" The list does not include 50.90-92 which is a major change process applicable for making changes to an approved, issued COL.	3	4	Add a bullet(s) referencing the applicability of 10 CFR 50.90-92 to the change process.
C.IV.3.7	C.IV.3.3.2		C.IV.3.3.2 indicates that departures from DCD Tier 2 information may occur in five ways. All five of the listed items specifically refer to "Appendix A" which is specific to ABWRs. This listing should be worded more generically, or it should be identified as an example. This specific reference to Appendix A continues in much of the text of this section.	3	2	Replace "Appendix A" with "the applicable design certification rule appendix" in this section.
C.IV.3.8	C.IV.3.3.2		C.IV.3.3.2, second paragraph indicates that departures from DCD Tier 2 information may occur in five ways. Item (4) of the list indicates "The licensee may request NRC approval for proposed departures that do not meet the requirements in Appendix A to Part 52, paragraph VIII.B.5 (71 FR 12914), as provided in paragraph VIII.B.5.d." Additionally, B.5.e indicates that "a departure from Tier 2 information that is made under paragraph B.5 of this section does not require an exemption from this appendix." However, B.5.a begins with "an applicant or licensee..." It is clear from B.5.d that a licensee would request a license amendment. What process does an applicant use under B.5 for a departure from Tier 2 information that requires NRC approval? Is this simply a request to depart without having to request an exemption?	2	4	Clarify the process for an applicant to request NRC approval for proposed departures that do not meet the requirements in the applicable design certification rule appendix to Part 52, paragraph VIII.B.5, as provided in paragraph VIII.B.5.d.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.9	C.IV.3.3.2		C.IV.3.3.2, second paragraph indicates that departures from DCD Tier 2 information may occur in five ways. Item (5) of the list indicates "The licensee may request NRC approval for a departure from Tier 2* information under Appendix A to Part 52, paragraph VIII.B.6 (71 FR 12914)." B.6.d indicates that "departures from Tier 2* information that are made under paragraph B.6 of this section do not require an exemption from this appendix." However, B.6.a begins with "an applicant..." It is clear from B.6.b that a licensee would request a license amendment. What process does an applicant use under B.6 for a departure from Tier 2* information that requires NRC approval? Is this simply a request to depart without having to request an exemption?	2	4	Clarify the process for an applicant to request NRC approval for a departure from Tier 2* information under the applicable design certification rule appendix to Part 52, paragraph VIII.B.6.
C.IV.3.10	C.IV.3.3.2		C.IV.3.3.2 provides a confusing mixture of information related to the ABWR (references to part 52, Appendix A) and the AP1000 (locations of severe accident Information). This guidance information should be provided on a more generic basis.	3	3	Clarify by referring to "the applicable design certification rule appendix to Part 52" as applicable.
C.IV.3.11	C.IV.3.3.3		C.IV.3.3.3 discusses the change processes for operational requirements as though the Section VIII processes are still "proposed." These are in the phrases "with its own change process in proposed paragraph VIII.C," then "The key to using the change processes proposed in Section VIII," and finally "Generic changes made under proposed paragraph VIII.C.1...." The word "proposed" should be removed from each of these phrases.	3	4	Delete the word "proposed" from the portions of C.IV.3.3.3 that reference issued rule requirements.
C.IV.3.12	C.IV.3.3.3		C.IV.3.3.3, second paragraph discusses the change processes for operational requirements and indicates "The determination of whether the generic TS and other operational requirements were completely reviewed and approved in the design certification rulemaking is based upon the extent to which an NRC safety conclusion in the FSER is being modified or changed." However, the acceptable extent to which an NRC safety conclusion might be modified or changed is not identified. Is there some change that is acceptable? If so, what criterion is used to determine if the change is acceptable or requires NRC review and approval?	2	4	Provide clarification and additional guidance for applicants to meet this portion of the guidance.
C.IV.3.13	C.IV.3.3.3		C.IV.3.3.3 states "If it cannot be determined that the TS or operational requirement was comprehensively reviewed and finalized in the design certification rulemaking, then there is no backfit restriction under 10 CFR 50.109..." However, the level of review to be considered "comprehensive" is not identified. All TS items were reviewed but many simply state that they are consistent with the improved Standard Technical Specifications and are acceptable. Is this considered a "comprehensive" review?	2	4	

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C.IV.3.14	C.IV.3.3.3		C.IV.3.3.3, third paragraph states "Some generic TS and investment protection short-term availability controls contain values in brackets [ ]. The brackets are placeholders indicating that the NRC's review is not complete, and represent a requirement that the applicant for a combined license referencing the AP1000 DCR must replace the values in brackets with final plant-specific values." The generic TS in the AP1000 DCD have a COL Information Item that requires the information in the brackets to be replaced with plant specific information. However, some certified design DCDs contain no such COL Information Item for the short-term availability controls. The COL Information Item is generally to provide a procedure. Further, there is no compelling reason to replace the bracketed generic information in the short-term availability controls.	1	1	Provide clarification on the means by which an applicant can provide sufficient information in order to meet NRC review requirements.
C.IV.3.14 (continued)	C.IV.3.3.3		The required procedure can be written with the plant specific information without any change to the short-term availability controls section containing the bracketed material. Additionally, leaving the bracketed material would remove the need to revise the FSAR Section each time there was a minor plant specific change to the material such as position titles. Would it be acceptable to leave the bracketed material in the short term availability controls section of the DCD as bracketed generic information?	1	1	see above
C.IV.3.15	C.IV.3.3.3		C.IV.3.3.3, last paragraph (and the DC rule, VIII.C.6) indicates that "the generic TS will have no further effect on the plant-specific TS after the issuance of a license that references this appendix." However, there is no such statement with regard to the "other operational requirements." Additionally, VIII.C.4 does not identify how a licensee can change the "other operational requirements," as it addresses only "applicants." Is the licensee bound to the exemption process in VIII.C.4 for changes that affect "other operational requirements" as described in the DCD for the life of the plant? If so, how does the licensee determine the full scope of the "other operational requirements"? It would seem that once a COL is issued, changes to "other operational requirements" should be under the 50.59 process.	2	4	Provide clarification that "other operational requirements" are included within the context of the referenced paragraph.
C.IV.4.1	C.IV.4.2		Table has 3 columns, does not match Table 13.4.x.	3	3	In the example shown in C.IV. make the table headings exactly as they are in 13.4 Add the 1st and 3rd columns ("Item" and "Source/Required By")

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C.IV.4.2	C.IV.4.3		Section C.IV.4.3 of DG-1145 discusses implementation of Operational Programs. Two examples are discussed with respect to delineating license conditions, one involving Fire Protection and another involving physical security. It is not clear from the writing of Section C.IV.4.3 whether these are examples of how all implementation license conditions should be addressed, whether these are exceptions or whether these are requirements for how the license conditions for the two programs discussed must be delineated based on recent regulatory changes. This needs to be clarified.	3	4	These "examples" should be clarified to ensure that licensees can understand the exact purpose of the examples for Fire Protection and Physical Security license condition write-ups in Section C.IV.4.3. It is not clear why only these two examples were included
C.IV.5.1	C.IV.5.1		Page C.IV.5-2, insert a new second paragraph as follows: "If the applicant is a Federal agency, including a corporate agency and instrumentality of the Federal Government, the application should contain the following: • the agency's enabling legislation • the location of the agency's headquarters • the name and address of the head of the agency, including, if applicable, that of each director and principal officer of the agency"	2	4	The existing draft provisions do not address the situation where the applicant may be a Federal agency.
C.IV.6.1	C.IV.6.1		Remove the requirement to specifically list in the transmittal letter the activities that the applicant is requesting to perform since it is already specified in 10 CFR 50.10.	3	4	C.IV.6.1 states "the applicant should specifically list in the transmittal letter the activities that the applicant is requesting to perform." 10CFR 50.10 lists the allowed activities and does not require a specific list. Requiring a specific list will just result in each applicant listing each item in 50.10.
C.IV.6.2	C.IV.6.2 C.IV.6.3		If the redress plan is expected to be provided in the ER, format guidance is needed. Specifically, the guidance needs to indicate where in the ER the SRP is expected to be placed.	1	1	C.IV.6.2 and C.IV.6.3 state "The requirements of 10 CFR 51.50(c)(4) specify that a site redress plan must be included in the environmental report." This is not consistent with NUREG-1555, which provides ER content review guidance to the staff, nor RG 4.2 which provides ER format and content guidance to the applicant.
C.IV.6.3	C.IV.6.2		Determine a better model for site redress plans. Suggest one of the ESP's currently under review	2	4	The Midland site stabilization report is a progress report on redress activities and is not formatted in the manner of an action plan.
C.IV.6.4	C.IV.6.3		Need additional supporting information as to why LWA-2 activities are not appropriate for inclusion at ESP stage.	3	4	The commitment to a single technology is not the underlying reason for NRC not wanting to allow LWA-2 activities at ESP stage.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.7.1	C.IV.7.1.2		**C.IV.7.1.2 states:** "Pre-application activities that support a COL application referencing an early site permit (ESP) should focus on the following topics:• potential deviations from the ESP"**The term "deviations" should be "variances" as indicated in the response to Comment C.IV.3-3.**	3	4	"• potential variances from the ESP"
C.IV.7.2	C.IV.7.3		**C.IV.7.1.3 lists the following for pre-application discussion topic** "• analysis needed to support offsite power analysis with RTO' **What does the staff have in mind here?**	2	2	NA
C.IV.7.3	C.IV.7.2		**C.IV.7.2** identifies Staff activities. **This is inconsistent with the rest of the DG and with the intent of the DG.** This guidance should be for the applicant (SRPs provide Staff guidance) to identify what the NRC needs/wants from the applicant in the pre-application phase to support the environmental review. Response to previous comment C.IV.7.2-1 indicated that the comment would be considered but also indicated "no change" to the DG.	2	3	**Rewrite this section to provide guidance to the applicant.**
C.IV.7.4	C.IV.7.2		**C.IV.7.2 lists pre-application activities that support the environmental review.** The NRC recently indicated (during a pre-application meeting with Southern re Vogtle ESP application) the potential for a "five-step environmental review." The context, timing, and scope of this five-step process needs to be clarified. **NRC clarification requested.**	2	5	N/A
C.IV.8.1	C.IV.8		C.IV.8 is apparently missing section number and title: C.IV.8.1 "Generic Issues"	3	4	Insert appropriate section number and title.
C.IV.8.2	C.IV.8		The cited proposed regulation limits review of generic issues to those that are resolved and applicable to design. C.IV.8's guidance regarding the use of App. B, NUREG-0933 is not clear. The vast majority of issues listed in the current App. B are coded "I" or "Note 3(a)". These notes are understood to mean that the issues have acceptable technical resolutions and that those resolutions have been incorporated into regulations or other regulatory guidance. Such issues, so coded, do not need to be addressed further under "Generic Issues." In general, for a COLA referencing a certified design, the COL applicant should address those generic issues listed in App. B (in effect 6 months...) that are technically relevant to the site-specific portions of design. In addition, the applicant must address those actions identified in the referenced DCD that are assigned to the applicant and relate to generic issues. Per the proposed regulation, the generic issue review is limited to those that are resolved. The introduction of App. B is read to understand that "Note 3(a)" and "I" issues are resolved and	2	4	C.IV.8 should be clarified regarding the use of NUREG-0933, App. B. The following language in C.IV.8 is recommended: "In general, for a COLA referencing a certified design, the COL applicant should address those generic issues listed in App. B (in effect 6 months...) that are technically relevant to the site-specific portions of design. In addition, the applicant must address those actions identified in the referenced DCD that are assigned to the applicant and relate to generic issues." In addition, as noted in the comment, the Staff should provide explicit guidance on the use of App. B in determining the scope of generic issues that are resolved and must be addressed for Part 52 applications.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.8.2 (continued)	C.IV.8		addressed in other regulations or guidance. "Note 6" applies to future plants but represents recommendations and not requirements. Overall, the use of App. B is unclear and the guidance of C.IV.8 does not resolve this. The Staff is requested to review App. B and provide explicit guidance (in C.IV.8 or other appropriate locations in DG-1145) as to how App. B's listing is to used, particularly for a COL applicant referencing a certified design.	2	4	see above
C.IV.8.3	C.IV.8		See Comment C.IV.8.2. C.IV.8 indicates that applicants should address those issues (in App. B, NUREG-0933) for which there is no entry or "TBD" in the future plants effective date. It is not clear that these are resolved generic issues which is the basic scope of the proposed Part 2.79(a)(20). The Staff should delete or explain what issues so coded should be addressed in the COL application.	2	4	Delete the following in C.IV.8 (or provided clarification as the basis for this guidance in that it appears inconsistent with the scope of the cite proposed regulation):
C.IV.8.4	C.IV.8.2		The Staff has provided a very helpful (preliminary) review of NRC generic letters and bulletins to "determine whether they have been superseded by other NRC generic communications." This explanation of the review is found in C.I.1.9.4. Given that the actual review results are provided in C.IV.8, this particular explanation of the review should also be provided in C.IV.8.	3	4	In C.IV.8, include the statement: "A review of these generic communications was performed to determine whether they have been superseded by other NRC generic communications, NRC actions, or requirements. Those generic communications that remain open and that are technically relevant to the COL applicants facility design should be addressed in the application." (consistent with C.I.1.9.4).
C.IV.8.5	C.IV.8.2		The use of the Staff's review in C.IV.8 of generic letters and bulletins (GL/B) is not fully clear. Section C.IV.8 defines of the various "exclusion codes" applied as "screening criteria" in the Staff's review. The implication is that any GL/B given an exclusion code is screened out and need not be considered further by the COL applicant. C.IV.8 should be revised to clarify the use of this table.	2	4	In C.IV.8, include the statement: "NRC generic letters and bulletins assigned an exclusion code have been screened from further evaluation and need not be addressed by the COL applicant."
C.IV.8.6	C.IV.8	0	The Staff has provided a very helpful (preliminary) review of NRC generic letters and bulletins to "determine whether they have been superseded by other NRC generic communications." This explanation of the review is found in C.I.1.9.4. Given that the actual review results are provided in C.IV.8, this particular explanation of the review should also be provided in C.IV.8	3	3	In C.IV.8, include the statement: "A review of these generic communications was performed to determine whether they have been superseded by other NRC generic communications, NRC actions, or requirements. Those generic communications that remain open and that are technically relevant to the COL applicants facility design should be addressed in the application." (consistent with C.I.1.9.4).
C.IV.8.7	C.IV.8		The use of the Staff's review in C.IV.8 of generic letters and bulletins (GL/B) is not fully clear. Section C.IV.8 defines of the various "exclusion codes" applied as "screening criteria" in the Staff's review. The implication is that any GL/B given an exclusion code is screened out and need not be considered further by the COL applicant. C.IV.8 should be revised to clarify the use of this table.	3	3	In C.IV.8, include the statement: "NRC generic letters and bulletins assigned an exclusion code have been screened from further evaluation and need not be addressed by the COL applicant."

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Attachment 1

Chapter 8. Electric Power

The AC and DC electric power systems are the source of power for station auxiliaries during normal operation, and for the protection system and engineered safety features during abnormal and accident conditions. Non-passive designs rely on offsite AC power, onsite AC power, and onsite DC power for safe shutdown while passive designs do not depend on either onsite or offsite AC systems for safe shutdown. Passive designs will rely solely on onsite DC systems for safe shutdown. Thus, the COL applicant should provide information in establishing the functional adequacy of the safety-related AC and DC electric power systems as applicable to either a passive design or non-passive design reactor (and electrical systems important to safety) and ensuring that these systems have adequate redundancy, independence, and testability in conformance with the current criteria established by the U.S Nuclear Regulatory Commission (NRC).

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8.1 *Introduction*

Provide a brief description of the utility grid and its interconnection to the nuclear unit and other grid interconnections. The applicant should list electrical systems as well as supporting systems that are safety-related. In the case of non-passive designs, these electrical systems will encompass both safety related AC and DC systems. For passive designs that do not rely on offsite AC power, the onsite Class 1E DC systems and the associated loads will be the only safety related electrical systems.

The application document should provide a regulatory requirements applicability matrix that lists all design bases, criteria, regulatory guides, standards, and other documents that will be implemented in the design of the electrical systems that are beyond the scope of the design certification. The specific information identified in Section C.I.8.1 of this guide should be included in the application document.

8.2 *Offsite Power System*

8.2.1 Description

The offsite power system is the preferred source of power for the reactor protection system and engineered safety features during abnormal and accident conditions. For non-passive designs, it includes two or more physically independent circuits from the transmission network. It encompasses the grid, transmission lines (overhead or underground), transmission line towers, transformers, switchyard components and control systems, switchyard battery systems, and so forth.

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Provide information concerning offsite power lines coming from the transmission network to the plant switchyard. For non-passive designs where the circuits from the transmission network that are designated as two offsite power circuits and are relied upon for accident mitigation should be identified and described in sufficient detail to demonstrate conformance with General Design Criteria (GDCs) 5, 17, and 18, as set forth in Appendix A to Title 10, Part 50, of the Code of Federal Regulations (10 CFR Part 50). The discussion should include the independence between these two offsite power sources to ensure that both electrical and physical separation exists, in order to minimize the chance of simultaneous failure.

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For non-passive designs, perform a failure mode and effects analysis of the switchyard components to assess the possibility of simultaneous failure of both circuits as a result of single events, such as a breaker not operating during fault conditions, a spurious relay trip, a loss of a control circuit power supply, or a fault in a switchyard bus or transformer. The capacity and electrical characteristics of transformers, breakers, buses, transmission lines, and the preferred power source for each path should also be provided to demonstrate that there is adequate capability to supply the maximum connected load during all plant conditions.

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For non-passive designs, identify the equipment that must be considered in the specification of offsite power supplies, the acceptance testing performed to demonstrate compliance, the effects that must be considered, the margins that are applied, and how the design incorporates these requirements for offsite power supplies, including high-voltage transmission networks, medium-voltage distribution networks, switchyard equipment (bus work, transformers, circuit breakers, disconnect switches, surge protective devices, control, communication, grounding, and lightning systems), switching capacitors, and offsite power supplies.

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For non-passive designs, provide information on location of rights-of-ways, transmission towers, voltage level, and length of each transmission line from the site to the first major substation that connects the line to the grid. All unusual features of these transmission lines should be described. Such features might include (but are not limited to) crossovers or proximity of other lines (to ensure that no single event such as a tower falling or a line breaking can simultaneously affect both circuits), rugged terrain, vibration or galloping conductor problems, icing or other heavy loading conditions, and high thunderstorm occurrence rate in the geographical area.

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For non-passive designs, indicate if generator breakers are used as a means of providing immediate access from the offsite power system to the onsite ac distribution system by isolating the unit generator from the main step-up and unit auxiliary transformers and allowing backfeeding of power through these circuits to the onsite ac distribution system. If so, provide sufficient information for the staff to evaluate the generator circuit breakers and load break switches.

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Compliance with GDC 5 requires that structures, systems, and components important to safety shall not be shared among nuclear power units, unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units. Toward that end, describe how the design satisfies the requirements of GDC 5.

Discuss the stability of the local area grid network. This should identify the equipment that must be considered for review and approval by the appropriate grid reliability planning and coordination organization(s). For non-passive designs, discuss the maximum and minimum switchyard voltage that must be maintained by the transmission system provider/operator (TSP/TSO) without any reactive power support from the nuclear power plant. In addition for non-passive designs, describe the formal agreement or protocol between the nuclear power plant and the TSP/TSO of the preferred offsite power capable of supporting plant startup, and to shut down the plant under normal and emergency conditions.

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Non-passive designs should include a description of the capability of the TSP to analyze contingencies on the grid involving the largest generation unit outage, critical transmission line outage, and other contingencies under varying power flows in response to market conditions and system demands.

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Furthermore, non-passive designs should include a description of the analysis tool used by the TSO to determine, in real time, the impact of the loss or unavailability of various transmission system elements on the condition of the transmission system. In addition, the applicant should provide information on the protocols in place for the nuclear power plant to remain cognizant of grid vulnerabilities, in order to make informed decisions regarding maintenance activities that are critical to the plant's electrical system (Maintenance Rule, 10 CFR 50.65).

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8.2.2 Analysis

Provide an analysis of the stability of the utility grid. This analysis should include the worst case disturbances for which the grid has been analyzed and considered to remain stable and to describe how the stability of the grid is continuously studied as the loads grow and additional transmission lines and generators are added. For non-passive designs, provide the assumptions and conclusions that demonstrate that the acceptance criteria required for the continued safe operation of the nuclear unit and the stability of the grid have been addressed. Identify the approving grid organization for the reliability studies, and identify any

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potential limits that may be imposed on the operation of the nuclear plant. Provide a discussion of grid availability, including the frequency, duration and causes of outages over the past 20 years for both the transmission system accepting the unit's output and the transmission system providing the preferred power for the unit's loads.

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The results of the grid stability analysis must show that loss of the largest single supply to the grid does not result in the complete loss of preferred power (or complete loss of the transmission system connected to the station for passive designs). The analysis should also consider the loss, as a result of a single event, of the largest capacity being supplied to the grid, removal of the largest load from the grid, or loss of the most critical transmission line. In determining the most critical transmission line, consider lines that use a common tower to be a single line. This could be the total output of the station, the largest station on the grid, or possibly several large stations if these use a common transmission tower, transformer, or breaker in a remote switchyard or substation.

8.3 *Onsite Power Systems*

8.3.1 AC Power Systems

8.3.1.1 *Description*

For non-passive designs describe how independence is established between the onsite and offsite power systems. Two aspects of independence should be addressed in each case:

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physical independence
electrical independence

In ascertaining the independence of the onsite power system with respect to the offsite power system, the applicant should describe the electrical ties between these two systems, and should provide the physical arrangement of the interface equipment. It should also demonstrate that no single failure will prevent separation of the redundant portions of the onsite power systems from the offsite power systems. For non-passive designs, following a loss of offsite power, the safety buses are solely fed from the standby power systems. Under this situation, describe the design of the feeder-isolation breaker in each offsite power circuit that must preclude the automatic connection of preferred power to the respective safety buses upon the loss of standby power.

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If non-Class 1E loads are connected to the Class 1E buses, the COL applicant should demonstrate that the design will not result in degradation of the Class 1E system. Describe the design of the isolation device through which standby power is supplied to the non-Class 1E load, including control circuits and connections to the Class 1E bus. To ensure physical separation between the Class1E equipment and the non-1E equipment, including cables and raceways, describe how the recommendations of Regulatory Guide 1.75 are followed.

Describe the means of identifying the non-1E components, including cables, raceways, and terminal equipment. Provide information on the identifying scheme used to distinguish between redundant Class 1E systems and non-Class 1E systems and their associated cables, raceways without the need to consult reference material.

For non-passive designs, the COL applicant should also describe how the diesel generators are sized to accommodate the added non-Class 1E loads.

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8.3.1.2 *Analysis*

For non-passive designs, provide analyses to demonstrate compliance with GDCs 17 and 18, and to indicate the extent to which the recommendations of Regulatory Guides 1.6, 1.9, and 1.32 and other

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appropriate criteria and standards are followed. The discussion should identify all aspects of the onsite power system that do not conform to Regulatory Guides 1.6, 1.9, and 1.32, and should explain why such deviations are not in conflict with applicable GDCs.

8.3.1.3 *Electrical Power System Calculations, and Distribution System Studies for AC Systems*

COL applicants that reference a certified design do not need to include this information unless design changes are made to the certified design.

8.3.2 DC Power Systems

8.3.2.1 *Description*

If non-Class 1E loads are connected to the Class 1E batteries, the COL applicant should demonstrate that the design will not result in degradation of the Class 1E batteries. Describe the design of the isolation device through which dc power is supplied to the non-Class 1E loads. To ensure physical separation between the Class1E equipment and the non-1E equipment, including cables and raceways, describe how the recommendations of Regulatory Guide 1.75 are followed.

Describe the means of identifying the non-1E components, including cables, raceways, and terminal equipment. Provide information on the identifying scheme used to distinguish between redundant Class 1E systems and non-Class 1E systems and their associated cables, raceways without the need to consult reference material.

The COL applicant should also describe how the batteries are sized to accommodate the added non-Class 1E loads.

8.3.2.2 *Analysis*

The COL applicant should provide analyses to demonstrate compliance with GDCs 17 and 18, and indicate the extent to which the recommendations of Regulatory Guides 1.6, and 1.32 are followed. The discussion should identify all aspects of the dc power system that do not conform to Regulatory Guides 1.6, and 1.32, and should explain why such deviations are not in conflict with applicable GDCs.

8.3.2.3 *Electrical Power System Calculations, and Distribution System Studies for DC Systems*

COL applicants that reference a certified design do not need to include this information unless design changes are made.

8.4 *Station Blackout (SBO) (for non-passive designs)*

8.4.1 Description

For non-passive designs, the applicant should describe how the alternate alternating current (AAC) power source provided to mitigate station blackout is independent from the offsite power system. Describe the physical arrangement of circuits and incoming source breakers [to the affected Class 1E bus(es)], separation and isolation provisions (control and main power), permissive and interlock schemes proposed for source breakers, source initiation/transfer logic, that could affect the ability of the AAC power source to power safe shutdown loads, source lockout schemes, and bus lockout schemes in arriving at the determination that the independence of the AAC power source is maintained.

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For non-passive designs, describe how the AAC power source components are physically separated and electrically isolated from offsite power components or equipment, as specified in the separation and isolation criteria applicable to the unit's licensing basis and the criteria of Appendix B to Regulatory Guide 1.155.

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For non-passive designs, identify local power sources and transmission paths that could be made available to resupply power to the plant following a loss of a grid or SBO.

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For non-passive designs, describe the procedures and training provided for the plant operators for an SBO event of the specified duration and recovery from the SBO event.

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8.4.2 Analysis

For non-passive designs, provide an analysis to demonstrate that no single-point vulnerability exists whereby a single active failure or weather-related event could simultaneously fail the AAC power source and offsite power sources. The power sources should have minimum potential for common failure modes.

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Attachment 1
NEI Comments on Draft
DG-1145

Rationale for recommended change to C.I.11.2.1
Paragraph three states:

> "Within this evaluation, provide a site-specific cost-benefit analysis for reducing population doses due to liquid effluents, in compliance with 10 CFR Part 50, Appendix I, and in accordance with the guidance in Regulatory Guide is 1.110 and 1.113 and NUREG/CR-4013. If this guidance is not followed, describe the specific alternative methods used. More specifically, show that the proposed systems contain all items of reasonably demonstrated technology that, when added to the system in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio affect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. State all assumptions and describe the calculational methods used, including all supporting references."

This paragraph should be deleted based on the following reasoning:

Standard Review Plan (SRP) 3.2.2, Draft Rev. 2 – April 1996, page 3.2.2-27:

> "(9) Reg. Guide 1.143 describes a method acceptable for complying with regulations regarding radwaste management systems, including guidance for classification and quality assurance measures. Position C.1.1 and Table 1 of the Reg. Guide describe codes and industry standards applicable to the design and fabrication of radwaste management systems. In addition, the Reg. Guide describes positions with regard to the design and fabrication of these systems that are supplemental to those established by the codes and standards cited."

Regulatory Guide 1.143, Revision 2 – November 2001, cover page:

> "This regulatory guide has been revised to provide guidance to licensees and applicants on methods acceptable to the staff for complying with the NRC's regulations in the design, construction, installation, and testing the structures, systems, and components of radioactive waste management facilities in light-water-reactor nuclear power plants.
>
> ". . . Appendix A. "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 establishes minimum requirements for the principal design criteria for light-water-cooled nuclear power plants.
>
> "Criterion 1, "Quality Standards and Records". Of Appendix A requires that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance to safety of the safety function to be performed and that a quality assurance program

be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety function."

Regulatory Guide 1.143, Revision 2 – November 2001, page 2:

"Criterion 2, "Design basis for Protection Against Natural Phenomena," of Appendix A requires, among other things, that structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornados, or flooding without loss of capability to perform their safety functions. The design basis for these structures, systems, and components are to reflect the importance of the safety functions to be performed. Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants, " of 10 CFR Part 50 states general design requirements for the implementation of General Design Criterion 2. Criterion 60, "Control of Releases of Radioactive Materials to the Environment," of Appendix A requires that the nuclear power unit design include means to suitably control the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid waste produced during normal reactor operation, including anticipated operational occurrences. The release of radioactive materials from external man-induce events and design basis accident must also be controlled.

"This regulatory guide is being revised to provide design guidance acceptable to the NRC staff in regard to natural phenomena hazards, internal and external man-induced hazards, and quality group classification and quality assurance provisions for radioactive waste management systems, structures, and components.[1] Further, it describes provisions for mitigating design basis accidents and controlling releases of liquids containing radioactive materials, e.g., spills or tank overflows, from all plant systems outside reactor containment."

Regulatory Guide 1.143, Revision 2 – November 2001, page 3:

"One aspect of nuclear power plant operation is the control and management of liquid, gaseous, and solid radioactive waste[2] (radwaste) generated as a byproduct of nuclear power. The purpose of this guide is to provide information and criteria that will provide a reasonable assurance that components and structures used in the radioactive waste management and steam generator blowdown systems are designed, constructed, installed, and tested on a level commensurate with the need to protect the health and safety of the public and plant operating personnel. It sets forth minimum staff recommendations and is not intended to prohibit the implementation of more rigorous design considerations, codes, standards, or quality assurance measures.

"For the purposes of this guide, the radwaste systems are considered to begin at the interface valves in each line from other systems provided for collecting wastes that may contain radioactive materials and to include related instrumentation and control systems. The radwaste system terminates at the point of controlled discharge to the environment, at the point of recycle to the primary or secondary water system storage tanks, or at the point of storage of packaged solid wastes."

Regulatory Guide 1.143, Revision 2 – November 2001, page 4:

"The design and construction of radioactive waste management and steam generator blowdown systems should provide assurance that radiation exposures to operating personnel and to the general public are as low as is reasonably achievable. One aspect of this consideration is ensuring that these systems are designed to quality standards that enhance system reliability, operability, and availability. In developing this design guidance, the NRC staff has considered designs and concepts submitted in license applications and resulting operating system histories. It has also been guided by industry practices and the cost of design features, taking into account the potential impact on the health and safety or operating personnel and the general public."

Regulatory Guide 1.143, Revision 2 – November 2001, page 10:

" The Purpose of this section is to provide information to licensees and applicants regarding the NRC staff's plans for using this regulatory guide.

"Except in those cases in which the applicant proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the method described in this guide reflecting public comments will be used in the evaluation of an applicant's design, construction, installation, and testing of radioactive waste management facilities, and in the evaluation of structures, systems, and components in light-water-cooled nuclear power plants. Current licensees may, at their option, comply with the guidance in this regulatory guide."

Regulatory Guide 1.110, March 1976, page 5:

"The procedures and models provided in this guide will be subject to continuing review by the staff with the aim of providing greater flexibility to the applicant in meeting the requirements of Appendix I. As a result of such reviews, it is expected that alternative acceptable methods for calculation will be made available to applicants and that calculational procedures found to be unnecessary will be eliminated."

10 CFR50 Appendix I, Sec. II.D.:

"In addition to the provisions of paragraphs A, B, and C above, the applicant shall include in the radwaste system all items of reasonably demonstrated technology

that, when added to the system sequentially and in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. As an interim measure and until establishment and adoption of better values (or other appropriate criteria), the values $1000 per total body man-rem and $1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) shall be used in this cost-benefit analysis. The requirements of this paragraph D need not be complied with by persons who have filed applications for construction permits which were docketed on or after January 2, 1971, and prior to June 4, 1976, if the radwaste systems and equipment described in the preliminary or final safety analysis report and amendments thereto satisfy the Guides on Design Objectives for Light-Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket-RM-50-2 dated February 20, 1974, pp. 25-30, reproduced in the Annex to this Appendix I."

Regulatory Guide 1.110, March 1976 is antiquated and inappropriate for use with the current technology in radwaste processing. Most of the current technology radwaste processing equipment is not included in Regulatory Guide 1.110, March 1976. That fact makes Regulatory Guide 1.110 inappropriate for guidance because the user must guess which equipment in the Regulatory Guide is closest to the current technology. The current technology generally is decades more advanced than the technology listed in Regulatory Guide 1.110, so that any comparison is speculative at best. Additionally, Regulatory Guide 1.143, Revision 2, as already shown in statements provided by the NRC, is designed to adequately provide complete guidance for the radwaste section of light-water-cooled nuclear power reactors. Lastly, 10 CFR50 Appendix I, Sec. II.D allows for 'other appropriate criteria.' Regulatory Guide 1.143, Revision 2 is the other appropriate criteria allowable by 10 CFR50 Appendix I, Sec. II.D. Therefore, any reference to Regulatory Guide 1.110 should be removed from DG-1145 as it applies to radioactive waste systems, structures, and components.

Regulatory Guide 1.113, Revision 1, April 1977, page 1, paragraph 4, in part:

> "The methods herein are general approaches that the NRC staff has adopted for the analysis of routine and accidental releases into various types of surface water bodies. Models for the ground-water pathway are not covered in this guide."

Regulatory Guide 1.113, Revision 1, as included in DG-1145, serves to analyze accidental releases to surface water bodies. Regulatory Guide 1.143 provides NRC guidance that when implemented, '. . .provide[s] design guidance acceptable to the NRC staff in regard to natural phenomena hazards, internal and external man-induced hazards, and quality group classification and quality assurance provisions for radioactive waste management systems, structures, and components.[1] Further, it describes provisions for mitigating design basis accidents and controlling releases of liquids containing radioactive materials, e.g., spills or tank

overflows, from all plant systems outside reactor containment.' Therefore, Regulatory Guide 1.143, Revision 2 includes guidance acceptable to the NRC regarding system, structure and component design, plus the mitigation and control of releases of radioactive liquids. Regulatory Guide 1.113, Revision 1 only serves to provide an approach to calculating an analysis of releases to surface water. Regulatory Guide 1.113 is virtually an enormous task to calculate data that is greatly subjective, and Regulatory Guide 1.143, Revision 2 provides guidance acceptable to the NRC to prevent the release altogether. Therefore, Regulatory Guide 1.113, Revision 1 is an unnecessary burden. Because it has effectively been superseded and reduced to an unnecessary burden by Regulatory Guide 1.143, revision 2, any reference to Regulatory Guide 1.113 should be removed from DG-1145 as it applies to radioactive waste systems, structures, and components.

Attachment 1

C.I.17.6 ***Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule***

The MR program must meet the requirements of 10 CFR 50.65. The format of the program description is left to the discretion of the applicant; however each element of 10 CFR 50.65 should be addressed sufficiently to enable the reviewer to determine whether and how each element is satisfied.

C.I.17.6.1 ***Description of MR Program and Procedures***

The program description for the MR program should endorse and be in accordance with NUMARC 93-01, and Regulatory Guides 1.160 and 1.182, including, but not limited to the following areas:

Note 1: Deviations from the guidance in NUMARC 93-01 and Regulatory Guides 1.160 and 1.182 should be explained and justified

Note 2: The MR program description is required to be submitted as part of the COL application; the actual detailed program must be available on-site for NRC audit prior to fuel load.

Note 3: COL applicants referencing a DCD must address the COL information items, if any, identified in Chapter 17.6 of the referenced generic DCD.

C.I.17.6.1.1 ***Scoping per 10 CFR 50.65(b)***

Provide a description of procedure for identifying the structures, systems, or components (SSCs) within the scope of your proposed Maintenance Rule (MR) program. The description of the MR scoping procedure should be in accordance with NUMARC 93-01 and Regulatory Guide 1.160 to address:

(1) Safety-Related SSCs

(2) Nonsafety-Related SSCs that Mitigate Accidents or Transients

(3) Nonsafety-Related SSCs that are used in Emergency Operating Procedures

(4) Nonsafety-Related SSCs Whose Failure Prevents Safety-Related SSCs for Fulfilling their Safety-Related Functions

(5) Nonsafety-Related SSCs Whose Failure Causes Scrams or Actuates Safety Systems

C.I.17.6.1.2 ***Reactor Safety Significance Classification and Other Factors Considered by Expert Panel***

Describe the process for safety significance classification (i.e., HSS or LSS) of in-scope SSCs and the bases thereof, including risk metrics/importance measures and values, operating experience, vendor information, and any other factors to be considered by the expert panel.

C.I.17.6.2 Monitoring per 10 CFR 50.65(a) and (a)(2)

Provide a description of the procedure for managing 10CFR 50.65(a)(1) requirements during plant operation. For the SSCs determined to be within the scope of the Maintenance Rule, discuss the method for establishing risk significance and performance criteria to initially determine which SSCs must have goals established and monitoring activities performed in accordance with (a)(1). For SSCs that do not meet

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Comment [jmt1]: It is important to differentiate from "known" at the time of application. Many COLA sections will be written prior to application submittal and further information may become available between the time of development and time of submittal.

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Deleted: Describe program procedures for Maintenance Rule implementation

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performance criteria, discuss the method for performing a cause determination and how appropriate goals are established commensurate with an SSCs safety significance and performance. Monitoring the performance of the SSCs against established goals should be demonstrated to provide reasonable assurance that the SSCs are proceeding to acceptable performance.

Provide a description of the procedure for managing 10CFR 50.65(a)(2) requirements during plant operation. Monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventive maintenance. Discuss how SSCs within the scope of (a)(2) are monitored (e.g., included in the formal PM program, determined to be inherently reliable, visual inspection during walkdowns to meet licensee requirements that already exist, or determined to be allowed to run to failure based on providing little or no contribution to system safety function). Discuss how the preventive maintenance program is determined to be effective in achieving the desired results of minimizing component failures and increasing or maintaining SSC performance.

C.I.17.6.3 Periodic Evaluation per 10 CFR 50.65(a)(3)

Identify and describe the program procedures that prescribe or govern periodic evaluation of the Maintenance Rule program in accordance with 50.65(a)(3). Ensure the following considerations are included:

(1) how procedures govern the scheduling and timely performance of (a)(3) evaluations

(2) documenting, reviewing and approving evaluations, providing and implementing results

(3) making adjustments to achieve or restore balance between reliability and availability

(4) industry operating experience (IOE).

C.I.17.6.4 Risk Assessment and Management per 10 CFR 50.65(a)(4)

Provide a description of the procedure for risk assessment per 10CFR 50.65(a)(4). Describe how assessments of the impact on overall plant safety functions prior to removal of SSCs from service are to be performed. Typically the (a)(4) program and procedure is a stand-alone activity, separate from the other elements of the MR Program.

The COL applicant should commit to implementing a 10CFR 50.65(a)(4) program consistent with Regulatory Guide 1.182 and NUMARC 93-01, items (1) through (3) below, as described in detail in NUMARC 93-01:

(1) Key Plant Safety Functions Applicable to the Plant Design.

(2) SSCs That Support Key Plant Safety Functions

(3) Assess and Control the Effect of the Removal of SSCs from Service on Key Plant Safety Functions

C.I.17.6.5 Maintenance Rule Training and Qualification

Describe the program, including procedures and documentation, for Maintenance Rule training and qualification consistent with the provisions of Section C.I.13 of this guide as applicable.

C.I.17.6.6 Maintenance Rule Program and Reliability Assurance Program Interface

Describe the relationship and interface between MR program implementation and Reliability

Deleted: For each SSC, indicate its standby or continuously operating status and associated type (i.e., availability, reliability, or condition) and level (i.e., component, system, pseudo-system, train, or plant) of monitoring/tracking. Describe the process for determining which SSCs' performance or condition will be monitored initially per paragraph 50.65(a)(1) and which will be tracked per 50.65(a)(2).

Deleted: Identify the plant's refueling cycle.

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Deleted: Identify and describe the program procedures and documents (including computer software and data) that prescribe or govern maintenance risk assessment and management accordance with 50.65(a)(4) including, but not limited to the following areas:

Deleted: <#>(1) determination of the scope (or limited scope) of SSCs to be included in (a)(4) risk assessments ¶
(2) risk assessment and management during work planning ¶
(3) risk assessment and management of emergent conditions and updating risk assessments as maintenance situations and plant conditions and configurations are changed ¶
(4) assessment (quantitative and qualitative capabilities) and management of risk of external events or conditions, including fire (internal, external and fire-risk-sensitive maintenance activities), severe weather, external flooding, landslides, seismic activity and other natural phenomena; grid/offsite power reliability for grid-risk-sensitive maintenance activities (respond to or refer to responses to MR-related questions in NRC GL 2006-02), and internal flooding ¶
(5) assessment and management of risk of maintenance activities affecting containment integrity ¶
(6) assessment and management of risk of maintenance activities when at low power or when shut down (including implementation of NUMARC 91-06) ¶
(7) assessment and management ... [15]

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Assurance Program (RAP) implementation during the operational phase (See Section C.I.17.4), including how functions are coordinated and procedures overlap and/or are cross referenced. Note: If the scope of the RAP is enveloped by the Maintenance Rule Program's SSCs classified as HSS, the Maintenance Rule Program is an acceptable method of implementation of the RAP during the operational phase.

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C.I.17.6.7 Maintenance Rule Program Implementation

The COL applicant should identify that the MR program will be implemented prior to fuel load, as identified in Section C.I.13.4. As discussed in Section C.I.13.4, and consistent with SRM/SECY-05-0197, the applicant should provide a schedule for implementing the MR program prior to fuel load. This schedule may be provided to NRC separate from the FSAR.

Deleted: Describe the plan or process for implementing the MR program as described in the COL application, including sequence and milestones for establishing program elements, commencing monitoring or tracking of performance and/or condition of SSCs as they become operational.

Attachment 1

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C.I.18 Human Factors Engineering (NUREG-0800, Ch.18, rev.1)

This chapter of the FSAR should describe how state-of-the-art Human Factors Engineering (HFE) principles are incorporated into: (1) the planning and management of HFE activities; (2) the plant design process; (3) the characteristics, features, and functions of the human-system interfaces (HSIs), procedures, and training; (4) the implementation of the design; and (5) the monitoring of performance at the site. The FSAR should address the 12 HFE elements of NUREG-0711 shown in Figure 1.

Comment [NEI1]: Monitoring "changes" reads as design change monitoring, which is QA, not HF, so rather than delete it, it was refit with the corresponding element for post-implementation monitoring.

Deleted: changes

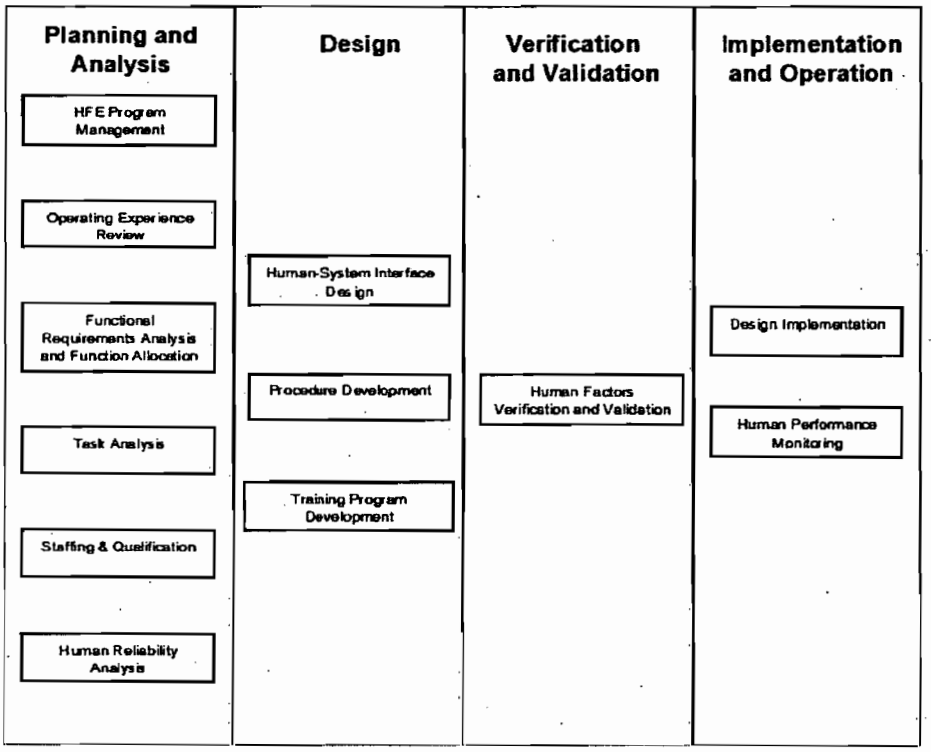


Figure 1 HFE elements to be addressed in the FSAR

COL Applicant Submittals

For each element illustrated in Figure 1, the FSAR should describe or reference the objectives and scope of the applicant's activities related to the element, the methodology

used to perform the activities, and the results of the activities. The specific content related to each element is addressed in the subsequent sections of C.I.18[1].

In general, the COL applicant (hereafter called applicant) may summarize this information. In such cases, an applicant may either submit, reference, or retain and make available for NRC staff audit the details, such as in supplemental reports, sufficient to support NRC staff review and determination of reasonable assurance. Where results are being credited for meeting specific regulatory requirements, more detail may be appropriate in the FSAR. Levels of detail and inclusion that may be suitable for presenting completed HFE elements in an FSAR are identified by examples for each element in subsequent sections of C.I.18

Submittals For HFE Activities That Have Not Been Completed

At the time that the COL application is submitted, some of the12 HFE elements may be incomplete. If an element is incomplete at the time of the COL application, the FSAR should describe the objectives and scope of the applicant's activities related to the element, the methodology that will be used to perform the activities, and the expected results of the activities. In addition, an "implementation plan" and schedule for completing the element should be submitted, including plans for the use and disposition of the corresponding results. Finally, DAC/ITAAC should be submitted which define the requirements for closure of the element when it is completed.

Applicants are encouraged to submit implementation plans at the earliest opportunity in the pre-application phase. An early review by the NRC of an implementation plan gives the applicant the opportunity to obtain staff concurrence in the applicant's approach before COL submittal or before conducting the activities associated with the element. Such a review is desirable from both the staff's and the applicant's perspectives because it provides the opportunity to resolve methodological issues and provide input early in the analysis or design process when staff concerns can more easily and more cost-effectively be addressed than when the activity is completed.

For similar reasons, the applicant is encouraged to submit other documents, such as an HSI style guide, for NRC review and issue resolution before the applicant initiates and completes the detailed design work.

Submittal Interfaces

The submittals described in this section should be coordinated with those of other SRP chapters and sections. Important review interfaces are described in NUREG-0800 Ch.18 rev.1, Sec.18.I.C.

Comment [NEI2]: 1. The term "contents of applications" has been equivocal in C.I.18. That is, the draft answer from Staff was mainly technical, but the industry question is mainly practical. Since the (mainly technical) Staff review guidance is (with exceptions noted) generally sufficient, what the Industry needs most from the content-of-submittals guidance is (1) to clarify what may be submitted vs. what may be retained (for audit or inspection), and (2) to identify necessary FSAR contents vs. the balance of the submittal (such as referenced reports).

Comment [NEI3]: Saying that "most sections" can be summarized begged the question of which sections cannot, hence the edit.

Comment [NEI4]: This is a key distinction for subsequent guidance.

Comment [NEI5]: Use of "may" in the Industry re-draft of C.I.18 attempts to give guidance in the form of alternatives for inclusion levels for technical contents. That something "may" be retained for audit implies that it may be submitted as well, but not necessarily that either course "should" be taken. Use of "should" was thus initially limited to matters of technical content, as a principal of style. It seems that "should" is also needed to specify items that explicitly belong in the FSAR, and perhaps further, that belong in the submittal (not necessarily in the FSAR, but not acceptable if only retained-for-audit/inspection). Thus, the may/should distinction in the re-draft was neither entirely successful, nor entirely without merit, and its use in some form can be considered on the practical merits. In any case, it is understood that the wording will be governed by NRC and legal conventions.

Comment [NEI6]: These two aspects of the content of submittals are what the industry seeks to have clarified

Comment [NEI7]: This rewrite tried to address the seeming paradox that the less complete elements were calling for more detail to be provided.

[1] Staff review guidance for the technical content of HFE programs and activities is given by the applicable revisions of NUREG-0800 (SRP) Chapter 18 and NUREG-0711. Conflicts of interpretation between C.I.18 and the applicable staff review guidance will be governed by the latter.

C.I.18.1 HFE Program Management (NUREG-0800 Ch.18 rev.1, Sec.II.A.1; NUREG-0711 rev.2, Sec.2)

Purpose

The purpose of this portion of the application is to document that, for plant design and operation, the applicant has adequately considered the role of HFE and the means by which HFE activities are accomplished.

Contents

The FSAR description of the HFE Program Plan may consist of the detailed HFE Program Plan, or it may consist of a summary that refers to a separately submitted (i.e. detailed) HFE Program Plan. All such descriptions (i.e. summary or detailed) should address the topics below in response to the applicable review guidance[2].

- General HFE Program Goals and Scope (NUREG-0711 rev.2, Sec.2.4.1)
- HFE Team and Organization (NUREG-0711 rev.2, Sec.2.4.2)
- HFE Process and Procedures (NUREG-0711 rev.2, Sec.2.4.3)
- HFE Issues Tracking (NUREG-0711 rev.2, Sec.2.4.4)
- Technical Program (NUREG-0711 rev.2, Sec.2.4.5)

Organizational procedures of the COL applicant and its assigns may be referenced in the detailed HFE Program Plan and be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.2 Operating Experience Review (NUREG-0800 Ch.18 rev.1, Sec.II.A.2; NUREG-0711 rev.2, Sec.3)

Purpose

The purpose of this section of the FSAR is to document that the applicant has identified and analyzed HFE related problems and issues in previous designs that are similar to the current design under review so that these problems and issues may be avoided in the development of the new design.

Contents

This section of the FSAR may describe how the procedures program addresses the requirements of 10 CFR 50.34(f)(3)(i).

The FSAR may describe the applicant's operating experience review (OER) and how it was used to identify HFE-related safety issues. This description may consist of a summary that refers to separately submitted report(s) describing sources, methods,

[2] The citations below are provided for convenience and refer to the most recent version of the cited review guidance at the time of C.I.18 publication.

Comment [NEI8]: A proposed framework for the C.I.18 sections is presented. Three components are used: Purpose, Contents, and Added Guidance. The intent of this framework is to be concise and to avoid ambiguity with existing NRC guidance.

Comment [NEI9]: The "Purpose" is a brief statement based on the applicable 0800 citation, that identifies the element and gives context to the rest of the section without adding, repeating, or revising existing guidance.

Comment [NEI10]: Terms such as application, submittal, FSAR, etc. may not be used correctly in the present draft, and a set of formal definitions is requested. Unclear how to correctly refer to "all" of the Applicant information for an element when only some of it is submitted, some is referenced, and some is retained.

Comment [NEI11]: The "Contents" sections address level of detail and place of inclusion for the identified items, rather than their technical contents (which are already specified elsewhere as cited.)

Comment [NEI12]: Where C.I.18 content reflects existing guidance, citations are preferred to restatements. Clearly, the Applicant is advised to submit what the Staff wants to see, and this is defined by the Staff review guidance. It may be true in some sense that NUREG-0711 & NUREG-0800 give guidance for Staff reviews but not for Applicant submittals - but does this justify the need for multiple versions of similar guidance? From a technical standpoint, the Industry finds the available Staff review guidance to be equally suited to either role, as shown by the use of NUREG-0711 from inception.

Comment [NEI13]: The "Added Review Guidance" sections identify material that is not considered to exist or to have been sufficiently treated in the existing Staff review guidance.

implementation, and results of OER. Detailed OER data may be retained and made available for NRC staff audit. All such descriptions (i.e. summary or detailed) should address the topics below in response to the applicable review guidance[3].

- Objectives and Scope of OER (NUREG-0711 rev.2, Sec.3.2 & 3.4.1)
- OER Process (10 CFR 50.34(f)(3)(I)).
- Predecessor Plants and Systems (NUREG-0711 rev.2, Sec.3.4.1(1))
- Risk-important Human Actions (NUREG-0711 rev.2, Sec.3.4.1(5))
- HFE Technology (NUREG-0711 rev.2, Sec.3.4.1(3))
- Recognized Industry Issues (NUREG-0711 rev.2, Sec.3.4.1(2))
- Issues identified by Plant Personnel (NUREG-0711 rev.2, Sec.3.4.1(4))
- Issue Analysis, Tracking, and Review (NUREG-0711 rev.2, Sec.3.4.2)

Results from interviews at predecessor plants may be summarized in submittals. Detailed results may be retained and made available for NRC staff audit.

Added Review Guidance

When there is more than one predecessor plant, the role of each should be clearly defined.

When the new proposed plant utilizes new technology, the applicant should obtain and describe experience from applications of this new technology, even if it is not from the predecessor plant.

The FSAR should identify risk-important HAs in the predecessor plants and determine if they are still risk-important in the applicant's design. For those that are applicable, the FSAR should identify those scenarios where these actions were called for during operation of the plant and if the actions were successfully completed, noting aspects of the design that helped to assure success. If errors have occurred in their execution, insights should be identified related to needed improvements in human performance.

Where the risk-important HAs for the new plant are determined to be different from those of the predecessor plant, the OER results should identify any operational experience related to these different risk-important human actions.

Comment [NEI14]: Directing applicants in a licensing submittal to specifically attribute problems to other plants is unlikely to be acceptable to industry.

Comment [NEI15]: This does not apply to predecessor plants; move to 18.2.2.4.

Comment [NEI16]: This seems infeasible because "risk-important" human actions may be undefined for predecessor plants. To the extent that RIHAs have been identified by the predecessor plant, even if these are appropriate OER contents for the Applicant, they do not belong in the Applicant's FSAR. If predecessor RIHAs do not exist, the burden should not fall on the Applicant to identify and submit them for the predecessor plant, and the suggestion invites legal obstacles.

[3] The citations below are provided for convenience and refer to the most recent version of the cited review guidance at the time of C.I.18 publication.

C.I.18.3 Functional Requirements[4] Analysis and Function Allocation (NUREG-0800 Ch.18 rev.1, Sec.II.A.3; NUREG-0711 rev.2, Sec.4)

Purpose

The purpose of this section of the FSAR is to document that the applicant has (1) defined the plant functions that must be performed to satisfy plant safety objectives, and (2) allocated those functions to human and system resources in a manner that takes advantage of human strengths and avoids human limitations.

Contents

The FSAR may state the objectives and scope, and summarize the methods and results of the analyses. The FSAR may include a summary description for each high-level function and related systems and parameters. Detailed methods and results may be provided in referenced reports. Analysis data may be retained and made available for NRC staff audit.

Added Review Guidance

If the proposed new plant is using the same functional requirements (FRs) as a predecessor plant, then a description of the methodology is not needed. In this case, the FSAR should identify the plant(s) whose functional requirements are being used and the functions themselves provided in the results.

Describe the verification of the functional requirements analysis.

The verification of the function allocation should be described to show that the allocations of functions result in a coherent role for plant personnel.

Comment [NEI17]: Generally, a state of affairs can't be verified unless either state (i.e., true or false) Functional requirements (FRs) are analyzed because it is difficult to determine that a set is sufficient (let alone complete, since another requirement can easily be added and often is). 0711 should simply say that, "**the results of the FR analysis should demonstrate that the set of safety functions is sufficient for safe operation, and that each function is adequately specified by the requirements,**" and the FSAR should simply summarize the results and submit/reference the details. That is all that is reasonably necessary or possible for descriptive analysis of this type, and the case is similar for the Analysis of Function Allocation.

Comment [NEI18]: The similar but not identical words in 4.4(10) of NUREG-0711 rev2 are that "*The functional requirements analysis and function allocation should be verified...*" The Industry correctly noted the disparity of wording between C.I.18 and 0711 at the 7/06 workshop. **The words in 0711 were taken by Industry as directions for Staff reviewers i.e., to review and confirm for themselves that the Applicant's analysis and conclusions are or are not reasonable.** By the rephrasing in C.I.18, the Staff may be indicating that this is what they meant (if not what they said) in 0711. However, the rephrasing places the Applicant in an analytic regressum until the Staff does what was expected in the first place; i.e., to accept or disconfirm the Applicant's analysis and conclusions. It is therefore requested that this added review guidance be deleted from C.I.18, and that instead, the Staff reviewer's responsibility for these items be clarified when NUREG-0711 is next revised.

C.I.18.4 Task Analysis (NUREG-0800 Ch.18 rev.1, Sec.II.A.4; NUREG-0711 rev.2, Sec.5)

Purpose

The purpose of this section of the FSAR is to document that the applicant's task analysis identifies the specific tasks that are needed for function accomplishment and their information, control, and task-support requirements.

Contents

The FSAR may state the objectives and scope, and summarize the methods and results of the analysis. Detailed methods and results may be provided in referenced reports. Analysis data may be retained and made available for NRC staff audit.

Comment [NEI19]: The means to identify RIHAs is HRA methodology, not TA scope; both are explained in 0711.

[4] The term "requirements" as used here and elsewhere in this document, refers to requirements that are established as part of the design process. The term "requirements" is not used in this context to denote "Regulatory Requirements." There are no regulatory requirements in this document, only review guidance.

The FSAR may summarize the methods used to analyze tasks.including the means by which tasks were derived from high-level descriptions to detailed task requirements. An example of the methods used to describe tasks and illustrate their relationships may be included in the summary.

A description of how the task analysis results were used as input to the design of HSI's, procedures, and training programs may be provided in referenced reports.

Added Review Guidance

The FSAR should describe the methods used to allocate tasks to members of the operating crew and how the skills necessary for task performance were determined.

The FSAR should describe the methodology and criteria used to identify a minimum inventory of alarms, displays and controls. Both task performance and instrumentation and control (I&C) criteria should be described.

C.I.18.5 Staffing and Qualifications (NUREG-0800 Ch.18 rev.1, Sec.II.A.5; NUREG-0711 rev.2, Sec.6)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.1, is to document that the applicant has analyzed the requirements for the number and qualifications of personnel in a systematic manner that includes a thorough understanding of task requirements and applicable regulatory requirements.

Contents

This section of the FSAR may describe how the staffing and qualifications activities address the requirements of 10 CFR 50.54 (i) through (m).

If an exemption from 10 CFR 50.54(m) is sought, the information related to such exemptions as identified in NUREG-0800 Sec.13.1.2 – 13.1.3 should be submitted.

Comment [NEI20]: The SRP gives the appropriate view of this subject, and includes the NUREG/CR-6838 reference deleted below.

The FSAR may summarize the methods used to analyze staffing and qualification requirements. Implementation plans and methodological details may be contained in referenced reports.

The FSAR may summarize the results of the Staffing Analysis. This should include enough detail to see how the methodology was implemented to provide the results. Detailed results may be referenced. Detailed data may be retained and made available for NRC staff audit.

Comment [NEI21]: FSAR contents are legally frozen, but staffing levels need flexibility to accommodate changing conditions and experience. Thus, staffing levels may be undesirable/infeasible FSAR contents. Cross-reference to Ch.13 or to introductory sections may be an appropriate alternative approach.

Deleted: The FSAR should provide the final staffing levels for all personnel identified in the above scope.

Added Review Guidance

None.

C.I.18.6 Human Reliability Analysis (NUREG-0800 Ch.18 rev.1, Sec.II.A.6; NUREG-0711 rev.2, Sec.7)

Purpose

The purpose of this section of the FSAR, in coordination with Section 19, is to document that the applicant has incorporated HRA results from the PRA into other activities of the HFE program, such that risk-important human actions have been thoroughly addressed in the design of the HFE aspects of the plant.

Contents

The FSAR may provide the importance measures, threshold criteria and bases, and the resulting list of risk-important human actions (HAs), and may summarize how the risk-important HAs and their associated tasks were identified and addressed by the various elements of the design process. Detailed HRA results, including the validation of the HRA assumptions, may be referenced. HRA data contained in the PRA may be retained and made available for NRC staff audit.

Added Review Guidance

A discussion of human actions related to passive systems and computer-based HSIs should be Included.

C.I.18.7 Human-System Interface Design (NUREG-0800 Ch.18 rev.1, Sec.II.A.7; NUREG-0711 rev.2, Sec.8)

Purpose

The purpose of this section of the FSAR is to document that the applicant has performed the process by which HSI design requirements are developed and translated to the detailed design of alarms, displays, controls, and other aspects of the HSI through the systematic application of HFE principles and criteria.

Contents

This section of the FSAR may describe the applicant's HSI design, and how it reflects state-of-the-art HFE principles. This description may consist of summaries that refer to separate reports describing objectives, scope, bases, methods, processes and results of HSI design. Detailed design data may be retained and made available for NRC staff audit. Such descriptions should address the topics below in response to the applicable review guidance:

- Objectives and Scope of HSI Design (NUREG-0711 rev.2, Sec.8.2)
- HSI Design Inputs (NUREG-0711 rev.2, Sec.8.4.1)
- Concept of Operations (NUREG-0711 rev.2, Sec.8.4.2)
- Functional Requirement Specification (NUREG-0711 rev.2, Sec.8.4.3)
- HSI Concept Design (NUREG-0711 rev.2, Sec.8.4.4)
- HSI Detailed Design and Integration (NUREG-0711 rev.2, Sec.8.4.5)

- HSI Tests and Evaluations (NUREG-0711 rev.2, Sec.8.4.6)

The FSAR may summarize and reference the following types of HSI technical documentation:

- Conceptual design / design basis documents
- Functional requirement (preliminary design) documents
- HSI style guideline documents
- System specification (detailed design) documents
- Engineering test reports

The procedures for use and maintenance of these documents may be retained and made available for NRC staff audit.

The FSAR may summarize the overall HSI design concept, its key features, and its concept of operations for the main control room, remote shutdown facility, and local control stations that are important to safety.

The FSAR may summarize the plant-specific implementation of the following safety aspects of the HSI:

• Safety function monitoring, e.g., safety parameter display system (SPDS)
• Periodic testing of protection systems actuation functions (Regulatory Guide 1.22)
• Bypassed and inoperable status indication for nuclear power plant (NPP) safety systems (Regulatory Guide 1.47)
• Manual initiation of protective actions (Regulatory Guide 1.62)
• Instrumentation for light-water-cooled nuclear power plants to assess plant and environmental conditions during and following an accident (Regulatory Guide 1.97)
• Instrumentation setpoints (Regulatory Guide 1.105)
• HSIs for the emergency response facilities, i.e. TSC & EOF (NUREG-0696)
• Minimum inventory of fixed position alarms, controls and displays

Added Review Guidance

Identify how the HSI characteristics minimize fatigue.

HSI Change Process: Describe the process, after the plant is in operation, by which (1) HSIs are modified and updated,(2) temporary HSI changes are made (such as set point modification); and (3) operator defined HSIs are created (such as temporary displays defined by operators for monitoring a specific situation). The procedures governing permissible operator-initiated changes to the HSI should be described. The criteria used for determining that an HSI change or modification should come under the control of the formal engineering change process should be described.

Describe the plant-specific implementation of the following safety aspects of the HSI: Minimum inventory of fixed position alarms, controls and displays.

Comment [NEI22]: Indicated below as "Added Review Guidance" since NUREG-0711 Sec.5.4(2) does not refer to "Minimum Inventory in the same way. Guidance is acknowledged lacking by Staff.

Comment [NEI23]: The increased regulatory concern for fatigue is acknowledged. However, the fatigue construct is either very narrowly defined (e.g. to a specific neuromuscular response) or very broadly inferred (e.g. as a presumed result of extended working hours). In any case, it is unclear what practical measures or criteria can be applied to show that fatigue has been ever been "minimized" in a complex environment. Incorporation of HFE guidance in design is expected to reduce various sources of fatigue, but it is also an unavoidable result of work. Thus, the practical treatment of fatigue normally is limited to identifying extreme or problematic sources and mitigating (not minimizing) them. Recommend deleting this added review guidance until a more practical formulation can be given.

C.I.18.8 Procedure Development (NUREG-0800 Ch.18 rev.1, Sec.II.A.8; NUREG-0711 rev.2, Sec.9)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.5, is to document that the applicant's procedure development program incorporates HFE principles and criteria, along with other design requirements, to develop procedures that are technically accurate, comprehensive, explicit, easy to use, and validated, and in conformance with 10 CFR 50.34(f)(2)(ii).

Contents

This section of the FSAR may describe how the procedures program addresses the requirements specified in 10 CFR 50.34(f)(2)(ii).

Comment [NEI24]: The 10CFR50 citation appears here under both "Purpose" and "Content" as an artifact of the rewrite (words were both in 0800 summary and original C.I.8 wording). In general, it is suggested that such citations be made only once per element, in a standard location, and only where they are unambiguously applicable in a legal sense.

The procedure writers' guide that establishes the process for developing procedures may be referenced.

The FSAR may summarize the results of the procedure development program. The actual procedures may be retained and made available for NRC inspection.

Added Review Guidance

None.

C.I.18.9 Training Program Development (NUREG-0800 Ch.18 rev.1, Sec.II.A.9; NUREG-0711 rev.2, Sec.10)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.2, is to document that the applicant has a systematic approach for the development of personnel training that complies with the requirements for applicant training programs established in 10 CFR 50.120.

Contents

For each of the following areas, the FSAR may summarize the training program, including plans, methods and results :

- Objectives and Scope of Training Program Development (NUREG-0711 rev.2, Sec.10.2 & 10.4.1(2))
- Organization of Training (NUREG-0711 rev.2, Sec.10.4.2)
- Learning Objectives (NUREG-0711 rev.2, Sec.10.4.3)
- Training Program Design (NUREG-0711 rev.2, Sec.10.4.4(1))
- Evaluation of Training (NUREG-0711 rev.2, Sec.10.4.5)
- Periodic Retraining Program (NUREG-0711 rev.2, Sec.10.4.6)

Implementation plans may be contained in referenced reports. Detailed training procedures and products may be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.10 Verification and Validation (NUREG-0800 Ch.18 rev.1, Sec.II.A.10; NUREG-0711 rev.2, Sec.11)

Purpose

The purpose of this section of the FSAR is to document that the applicant's verification and validation (V&V) activities sufficiently confirm that the HSI design conforms to HFE design principles, and that it enables plant personnel to successfully perform their tasks to achieve plant safety and other operational goals.

Contents

For each of the following V&V activities, the FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and results:

- Operational Conditions Sampling (NUREG-0711 rev.2, Sec.11.4.1)
- Design Verification (NUREG-0711 rev.2, Sec.11.4.2)
- Integrated System Validation (NUREG-0711 rev.2, Sec.11.4.3)
- Human Engineering Discrepancy Resolution (NUREG-0711 rev.2, Sec.11.4.4)

Detailed implementation plans and results reports for the above activities may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.11 Design Implementation (NUREG-0800 Ch.18 rev.1, Sec.II.A.11; NUREG-0711 rev.2, Sec.12)

Purpose

The purpose of this section of the FSAR is to document that the applicant's as-built design is confirmed to conform to the verified and validated design that resulted from the HFE design process.

Contents

For each of the following activities, the FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and results:

- V&V of aspects of the design not able to be completed as part of the HSI V&V program (NUREG-0711 rev.2, Sec.12.4.6(1))
- confirmation that the as-built HSI, procedures, and training conform to the approved design (NUREG-0711 rev.2, Sec.12.4.6(2))
- all HFE issues in the tracking system are appropriately addressed (NUREG-0711 rev.2, Sec.12.4.6(3))

Detailed implementation plans and results reports for the above activities may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

The design implementation methodology cannot be completed until the plant construction is complete. Therefore, at the time of COL application the results section of the FSAR may describe the final documentation that will be developed to show successful completion of this activity.

Added Review Guidance

None.

C.I.18.12 Human Performance Monitoring (NUREG-0800 Ch.18 rev.1, Sec.II.A.12; NUREG-0711 rev.2, Sec.13)

Purpose

The purpose of this section of the FSAR is to document that the applicant has prepared a human performance monitoring strategy for determining that no significant safety degradation occurs because of any changes that are made in the plant and to confirm that the conclusions that have been drawn from the Integrated System Validation remain valid over time.

Contents

The FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and processing of results for Human Performance Monitoring.

Detailed implementation plans and procedures for Human Performance Monitoring may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

Human Performance Monitoring is an operational program that begins after plant operation commences. Therefore, the results section of the FSAR may describe the documentation to be maintained after the program is implemented.

Added Review Guidance

None.

Draft Regulatory DG-1145, "Combined License (COL) Applications for Nuclear Power Plants (LWR Edition)"

November 30, 2006

Eric R. Oesterle, PM
NRO/DNRL/NGIF

ATTACHMENT 2

DG-1145 Overview

Purpose

- Provide guidance to potential applicants on format and content for a combined license (COL) application pursuant to 10 CFR 52
- COL referencing neither a certified design (CD) nor an early site permit (ESP)
- COL referencing a CD but not an ESP
- COL referencing a CD and an ESP

DG-1145 Overview (cont'd)

Background and Developmental Basis

- Industry guidance for COL applications (NEI 04-01)
- NEI 04-01 provided guidance for "base case" COL application
- NRC interactions with external stakeholders identified several COL application scenarios
- Staff recognized the need for more comprehensive guidance for COL applicants

DG-1145 Overview (cont'd)

Development Basis

- RG 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)
- Updated SRP revisions (including draft 1996 updates)
- Draft NEI 04-01 guidance for COL applications
- NRC design certification and ESP experience
- SECY papers and associated SRMs

DG-1145 Overview (cont'd)

Development Basis (cont'd)

- Proposed Part 52 rule issued March 13, 2006 (71 FR 12782)
- Monthly public workshops (March 2007 – September 2007) ~ 500 comments
- All draft work-in-progress sections publicly available via NRC's website by June 30, 2006
- DG-1145 issued for 45-day public comment period on September 7, 2006 (71 FR 52826)

DG-1145 Overview (cont'd)

Format and Structure

- Part C.I – guidance for a COL applicant that references neither a CD nor an ESP (consistent with proposed 10 CFR Part 52.79)
- Part C.II – additional technical information (consistent with proposed 10 CFR Part 52.80)
- Part C.III – COL applicants referencing CDs and/or ESPs
- Part C.IV – Miscellaneous Topics

DG-1145 Overview (cont'd) Format and Structure – Part C.I

C.I.1 Introduction and General Plant Description*

C.I.2 Site Characteristics

C.I.3 Design of Structures, Systems, Components and Equipment

C.I.4 Reactor

C.I.5 RCS and Connected Systems

C.I.6 Engineered Safety Features

C.I.7 Instrumentation and Control

C.I.8 Electrical Power

C.I.9 Auxiliary Systems

C.I.10 Steam and Power Conversion System

C.I.11 Radioactive Waste Management

C.I.12 Radiation Protection

C.I.13 Conduct of Operations

C.I.14 Verification Programs

C.I.15 Transient and Accident Analyses

C.I.16 Technical Specifications

C.I.17 Quality Assurance and Reliability Assurance

C.I.18 Human Factors Engineering

C.I.19 Probabilistic Risk Assessment Information and Severe Accidents*

DG-1145 Overview (cont'd)

Format and Structure – Part C.II

C.II.1 - Probabilistic Risk Assessment (PRA)

C.II.2 - Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

C.II.3 - Environmental Report

DG-1145 Overview (cont'd)

Format and Structure – Part C.III

C.III.1 - Information Needed for a COL Application Referencing a CD (consistent format with C.I)

C.III.2 - Information Needed for a COL Application Referencing a CD and an ESP (consistent format with C.I)

C.III.3 - Finality of an EIS Associated with an ESP

C.III.4 - COL Action Items

C.III.5 - Design Acceptance Criteria

C.III.6 - COL Application Timing

C.III.7 - ITAAC for COL Applications Referencing a CD and/or an ESP

DG-1145 Overview (cont'd)

Format and Structure – Part C.IV

C.IV.1 - COL Application Acceptance Review Checklist
C.IV.2 - Submittal Guidance for COLs
C.IV.3 - General Description of Change Process
C.IV.4 - Operational Programs
C.IV.5 - General and Financial Information
C.IV.6 - Limited Work Authorizations and Site Redress Plan
C.IV.7 - Pre-Application Activities
C.IV.8 - Generic Issues
C.IV.9 - deleted
C.IV.10 - Regulatory Treatment of Non-Safety Systems (RTNSS)
C.IV.11 - relocated to App. 1 (responses to public workshop questions)
C.IV.12 - Applicability of Industry Guidance

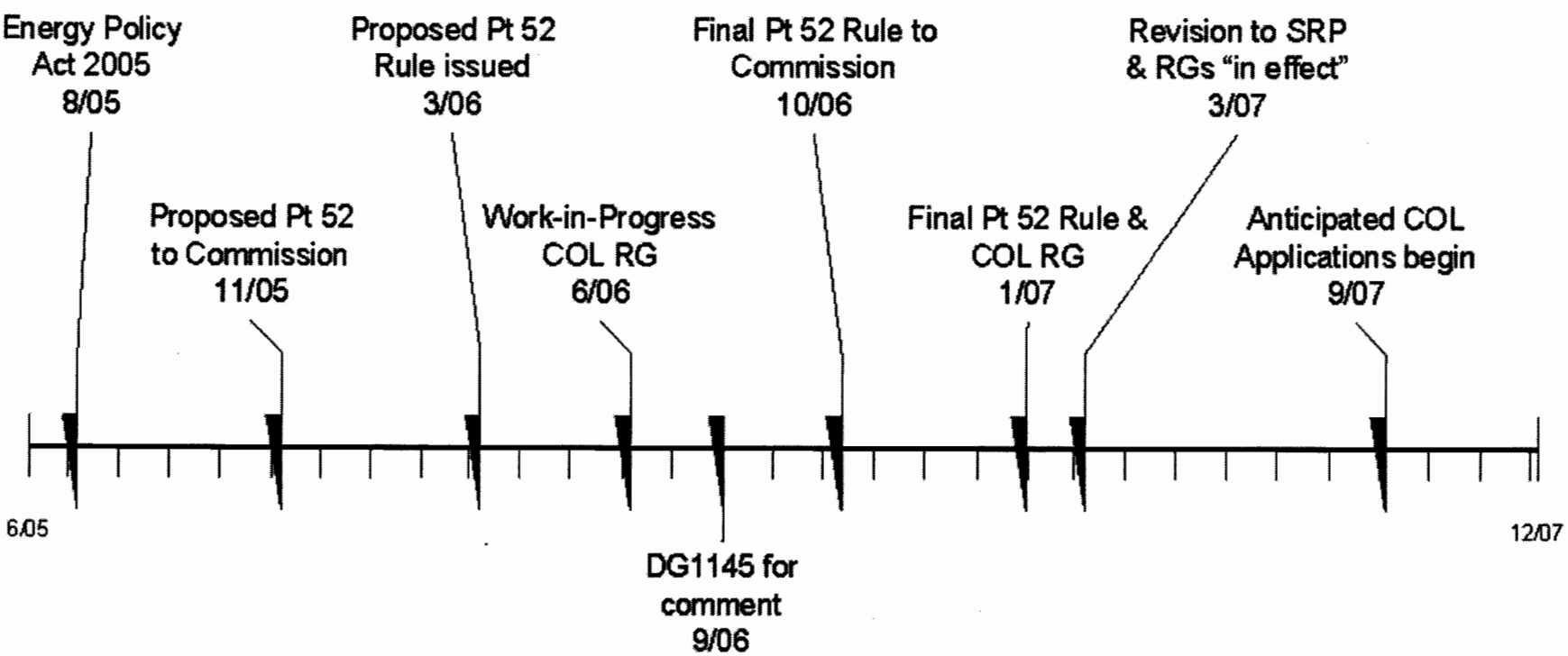
DG-1145 Overview (cont'd)

Status

- Comment period on DG-1145 closed on October 23, 2006
- Approximately 700 total comments received
- Staff is currently working to resolve public comments and revise DG-1145, as appropriate
- Process in place to ensure consistency between DG-1145 and the SRP and Reg. Guide updates
- Plan to publish DG-1145 final as RG 1.206 following incorporation of public comments and final issuance of the Part 52 rule
- Staff considering additional public forums to update external stakeholders on RG 1.206 prior to publication

DG-1145 Overview (cont'd)

New Reactor Licensing Infrastructure Timeline



NRCREP - Notice of Availability Draft Regulatory Guide DG-1145

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October 20, 2006

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Washington, DC 20555-0001

PROJECT NUMBER: 689

SUBJECT: Notice of Availability Draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)." ("DG-1145") 71 Fed. Reg. 52,826 (Sept. 7, 2006).

The Nuclear Energy Institute [1] (NEI) submits the following comments on the NRC's draft Regulatory Guide DG-1145, *Combined License Applications for Nuclear Power Plants (LWR Edition)* in response to the subject *Federal Register* notice.

The industry commends the NRC staff for its work in developing the 1100-page DG-1145 in a nine-month period, including the holding of numerous public meetings seeking public input and comment on the guidance as it was being developed. These interactions have resulted in a draft that better reflects the NRC's new Part 52 licensing process.

Sincerely,

Adrian P. Heymer
Senior Director, New Plant Deployment
Nuclear Generation Division
Nuclear Energy Institute
(202) 739-8094
aph@nei.org

[1] The Nuclear Energy Institute ("NEI") is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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NUCLEAR ENERGY INSTITUTE

Adrian P. Heymer
SENIOR DIRECTOR, NEW PLANT DEPLOYMENT
NUCLEAR GENERATION DIVISION

October 20, 2006

Rules and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

PROJECT NUMBER: 689

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The industry commends the NRC staff for its work in developing the 1100-page DG-1145 in a nine-month period, including the holding of numerous public meetings seeking public input and comment on the guidance as it was being developed. These interactions have resulted in a draft that better reflects the NRC's new Part 52 licensing process.

The industry recognizes that the September 2006 draft is still a work-in-progress and the open issues are numerous, as reflected in our detailed comments that are described in the Enclosure. As a result, it is important that public interactions continue so that a common understanding is established between the NRC staff and the industry on what constitutes a complete, practical and quality combined license application.

Our main comments are:

1) The guidance seeks information for combined license (COL) applications that will not be available at time of a COL application submittal. In each case, we believe that alternative information may be provided in the COL application to support

[1] The Nuclear Energy Institute ("NEI") is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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NRC safety reviews or the information sought may be verified by the staff as part of design implementation inspections after COL issuance.

2) Part III of the guidance, which assumes a design certification is referenced, seeks COL application information on matters that have been resolved during the design certification proceedings. This is contrary to the Part 52 principle of design certification finality, which provides that no additional detail is required in COL applications on the approved standard design. Examples of this are identified in Comments C.III.1.47-48 in the enclosure.

3) The guidance seeks similar information about off-site AC power sources for both evolutionary and "passive" plant designs. Passive plants do not rely on off-site AC power for any safety function, as a result the information required about off-site power sources should be much less. Comment C.1.8.5.

4) Several sections of draft DG-1145 refer to corresponding Standard Review Plan (SRP) Sections that are currently being drafted and not available for review at this time. As such, the industry is unable to provide meaningful comment at this stage. This comment emphasizes the importance of holding additional public meetings on DG-1145 and specific SRP sections.

5) Plant-Specific PRA:

   a. *Large Release Frequency (LRF):* The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, *PRA Internal Events,* which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting.

      A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how it would be applied. This would introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.

b. *Conditional Containment Failure Probability (CCFP):* The draft guidance proposes the CCFP of 0.1, given a core melt. For advanced designs, whose calculated internal event core damage frequency is approximately 10^{-7}/year, the CCFP would translate into a containment failure frequency of approximately 10^{-8}/year. It is impractical and unreasonable to attempt to design a containment structure to withstand naturally occurring ultra-low frequency events of this magnitude, for example a one in a 100 million-year earthquake. Hence, as interpreted by the industry, the proposed CCFP could not be met. There is a need for further industry-NRC interaction on developing a practical containment performance metric that could be used in operational licensing evaluations for designs that have very low core-damage frequency.

c. *COL PRA Information:* The guidance should clarify that no additional plant-specific PRA information is required to be included in the COL application where the design certification PRA bounds the site- and plant-specific parameters.

6) ITAAC:

a. Section C.II.2 contains numerous examples of incorrect criteria for establishing ITAAC. The proposed criteria do not meet the well established criteria for ITAAC described in SRP 14.3 and in Generic Design Control Documents, Section 14.3. ITAAC are established to verify top-level (Tier 1) design descriptions and performance standards. Examples of this problem are in Section C.II.2.2.5 and Section C.II.2, Attachment A, on ITAAC for Instrumentation and Controls, which call for ITAAC on "cabinet layout and wiring" and other second-tier design information.

b. The guidance should not call for additional ITAAC at the COL stage on matters that were resolved through a referenced design certification. This would be contrary to the Part 52 design finality principle. At the time of COL, ITAAC are developed for emergency planning and the site-specific design, including physical security features, as appropriate, in accordance with the criteria in SRP Section 14.3. Moreover, whether a design certification is referenced or not, the lack of complete detailed design information in a COL application is not a basis for requiring ITAAC. Applications will contain sufficient information to support required NRC safety findings, recognizing the NRC staff will have an opportunity later to verify the design implementation through the Construction Inspection Program.

7) DG-1145 contains placeholders in Sections C.II.3 and C.III.3 for guidance on COL application environmental reports. Attaining a common understanding on environmental matters, including how Early Site Permit environmental finality will be assessed at the time of a COL, is critical for assuring an effective and efficient licensing proceeding. Also, the benefit and effectiveness of the Early Site Permit subpart in Part 52 will hinge on how this section will be interpreted by the industry and NRC staff. The importance of these two sections underscores the importance of having additional public meetings.

8) NRC rules and DG-1145 guidance for addressing Regulatory Guides, SRPs and operating experience require an applicant to address the guidance in effect six months before docket date. However, "six months before docket date" is not a fixed date known by either the NRC or applicant. The NRC staff has stated that it has been and will continue to be the NRC practice to implement this requirement as "six months before application date." DG-1145 and existing regulations should be modified to reflect NRC practice and intent going forward. (Comments C.I.1.10 and C.III.1.9)

9) Appendix I documents NRC responses to numerous comments raised in connection with the DG-1145 workshops. In many instances, the NRC staff agreed with the comment but declined to change or modify the guidance. For example, the NRC staff response to workshop Comment C.I.13.1.2.1-1 agreed that a high level organization chart is sufficient to provide in Section 13.1 of the FSAR. However, the staff declined to modify Section C.I.13.1, which currently seeks a more detailed organization chart than COL applicants will have developed at the time of application submittal.

   It is vital that DG-1145 document the understandings reached during the workshops and public comment process. Failure to do so will cause misinterpretations in the future, unnecessarily prolonging licensing proceedings.

Attachment 1 to the Enclosure provides mark-ups of specific DG-1145 sections consistent with the comments in Enclosure 1. The specific sections are: C.III.8, Electric Power; C.I.11, Radioactive Waste Management; C.I.17.6, Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule; and C.I.18, Human Factors Engineering.

The industry comments in the enclosure are organized by DG-1145 section and prioritized high, medium and low (1, 2 or 3). The comments fall into four general categories ("Basis Codes").

1) The guidance does not conform with the regulations
2) The guidance seeks information that will not be available at the time of COL application submittal and is not necessary to support required reasonable assurance findings
3) The guidance is not consistent with other NRC guidance
4) Clarification is needed

Where a comment is a follow-up to an NRC response provided in Appendix I of DG-1145, we have included the NRC's Appendix I comment number for reference.

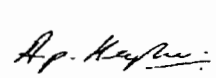
In the public meetings on September 22 and October 3, 2006, we discussed three steps for continuing the public engagement.

1. Hold public meetings in December 2006 and, if necessary, in January 2007, to discuss the disposition of the stakeholder comments and open items.
2. Post a draft final version that reflects the reconciliation of public comments on the NRC website as soon as possible.
3. Hold a final meeting following issuance of the final regulatory guide to explain changes made in finalizing the document, including those changes made to conform the guidance to the final Part 52 rule.

The industry is committed to continue to work with the NRC staff on the development of guidance for COL applicants. This will assure clarity and a common understanding of the key elements of the regulatory infrastructure, including DG-1145, the Standard Review Plan, Part 52 and related NRC regulations. This is essential for assuring the development of quality combined license applications and for assuring NRC reviews are conducted in the most effective and efficient manner.

If there are questions on these comments, please contact Russ Bell at 202-739-8087; rjb@nei.org or me at 202-739-8094; aph@nei.org.

Sincerely,



Adrian P. Heymer

Enclosure

c: Mr. David B. Matthews, NRC
Mr. Thomas A. Bergman, NRC
Mr. Eric R. Oesterle, NRC
Document Control Desk

ENCLOSURE 1

INDUSTRY COMMENTS

DG-1145, "COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)

PUBLISHED FOR COMMENT SEPTEMBER 7, 2006

The attached Excel Spreadsheet contains detailed comments on the draft Regulatory Guide, DG-1145, published September 7, 2006. Comments are identified by a comment number in the first column that includes the part and section number from the guide. The second column identifies the specific, applicable section or paragraph in the guide and the third column identifies the related NRC I. D. number from Appendix I, where applicable. Column 4 is the text of the comment that identifies the industry issue.

Columns 5 and 6 give a priority and basis for recommended changes. Priority 1 comments are the most significant and Priority 3 are the least significant. The Basis Categories are:

Basis Category	Description
1	The guidance does not conform with the regulations
2	The guidance seeks information that will not be available at the time of COL application submittal and is not necessary to support required reasonable assurance findings
3	The guidance is not consistent with other NRC guidance
4	Clarification is needed
5	Other - specify

Column 7 of the table indicates suggested changes to the guidance.

Attachment 1 provides proposed mark-ups of four sections of DG-1145 that reinforce the comments in the main body of the enclosure. The four sections are:

1) Section C.III.8, "Electrical Power"
2) Section C.I.11, "Radioactive Waste Management"
3) Section C.I.17.6, "Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule"
4) Section C.I.18, "Human Factors Engineering"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
Gen 1	Various		NON-FSAR MATERIAL REQUESTS - The document continues to identify in the FSAR information requests for material that does not belong in the FSAR documents. Some of these are listed below, but this should not be considered a comprehensive listing. It should be clear when "non-FSAR" material is requested, that it can be provided separately from the FSAR.: C.I.6.1.1.1, (2) test data & experience C.I.8.3.1.3, software C.I.8.3.1.3, e-copy of the model C.I.10.2.3.3, procedures C.III.1.10 – 2.3.3, met data C.III.1.10 – 2.5.2.5, database C.III.1.10 – 3.11.3, test results documents C.III.1.10 – 3.11.4, test results documents C.III.1.10 – 3.11.5, test results documents C.III.1.10 – 3.11.6, test results documents C.III.1.10 – 7.1.1 via C.I.7.1-A, Item (7) software design outputs C.III.1.10 – 13.1.1.3, resumes C.III.1.10 – 13.3.1, copy of referenced E plans and ETE C.III.1.10 – 13.3.1, cross-reference to requirements, guidance, other criteria, etc C.III.1.10 – 13.3.1, EPIPs C.III.5.1.1, item 3, reference documents C.III.5.1.1, item 4, implementation docs C.III.5.1.1, item 5, confirmation info and output documents C.III.5.1.1, item 6, documents that demonstrate EQ	1	4	Revise as indicated
Gen 1 (continued)	Various		C.III.5.1.1, item 7, demonstration info C.III.5.1.1, item 8, demonstration info C.III.5.1.1, item 9, reference documents Each of the C.III items likely has a similar counterpart request in the C.I section.	1	4	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.1	C.I.1		Guidance refers to the need to identify net electrical output for rated and design thermal power. Of what value is this information, and to what extent is it considered binding as part of the FSAR? The net electrical output will be influenced by many factors such as house loads that may not be known at the time of application. Also, what is the relevance of net "design" output if different from rated output?	2	4	Indicate this as approximate and provided for information only.
C.I.1.2	C.I.1.1.1		The phrase "whether the plant is colocated with existing operating nuclear power plants" should be clarified as to the parameters of interest. Does it apply to a new unit outside the protected area for the existing facility? Outside the exclusion area boundary? Does the unit's status matter in the definition of "operating"?	2	4	Replace with "...including the extent (if any) to which the plant is collocated and/or interfaces with a licensed, existing nuclear power plant (i.e., within the existing plant's protected area or exclusion area boundary)."
C.I.1.3	C.I.1.1.4		These requirements are less detailed than those in C.I.1.1 - while the value of this information and extent to which it is it considered binding as part of the FSAR is not clear, the information indicated as required should at least be consistent.	2	3	Delete section, or at least make two sections consisten
C.I.1.4	C.I.1.1.5		Absent a clear regulatory basis or relevance of the schedule information requested here, this requirement should be deleted.	1	4	Submitting a COL application is not a commitment to construct a plant. Rather than requesting a schedule for completion, this section should request a regulatory commitment for the COL applicant to provide construction and startup information when the decision is made to construct a plant.
C.I.1.5	C.I.1.1.6.1		(1) "guides" is plural but DG-1145 is the only guide indicated (2) should indicated conformance with DG-1145 ensures/obviates need to address RG-1.70 (3) "DG-1145" should be replaced with RG number when available	3	4	Consider replacing 1.1.6.1 with "conformance with format and content guidance of this regulatory guide."
C.I.1.6	C.I.1.1.6.2		Ambiguous reference to SRP conformance	2	4	Insert "...approved as of six months prior to submittal date of application" after "(NUREG-0800)"
C.I.1.7	C.I.1.2		In the last sentence change the word "problems" to "considerations." The example given and the context of the paragraph is to highlight issues needing special attention – these will not necessarily be problems.	3	4	Change the word "problems" to "considerations".
C.I.1.8	C.I.1.8		There are several examples of using a double negative sentence construction or missing words. Also several sentences are not clear. Revise the 3rd sentence to read: "By definition, there are no interface requirements between standard designs and site-specific designs for a complete facility". The 4th sentence needs to clarify what "these documents" refers to. Revise the 5th sentence: Certified design applications should reference the applicable documents. The 6th and 7th sentence: COL applicants that reference a certified design and/or early site permit are the only applicants that will have interface requirements. COL applicants that do not reference a certified design will need to submit design information on the new facility.	2	4	Revise as indicated

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.9	C.I.1.9.1		C.I.1.9.1 repeats the proposed regulation to provide an assessment of "regulatory guides" conformance. This guidance could be modified to reflect the specific RG Divisions and/or specific RGs expected to be addressed to comply with this regulation. For example, Division 2, Research and Test Reactors, would not be applicable; so, we should eliminate Division 2 assessments since they don't address design or operation of commercial power reactors. Further, within Division 4, RG 4.2 addresses Environmental Reports and is not an appropriate topic to be addressed in the FSAR. See also C.III.1 – 1.9.1.	2	4	Revise as indicated
C.I.1.10	C.I.1.9		To determine the scope of applicable RGs, SRPs, generic issues and operating experience to be addressed in the COLA, the staff has stated that it is their current practice and intent going forward that the standard applied will be six months prior to the application date, as the applicant has no control over when the application is docketed. (This comment is typical of several instances in C.I.1.)	2	4	Acknowledge standard to be applied as a matter of practice will be guidance in effect "six months prior to application date." The NRC should initiate a rulemaking to fix the regulations.
C.I.1.11	C.I.1.9.1		Use of "any" in "of any departures from the guidance contained in the NRC's regulatory guides," is unduly broad.	2	4	Change to say "...identification and description of significant departures..."
C.I.1.12	C.I.1.9.2		Use of "any" in "any differences in design features" is unduly broad	2	4	Change to say "...significant differences in design features..."
C.I.1.13	C.I.1.9.3		Generic Issues. Improvements regarding guidance for the review of generic issues is noted in C.IV.8 (9/1/06); however, as recognized by the Staff, other related sections in C.I and C.III.1/2 have not yet been updated and are, therefore, inconsistent. In addition, guidance in C.IV.8 also requires additional clarification regarding the use of NUREG-0933, Appendix B. Additional comments are provided on C.IV.8 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed. 3. In general, since guidance should be stated once and then referenced as needed, it is recommended that detailed guidance on the scope of generic issue review be included in C.IV.8. Section C.I.1.9.3 should only provide a summary and reference C.IV.8 for detailed guidance.	2	4	C.I.1.9.3 should be revised as follows: 1. Delete statement that C.IV.8 contains a listing of generic issues. 2. Clarify NRC guidance to say that the scope of generic issues to be included in the COLA is restricted to those issues for which a resolution has been reached. 3. Provide only summary guidance in Section C.I.1.9.3. Refer reader to C.IV.8 for more detailed guidance on generic issues.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.1.14	C.I.1.9.4.1		This section states "Applicants for certified designs or combined licenses are required to address comparable international operating experience in accordance with proposed 10 CFR 52.47(a)(19) [52.47(a)(22) in version released 27 Sep 2006] and 10 CFR 52.79(a)(37), respectively. To the extent that the design (or portions thereof), for which an applicant seeks a design certification or COL, originates or is based on international design, the application should address how international operating experience has contributed to the design process."	1	1	Revise C.I.1.9.4 to make it consistent with proposed 10 CFR Part 52 by: 1) eliminating subsection C.I.1.9.4.1; and 2) adding a statement at the end of C.I.1.9.4 indicating that an applicant may provide the necessary operating experience information by addressing international operating experience as an alternative to addressing generic letters and bulletins.
C.I.1.14 (continued)	C.I.1.9.4.1		NRC's own procedures (e.g., LIC-401) require them to factor in international OE into their own generic OE program; this is implicitly addressed in our evaluation of the NRC's OE documents. Therefore an additional requirement for the applicant to evaluate international operating experience in addition to generic letters / bulletins and should not be required. Further, the draft guide requires this information only from some applicants; those whose design originates or is based on international design. It is inequitable to impose this additional requirement on designs of "foreign" heritage, because any assessment of "heritage" (i.e., the extent to which a domestic design is "based on" a "foreign" design) is subjective, as is the assessment of applicability of international OE to any given domestically licensed design. NRC disposition of the industry's May 30 comment in this regard on the Part 52 rulemaking is pending.	1	1	see above
C.I.1.15	C.I.1.9.5		The following documents are listed twice: SECY-91-262 SECY-92-053 SECY-92-092 SECY-93-087 SECY-94-084 SECY-94-302	3	5	Delete redundant entries
C.I.2.1	C.I.2		The last sentence of the first paragraph is ambiguous and requires clarification in that it states that the "adequacy of site characteristics need to be addressed from a safety viewpoint. " The plant design and operation needs to be discussed from a safety viewpoint relative to site characteristics.	3	4	Clarify statement to indicate that information related to site characteristics such as frequency, probabilities and magnitude may be used to bolster statements pertaining to adequacy of facility design.
C.I.2.2	C.I.2.4.5.1		RG1.70 calls for the determination of a more severe meteorological wind system than actually recorded...based upon meteorological reasoning. DG1145 does not refer to the ability to utilize meteorological reasoning to exclude "incredible" events.	1	4	Request Guidance with respect to limits relative to use of meteorological reasoning as a basis to support conclusions.

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C.I.2.3	C.I.2.4.12.3	C.I.2.4-1	This section tends to comply with RG1.70 section 2.4.13.3 in terms of content requirements. DG1145 requires conservative analysis be performed of all groundwater pathways for a liquid effluent release; RG1.70 requires a conservative analysis of postulated accidental release of liquid radioactive material at the site. Liquid radioactive effluent may only be located in specific areas of the plant (holding tanks or along designated haul paths thereby only warranting an analysis in the general vicinity of groundwater flow. DG1145 requires analysis of all groundwater pathways.	1	4	Requires clarification as to intent. If we are required to evaluate all pathways then this could be a considerable effort.
C.I.2.4	C.I.2.4.12.5 (1)		This Section is compliant with the requirements of RG1.70 section 2.4.13.5 with the exception that DG1145 uses the terminology "Site Characteristics in lieu of the RG1.70 terminology "Design Bases" interchangeably. This is confusing.	2	4	Clarify use of "Site Characteristic " terminology in DG1145
C.I.2.5	C.I.2.4.12.5 (2)e		RG1.70 defines the design basis groundwater level whereas DG1145 does not.	3	4	Employ RG1.70 definition of groundwater level
C.I.2.6	C.I.2.1.3.1		The subject section calls for current "residential population" to be indicated on appropriate maps. Census data would generally be used for this population segment and would likely include not only "residential" (strictly speaking) but also other persons, such as those in boarding schools, colleges, universities, etc. A more appropriate and clearer term would be "resident population" consistent with the use of "resident" in Reg. Guide 4.2 and census bureau terminology	1	4	To better align this guidance with Reg. Guide 4.2 and census bureau terminology, change "residential population" to "resident population."
C.I.2.7	C.I.2.2.3.1		"Accident category (1)" discusses the consideration of potential missiles generated by explosions involving hazardous material. Category (1) in Section C.I.2.2.3.1 could be read to say that an evaluation of missiles should be considered regardless of the blast over-pressure prediction. However, per Reg. Guide 1.91, (referenced in Section C.I.2.2.3.1), "If the overpressure criteria of Reg. Guide 1.91 is exceeded, the effects of missiles must be considered." Furthermore, even if the blast overpressure criteria is not met, it is reasonable that missiles not be evaluated if the probability of occurrence is shown to be less than 10-7 per year, per C.I.2.2.3.1. A similar comment would pertain to accident category (2), delayed detonation of flammable vapor cloud as well.	2	4	It is recommended that Section C.I.2.2.3.1 be revised to clarify explicitly that missile evaluations need not be provided in the FSAR if the blast overpressure criteria is met or if the probability of occurrence of the subject event is less than 10-7 per year.

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C.I.2.8	C.I.2.3.3		Section C.I.2.3.3 prescribes the time for which data must be collected and "provided at docketing." Docketing occurs after submittal and completion of the Staff's acceptance review. It's assumed that the Staff intended "application" and not "docketing." Furthermore, as a practical matter, data collection must conclude well before the application submittal goal to allow sufficient time for data quality review, analysis, and development of required FSAR material.	1	4	Revise the subject section to say "provided at the time of the COL application." And clarify the guidance to recognize that actual data collection must be concluded in time to allow for appropriate data review, analysis, etc.
C.I.2.9	C.I.2.3.3		The industry concurs with the Staff response to comment C.I.2.3.3-1 regarding the COL applicant's providing at least one annual cycle of meteorological data with the application and subsequent submittal of the complete 2-year data set when collected. However, the Staff elected no to reflect this disposition via change in DG-1145.	2	4	It is anticipated that the subject approach, discussed by the Staff in response to comment C.I.2.3.3-1, will likely be often adopted by COL applicants proposing a site without an active meteorological tower (such as a green field or site with partial construction). Therefore, it is recommended that this disposition be explicitly described as an acceptable alternative in C.I.2.3.3 of the Guide.
C.I.2.10	C.I.2.5.1.2		The scale of the maps requested in the subject guidance is far too large for the needed purpose. the scale requested will require up to 4-6 large "D" size plates in the COLA FSAR. Reg. Guide 1.165 does not require such large scale maps. The guide provides the option for smaller scale maps, as appropriate.	3	1	Revise C.I.2.5.1.2 to say that maps of 1:50,000 or smaller, as appropriate, should be provided.
C.I.3.1	C.I.3.6.3	C.I.3.6.3-5	Statement of (2)(a) requires to "provide as built drawing(s) of piping geometry. It is impossible to address this requirement at the time of COL application.	2	2	Revise as follows: "Provide a general description and or references to applicable codes and standards to be used for piping design."
C.I.3.2	C.I.3.7.1.1.1		Typo: in (1), change "fee" to "free"	3	5	Revise as noted
C.I.3.3	C.I.3.7.2.1		Although this section and other sections use "Seismic Category II" as one of SSCs category of seismic design, the definition is not specified.	2	3	Add definition of "Seismic Category II".

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C.I.3.4	C.I.3.7.1.1.1, C.I.3.7.1.1.2, & C.I.3.7.2.5		All these sections have requirements for ground motion time histories to meet spectrum matching for multiple damping values and to envelop a target PSD (Power Spectral Density). These requirements are applicable if site-independent RG 1.60 ground spectra are considered as design spectra. For COL plants a site-specific SSE ground spectrum will be developed from a PSHA (Probabilistic Seismic Hazard Analysis) in accordance with RG 1.165 or equivalent. In a recent NRC-sponsored study NUREG/CR-6728, Technical Basis for Regulatory Guidance on Design Ground Motions: Hazard- and Risk-Consistent Ground Motion Spectra Guidelines, spectrum matching for damping other than 5% and target PSD enveloping are not required.	2	4	Implement NUREG/CR-6728 recommendations
C.I.3.5	C.I.3.7.2.13 & C.I.3.7.3.8		These two sections address same subject for dams.	3	4	Eliminate either section.
C.I.3.6	C.I.3.7.4.6		Description of implementation program for the seismic monitoring program is not a requirement in the existing SRP.	1	2	This program would not be available at the time of COL application and is not necessary to support COLA.
C.I.3.7	C.I.3.8.4.5		ANSI/AISC N690-1984 is mentioned. Does it mean that only the 1984 edition is acceptable?	3	4	Please clarify.
C.I.3.8	C.I.3.2.1 (3rd para, 2nd sentence)		Clarify what sections of Regulatory Guide 1.29 provide recommendations for Seismic Category I SSCs.	3	4	Add "Positions C.1 and C.3" after Regulatory Guide 1.29 in the second sentence.
C.I.3.9	C.I.3.2.1 (3rd para, 5th sentence)		Clarify what sections of Regulatory Guide 1.29 provide recommendations for non-Seismic Category I SSCs whose failure could reduce the functioning of a Seismic Category I SSC or could result in incapacitating injury to control room personnel.	3	4	Add "Positions C.2 and C.4" after Regulatory Guide 1.29 in the fifth sentence.
C.I.3.10	C.1.3.2.2 (3rd para)		Add Regulatory Guide 1.151 to the 3rd paragraph to be consistent with the 2nd paragraph.	3	3	Add "and Regulatory Guide1.151" to the first and last sentence.
C.I.3.11	C.I.3.9.6.2		C.I.3.9.6.2 (4) states "and include this information in the technical specifications." This level of detail is no longer included in the Improved Technical Specifications, Section 5.5.	2	4	Delete portion of sentence containing "and include this information in the technical specifications."
C.I.3.12	C.I.3.9.6.3		C.I.3.9.6.3 (4) states "and include this information in the technical specifications." This level of detail is no longer included in the Improved Technical Specifications, Section 5.5.	2	4	Delete portion of sentence containing "and include this information in the technical specifications.".
C.I.3.13	C.I.3.2.2		Typographical error. The last sentence should read: "...Regulatory Guide 1.26 or Regulatory Guide 1.143."	3	5	Add correction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.14	C.I.3.5.1.2		The second sentence reads as follows: "These are the SSCs whose failure could lead to offsite radiological consequences, or those required for safe plant shutdown ***to a cold condition assuming an additional single failure.***" The words in italics are confusing and do not conform to existing regulation.	1	1	Delete "to a cold condition assuming an additional single failure" from the end of the second sentence.
C.I.3.15	C.I.3.5.1.2		The third sentence reads: "Missiles associated with over speed failures of rotating components..." The types of missiles should be clarified as those that are "credible."	1	1	Add "Credible" at the beginning of the third sentence.
C.I.3.16	C.I.3.6.2.1		The requested information in this provision (i.e. details of the containment penetrations (etc), the number of pipe breaks, their locations, the presence of postulated cracks, and rupture orientation) is not expected to be available for COL and is not necessary to support COLA.	1	2	The criteria to be used should be specified in the application and the detailed information would be available during plant construction.
C.I.3.17	C.I.3.6.2.2		Other than the design criteria, the requested detailed information for the guard pipe assemblies is not expected to be available for COL and is no necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.18	C.I.3.6.2.3		The requested information for the analyses results is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.19	C.I.3.6.2.5		The requested information (i.e. final configurations, locations, and orientations) is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.20	C.I.3.6.6		The requested information is not expected to be available in its entirety for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.21	C.I.3.7.1 C.I.3.7.1.1 C.I.3.7.1.1.1 C.I.3.7.1.1.2 C.I.3.7.1.2 C.I.3.8.1.3 C.I.3.8.2.3 C.I.3.8.3.3 C.I.3.8.4.3		Reference is made to the OBE. Designing for an OBE is no longer a requirement.	1	1	Remove reference to OBE.
C.I.3.22	C.I.3.8.2.7		Editorial. In first sentence, "Section HI" should read "Section III."	3	5	Correct "Section HI" to "Section III".
C.I.3.23	C.I.3.8.3.6		ANSI N45.2.5 is an inactive national standard. The replacement reference is to ASME NQA-1.	2	3	Change "ANSI N45.2.5" to "ASME NQA-1."
C.I.3.24	C.I.3.8.4.5		ANSI/AISC N690-1984 is a superseded edition. Use latest version	3	4	Delete "1984."
C.I.3.25	C.I.3.9.2.1		The requested information in items (1) to (5) is not expected to be completely available for COL and is not necessary to support COLA.	2	2	Add provision to make the detailed information available during construction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.26	C.I.3.9.3.1 C.III.1, Sec 3.9.3.1		C.I.3.9.3.1, second paragraph, item (3) seeks a summary of maximum stress, deformation, and cumulative usage factor values for all ASME Code Class I components. This information will not be available at the time of COLA and is not necessary to support COLA. The cumulative usage factor values will be contained in the ASME required design report, which requires reconciliation with the as-built configuration. Consistent with industry's position in NEI 04-01 Rev E, Appendix H, Item 3-18, the ASME required design specification and design report should be made available for NRC audit prior to fuel load. This comment also applies to C.III.3.9.3.1.	1	2	Modify C.I.3.9.3.1 and C.III.1, Sec.3.9.3.1 to state that the ASME required design specification and design report will be prepared according to ASME Code Section III for Class I components and made available for NRC audit prior to fuel load.
C.I.3.27	C.I.3.9.3.3		The requested information in paragraph 2 (i.e. program results, stresses, deformations, EQ, etc) is not expected to be completely available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.28	C.I.3.9.3.4		The requested information in the second paragraph (i.e. the results of the analysis and/or test programs) is not expected to be available for COL and is not necessary to support COLA.	1	2	Add provision to make the detailed information available during construction.
C.I.3.29	C.I.3.12.6.1 C.I.3.12.6.9 C.I.3.12.6.12		Piping supports, supplementary steel, and instrumentation supports traditionally have been in compliance with ASME NF and AISC, with jurisdictional boundaries identified in the FSAR. These three sections should also address AISC N690 Code.	2	4	Add "and AISC N690" whenever the ASME NF provision is identified.
C.I.3.30	C.I.3.6.3	C.I.3.6.3-1 C.I.3.6.3-2 C.I.3.6.3-3 C.I.3.6.3-4 C.I.3.6.3-5 C.I.3.6.3-6	DG-1145, Appendix I provided response to a number of issues raised about the content of C.I.3.6.3. The NRC responded that, as a result of public comments, "Section 3.6.3(1)(a) will be modified", "Section 3.6.3(1)(b) will be modified", "Section 3.6.3(2)(a) will be modified", and "Section 3.6.3(2)(c) will be modified". DG-1145 has not been revised to incorporate any changes to the above referenced paragraphs.	2	4	Make the indicated modifications.
C.I.3.31	C.I.3.11		The reference in the first paragraph to 10CFR50.49 and mechanical equipment, is not correct. That is because 50.49 does not address mechanical equipment.	3	1	Remove reference to 10CFR50.49 from this paragraph.
C.I.3.32	C.I.3.11.2		The following comments/ observations for this section are: a. Inclusion of RG 1.30 is incorrect, as this RG pertains to QA requirements and not to EQ requirements and it is therefore, outside the scope of EQ. b. RG 1.151; same as above comment for b), regarding RG 1.30. c. RG 1.183; same as above comment for a) and b) regarding requirements of 10CFR50.67 and RG 1.30.	3	1	Remove reference to 10CFR50.67, RG 1.30, RG 1.151 and RG 1.83 from this paragraph.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.3.33	C.I.3.7.1		Sections 3.7.1 as written reflect pass requirements associated with use of generic design ground response spectra, e.g., RG 1.60 design ground response spectra. There are fundamental differences between generic SSE design ground response spectra and current methods to develop site-specific SSE design ground response spectra. Therefore these sections should be revised to reflect current state-of-the-art practice for developing site-specific SSE design ground response spectra being used by COL applications. COL SSE design response spectra are PSHA based following RG 1.165 or equivalent risk-performance base methodology. The PSHA and associated methodologies to develop the site-specific SSE are based on 5 percent damped spectra. The associated ground motion time histories therefore should only need to match the 5 percent design ground response spectra. The criteria to determine the adequacy of a give time history in spectral matching, adequate energy over the frequency range, component correlation characteristics, etc. are provided in NUREG/CR-6728.	1	4	Clarify as indicated.
C.I.3.33 (continued)	C.I.3.7.1		If response spectrum analysis instead of time history analysis is used to determine building response for design, then site-specific SSE design ground response spectra at appropriate damping values should be provided. Section 3.7.1 should clarify that there is a single location or control point for the SSE free-field ground motion response spectra at the free ground surface and that location depends on the soil characteristics at the site. That location, depending on site conditions, can either be the top of finish grade or an outcrop or hypothetical outcrop at a location of the top competent material for the site. NUREG-0800 provides this clarification.	1	4	see above
C.I.3.34	C.I.3.11		This section requires submittal of EQ testing requirements, accident environments, and milestone schedules that won't be available at the time the COLA is submitted. The EQ program information requirements are outlined in DG-1145, Section C.I.13.4	1	3	Revise this section to be consistent with Section C.I.13.4.
C.I.4.1	C.I.4	C.I.4-2	Given that the reactor vendors are constantly working to improve fuel and core design (Note INPO's objective of Zero fuel failure by 2010), the information requested by DG-1145 is too prescriptive. DG-1145 should clearly indicate that the information to be supplied is a reference or typical fuel design recognizing the actual fuel and core design will be developed using fuel and core design methods approved by the NRC for the intended application consistent with the Plant license. The actual fuel and core design may change, thus DG-1145 should acknowledge that any changes following a COL application should be consistent with the current process for refueling current (at the time of fuel loading) operating plants.	1	1	Revise the text of C.I.4 to refer to the information required to be submitted as reference, typical or bounding fuel design information, with final fuel design information to be supplied by the applicant prior to fuel loading, rather than at the time of COL application.

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C.I.4.2	C.I.4.2.2		Definition of "final (FSAR) design drawing" is unclear.	2	4	Revise the paragraph to read as follows: "Provide a description and final (FSAR) design drawing of the fuel rod components, burnable poison rods, fuel assemblies, and reactivity control assemblies showing arrangements, dimensions, critical tolerances, sealing and handling features, methods of support, internal pressurization, fission gas spaces, burnable poison content, and internal components."
C.I.4.3	C.I.4.2.3		The bulleted information under the headings "phenomenological models" and "fuel system damage criteria" contain typographical errors.	3	5-typo	Under the heading, "Also discuss the following phenomenological models:" In the first bullet, change "radical" to "radial;" In the 13th bullet, change "knudsen" to "Knudsen;" In the 14th bullet, change "contract" to "contact." Under the heading, "In addition, provide the following information," Item (1), "Fuel system damage criteria for all mechanisms:" Change "structured" to "structural" in paragraph (a); Change "commutative" to "cumulative" in paragraph (b); Change "production" to "products" in paragraph (d); Change "maintaining" to "keeping" in paragraph (h), and also add the word "maintain" between "to" and "control." In Item (3) of this heading, paragraph (b), change "systems" to "system."
C.I.4.4	C.I.4.6.3 to C.I.4.6.5		Sections are duplicated	3	5-typo	Remove duplicated sections.
C.I.5.1	C.I.5.2.1.1		In the fourth line of the paragraph under this section, please clarify why the component order date of each Class 1 component within the RCPB is required to be part of the COL application. It does not appear to be relevant information for this stage of the licensing process, nor, if required, will this information be available at the time the application is submitted.	1	2	Revise the third sentence of the paragraph to state, "The applicable component code and code edition and addenda of each Class 1 component within the RCPB, ..."
C.I.5.2	C.I.5.2.1.2		The fourth sentence of the paragraph discusses the use of Regulatory Guide 1.84 to identify those ASME Code Cases that are **"generally acceptable"** (emphasis added) to the NRC staff. The industry recognizes that RG 1.84 identifies Code Cases that are acceptable to the NRC, and that some Code Cases are acceptable only under conditions identified in RG 1.84. Additional specificity should be added to avoid ambiguity.	3	4	Delete the word, "generally," before the word, "acceptable," in the fourth sentence. Add, ", including conditions for approval identified in RG 1.84." at the end of the fifth sentence after "1.84."
C.I.5.3	C.I.5.2.3.1		In the last sentence of the paragraph, the requirement to "identify the final metallurgical condition" of the material placed in service is unclear. Please clarify what the term, "metallurgical condition," means or else delete the term.	2	4	Delete "and final metallurgical condition" from the last sentence of the paragraph

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.5.4	C.I.5.2.3.2(4)		The third sentence of the fourth information request requires the provision of sufficient information on the concentration of chemical compounds to meet Regulatory Guide 1.36 requirements. This should be clarified to address the leachable concentrations, since only leachable ions pose a threat (Cl or F) or ameliorating benefit (Na or SiO3) to the promotion of stress-corrosion cracking of austenitic stainless steel, as described in the Regulatory Guide.	1	4	Add the word, "leachable," before the word, "concentrations."
C.I.5.5	C.I.5.2.3.3(1)		This section identifies the requirement to submit data, test results or information that may not be available at the time of COL application. Please clarify what the requirements are for this type of information, and whether it is required to be provided at the time of COL application or at a later date, if at all.	2	2	Add the following at the end of the section as a separate paragraph, as applicable: "It is acceptable to submit a general description of the data, test results, or other information not available at the time of COL application. When detailed information required in this section is not available at the time of submitting the application, the COL applicant should make a commitment in the application that such information will be provided at a later date for NRC review."
C.I.5.6	C.I.5.2.3.3 C.I.5.2.3.4		The numbering of the bulleted items in the listed paragraphs is incorrect.	3	5	In C.I.5.2.3.3, change (5) to (3) In C.I.5.2.3.4, change (4) to (2)
C.I.5.7	C.I.5.2.3.5(1)		The second sentence of the stated section is not correct. It implies that inservice inspections can demonstrate whether or not a material is susceptible to PWSCC. ISI cannot demonstrate that a material is susceptible or not, ISI can only determine if there is in-service degradation or not. The industry performs inspections of many components that are susceptible to PWSCC without finding degradation.	1	4	Reword the second sentence of C.I.5.2.3.5(1) to state, "Describe test results that demonstrate the nickel-based alloy materials are not susceptible to PWSCC, and identify the inservice inspections that will be performed to confirm that PWSCC is not occurring in the materials."
C.I.5.8	C.I.5.2.3.3 C.I.5.2.3.4 C.I.5.2.3.5 C.I.5.2.4.1 C.I.5.4.7.1 C.I.5.4.7.2		The numbering of the bulleted items in the listed paragraphs should be re-started from (1)	3	5	Renumber the bulleted items to start with (1)
C.I.5.9	C.I.5.2.4.1(7)		The industry does not have "exemptions" from Code requirements, but rather has Relief Requests and alternatives per 10 CFR 50.55a. The industry also works to Code Cases, as specified in Regulatory Guide 1.147. Please clarify if our understanding is correct and this item can be deleted. If this requirement is addressing components that are exempt from the inspection requirements of Section XI as defined in Section XI (usually based on size), please clarify and elaborate that this is the intent of this item.	2	4	Delete the following bulleted item" Code exemptions. Identify any exemptions from Code requirements.

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C.I.5.10	C.I.5.2.4.2		The second sentence of this paragraph appears to duplicate information on operational programs contained in Section C.I.13.4, but does not comprehensively define the information that is required to enable the staff to make a reasonable assurance finding regarding the acceptability of the program.	1	2	Revise the second sentence of the paragraph under C.I.5.2.4.2 to read, "The preservice inspection program is an operational program as identified in C.I.13.4 of this guide, and should be fully described as defined in SECY-05-197."
C.I.5.11	C.I.5.3.1.7		Please clarify the requirement to discuss the procedures used to perform nondestructive evaluations in the second sentence of this bullet. Procedures will not be developed by the time of COL application. Also, it does not seem to be advisable to submit detailed procedures which require a FSAR update if a change to the procedure is performed. We believe that a discussion of the methods and techniques used to perform nondestructive evaluations, that will be incorporated in procedures developed as part of an ITAAC, provides sufficient information for staff review.	2	4	Delete the word "procedures" after "nondestructive evaluation" in the second sentence, and substitute the word "techniques."
C.I.5.12	C.I.5.3.3		The third sentence of the paragraph in this section states, "Also identify the reactor vessel designer and manufacturer, and describe their experience." This requirement does not appear to be appropriate. Please clarify why this information needs to be supplied.	2	4	Delete the third sentence of the paragraph that reads, "Also identify the reactor vessel designer and manufacturer, and describe their experience."
C.I.5.13	C.I.5.3.3.2		Please clarify what is meant by the words used at the end of the first sentence, "...improve their properties or quality?" These words appear to imply that Code-acceptable materials need improvement in order to be acceptable to NRC.	2	4	Delete the phrase, "to improve their properties or quality."
C.I.5.14	C.I.5.4.2.1 (2)		Detailed information on fracture toughness properties may not be available at the time of COL	2	4	Revise the second and third sentences of this section to read: "Provide sufficient information on materials for Class 1 components to show how compliance with the requirements of Article NB-2300 and Appendix G to Section III of the ASME Code will be verified. For Class 2 materials, provide sufficient information to show how compliance with the requirements of Article NC-2300 of Section III of the Code will be verified."
C.I.5.15	C.I.5.4.6 C.I.5.4.7		These sections start with a general statement concerning the description of the pre-operational test programs. Section C.I.5.4 is supposed to identify component and subsystem design. Requirements for descriptions of pre-operational test programs for a subset of systems in C.I.5.4 appear to be out of place and better covered in C.I.14.	2	4	Delete the lead-in paragraphs describing pre-operational test program descriptions underneath the subsections in C.I.5.4.6 and C.I.5.4.7.
C.I.5.16	C.I.5.4.7.2		The last paragraph in C.I.5.4.7.2 states, "(for example, in a BWR, the RCIC condensing mode)". The RCIC condensing mode in a BWR is not a current design. For instance, the current BWR, i.e. ABWR, does not have such an outdated system. Therefore, the above description should be deleted.	3	3	Revise the paragraph to read as follows: "Provide a mode diagram showing temperatures, pressures, and flow rates for each mode of RHR operation.

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C.I.6.1	C.I.6		The C.I.6 lead-in information states "The applicant should state its intentions with regard to adopting risk-informed categorization, and treating structures, systems, and components in accordance with Title 10, Section 50.69, of the *Code of Federal Regulations(10 CFR 50.69)." Generally, this should be done once in Section 3.2, not in the various sections of the FSAR discussing the SSCs*	2	3	Omit this statement from Chapter 6, but address the use of §50.69 in Section 3.2 of the FSAR. 10 CFR 50.69 is currently not mentioned in C.I.3.
C.I.6.2	C.I.6		Lead-in info to C.I.6 states "Generic design control documents (DCDs) typically address the equipment and materials used to manufacture the components in the engineered safety feature (ESF) system. If applicable, this information may be incorporated by reference." Workshop discussions have led the Industry to believe that the Staff interprets Part 52 to require that the COLA include the DCD information, not "incorporate by reference."	2	3	Be consistent with Staff interpretation of 10 CFR Part 52.
C.I.6.3	C.I.6		The 3rd paragraph, 2nd sentence, reads in part, "...to serve as ESFs systems."	3	3	ESF should be singular, not plural. Change to, "...to serve as ESF systems."
C.I.6.4	C.I.6.1.3.3.3 (e)(3)		Section states "Operating experience has indicated that certain nickel-chromium-iron alloys (e.g., Alloy 690 and Alloy 182) are susceptible to primary water stress corrosion cracking (PWSCC) attributable to corrosion. Alloy 690 has improved stress corrosion cracking resistance in comparison to Alloy 600..."	2	3	Re-word to state "Operating experience has indicated that certain nickel-chromium-iron alloys (e.g., Alloy 600 and Alloy 182)"
C.I.6.5	C.I.6.1.1.2(1)		The first sentence of the paragraph discusses the control of the pH of ESF coolants.	3	3	Change "coolants" to "fluids," to be consistent with the rest of the chapter.
C.I.6.6	C.I.6.2.1.1		Traditional PWRs drain water to the refueling canal and during recirculation post accident the SI pumps draw from the sump to continue cooling and depressurizing containment. Not all next generation designs have a traditional sump. Discussion of the refueling canal may be misleading. The discussion in DG-1145 should be revised to make it more generic.	2	4	Remove discussion relating to the refueling canal or make the discussion more general.
C.I.6.7	C.I.6.2.1.4		This section contains the statement "Consider smaller break areas of steam line breaks starting with the double-ended rupture, until no liquid entrainment is calculated to occur." The approved AREVA methodology does not include this verbiage. This is typical of the Westinghouse approach and shouldn't be part of DG 1145 because it is a vendor specific approach. AREVA runs a spectrum of break sizes, but if the results of the analysis are trending toward lower containment pressure we don't continue to reduce the break size. For certain break size liquid entrainment may occur. The discussion in DG-1145 should be revised to make it more generic.	3	4	Revise the discussion to state "Consider smaller break areas of steam line breaks starting with the double-ended rupture"

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C.I.6.8	C.I.6.2.1.2, item (3)(g) C.I.6.2.1.3,2nd Item (1) C.I.6.2.1.4, item (1) C.I.6.2.1.5, item (1)		Typographical errors in the mass units of measure.	3	3	Change the mass units of measure from lbm to lbm for the mass release rate and enthalpy of mass released in C.I.6.2.1.2, item (3)(g), for the mass release rate in C.I.6.2.1.3, 2nd item (1), for the mass flow rate in C.I.6.2.1.4, item (1), and for the mass release rate and enthalpy of mass released in C.I.6.2.1.5, item (1)
C.I.6.9	C.I.6.2.2		Section C.I.6.2.2 only includes fan coolers, sprays and passive systems to remove heat from the reactor containment for PWRs. The US EPR uses the passive heat structures and the Residual Heat Removal (RHR) Hx to remove energy from the In-Containment Refueling Water Storage Tank (IRWST) which is similar to a BWR removing energy from the suppression pool. The discussion in DG-1145 should be revised to make it more generic.	3	4	The section should be written to include the energy removal from the IRWST for more than just BWR designs.
C.I.6.10	C.I.6.2.2.2		§C.I.6.2.2.2 states "Compare the design of the recirculation intake structures to the positions in RG 1.82, Revision 3, "Sumps for Emergency Core Cooling and Containment Spray Systems."" This is no the correct title for this RG.	3	4	"Compare the design of the recirculation intake structures to the positions in RG 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident.""
C.I.6.11	C.I.6.2.2.3		C.I.6.2.2.3 refers to RG 1.83 for analysis of NPSH for recirculation pumps, but the title identified is that of RG 1.82. The reference should be RG 1.82. RG 1.83 is titled "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes." Also, correct the "Surfaces" in the title to "Sources"	3	4	"Provide analyses of the net positive suction head (NPSH) available to the recirculation pumps, in accordance with the recommendations of RG 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident.""
C.I.6.12	C.I.6.2.2.4		C.I.6.2.2.4 requests "Provide the results of tests performed, as well as a detailed updated testing and inspection program." Delete this statement on the same basis as indicated in comments C.I.6.2.3.4-1, C.I.6.2.4.4-1, C.I.6.2.5.4-1, and C.I.6.4.5-1, and agreed to in the responses to the comments.	2	2	Delete "Provide the results of tests performed, as well as a detailed updated testing and inspection program."
C.I.6.13	C.I.6.3.1		C.I.6.3.1 states "Describe how the ECCS design meets the relevant Commission policy, as described in SECY papers and corresponding staff requirement memoranda (SRMs)." It is generally not appropriate to request applicants to discern and comply with the Commission Policy from SECY papers and the corresponding SRMs. These documents have not been through the appropriate review processes for public and stakeholder comment to be considered guidance to the applicants.	2	4	Revise to clearly identify the "relevant Commission policy" and use the SECY paper as your reference.
C.I.6.14	C.I.6.3.1		Section C.I.6.3.1 refers to "GL 98-0". Should these references be to GL 98-04. Please confirm.	3	5	Change reference to GL 98-04

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C.I.6.15	C.I.6.3.2.5		Section C.I.6.3.2.5 states "describe how containment sump recirculation debris screen design meets the guidelines in RG 1.82, Revision 3". The statement about the screen for a BWR should be added according to the RG 1.82 Revision 3.	3	4	The DG-1145 should be revised to read "describe how containment sump and suppression pool recirculation debris screen design meets the guidelines in RG 1.82, Revision 3."
C.I.6.16	C.1.6.3.2.5		C.I.6.3.2.5 states "Describe how the regulatory oversight of the active nonsafety systems was considered in using the process of "regulatory treatment of non-safety systems" described in SECY-94-084." The results of the SECY document, and the SRM (which indicates that the Westinghouse comments on this item, as stated in the Attachment to NTD-NRC-94-4145 should be accommodated) should be documented in some form of clear guidance to the industry. This SECY, the SRM and the WEC comments, are not readily available to the public.	2	4	Revise to clearly identify the criteria for acceptable results "of the SECY document, and the SRM..." and use the SECY and SRM as your reference.
C.I.6.17	C.I.6.3.4.1		C.I.6.3.4.1 refers to RG .79. The reference should be RG 1.79.	3	5	"Justify any exceptions to the regulatory position in RG 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized-Water Reactors.""
C.I.6.18	C.I.6.4		C.I.6.4 refers to "Section 15.X.X, paragraph 5." The reference should be Section 15.6.5, paragraph 5.	3	5	"Reference information and evaluations in other sections of the application that relate to adequacy of the habitability systems (see Sections 6.5.1, 9.4.1, and 15.6.5, paragraph 5)."
C.I.6.19	C.I.6.4.2.2		C.I.6.4.2.2 – Ventilation System Design. This section should identify the ventilation system components that are located outside the Control Room Envelope and interface with unfiltered air outside the envelope, and if they are at negative or positive pressure. This information is necessary since these components are typically the main sources of unfiltered air in-leakage in a pressurized Control Room.	2	4	Add the following item in this section for evaluation of control room system –(3) list of air flow components (ducts, dampers, fans, air handling units, etc.) that are located outside the Control Room Envelope and/or interface with unfiltered air outside the envelope. Also, indicate if these components are at positive or negative pressure.
C.I.6.20	C.I.6.4.2.4		C.I.6.4.2.4 – Interaction with other zones and pressure containing equipment. This section needs to specifically address the interaction with air conditioning components that are pressurized with refrigerant, and interface directly with Control Room Envelope atmosphere. It may not be possible to isolate these components if they are needed for Control Room cooling. Although, most refrigerants in current use are non-toxic, they can displace air and cause asphyxiation in a confined space.	2	4	Add the following item in this section to consider for interaction – (3) potential leak or release of refrigerant from the Control Room air conditioning systems that have the pressurized refrigerant components interfacing directly with the Control Room Envelope air, and cannot be isolated. The refrigerant gas can displace air and cause asphyxiation in a confined space, or it could be toxic.

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C.I.6.21	C.I.6.4.2.5		C.I.6.4.2.5 refers to "Section 15.X.X, paragraph 5." The reference should be Section 15.6.5, paragraph 5.	3	4	"Present the corresponding evaluation of DBA doses to control room operators in Section 15.6.5, paragraph 5."
C.I.6.22	C.I.6.4.4.2		C.I.6.4.4.2 states "If chlorine has been identified as a potential hazard to the operator, specific guidance is provided by RG 1.95, 'Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chlorine Release.'" This is no longer accurate as RG 1.78 Rev 1 has subsumed the RG 1.95 guidance.	3	4	"RG 1.78 also provides specific guidance if chlorine has been identified as a potential hazard to the operator."
C.I.6.23	C.I.6.4.4.2		C.I.6.4.4.2 – Toxic Gas Protection. Typically the toxic gas detector is located in the outside air intake with an isolation damper downstream. This section should identify if the air intake isolation damper is designed to close before toxic gas reaches it.	2	4	Add the following item in this section for evaluation of toxic gas protection – (3) provide the travel time of the toxic gas/ outside air intake flow, from the detector sample point to the isolation damper, and compare it with the detector response time plus isolation damper closing time.
C.I.6.24	C.I.6.6.1		C.I.6.6.1 requests "A detailed inservice inspection program, including information on areas subject to examination, method of examination, and extent and frequency of examination, should be provided in the technical specifications." This sentence should be deleted since ISI is no longer included in the Technical Specifications (as the information was generally a duplication of the requirements).	3	3	Delete the sentence.

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C.I.6.25	C.I.6.6.6		C.I.6.6.6 requests "Describe the method to be used in evaluating examination results for Class 3 components and, until publication of IWD-3000, indicate the extent to which these methods are consistent with requirements in Article IWA-3000 of Section XI." This guidance should be updated to reflect that IWD-3000 has now been published.	3	4	"Describe the method to be used in evaluating examination results for Class 3 components and, indicate the extent to which these methods are consistent with requirements in Article IWD-3000 of Section XI."
C.I.6.26	C.I.6.7		The Main Steam Line Isolation Valve Leakage Control System (BWRs) has been eliminated in new BWR plants. It is recommended that the description be modified to make consistent with section C.I.10.4.4 in DG 1145.	2	4	Per SECY 93-087, for new BWR plants that do not incorporate a main steam isolation valve leakage control system and for which turbine bypass system holdup and plateout of fission products is credited in the analysis of design basis accident radiological consequences, demonstrate consistency with the seismic analysis described in SECY 93-087.
C.I.6.27	C.I.6 Table 6-2		C.I.6, Table 6-2, Item IV.C refers to units of "106 Btu/hr." The units should be 10^6 Btu/hr.	3	5	"10^6 Btu/hr"
C.I.6.28	C.I.6, Table 6-4		C.I.6, Table 6-4 contains an outdated note * that states "*Provided best estimates of these heat sinks in the PSAR stage and a detailed listing in the FSAR." This note should be deleted.	3	4	Delete the note.
C.I.6.29	C.I.6, Table 6-4		C.I.6, Table 6-4 items (19) and (34) are both other. Item (19) should probably be removed.	3	4	Delete item (19)
C.I.6.30	C.I.6, Table 6-4		C.I.6, Table 6-4, Item B, states "The following data should be provided for the passive heat sinks listed in Table 6-4A (a detailed listing in the FSAR stage):" The parenthetical phrase should be omitted since there is only one phase under Part 52.	3	4	Delete "(a detailed listing in the FSAR stage)"

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C.I.6.31	C.I.6, Table 6-4		C.I.6, Table 6-4, item D, includes a column header for density with units of "1/bft^3" and a column header for Thermal Conductivity with units of "Btu/hr-ft EF". The units should likely be "lb/ft^3" and "Btu/hr-ft^2 EF," respectively.	3	4	"Density, lb/ft^3" and "Thermal conductivity, "Btu/hr-ft^2 EF"
C.I.6.32	C.I.6, Table 6-4		C.I.6, Tables 6-4B, 6-4C, and 6-4D have several inconsistencies with the similar table in RG 1.70.	3	4	Correct the inconsistencies.
C.I.6.33	C.I.6, Table 6-5		C.I.6, Table 6-5 Item B(11) use of "Resiction" should be Restriction.	3	4	"Restriction"
C.I.6.34	C.I.6, Table 6-11		C.I.6, Table 6-11 footnote indicates plots should include time periods "to at least 106 seconds." This should be "to at least 10^6 seconds."	3	4	"...to at least 10^6 seconds."
C.I.6.35	C.I.6, Table 6-13		C.I.6, Table 6-13 identifies two headers for differential pressure with units of "psig". These units should likely be "psid".	3	4	"psid"
C.I.7.1	C.I.7.2 thru C.I.7.9		In these sections, the uses of SAR and FSAR are inconsistent. For example, in 7.2, 7.3, and 7.4, the "SAR" is referenced but in 7.5, 7.6, 7.7 and 7.8, reference is made to the "FSAR." This seems to be a consistency issue throughout the new draft guide. In the previous revision of the draft guide, only the "SAR" term is used. The SAR and FSAR are related but some implications may be made if one uses SAR instead of FSAR or vice versa.	3	3	More consistency in the use of SAR and FSAR.
C.I.7.2	C.I.7.5		The first paragraph leads into a bulleted list with "These system functions are:". However the bulleted list is a list of systems (such as post accident monitoring system) instead of a list of functions. The intent of the wording lacks clarity.	3	4	Reword the bulleted list to be functions instead of systems or reword the first paragraph to list systems instead of functions.

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C.I.7.3	Appendix C.I.7 A		Under item (19), the second sentence states "A statistically valid sample of system requirements should be selected to confirm that the applicants/ licensee's life–cycle activities have been implemented as planned. The sample size should be such that the staff can conclude with at least 95% assurance that the quality of the design has been validated." This statement is an attempt to clear up the amount of information that needs to be submitted. However, the method of determining the sample size of the requirements is still ambiguous. Exactly what one requirement constitutes is debatable and the sample size to provide "95% assurance" is open to interpretation. There was discussion at the work shop in July that the NRC would require an inventory of documents to be made available to the reviewers when the application is submitted and the NRC would then review what they thought was a valid sample size. This approach would be more manageable.	1	4	It is recommended that DG 1145 be revised to state that the applicant should identify documentation available for NRC inspection that confirms implementation.
C.I.7.4	Appendix C.I.7 A		Under item (20), the second sentence states "A statistically valid sample of software design outputs should be provided to confirm with at least 95% assurance that they address the functional requirements and have been allocated to the software appropriately, and to confirm that the expected software development process characteristics are evident in the design outputs." This statement is an attempt to clear up the amoun of information that needs to be submitted that was during the review of the first draft. However, the method of determining the sample size of the design outputs is still ambiguous. The sample size to provide "95% assurance" is open to interpretation.	1	4	It is recommended that DG 1145 be revised to state that the applicant should identify documentation available for NRC inspection that confirms implementation.
C.I.7.5	Appendix C.I.7 B		In Appendix C.I.7-B, under item (6), the last sentence references SRP Appendix 7.1-D, "Guidance for Evaluation of Conformance to IEEE Std. 7-4.3.2. This SRP Appendix currently does not exist. It is understood that the SRP's are being updated, however reference to future guidance does not provide clear guidance to applicants.	2	4	Change reference to existing guidance.
C.I.7.6	Appendix C.I.7 B		In Appendix C.I.7-B, under item (6), the guidance on communication independence is ambiguous and the present guidance on this matter is conflicting. Physical and electrical independence is addressed in this item but not communication independence. It states that additional guidance is provided in SRP Chapter 7, Appendix 7.1-C. When reviewing the guidance provided in SRP Appendix 7.1-C, it states in section 5.6 that Annex G of IEEE Std. 7-4.3.2 describes an acceptable means for providing communications independence. The version of the IEEE 7-4.3.2 that the SRP references must be 1993 since the SRP was published in 1997. The verbiage in this annex is exactly the same as that found in Annex E of the 2003 version of IEEE 7-4.3.2. However, RG 1.152, rev. 2, explicitly states that the NRC has not endorsed Annex E of IEEE 7-4.3.2 -2003. The regulation is conflicting.	2	4	Correct conflicting NRC guidance and provide clear guidance on communication independence.

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C.I.7.7	Appendix C.I.7.C-1		In this section, under Software Life Cycle Process Implementation, there is a bulleted item labeled "Test". In BTP-14, which is the origin of this wording, the word "Validation" is used. All other items in the lists are exactly the same except this one. Why was this word changed? Also, the numbering of the items starting with Software Life Cycle Process Planning should be labeled as (a), (b), (c) instead of (1) (2) (3)	3	4	Change the "Test" to "Validation" for consistency of wording with BTP-14. Change the numbering to be consistent with the rest of the Appendix.
C.I.7.8	Appendix C.I.7.C-1		Typographical error. Under item 12: Human Factors Considerations, there is a lone "e" in the text.	3	4	Eliminate "e" from text
C.I.7.9	Appendix C.I.7.C-1	C.I.7-1	In the first paragraph of this Appendix, reference is made to IEEE 603-1998. It states that IEEE 7-4.3.2 -2003 serves to amplify IEEE Std. 603-1998, yet there is no regulation that endorses IEEE Std. 603-1998. IEEE 7-4.3.2 -2003 is endorsed by Regulatory Guide 1.152 rev. 2 excep for Annexes B thru F.	2	4	Clarity is needed on the proper regulatory path to use IEEE Std 603-1998
C.I.7.10	C.I.7		The terminology in the second paragraph should be modified to be consistent with Regulatory Guide 1.97.	3	3	Delete "Information for post-accident" and substitute "Instrumentation for accident."
C.I.7.11	C.I.7.1.2		Since each system section (RTS, ESF, etc.) has a design basis sub-section, the third paragraph of C.I.7.1.2 is unnecessary.	3	4	Delete the third paragraph of C.I.7.1.2
C.I.7.12	C.I.7.4.1		Remote shutdown capability is not required to meet IEEE 603.	3	4	Make the last bullet about remote shutdown capability a separate paragraph.
C.I.7.13	C.I.7.5.1		The terminology in the first bullet should be modified to be consistent with Regulatory Guide 1.97.	3	4	Delete "post-accident monitoring (PAM) systems" and substitute "Accident monitoring instrumentation."
C.I.7.14	C.I.7.5.1		The fourth and fifth bullets do not have references to regulatory requirements for the safety parameter display system and information to be transmitted to the emergency response facilities and nuclear data link.	2	4	Add the appropriate references to the fourth and fifth bullets.
C.I.7.15	C.I.7.5.2		The first sentence of C.I.7.5.2 discusses only Regulatory Guide 1.97 type A instrumentation (i.e., required manual safety functions and essential operator actions). However, the examples listed include non-safety functions (e.g., monitoring the status of safety equipment). In developing a suggested revision to this sentence, it was realized that there is no need for a separate discussion of this subset of information systems important to safety.	2	4	Delete the first paragraph of this section and add a new sentence at the end of the section that reads, "The applicant should identify appropriate design criteria in the FSAR and demonstrate compliance with these criteria."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.7.16	C.I.7.6.1		This section requires submittal of schematic diagrams, while all other instrument and controls sections require submittal of logic diagrams, piping and instrument diagrams, and location layout drawings.	2	4	Delete the last sentence of section C.I.7.6.1 and substitute, "The applicant should provide logic diagrams, piping and instrumentation diagrams, and location layout drawings of interlock systems important to safety in the SAR."
C.I.7.17	C.I.7.7.2		Defense-in-depth and diversity is covered adequately in section C.I.7.1.8.	3	4	Delete the ninth bullet in C.I.7.7.2.
C.I.7.18	C.I.7.9.2		This section applies to both safety and non-safety communications systems. Since there is only one list of design basis information, it is unclear which criteria should be discussed for non-safety systems. Also approximately half of the design considerations listed will have already been discussed in the SAR section that describes the supported system in which the communications components are used	2	4	The list of design considerations should be limited to those items unique to communications systems by deleting the first, second, sixth, seventh, eighth, ninth, and eleventh bullets.
C.I.7.19	C.I.7.9.2		Miscellaneous editorial changes	3	4	In the fourth bullet, delete "DCA" and substitute "DCS." In the last sentence of the sixth bullet, delete "supported systems" and substitute "safety systems." In the eighth bullet, delete "protection system" and substitute "safety system." In the tenth bullet, delete "portion of a system" and substitute "portion of a safety system." In the tenth bullet, delete "from another system" and substitute "from a non-safety system."
C.I.7.20	C.I.7.9.3		The references to GDC 1 and 10 CFR 50.55a(a) (i.e., quality standards and records) appear out of place in a section about communications systems.	2	1	Delete the current section and replace it with "The applicant should provide analyses to demonstrate that the communications systems conform to the guidelines in the regulatory guides and industry codes and standards applicable to these systems."
C.I.7.21	C.I.7.B-1(4)		The third sentence states "The applicant/licensee should confirm that there is independence between environmental control systems and sensing systems which would indicate the failure or malfunctioning or environmental control systems." It is agreed that the single failure criterion must be met if the environmental control system is required to ensure a particular environment. However, independence is required between redundant portions of the environmental control system, not between the environmental control system and the sensing system that indicates failure or malfunction of the environmental control system.	1	1	Delete the third sentence of C.I.7.B-1(4).

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.7.22	C.I.7.B-1(5)		NRC comment C.I.7.39 on the preliminary version of this section identified that the statement, "Failure of computer system hardware or software should not inhibit manual initiation of protective functions or the operator performance of preplanned emergency or recovery actions" is not a requirement of IEEE Standard 603 and should be deleted. This previous comment stated that the requirements of Section 6.2 of IEEE Standard 603 are sufficient to ensure proper manual control. The NRC response to the comment was to make no change based on the justification that "This guidance comes from BTP 7-19 acceptance criteria...BTP 7-19 is developed based on Commission SECY-93-087...dated July 15, 1993." It is noted that SECY-93-087 and BTP 7-19 were developed prior to incorporation of IEEE Standard 603 into 10 CFR 50.55a(h) in 1998. Hence, this portion of these documents in not supported by current regulations. The guidance promulgated by these documents related to manual controls is inappropriate in the subject appendix entitled "Conformance with IEEE Std. 603."	1	1	Delete the fifth bullet of section C.I.7.B-1(5).
C.I.7.23	C.I.7.B		Miscellaneous editorial changes	3	5	Delete "protection system" and substitute "safety system" in the following places: Third sentence of section C.I.7.B-1(7) First sentence of section C.I.7.B-1(9) Second sentence of section C.I.7.B-2(1) First sentence of section C.I.7.B-2(3) First bullet of section C.I.7.B-2(3) Last bullet of section C.I.7.B-2(3) First sentence of section C.I.7.B-2(4)
C.I.7.24	C.I.7.B-2(3)		Editorial change	3	3	In the second sentence, delete "protection functions" and substitute "safety functions."
C.I.8.1	C.I.8.1 (C.III.1, Sec.8.1)		Introduction states the need to show compliance with various regulations and standards (e.g. Reg Guides, GLs). This is a similar requirement to section 1.9 of the DG	3	4	Provide documentation for compliance with Reg Guides, etc in this section (C.I.8.1), and have section C.I.1.9 refer to this section. This is a generic item for DG-1145, so resolution should be consistent with other sections. Enercon has developed a FSAR Writer User Guide which addresses how to handle section 1.9 compliance discussion
C.I.8.2	C.I.8.1		Reg. Guide 1.29 is out of order.	3	4	Place reg. guides in numerical sequence

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.8.3	C.I.8.1 C.III.1 Section 8.4		Introduction & section 8.4 refers to AAC as part of SBO response. Not all plant designs will need an AAC. Part of "bigger picture" issue on GDC 17 and passive plants. See comments for section C.I.8.2	2	4	This sentence should be revised, e.g.; "... the onsite electric system should be described briefly in general terms, and a brief description provided for station blackout mitigation, and the..."
C.I.8.4	C.I.8.1		Introduction discusses systems "important to safety"; A more specific definition / scope needs be provided.	2	4	For passive plants, offsite power is not safety related but may be RTNSS. Staff will consider providing a definition. No discussion on relation to passive designs. This is a generic issue since the ITS term is used multiple times in the DG. Definition of ITS is important since in PRA space ITS is risk significant category 3. Assigning equipment this category may impact M-rule and RTNSS issues.
C.I.8.5	C.I.8.2.1,2 C.III.1 Section 8.2 C.I.8.4.1	C.I.8.2.1-2 C.I.8.2.1.2-1	These sections require a significant amount of detail on the offsite transmission system, much of which appears to be predicated upon the GDC 17 requirement for two physically independent circuits. Examples; (1) Section should require a Failure Modes and Effect Analysis (FMEA) for the switchyard. This requirement should only apply to sites that must comply with GDC 17 (i.e. exclude passive plants). (2) FMEA and Stability Analysis may not be complete at time of COLA submittal due to availability of information for switchyard design. (3) Local power sources and transmission paths for re-supply may be under the control of a Transmission System Operator (TSO) that is independent of the licensee. This information may not be available at the time of COLA submittal.	1	1	For COL applications that reference a DCD for a design that has been granted an exemption to the requirement for two offsite sources, provide direction for the required subset of information on the transmission system that is required. Provide the basis for the requirement for this information. Big picture question is what is required of passive plants with an exemption to GDC 17. For plants that require FMEA, provide methodology and schedule in COLA. FMEA provided when completed prior to fuel load. Issue also applicable to transmission stability study . See Attachment 1- proposed guidance markup
C.I.8.6	C.I.8.2.2		This section identifies a requirement to: "Describe how the stability of the grid is continuously studied as the loads grow and additional lines and generating lines are added."	1	1	Provide basis for this requirement or delete.
C.I.8.7	C.I.8.3.1.1 C.I.8.3.2.1	C.I.8.3.1.1-1	The requirement to discuss how RG 1.75 recommendations are met is redundant to section 8.1 requirements. Same comment applies for DC cables. (This comment applies to two entire paragraphs on each section and not just the sentence containing RG 1.75.)	3	4	Discuss compliance in section C.I.8.1 and refer to discussion in sections C.I.8.3.1.1 & C.I.8.3.2.1
C.I.8.8	C.I.8.3.1.1	C.I.8.3.1.1-2	System Capacity & Capability section discusses suitability of diesel generators for standby power source. Not all plant designs utilize diesels, thus the wording should be more generic.	3	4	e.g.; "...suitability of the standby power sources to ensure sufficient..."

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C.I.8.9	C.I.8.3.1.3 C.I.8.3.2.3		Codes may change over life of plant; "Electronic models" of software are not typically submitted to the NRC as a part of the application. Models will be available for inspection by NRC. Comment also applies to DC sections.	3	4	Provide "input decks" for electronic models to allow NRC independent analysis. Identify codes used independent of COLA. Section C.III.1 Ch 8.3 does not require codes for designs based on DCD.
C.I.8.10	C.I.8.3.1.3		(1) Section 4 for Equipment Protection does not specify that it only applies to safety-related equipment. (2) It is unclear if this section should cover "associated circuit analysis" type issues that are required by the Fire Protection plan. (3) Section 4 is under AC, but includes discussion on DC fuses.	3	4	(1) Specify "...what safety related equipment needs to be considered for equipment protection..." (2) State that associated circuit analysis for response to fire (e.g. separation) is covered in section C.I.9.5.1 (3) Add separate section for DC system protection (C.I.8.3.2), or make section "common".
C.I.8.11	C.I.8.3.1.3 C.I.8.3.2.3		Section on Power Quality (AC & DC) is a new requirement. Section does not specify any industry guidance (e.g. IEEE 519, RG 1.180); What parameters are concerns, e.g. frequency, voltage, harmonic content (THD)? What acceptance criteria for VFDs are a concern (THD, notch depth)? NRC concern on impact of VFD operation on any class 1E power systems, but no criteria provided.	2	4	Section C.III.1 Ch 8.3 does not require discussion on power quality for designs based on DCD. Power quality not discussed in AP-1000 DCD.
C.I.8.12	C.I.8.3.2.1	C.I.8.3.2.1-1	Section 4 requires battery characteristic curves; Characteristic curves will not be available until batteries are purchased, which will be after COLA submittal.	1	2	Discuss generic battery characteristic curves, and schedule for submittal of specific curves prior to COLA approval.
C.I.8.13	C.I.8.3.2.3		Page C.I.8-15 editorial changes; Wording under Short Circuit Studies and Monitoring and Testing	3	5 editorial	The second sentence should be;"Identify the potential effects that must be considered during testing, and the margins that are being applied." Under monitoring and training, delete the word existing in the first sentence.
C.I.8.14	C.I.8.4.2		Last sentence on passive system designs should be moved to the beginning of this section.	2	4	More general discussion about passive plants should also be included in other applicable sections (e.g. Offsite & Onsite AC requirements not all applicable to passive designs). See markup in Attachment 1.

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C.I.9.1	C.I.9.1.1.1, C.I.9.1.2.1		These paragraphs address "means for maintaining a sub-clinical array." The context of the paragraph suggests that the word "clinical" should be replaced by the word "critical."	3	5	Replace the word "clinical with the word "critical."
C.I.9.2	C.I.9.1.4.2		The third sentence of the paragraph, which deals with the system description of the Fuel Handling System, states, "Component drawings, building layouts, and illustrations of the fuel handling procedures should also be provided." Please clarify what is meant by "illustrations of the fuel handling procedures."	3	4	By comparison with the requirements of C.I.9.1.5.2, it appears that the word "procedures" should be replaced with "components" or "devices."
C.I.9.3	C.I.9.1.5.1		Section C.I.9.1.5.1, "Design Basis", for Overhead Heavy Load Handling Systems: This section should be expanded to define "heavy	3	1	Add the following: "A heavy load is defined as a load weighing more than one fuel assembly and its associated handling device."
C.I.9.4	C.I.9.1.5.1		Section C.I.9.1.5.1, "Design Basis", for Overhead Heavy Load Handling Systems: This section should be expanded to clarify what is being protected from a heavy load drop.	3	1	Revise the opening sentence to read (italics added where new provision is added: "Provide the design bases...cause the greatest damage to safety related structures, systems or components; the areas..."
C.I.9.5	C.I.9.1.5.2		Section C.I.9.1.5.2, "System Description," for Overhead Heavy Load Handling Systems: The opening sentence requires that illustrations of special lifting devices be submitted. At the time the COL application is being submitted, this information would generally not yet be available. Conformance to National Standards, such as ANSI N13.2 that is for the design of special lifting devices, should be all that is required. This provision is spelled-out in other regulatory guidance i.e. NUREG-0612.	1	2	Delete "and illustrations of special lifting devices" from the opening sentence.
C.I.9.6	C.I.9.4.1		This section should use the terminology "Control Room Envelope" (CRE), consistent with Habitability Section C.I.6.4.2. Add the requirement to provide details on missile protection of outside air intake and exhaust louvers in Section C.I.9.4.1.1 Add "unfiltered air inleakage" in the examples given for testing in Section C.I.9.4.1.4.	2	3	This section should include a definition of the CRE (areas included) or reference Section C.I.6.4.2 for the definition and cover the system serving the CRE.
C.I.9.7	C.I.9.3.4.3		Eighth bullet regarding Failure Modes and Effects Analysis (FMEA). The text states "results of failure modes and effects analyses vis a vis single failure criteria for safe shutdown and prevention/mitigation of postulated accidents." Does this imply that if the CVCS system provides no safety-related function for safe shutdown or design basis accident mitigation, then no FMEA is required?	2	4	N/A
C.I.9.8	C.I.9.3.4.4		C.I.9.3.4.4 Inspection and Testing Requirements Recommend the second sentence be transferred to C.I.9.3.4.2 System Description as it does not pertain specifically to Inspection and Testing.	2	4	Move "Outline the operating procedures for the CVCS, including the controls for boron addition and primary coolant dilution." To Section C.I.9.3.4.2.

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C.I.9.9	C.I.9.5.1.1		The 4th bullet item pertains to Operator Manual Actions (OMAs), or recovery actions, that may need to be taken to mitigate spurious actuations of equipment due to fire-induced circuit failures, or may otherwise be needed to achieve and maintain safe shutdown during and after a fire. The draft guidance states that the "acceptance criteria" for OMAs should be provided, along with the analyses (including thermal-hydraulic analysis) to demonstrate that safe shutdown can be achieved and maintained. Applicants may lack the [scenario-specific] technical input requirements developed to the necessary level of detail to adequately demonstrate the feasibility of OMAs at the COL submittal stage.	2	2	Regulatory provisions should be established in the DG for the COL applicant to develop reasonable bases for the acceptability of OMAs as a post-COL submittal activity. On this basis, the feasibility of OMAs could be assessed by the NRC as part of the plant inspection process. Meanwhile, the NRC and industry should work to develop a minimum set of acceptance criteria for OMAs moving
C.I.9.10	C.I.9.5.4 through C.I.9.5.8	C.I.9.5-1	Sections discuss detailed information requirements for diesel generator subsystems	2	4	Provide a discussion of what decreased level of information is required for plants that do not have safety-related diesel generators.
C.I.10.1	C.I.10.1		Section C.I.10.1 states "In addition, for all of the following sections, include a discussion of how the system design meets the applicable regulatory requirements and is consistent with the regulatory guidance available". This statement is more appropriate for general statement of C.I.10 (before section C.I.10.1).	3	3	Relocate statement and add at the end "six months prior to application submittal".
C.I.10.2	C.I.10.3.6.1		For non-code components, provide expected plant-specific material property data such as chemistry, yield strength, fracture toughness data (KIC), Charpy V-notch energy, nil-ductility temperature, and fracture appearance transition temperature. Identify appropriate ITAAC to verify the plant-specific material property data, including identification of manufacturer/fabricator, and heat number(s).	1	4	It is unclear what is meant by a "non-code component". The first paragraph under C.1.10.3.6 states that this section is only applicable to ASME Section III, Class 2 and 3 components. This is reinforced in the lead sentence to C.I.10.3.6.1. In this context, a non-code component may refer to a component installed in the Class 2 and 3 portion of the system that is not ASME code stamped. If "non-code component" is referring to components installed outside of the ASME Section III, Class 2 and 3 (non-safety related) portions of the system, the information requested appears to be beyond the requirements of the current SRP.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.10.3	C.I.10.3.6.1		For non-code components, provide plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s). Per past practice for design certification and Section C.II.2, ITAAC are not established to verify material properties of non-code components in the steam and feedwater systems. Rather, NRC may verify actual material properties through normal design implementation inspections.	1	1	Suggest deletion of individual ITAAC requirements in this and other sections. The more global guidance on ITAAC identification and construction is provided in C.II.2 of DG-1145. This global guidance will provide for consistent ITAAC selection based on the overall safety philosophy of the design. As noted in C.II.2: "The type of information and the level of detail included in the ITAAC is based on a graded approach that is commensurate with the safety-significance of the facility's SSCs. Top-level design information selected for verification in the ITAAC should contain the principal performance characteristics and safety functions of the SSCs, their importance in various safety analyses, and their functions for defense-in-depth considerations."
C.I.10.4	C.I.10.4.7		The corresponding section of C.III.1 differentiates between the PWR and BWR issues.	3	3	For clarity, please consider separate phrasing of BWR and PWR requirements.
C.I.10.5	C.I.10.4.9		Section discusses detailed information requirements for auxiliary feedwater systems	2	4	Provide a discussion of what decreased level of information is required for plants that do not have safety-related auxiliary feedwater systems or no auxiliary feedwater systems.
C.I.11.1	C.I.11, C.III.1, Ch.11		The highest priority for a nuclear plant is the safe, efficient generation of electricity. Liquid and solid effluent processing can usually be provided as an off site vendor service more competitively and with less distraction to the safe, efficient generation of electricity. Safety analyses for off site vendor activities is addressed as part of the vendor facility license and is not appropriate to address in the nuclear plant SAR. Moreover, the option of when to use off site processing, which waste to process off site, what quantity is processed off site, and what off site processing techniques might be selected at any given time is a business competitive and economic issue which has no bearing on the plant SAR.	1	1	Add a paragraph at the beginning of this section which recognizes off site vendor processing of liquid and solid effluents as a normal, competitive business option and which does not require further discussion or clarification in the SAR nor any related flowcharts. It is appropriate to capture on site waste processing data and information in the nuclear plant SAR, and it is reasonable to expect that a fixed and/or mobile processing capability is incorporated in the plant design for each waste type and appropriately addressed in the SAR. Off site processing activities at independently licensed facilities are not appropriate to address in the plant SAR.
C.I.11.2	C.I.11, C.III.1, Ch.11		There is some confusion as to the requirement for P&IDs to be included in the COLA or SAR. Established precedence allows P&IDs to be referenced in the SAR without actual inclusion of the P&IDs in the SAR. It seems reasonable to apply this precedent to the COLA.	1	4	Add a comment that P&IDs are to be referenced in the COLA and SAR without actual inclusion of the P&IDs in the COLA and SAR.

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C.I.11.3	C.I.11, C.III.1, Ch.11		In advanced nuclear plants, mobile (including skid-mounted) systems are expected to be a key, common component of the plant design. Since the systems and their connections are addressed in the engineered design drawings and SAR, and since the connections for such systems are included in the P&IDs, the word "temporary" and "temporary connections" adds a layer of confusion which will adversely impact routine installation, use, maintenance and replacement of such systems and connections.	2	4	Remove all references to "temporary" waste systems, relying on the term "mobile (including skid-mounted)." Remove all references to "temporary connections" and replace with "engineered, flexible connections." Reference should be made to RG 1.143 and ANSI 40.37.
C.I.11.3 (continued)	C.I.11, CIII.1, Ch.11		The problem arises because the term "temporary" as applied to nuclear plant systems is strongly associated with temporary modifications and narrowly defined time limits for temporary modifications and temporary installations. Therefore, in most nuclear plants, the word "temporary" suggests an immediate engineering review and classification as a temporary modification with clear time constraints. In sharp contrast, the mobile system concept and design is intended for short term (e.g., outage) and long term (e.g., up to 20 or more years) installations, as wel as inter-unit shuttle capability. With further regard to "temporary connection" points included in the plant design for mobile systems; a more accurate and appropriate term would be "engineered, flexible connections." Reference should be made to RG 1.143 and ANSI 40-37.	2	4	see above
C.I.11.4	C.III.1, Ch.11		It should be sufficient for a plant to state that waste will be disposed when an acceptable disposal option is available. If the plant recognizes that such an option is not available at the time the SAR is submitted or at a subsequent date, then the SAR should provide appropriate information for an interim storage facility or ISFSI, as applicable. The ALWR design is intended for a 60-year licensing period, plus at least 10 years for decommissioning. This is beyond the initial application life of a commercial waste disposal facility, which means that every new plant faces a potential for having to store some waste for short periods of time. If a disposal option is available, waste will normally go from the processor to a disposal facility. If no disposal option is available, then the waste will be processed and returned or sent to an off site vendor storage facility. If the process and return option materializes as a matter of normal operation, then the SAR should address it along with the interim storage consideration. If the disposal-site-available situation is active, then this requirement need not be addressed.	1	1	Consistent with the preceding comment, each occurrence of the following passage or similar passage should be deleted: "Indicate what fraction, if any, of all solid waste processing will be contracted out to waste brokers or specialized facilities. Describe the disposition of solid wastes generated by the plan once processed in such a manner. Indicate whether such processed wastes will be returned to the plant for subsequent disposal or will be shipped directly by the processor to an authorized low-level radioactive waste disposal facility under 10 CFR Part 61 or equivalent Agreement State regulations."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.11.4 (continued)	C.III.1, Ch.11		Equally important, the "fraction of waste processing contracted out" will vary as a matter of competitive routine based on disposal fees, waste characteristics, on site processing costs, and off site processing costs. It cannot be predicted reliably more than one year in advance, so it would never be reliable if stated in the SAR and would constantly need to be updated. It should be sufficient to recognize – without stating it in the SAR – that the plant will rely on safe, licensed and efficient off site processing at the discretion of the plant operator and prevailing economics.	1	1	see above
C.I.11.5	C.I.11		The plant should describe the equipment to be used and provide any appropriate data. At present, very few USA nuclear plants rely on in-house solidification, compaction, shredding, or crushing.	1	1	All references to specific processing equipment (e.g., compactors, shredders, solidifying units) and processing methods (e.g., solidification) should be deleted where they might suggest a requirement for the plant to rely on such systems.
C.I.11.6	C.I.11		Many paragraphs and passages in DG-1145 appear to require details related to specific processes, equipment and procedures that may not be available or accurately defined at the COLA. For example the types of training, specific procedures, process control program. Such data and documentation should be incorporated in the FSAR by reference and made available for review prior to start-up.	1	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA.
C.I.11.7	C.I.11		There are several references to "10 CFR 20.1302" dose limits. 10 CFR 20.1301 is the correct reference for the 10CFR20 dose limits.	3	1	Change 10 CFR 20.1302 to 10 CFR 20.1301
C.I.11.8	C.I.11		NRC Information Notice IN 91-40, Contamination of Nonradioactive System And Resulting Possibility For Unmonitored, Uncontrolled Release To The Environment, should be included along with IE Bulletin No. 80-10 throughout these documents in discussions of contamination of non-radioactive systems. Based on industry Operational Experience (OE), IN 91-40 updates information published in IE Notice 80-10, and should be appropriately referenced.	2	1	Include references to IN 91-40 and IE Bulletin 80-10 where appropriate. Include also in Section C.I.11.6 as references. Consideration should also be given to including references to Reg. Guide 1.11 where appropriate.
C.I.11.9	C.I.11.2.1 pg 3, para 1 and General Comment		All references to "site-specific cost benefit analysis, regardless of purpose or liquid effluent type, should be deleted. This includes any requirement to show that the proposed systems contain all items of reasonably demonstrated technology that, when added to the system in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio affect reductions in dose to the population or comparing equipment to outdated technology. Additionally requires an isotopic analysis that pertains only to surface waters. 10 CFR50 provides for an alternative approach.	1	1	This item is suggestive of "best available technology" and could lead to numerous, subjective challenges on the acceptability of the licensee approach. Some alternative language which could minimize the impact might be: "10CFR50, Appendix I, para D. and Regulatory Guide 1.143 Rev 2 provide the language and an acceptable alternative approach". Extensive references, discussion and justification are provided in Attachment 1 to this Table.

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C.I.11.10	C.I.11.2.1 pg 3, para 2		The required information is basically equivalent in SRP 11.2 Draft Rev. 3, Section III.2.c & Section IV.3; SRP 11.3 Draft Rev 3, Section III.2.b & SectionIV.3, plus it's associated ETSB 11-5, Section B.1.b; SRP 11.4; DG-1145 Section C.I.11.3 and DG-1145 Section C.I.3.1. However, it conflicts with Regulatory Guide 8.8 Revision 3, 1978, Section C.2 on page 8.8-7. SRP 11.2 Draft Rev. 3 Section III.2.c states: "The system capability to process wastes at design basis fission product leakage levels, i.e., from 1% of the fuel producing power in a PWR or, in a BWR, consistent with a noble gas release rate of 3.7 MBq/sec per MWt (100 Ci/sec per MWt) measured after 30 minutes delay." In conflict, Regulatory Guide 8.8 Revision 3 states: "Fission product source terms should be estimated using these bases: (1) an offgas rate of 100,000 Ci/sec after 30 minutes delay for BWRs and (2) 0.25% fuel cladding defects for PWRs."	2	1	Please note that this applies in multiple locations throughout DG-1145.
C.I.11.11	C.I.11.2.1 pg 3, para 3		"Excessive" suggests an unplanned event or accident; the focus of the SAR is on "normal operation, including anticipated operational occurrences."	3	1	In the last line of the paragraph, replace the word "excessive" with "peak."
C.I.11.12	C.I.11.2.1 pg 3, para 5 AND C.III.1, Sec 11.2.1 pg 116, bullet 1		RG 1.143 also applies to in-plant systems (i.e., not just mobile equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.2 on page 2 and C.III.11.2, ensuring that it is linked to in-plant systems as well. This same comment applies to C.I.11.3, C.I.11.4, C.III.11.3 and C.III.11.4.
C.I.11.13	C.I.11.2.1 pg 3, para 5 AND C.III.1, Sec. 11.2.1 pg 116, bullet 1		With regard to plant interface, skid-mounted systems are mobile, and all mobile and skid-mounted systems have the same plant interface (connection) considerations in terms of the SAR. Confusion arises when DG-1145 provides extensive discussion on mobile systems, then it separately addresses skid-mounted systems with the same requirements.	3	4	The term "mobile" should be clarified as "mobile (including skid-mounted)."
C.I.11.14	C.I.11.2.1 pg 4, para 4 AND C.III.1, Sec. 11.2.1 pg 116, bullet 7		At most plants, the Liquid Radwaste System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	2	2	This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. It should be deleted as a requirement or clarified as to intent and applicability.

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C.I.11.15	C.1.11.2.1 pg 4, para 5 AND C.III.1, Sec. 11.2.1 pg 116, bullet 9		A significant aspect of environmental contamination relates to groundwater contamination. EPRI has developed groundwater documents which capture the latest industry guidance, as well as industry lessons learned and technical references. These references will be very useful in responding to this requirement.	3	4	Add references to EPRI Groundwater documents
C.I.11.16	C.I.11.2.2, pg 4, Para 7 AND C.III.1, Sec. 11.2.2 pg 117, para 1		Some systems are not normally considered Radioactive Waste systems, e.g., PWR turbine drains and steam generator blowdown.	3	4	Clarify last sentence regarding processing as follows: "Indicate the processing to be provided for all liquid radwaste (e.g., the systems indicated in Regulatory Guide 1.143)."
C.I.11.17	C.I.11.2.3, pg 5, para 4 AND C.III.1, Sec. 11.2.3 pg 117, para 5		It is not clear why the NRC is pushing SI units, especially as a priority over USA units. Becquerels are routinely required and as more desirable than curies (or perhaps the NRC is requiring both); other passages in the SAR call for kg/yr and m3/yr. If the NRC is seeking an across-the-board change, then it should do so for all licensees and all regulatory requirements. It is not appropriate to seek such a change within a new DG.	1	1	On line 5 of this paragraph, change "...and the becquerel (curie) and radionuclide content (the activity and expected radionuclide distribution..." to "and the activity and radionuclide (expected radionuclide distribution..." This same comment applies throughout C.I.11 and C.III.11
C.I.11.18	C.I.11.2.3, pg 5, Para 3		This is an operational consideration, requires specific knowledge of liquid waste processes and reactor water chemistry, and is not a regulatory consideration.	1	1	Delete the first sentence.
C.I.11.19	C.I.11.2.3 pg 5, para 5 AND C.III.1, Sec. 11.2.3 pg 117, para 6		This section states that Regulatory Guide 1.109 should be used to calculate doses to members of the public, and then to compare the doses to 10CFR20 dose limits. The problem with this requirement is that RG 1.109 and 10CFR20 are based on different ICRP dose methodologies and can not be directly compared. Moreover, RG 1-109 is out of date. Federal Register Vol. 56, No.98, 5/21/91 which issued a revised 10CFR20, states that demonstrating compliance with the design objectives on 10CFR50, Appendix I, and the limits of 40CFR190 will demonstrate compliance with the 0.1 rem 10CFR20 dose limit.	1	1	Remove the requirement to compare RG 1.109 calculated doses to the 10CFR20 dose limits, and/or provide more guidance on how to demonstrate compliance with the 10CFR20 dose limits such as what was provided in the Federal Register. Alternatively, replace RG 1-109 with Federal Guidance 11 and 12..
C.I.11.20	C.I.11.3.1 pg 7, para 2 AND C.III.1, Sec. 11.3.1 pg 117, para 1		RG 1.143 also applies to in-plant systems (i.e., not just to mobile or temporary equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.3 on page 6, ensuring that it is linked to in-plant systems as well.

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C.I.11.21	C.I.11.3.1 pg 8, para 4 AND C.III.1, Sec. 11.3.1 pg 118, para 5		This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. Also, at most plants, the Gaseous Effluent System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	1	1	Delete as a requirement or clarify as to intent and applicability.
C.I.11.22	C.I.11.3.3 pg 9, para 6 AND C.III.1, Sec.11.3.3 pg 119, para 5		Same comment as above for C.11.2.3 with regard to RG 1-109.	1	1	Remove the requirement to compare RG 1.109 calculated doses to the 10CFR20 dose limits, and/or provide more guidance on how to demonstrate compliance with the 10CFR20 dose limits such as what was provided in the Federal Register. Alternatively, replace RG 1-109 with Federal Guidance 11 and 12..
C.I.11.23	C.I.11.3.3 pg 9, para 6 AND C.III.1, Sec. 11.3.3 pg 119, para 5		This section requires that, for gaseous radioactive releases, the licensee must "demonstrate compliance with regulations by comparing the calculated effluents with the concentration limits of 10 CFR Part 20, Appendix B, Table 2, Column 1". Showing compliance with the EC values in 10CFR20, App. B, Table 2 is currently being performed only for liquid effluents per NUREG-1301 and NUREG-1302. As stated in NUREG-1301, for gaseous effluents, site boundary dose limits provide reasonable assurance that the gaseous EC values in 10CFR20, App. B, Table 2 will not be exceeded.	1	1	Remove the sentence, "Demonstrate compliance with regulations by comparing the calculated effluents with the concentration limits of 10 CFR Part 20, Appendix B, Table 2, Column 1" and/or provide NUREG-1301 and NUREG-1302 information that clarifies how the 10CFR20 gaseous EC requirement can be met.
C.I.11.24	C.I.11.4.1 pg 10, para 5		SI unit discussion again; should not be preferential	1	1	Delete SI units or make them non-preferential (i.e., do not list them first).
C.I.11.25	C.I.11.4 pg 10, para 3 AND C.III.1, Sec. 11.4 pg 119, para 6		Mobile systems do not need to be skid-mounted	3	4	Delete the phrase "skid-mounted"
C.I.11.26	C.I.11.4.1 pg 10, para 7 AND C.III.1, Sec. 11.4 pg 120, para 1		RG 1.143 also applies to in-plant systems (i.e., not just to mobile or temporary equipment).	2	4	Reference to RG 1.143 should be made in the first paragraph in C.I.11.4 on page 10 and C.III.11.4 on page 119, ensuring that it is linked to in-plant systems as well

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C.I.11.27	C.I.11.4.1 pg 11, para 3		As used in this paragraph, the word "cleaning" is unclear. Clarification is recommended. It is also recommended that the phrase "and ANSI 55.1" be added after "Regulatory Guide 1.143" along with an appropriate reference to ANSI 55.1 in Section C.I.11.6.	2	4	Clarification needed. Reference to be added.
C.I.11.28	C.I.11.4.1 pg 11, para 3		The intent of the paragraph is not clear, specifically in reference to the term "cleaning." Also add reference to ANSI 55.1.	2	4	Clarify to avoid inadequate responses. ANSI 55.1 provides clarity and supports the connection to RG 1.143.
C.I.11.29	C.I.11.4.1 pg 11, para 6 AND C.III.1, Sec. 11.4.1, pg 120, para 5		This paragraph requires inspection and testing provisions for periodic evaluation of operability and functional performance IAW RG 1.143, yet many operating plants have never committed to this guidance. Also, at most plants, the Solid Radwaste System is always "in-service." Therefore, unlike many other systems, it cannot be taken out of service and tested. Monitoring of system performance and function on a daily/weekly basis meets the intent of this guidance.	1	1	Delete as a requirement or clarify as to intent and applicability.
C.I.11.30	C.I.11.4.2 pg 12, para 5, line 1 AND C.III.1, Sec. 11.4.1, pg 120, para 8		Discussed previously; technologies may not be used and are not required.	2	1	Delete any reference to solidification, shredders, compactors, crushers.
C.I.11.31	C.I.11.4.2 pg 12, para 5, line 1 AND C.III.1, Sec. 11.4.1, pg 120, para 8		This is vendor specific, would vary over the life of the plant, varies more often if mobile systems are used, and varies as often as annually if off site vendors used.	1	2	Delete the sentence "List the system components and their design parameters..."
C.I.11.32	C.I.11.4.2 pg 12, para 5, line 7		Clarification; resolution of SI confusion.	3	1	Change "...and radionuclide and becquerel (curie) content." to "...activity and radionuclide distribution."
C.I.11.33	C.I.11.4.2 pg 12, para 1, lines 8-12		This business option was discussed previously as a General Comment in C.I.11.9	1	1	Delete lines 8-12 beginning with "Indicate what fraction..."
C.I.11.34	C.I.11.4.2 pg 12, para 2		This is adequately addressed in Section C.I.11.3.	2	3	Delete paragraph which begins with "For plant using offgas treatment systems..." Also delete all references anywhere in the DG to kg/yr and m3/yr.

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C.I.11.35	C.I.11.4.2 pg 12, para 3 AND C.III.1, Sec. 11.4.2, pg 121, para 1		Solidification may not be used and is not required. The process control program is an NRC requirement and will automatically address this information. A requirement for compliance with the PCP appears on the top of page 14, paragraph 2, and should suffice.	1	1	Change "...method and solidification media to be used for solidifying each..." to "...method for converting wet waste to a solid waste for each..."
C.I.11.36	C.I.11.4.2 pg 12, para 4 AND C.III.1, Sec. 11.4.2, pg 121, para 1		Solidification not required and may not be used; fraction of off site waste processed is addressed above as a business option and as not being appropriate in the SAR.	1	1	Delete paragraph which begins "Describe methods for solidification..."
C.I.11.37	C.I.11.4.2 pg 12, para 4		This is a solid waste section. Liquid wastes aren't processed by solid waste systems only wet wastes (resins, liquid filters, evaporator concentrates, membrane rejects) are processed.	2	3	If paragraph is not deleted as recommended in previous comment, then change "...processed wet and liquid wastes..." to "... processed wet wastes..."
C.I.11.38	C.I.11.4.2 pg 12, para 5 AND C.III.1, Sec. 11.4.2, pg 121, para 2		These shipping requirements are called out in the next section. They should not be stated in this paragraph. The Process Control Program only addressed disposal waste form issues and cannot demonstrate compliance with shipping regulations	2	3	Delete "10 CFR Part 71, and applicable U.S. DOT regulations (49 CFR Parts 170-180)."
C.I.11.39	C.I.11.4.2 pg 12, para 5 AND C.III.1, Sec. 11.4.2, pg 121, para 2		SECY 94-198 superseded GL 81-038.	2	1	In the last line of the paragraph, the reference to GL-038 should be replaced with SECY 94-198.
C.I.11.40	C.I.11.4.2 pg 13, para 1, lines 4-9		This business option was discussed previously as a General Comment in C.I.11.9	1	1	Delete lines 4-9 beginning with "Indicate what fraction..."
C.I.11.41	C.I.11.4.2 pg 13, para 1		Compaction and baling may not be used and is not required	1	1	In the first sentence, replace "compaction and baling" with "processing."
C.I.11.42	C.I.11.4.2 pg 13, para 2		Clarification needed as to when applicable	3	1	Change "...Part 61.56." to "...Part 61.56 (Stability)"
C.I.11.43	C.I.11.4.2 pg 13, para 4		Flexibility is needed to preclude constant, non-valuable updates to SAR.	3	1	In the first line, replace "Describe the type and size" with "Describe the typical type and size..."
C.I.11.44	C.I.11.4.2 pg 13, para 5		Filling and handling are not methods to obtain loose contamination or measure radiation levels.	3	1	Change "...method of filling, handling and monitoring" to "... method of monitoring."

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C.I.11.45	C.I.11.4.2 pg 13, para 6		There is no 5 year limit for on-site storage. This former requirement of GL 81-038 was superseded by SECY 94-198, which specifically deleted the 5-year limit. SRP 11.4 contains outdated guidance on this topic.	1	1	Delete "(up to 5 years)". Also update SRP 11.4, Append 11.4.-A, pg 11.4-22.
C.I.11.46	C.I.11.4.2 pg 13, para 7		Paragraph is unclear. Moreover, it is not common in current SARs and should be considered for deletion or should be entirely rewritten.	1	1	The following is recommended: "Discuss provisions for moving waste containers to storage and shipping areas. Also discuss the potential for loss of radioactive contents due to dropping containers from cranes, forklifts, monorails, etc. Describe provisions for collecting and processing any lost contents and decontaminating containers. Describe provisions for waste storage prior to shipping, including storage provisions, storage capacity, etc." Delete the balance of the paragraph.
C.I.11.47	C.I.11.4.2 pg 13, para 8		Clarification; resolution of SI confusion.	2	4	Change "...and radionuclide and becquerel (curie) content." to "...activity and radionuclide distribution."
C.I.11.48	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		P&IDs and process flow diagrams: Only one or the other should be required, based on the specific plant design.	1	4	On line 1, change "P&IDs and process flow diagrams" to "P&IDs or process flow diagrams"
C.I.11.49	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		Clarification; minimizes ambiguity and potential for expanded scope of analysis to "all possible anticipated events."	3	1	On line 5, change "anticipated" to "expected"
C.I.11.50	C.I.11.4.2 pg 14, para 1 AND C.III.1, Sec. 11.4.2, pg 121, para 3		This information applies to liquid wastes; it should not appear in the solid waste section.	2	3	Delete last two sentences on lines 5-8 where the paragraph states "Provide information on instrumentation..."
C.I.11.51	C.I.11.4.2 pg 14, para 2-3		This information applies to liquid wastes; it should not appear in the solid waste section.	2	3	Delete paragraphs 2-3, which begin with "Provide P&IDs which indicate..." and "In addition, provide

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C.I.11.52	C.I.11.4.3 pg 14, para 6		For clarification purposes. This section is for solid waste, and releases tends to be (1) generally applicable to liquid and gaseous effluents; and (2) focused on clearance (unrestricted release) rather than the extensive listing near the bottom of the same page.	2	4	In the subsection title and in all paragraphs which follow within this subsection, change the word "releases" to "effluents" or "release points" to "effluent release point
C.I.11.53	C.I.11.4.3 pg 15, para 3		(1) clarification; and (2) typo.	3	5	In the last sentence of the paragraph, change "For release points disposal methods..." to "For effluent release points and disposal methods..."
C.I.11.54	C.I.11.4.3 pg 15, para 3		Mention of liquid and gaseous waste not applicable to solid waste section.	2	3	In item 2 following paragraph 6, delete "liquid, gaseous,"
C.I.11.55	C.I.11.4.3 pg 15, para 1 AND C.III.1, Sec.11.4.3, pg 121, para 4		The requirements in C. I.11.4.3 and C.III.11.4.3 should be identical at this point, but they are worded differently for some unclear reason. This leads to confusion by the user.	2	4	Match the two paragraphs
C.I.11.56	C.I.11.4.3 pg 15, para 1 AND C.III.1, Sec. 11.4.3, pg 121, para 4		A copy of the PCP is required, but this will not be available during the COLA phase. The PCP should NOT be required, as it is primarily an operational business decision which will likely change or only be known very near the time the plant is commissioned. This same concept applies to the ODCM. In addition, the PCP does not apply to transport.	1	2	Delete the requirement. This same concept applies to any requirement for submittal of the ODCM. Also delete reference to "NRC and DOT shipping regulations (Part 71, and 49 CFR 171-180)"
C.I.11.57	C.I.11.5 pg 15, para 5		Clarification.	3	4	Replace "summarized here, including flow diagrams and essential design features" with "referenced here."
C.I.11.58	C.I.11.5 pg 15, para 6		The information in EPRI report TR-101965 satisfies these guidance documents.	2	4	Include a reference to EPRI Report TR-101965 as an acceptable approach to meeting the guidance in RG 1.21, 1.33 and 24.15.
C.I.11.59	C.I.11.5.2 pg 17, para 2		This refers to the second paragraph from the bottom of the page. Regulatory Guide 1.109 is outdated.	2	1.	Regulatory Guide 1.109 should be replaced with a current reference.
C.I.11.60	C.I.11.6		General comment – review all references in the document and (1) ensure they appear in the References in C.12.6; (2) delete any References which are not used in the basic text; (3) delete any references which are out of date, superseded, etc.	2	4	Clarification and completeness of references

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C.I.11.61	C.I.11.6		References are addressed without specific revision numbers. It is critical that those developing and reviewing each document know which regulatory or other references applied. This is especially true for frequently or annually revised RGs and NUREGs, as well as for periodically revised ANSI standards and industry standards (including the EPRI URD).	2	4	1) Add a requirement for a table of references to be included in the COLA which contains the specific revision number used by the applicant for each reference. 2) It is requested that the NRC provide industry with a discussion regarding which reference revision numbers are to be used in developing the COLA and the SAR (e.g., NUREG-1307 rev 11, "most current"). This discussion would be expected to apply throughout current and future COLA and SAR development.
C.I.11.62	C.I.11.6		Clarification and completeness of references routinely used by industry (e.g., NEI; EPRI or other guidance documents). Similarly, embedded references within other DG-1145 references should be included. For example, if a Regulatory Guide is referenced as the source of a requirement, but within the RG is an explicit related or controlling reference to an ANSI standard, then the ANSI standard is considered as an "embedded" standard" and should be referenced in DG-1145.	2	4	General comment --Add an "Industry Standards" section to identify NEI, EPRI or other guidance documents and key technical reports which are routinely used by industry and/or recognized by NRC as an acceptable approach. Add all applicable embedded references.
C.I.11.63	C.I.11.6, pg 18		The conversion factors in RG 1.109 are outdated. Those contained in the Federal Guidance are based on more current guidance and models.	3	1	Replace Regulatory Guide 1.109 with Federal Guidance Reports 11 and 12.
C.I.11.64	C.I.11.6, pg 18		Regulatory Guide 1.110 is outdated	3	1	Delete Regulatory Guide 1.110
C.I.11.65	C.I.11.6, pg 18		RG 1.113 has been incorporated into RG 1.143	3	1	Delete Regulatory Guide 1.113.
C.I.11.66	C.I.11.6, pg 19		GL-81-038 replaced by SECY 94-198.	1	1	Delete Generic Letter 81-038; add SECY 94-198
C.I.11.67	C.I.11.6, References		Additional references	3	4	IN 91-40 IE Bulletin 80-10 Regulatory Guide 1.11 ANSI 40.37
C.I.11.68	C.1.11.2.3 pg 5, para 5 AND C.1.11.3.3 pg 9, para 6		Compliance with EPA 40CFR190 is required as part of section 11.2. Compliance with this standard has typically been part of the Offsite Dose Calculation Manual.	2	4	Delete this reference from here (also section C.1.11.3.3) and include it as part of the ODCM discussion in C.1.11.5.2.
C.I.11.69	C.1.11.3.2 pg 9, para 3		Identification of the types of adsorbent media to be used is required. However, the detailed type of this media will be determined based upon performance and availability throughout the plant operation. Technology improvements should not be precluded from adoption by requiring excessive detail here.	2	2	Require identification of only the general type of adsorbent media, along with performance characteristics assumed.

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C.I.12.1	C.I.12 General 1		Many of the requirements in this document appear to require details related to specific processes, equipment and procedures that may not be accurately defined at the COLA. For example the types of portable and in-plant radiation protection instrumentation, training, specific procedures, as well as discussion of routine survey frequencies, etc.	1	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA.
C.I.12.2	C.I.12.1.2, Para. 1		At the end of the first paragraph of this section: "These descriptions should be detailed in the SAR, including an indication of whether and, if so, how the plant will implement and follow the design consideration guidance provided in Section C.I of Regulatory Guide 8.8, as well as other industry-developed design guidance that includes ALARA criteria. Conversely, if the plant will not follow such guidance, describe the specific alternative approaches to be used." It is important to define the documents referred to in general terms in the DG-1145. For example when it says "as well as other industry developed design guidance that includes ALARA criteria." This is open ended and dependent on the NRC reviewer can entail compliance with a multitude of various documents. This goes back to the idea of making sure that the COL applicants have all the documents and regulations they need to follow on hand so as to decrease the number of RAIs.	2	4	Define which document they are referring to. OR deleted "as well as other industry developed design guidance that includes ALARA criteria"
C.I.12.3	C.I.12.1.2, para 3		"Include a general discussion of the plant's approach to meeting the requirements by specifying the selected design concept and the supporting design bases and criteria. Demonstrate that the design concept is technically feasible and within the state-of-the-art, and that reasonable assurance exists that the requirements will be properly implemented prior to the issuance of operating licenses."	2	4	Needs clarification and definition of "requirements."
C.I.12.4	C.I.12.1.3		First paragraph of this section requested information, such as "Describe the methods to be used to develop the detailed operational plans, procedures, and policies." This data may not be available during the design and construction phase. This information may not be available until the fueling begins.	2	2	Refer to General Comment 1.
C.I.12.5	C.I.12.2.1		Specify what kind and the detail of information is being asked for, i.e. what kind of isotopes at what dose ranges, what detail is meant by "location" of the source.	3	4	Specify what kind and the detail of information is being asked for, i.e. what kind of isotopes at what dose ranges, what detail is meant by "location" of the source.
C.I.12.6	C.I.12.2.1		It is not clear how N-16 sources from BWR operation are contained sources.	3	4	Requires clarification.
C.I.12.7	C.I.12.2.1		Instrument calibration methods and radiation sources used for calibration may change from the time of design and construction to the time of operation. If this information is provided at the apparent detailed level requested will a license change be required to use different methods and sources than reported?	2	2	Requires clarification.

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C.I.12.8	C.I.12.2.1		Revise this to provide separate requirements that are dependent on source origination (owner license, other license, etc.) and plant status.	2	4	This section should specify separate requirements depending on criteria such as during operation conditions, sealed sources, accident sources, site boundaries, button sources, etc.
C.I.12.9	C.I.12.2.1		"Provide a listing of isotope, quantity, form, and use of all sources in this latter category that exceed 100 millicuries." Is this only for sealed sources? Is this for any non-reactor generated source in the plant. What is the regulatory basis for the 100 millicuries limit?	3	4	Please provide clarification for this requirement. Is this applicable only to portable/installed sources.
C.I.12.10	C.I.12.2.2		"This description should include those airborne sources that are created by leakage, opening formerly closed containers, storage of leaking fuel elements, and so forth."	2	4	This is a very broad statement that requires clarification. Please define how we would define leakage – is this design leakage? What are closed containers? Waste? Tanks?
C.I.12.11	C.I.12.4.2 & C.I.12.3		The referenced sections refer to NUREG 0737. Since this NUREG was written significant regulatory work has been done that changes many of the requirements or allows for alternate ways to meet the intent of the guidance.	2	4	NUREG 0737 should be reviewed to ensure that the industry does not re-commit to requirements resolved following publication of the document.
C.I.12.12	C.I.12.3.1, para 2		"Also, include descriptions of methods for reducing the production, distribution, and retention of activation products through design, material selection, water chemistry, decontamination procedures, and so forth."	2	2	Specify the time frame when this information is expected.
C.I.12.13	C.I.12.3.1, para 3		This is a complex paragraph that asks for a significant volume of information. "Provide scaled layout and arrangement drawings of the facility. On these drawings, show the locations of all sources described in Section 12.2 of the SAR and identify those sources in a manner that can easily be related to tables containing the pertinent and necessary quantitative source parameters. Accurately locate positions, indicating the approximate size and shape of each source. On the layout drawings, provide the radiation zone designations, including zone boundaries for normal operations, refueling outages, and post-accident conditions (based on the applicable guidance in Regulatory Guides 1.3, 1.4, 1.7, and 1.183). Reference other chapters of the SAR, as appropriate. The layout drawings should show shield wall thicknesses; traffic patterns (including post-accident access routes to and from vital areas); and locations of controlled access areas (including locked	2	2	The level of detail requested may not be available at the time the COLA is submitted and is not necessary for COLA. The guidance should say that it is acceptable to provide the requested information or provide a general description and/or reference to applicable codes and standards that will be used to implement the design described in the FSAR. The guidance may call for the COL applicant to provide a schedule for making this information available for NRC audit, but the schedule need not be part of the COLA. Items 1 and 2 below also address this same paragraph but are three "Proposed Alternates" that address different issues. The concerns are as follows: 1) this complex paragraph should be split up so that it is easier to read and follow the requirement, 2) portable and fixed equipment should be addressed separately, 3) if the level of required detail is not clarified, changes to these items following COLA submission and/or unit startup will require a 10 CFR50.59 evaluation. This requires a significant effort

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.12.13 (continued)	C.I.12.3.1, para 3		high and very high radiation areas), personnel and equipment decontamination areas, personnel locker and changeout rooms, contamination control areas, radiation protection facilities, airborne radioactivity, area and portal radiation monitors, the solid radwaste processing area and control panels for radwaste equipment and components, the onsite laboratory for analysis of chemical and radioactive samples, the independent spent fuel storage installation (where applicable), the counting room, and the control room and Technical Support Center. Specify the design-basis radiation level in the counting room during normal operation and anticipated operational occurrences. Describe the facilities and equipment (such as hoods, glove boxes, filters, special handling equipment, and special shields) related to the use of sealed and unsealed special nuclear, source, and byproduct material."	2	2	on the part of the licensee solely due to inadequate initial guidance.
C.I.12.14	C.I.12.3.5 and C.III.1, Sec. 12.4		C.III.1 retains the section header "12.4 Dose Assessment", whereas C.I removes the 12.4 numbering completely. This creates a different sub-section numbering for the last section between C.III.1 and C.I	3	5	C.III should revised to be consistent with C.I.
C.I.12.15	C. I.12.4, second # (3)		Prior to initial loading of fuel in the reactor, the program described in this section will be fully implemented, with the exception of the organization, facilities, equipment, instrumentation, and procedures necessary for transferring, transporting or disposing of radioactive materials in accordance with 10 CFR Part 20, Subpart K, and applicable requirements in 10 CFR Part 71.	3	4	Requires clarification
C.I.12.16	C. I.12.4, last para		"Identify the staffing levels, instrumentation and equipment, facilities, procedures, and training necessary to ensure radiation safety of workers and the public for each phase of implementation." This information will not be available until before the start of operation.	2	4	Revise to indicate that criteria used for defining these parameters should be provided in the application.
C.I.12.17	C.I.12.4.2		This section appears to address fixed and portable instrumentation and also facilities. Fixed instrumentation is addressed in 12.3.1 and 12.3.4. Facilities are addressed in sections 12.3.1 and in part in others.	2	3	Modify this section to clarify that only portable instrumentation and radiation protection facilities are addressed in this section.
C.I.12.18	C.I.12.4.2, para 2		Current language is too restrictive and would require an SAR revision for every new instrument type, quantity, etc.	2	4	Change "Describe the types of detectors and monitors, as well as the quantities..." to "Describe the typical types of detectors and monitors, as well as the minimum quantities..."
C.I.12.19	C.I.12.4.2 "Facilities", para 1		C.I.12-11 applies to non-DCD COLA only. There will be no DCD to refer to.	3	4	Delete first sentence: "This section of the SAR need not include..."
C.I.12.20	C.I.12.4.3, Contamination Control, para 1		Use of the term disposal in the last sentence of the first paragraph implies that it will be disposed at a licensed burial facility.	2	4	Modify last sentence to use the term disposition in lieu of disposal.

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C.I.12.21	C.I.12.4.3, Contamination Control, para 2		IN 91-40 uses industry experience to update IE 80-10	3	1	Reference IN 91-40 here
C.I.12.22	C.I.12.4.3, Personnel Monitoring and Dose Control, para 3		The detailed procedures for refueling, etc., are not appropriate for inclusion in this section. This should address only the ALARA aspects.	3	4	Clarify second sentence: "Include a description of the ALARA aspects of the radiation protection procedures used in refueling..."
C.I.12.23	C.I.12.4.3, Radioactive Material Control, para 1		Significant typo	3	5 typo	In sentence 3, change "position control" to "positive control."
C.I.12.24	C.I.12.5		Add RG 1.140	3	1	Referenced document in main text
C.I.12.25	C.I.12.5 (25)		Outdated.	3	1	Delete RG 8.28
C.I.12.26	12.5		Sub-numbers are not correct (start with 49)	3	5 typo	Change to 1 - 3
C.I.12.27	C.I.12.5		Many documents referenced in this guidance direct the user to other supporting documents. The guidance document reference list does not appear to list all of those cross referenced documents and therefore is an incomplete reference list.	3	4	Add cross referenced documents to the Reference list.
C.I.12.28	C.I.12.3.3 2nd para.		It is stated in the first paragraph of this section that the intent of the section is to address those items "not addressed in Chapter 11 or described in Chapter 9", however the statement to that effect is not concise nor in the optimal location in that paragraph.	2	3	Reformat Para 1 to move the following to the 1st sentence: "Section 12.3.3 of the SAR should describe any ventilation system protective features that are not addressed in Chapter 11 or described in Chapter 9."
C.I.12.29	C.I.12.4.3 Respiratory Protection 2nd para. 1st bullet		Bioassays is redundant. Monitoring bioassays is covered completely in the previous section of C.I.12.4.3 under the heading "Personnel Monitoring and Dose Control." See the 1st para, 2nd sentence.	2	3	Delete bioassays from this requirement
C.I.13.1	C.I.13.1		NRC should consider changing the required format for section 13.1 to include an appendix in which would be placed all the design and construction information currently required in subsection 13.1.1. This information becomes historical after construction/startup and is generally removed from site FSARs.	3	5	Placing it in an appendix would make it simpler for the applicant in the future to maintain the FSAR as a living document.
C.I.13.2	C.I.13.1	C.I.13.1-1	NRC should consider changing the required format for section 13.1 to include a table or appendix which would contain information which is site specific or different from a standard/generic FSAR section 13.1. Industry and NRC are currently attempting to make much of the FSAR generic.	2	5	Removing the site specific information to an appendix would allow the NRC to perform only one required review of the required information in the FSAR and if the applicant adopted the previously reviewed FSAR section the only new reviews required for the NRC would be that information in the suggested table or appendix.
C.I.13.3	C.I.13.1		Items 13.1.1, d. and e. seem to be asking for the same information except that d. uses the adjective "general".	2	4	Clarify the expectations or combine items d. and e.

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C.I.13.4	C.I.13.1.1		The section requests detail that does not impact public health and safety. Presentation of the numbers is highly variable considering contractor or utility experience and task duration. All requests for numbers of people should be eliminated.	1	2	Delete any reference to numbers of people or percentage of time assigned to the project in the opening paragraph, item 3 and item 6.
C.I.13.5	C.I.13.1.1		This section requests detail that does not impact public health and safety. Organizational alignments do not add value to the descriptions and are not useful. For the industry to provide consistent descriptions in the SARs this section should only address responsibilities and qualifications. Numbers of people and organization design should not be included. Delete reference to Technical Support Organization from this section, too much of the information belongs in 13.1.2 relative to Operating Organization.	1	2	Combine and reword items 1-7 to address two issues only; 1) describe functional responsibilities of the design, construction, and operating organization, 2) provide general educational and experience requirements for required functions, 3) change the title of the section to address only "Management of Design and Construction", 4) consider an alternative solution, have 13.1.1 address design, 13.1.2 address construction, and 13.1.3 address operations for easier reference and less duplication.
C.I.13.6	C.I.13.1.1.1		Pre-Operational Responsibilities -- This item indicates that a description of the proposed plans for the development and implementation of staff training programs should be included and should be substantially accomplished before preoperational testing begins.	3	4	This item is more appropriately relocated to Subsection 13.2, Training.
C.I.13.7	C.I.13.1.1.1		This section is too large because it includes Design, Construction and Operating Responsibilities. Organization alignment information is provided that does not impact public health and safety. As an example, delete the requirement for organization charts. Simplify the presentation of information and focus only on functions and qualifications.	1	2	Change section 13..1.1.1 to only address Design related functions and qualifications. Change 13.1.1.2 to only address Construction related functions and qualifications.
C.I.13.8	C.I.13.1.2		It is not necessary to differentiate between an operating organization responsibility and support organization responsibility at the site. Pull site operational functions out of 13.1.1 and place in 13.1.2. Only address function and qualification. Remove organization charts and organization alignment descriptions. Only include a description of required functions and qualifications.	2	2	Add qualifications to the function descriptions for the Operating Organization in 13.1.2. No need for section 13.1.3 so this section can become reference section.
C.I.13.9	C.I.13.1.2.1	C.I.13.1.2.1-1	Plant Organization, first sentence-- This sentence requires an applicant to provide an organization chart showing the title of each position, number of persons assigned, etc. An industry comment proposed that a high-level organization chart be provided in the COL application since the details needed for the requested chart would not be known at the time the application was filed. The industry understanding of the discussion of this issue is that the NRC agrees that a high-level organization chart is adequate for the application and that the regulatory commitments associated with the applicant organization could be confirmed through inspections after the COL application is filed. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.1.2.1 was not revised to reflect the adequacy of the alternate approach.	1	2	It is recommended that subsection 13.1.2.1 be revised to reflect that a high-level organization chart is adequate for the application and that the regulatory commitments associated with the applicant organization could be confirmed through inspections after the COL application is filed.
C.I.13.10	C.I.13.2		Change the title of 13.2 to Training Program	3	4	

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C.I.13.11	C.I.13.2		Too much detail is being requested for submittal in the training program descriptions. None of this can be entered until the systematic approach to training is followed and materials are actually developed.	1	2	Revise guidance to indicate that the application should include a commitment to SAT and applicable regulatory requirements.
C.I.13.12	C.I.13.2		The second sentence of the first paragraph refers to requalification programs as required in 10 CFR 50.54 (i)(I-1). This section of 50.54 states "Within three months after issuance of an operating license, the licensee shall have in effect an operator requalification program which must as a minimum, meet the requirements of § 55.59(c) of this chapter."	1	1	The industry believes that the proposed part 52 rule language published in the federal register on March 13, 2006 should be incorporated in this section. Specifically "Within three (3) months after either the issuance of an operating license or the date the Commission makes the finding under §52.103(g) of this chapter for a combined operating license, as applicable, the licensee shall have in effect an operator requalification program."
C.I.13.13	C.I.13.2.1		First paragraph – at the end of this paragraph, reference is to Section 13.2.3. Following renumbering from initial draft, the correct reference is 13.2.2.	3	5	Modify as indicated
C.I.13.14	C.I.13.2.1.1	C.I.13.2-6	These items specify that license applicants should identify the proposed training course durations in the COL application. The industry provided comments that they believed it was not possible to prescribe course durations prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course durations is inconsistent with the systems approach to training and that the reference to training course durations should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.2.1.1 was not revised to delete the reference to training course durations. It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.	2	4	It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.
C.I.13.15	C.I.13.2.1.1		Too much descriptive detail is requested in this section. Schedules are not needed, it is enough to say that sufficient operators shall be licensed prior to fuel load. Items 1 -6 request too much description on what is required by 10CFR55. No need to add this level of detail. For items 1-10 too much detail is requested for 10CFR50.120 programs.	1	2	Add a reference to section 13.4 that describes the operational program requirements. Delete detail requested in 1-6 for OPS programs. Reviewer just needs a commitment to meet the CFR. Delete detail requested in 1-10 for non-OPS programs. Reviewer just needs a commitment to meet the CFR. Remove requirement to provide a schedule.
C.I.13.16	C.I.13.2.1.1		For clarity, add additional level of numbering for this section: 13.2.1.1.1 for licensed plant staff, 13.2.1.1.2 for non-licensed plant staff	3	4	

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C.I.13.17	C.I.13.2.1.1		These items specify that license applicants should provide the subject matter including a syllabus or course description for the proposed training courses in the COL application. The industry provided comments that they believed it was not possible to prescribe syllabi or similar detailed course descriptions prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course content is inconsistent with the systems approach to training and that the reference to syllabi of equivalent course descriptions should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC making no distinction between course topics and a syllabus.	1	2	It is recommended that the references to proposed training syllabi or equivalent course descriptions be removed from Subsection 13.2.1.1.
C.I.13.18	C.I.13.2.1.1		Licensed Plant Staff Item 4 identifies RG 1.149 along with several regulations and refers to all of them as "requirements." The NRC RG is only guidance, not a requirement.	3	1	Separate RG 1149 from the regulations cited and refer to it explicitly as guidance.
C.I.13.19	C.I.13.2.1.1		Non-Licensed Plant Staff Item 2 indicates that the application should include "a commitment to meet the requirements of 10 CFR 50.120 at least 18 months before fuel load." There is no need to commit to a regulation. Regulations are already required to be met, with or without a commitment	3	1	N/A
C.I.13.20	C.I.13.2.1.1 (1) and 13.2.1.2	C.I.13.2-6	Text refers to development of a schedule including course durations for the licensed operator training program and each part of the training program for each functional group of employees. NRC concurred with the industry's comment that the predetermination of the course durations is inconsistent with the systems approach to training (SAT) as described in 10 CFR 55.4 and required in this section.	3	2	Industry recommends removal of requirements for course durations and timelines from the FSAR
C.I.13.21	C.I.13.2.1.1 (1) and 13.2.1.2		Text specifies the development of program implementation timelines. The industry believes the level of detail requested in these FSAR section is beyond that necessary to support required COL findings. Consistent with SECY-05-0197, industry believes that timeline information should be supplied as part of program implementation materials separately from the FSAR.	1	2	Remove section 13.2.1.2 and references to timeline in 13.2.1.1
C.I.13.22	C.I.13.2.1.1 (9)		Text specifies evaluation of training program effectiveness for all employees in accordance with SAT. Industry believes that the FSAR section 13.2 only includes specific training programs for personnel detailed in the section (e.g. licensed personnel and personnel covered by 10 CFR 55.120.)	2	4	Revise text to include only training programs for licensed employees and personnel covered by 10 CFR 55.120.
C.I.13.23	C.I.13.2.1.1(1)		First sentence requires that course length be identified. This information will not be known at the time of COL application	1	2	Remove from text.
C.I.13.24	C.I.13.2.1.1(10)		This section discusses the training provided to all employees regarding physical security. This information will be included in section 13.6. Additional information will also be included in the Physical Security Plan, which is a separate document that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.25	C.I.13.2.1.1(2)		First sentence refers to the inclusion of 10 CFR 55.31 (how to apply for a license) as needing to be described in the FSAR training program description. This is an administrative requirement that should not be included in the FSAR	2	4	Delete reference to 10 CFR 55.31

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.26	C.I.13.2.1.1(3)		First sentence – subject matter, course description and durations will be developed using SAT post-COL application	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL
C.I.13.27	C.I.13.2.1.1(4)		Reference is made to 10 CFR 55.31 (how to apply). This is not related to description of simulator capability and should be deleted.	2	4	
C.I.13.28	C.I.13.2.1.1(4)		Paragraph requires the COL applicant to state how its program will meet regulatory requirements and guidance, including fidelity to the plant and control room. This information will be contained in plant administrative procedures that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.29	C.I.13.2.1.1(4)		The fire protection program description will be included in FSAR section 9.5.1. The fire protection training program will be developed to meet the requirements of NFPA Standard 600. Training program information detailed in this section of DG-1145 will be developed post-COL application.	1	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL
C.I.13.30	C.I.13.2.1.1(7)	C.I.13.2.1.1-13	This section discusses Emergency Plan training. Emergency Plan training will be included in the Emergency Plan, which is a separate document that will be developed post-COL application	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.31	C.I.13.2.1.1(8)		Paragraph requires the COL applicant to state how its program will meet regulatory requirements and guidance, including fidelity to the plant and control room. This information will be contained in plant administrative procedures that will be developed post-COL application.	2	2	Revise document to allow commitment to meet regulation with verification by NRC during inspection post-COL.
C.I.13.32	C.I.13.2.1.2		These items specify that license applicants should identify the proposed training course durations in the COL application. The industry provided comments that they believed it was not possible to prescribe course durations prior to the systems approach to training as described in 10 CFR 55.4 and that predetermination of course durations is inconsistent with the systems approach to training and that the reference to training course durations should be removed from DG-1145. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their concurrence with the comment. However, subsection 13.2.1.1 was not revised to delete the reference to training course durations.	1	2	It is recommended that the references to proposed training course durations be removed from items (1), (3), and (6) of Subsection 13.2.1.1.
C.I.13.33	C.I.13.2.1.2		The first sentence of the section contains conflicting text.	3	4	Revise by deleting the last three words of the sentence "following plant criticality".
C.I.13.34	C.I.13.2.2		NUREG-0711, "Human Factors Engineering Program Review Model", should not be listed as a reference for this section. This NUREG is applicable to detailed development of training programs, but is not applicable to the high-level program description provided by FSAR 13.2.	1	4	Delete the reference.
C.I.13.35	C.I.13.2.2		RG-1.134,"Medical Evaluation of Licensed Personnel at Nuclear Power Plants", should not be listed as a reference for this section. The information in this RG applies to the licensed operator training program, but not to the high-level program description.	1	4	Delete the reference.

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C.I.13.36	C.I.13.3		The emergency class definitions have been revised to include security events.	1	1	The emergency plan should include the Emergency Classification definitions contained in NRC BL 2005-02 or those developed by NEI and endorsed by the NRC in RIS 2006-12.
C.I.13.37	C.I.13.3		This confirmation of agreement does not need to be a permanent part of the E-plan. Also, the letter showing offsite agency agreement is needed whether or not there are other reactors at the site.	2	4	The applicant should provide some form of confirmation of the agreement, such as a letter signed by State and local governmental authorities, with the application.
C.I.13.38	C.I.13.3		This should be able to be provided by reference to other sections.	2	2	Add the following sentence after the second paragraph on page C.I.13-11:"It is acceptable to reference the sections in the FSAR that address site characteristics to satisfy this requirement."
C.I.13.39	C.I.13.3		Existing regulations do not require submittal of State and local emergency response procedures, just plans. (10 CFR 50.33(g))	1	1	In addition to the NRC's regulations (described above), the COL application needs to include the applicable State, Tribal, and local plans that address the relevant DHS requirements contained in 44 CFR Parts 350, 351, and 352, as well as associated REP guidance documents.
C.I.13.40	C.I.13.3.1	C.I.13.3.1-1	It is permissible for the Emergency Plan to be a stand alone document.	3	2	This plan should be a physically separate document *referenced by* Section 13.3 of the FSAR, and may incorporate by reference various State and local emergency plans or other relevant materials.
C.I.13.41	C.I.13.3.1		The requirement of 10CFR 73.71(a) should be addressed under security, not EP.	1	4	The cross-reference should indicate where the specific criteria in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), Appendix E to 10 CFR Part 50, and NUREG-0654/FEMA-REP-1, Rev. 1 are addressed in the applicant's plans.
C.I.13.42	C.I.13.3.1		Explicitly state what type of documents must be addressed - GL, BL, Orders. This should not include IN's as these are not supposed to set new requirements.	1	1	The applicant should address the various generic communications and Commission Orders that are in effect...explicitly state what type of documents must be addressed - GL, BL, Orders.
C.I.13.43	C.I.13.3.1		The EAL information should be in the stand alone Emergency Plan.	3	3	The *emergency plan* should also address an emergency classification and action level scheme, as required by 10 CFR 50.47(b)(4).
C.I.13.44	C.I.13.3.1		For security-related aspects of EP to be addressed, explicitly reference BL 2005-02 and RIS 2006-12, not just the 2002 orders.	2	4	The applicant should address the NRC Orders issued February 25, 2002, *BL 2005-02 and RIS 2006-12*, as well as any subsequent NRC guidance (or any NRC endorsed industry guidance developed in response to issues related to implementation of the Orders), to determine what security-related aspects of emergency planning and preparedness must be addressed in the emergency plan.
C.I.13.45	C.I.13.3.1		10 CFR 2.390 gives the requirements for marking information to be withheld from public disclosure.	3	1	Any information submitted to the NRC that is proprietary, sensitive, or safeguards information should be marked *as required by 10 CFR 2.390.*

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C.I.13.46	C.I.13.3.3		Refer to the table at it is labeled - Table C.II.2.B-1.	1	3	Additional plant-specific emergency planning ITAAC (i.e., beyond those listed in Table C.II.2.B-1.) may be proposed, and they will be examined to determine their acceptability on a case-by-case basis.
C.I.13.47	C.I.13 Table 13.3		Section 7.1 states that the TSC and OSC may be combined. Section7.1.6 states that the OSC be separate from the TSC.	2	3	Revise 7.1.6 to be consistent with 7.1.
C.I.13.48	C.I.13.3.1		C.I.13.3.1 states: "The application should also include a table of contents and a cross reference to applicable regulatory requirements, guidance documents, generic communications, and other criteria that are used to develop the application and emergency plan." C.I.13.3.1 defines "generic communications" by directing the reader to C.I.13.3.4. The C.I.13.3.4 listing of generic communications includes not only generic letters and bulletins but also NRC IN, RIS, EPPOS, and CR documents. The C.I.13.3.1 use of the term "generic communications" appears to be inconsistent with requirements in proposed Part 52.79(a)(37) which limits this scope to bulletins and generic letters (which is specifically noted in Footnote 3 in C.I.13.3.1). Inclusion of documents beyond GL and bulletins is also inconsistent with C.I.1.9.4 which justifies "The significance of limiting this review to generic letters and bulletins is that these documents pertain to issues that were considered to have risen to a level of safety-significance such that they required responses and resolutions from nuclear operating plant license	2	1	C.I.13.3.1 should be revised as follows: "The application should also include a table of contents and a cross reference to applicable regulatory requirements, guidance documents, generic letters and bulletins, and other criteria that are used to develop the application and emergency plan." "The applicant should address the various generic letters and bulletins and Commission Orders that are in effect and applicable to emergency planning in support of an Operating License (see Generic Communications identified in Subsection 13.3.4, below)."
C.I.13.48 (continued)	C.I.13.3.1		Furthermore, 52.59(a)(37) and C.I.1.9.4 limits this scope to how the subject operating experience insight is incorporated into facility design. In public workshop discussions, this listing in C.I.13.3.4 was discussed; however, it remains unclear as to why emergency planning would be given different requirements in contrast with any other area that may involve operational aspects.	2	1	see above
C.I.13.49	C.I.13.4		The first two paragraphs refer to two different documents for definition and discussion of the term "fully described". NRC should change the first reference from "SECY-05-0197" to "C.IV.4" and remove the second reference such that the third sentence in the second paragraph would read "Descriptions of operational programs, consistent with the definition of "fully described" as discussed in Section C.IV.4, should be provided..."	3	3	Revise as described
C.I.13.50	C.I.13.3		Reference 23 is a proposed Reg. Guide revision that dates back to 1986 that has never been finalized.	1	2	Replace with reference to the appropriate approved Reg. Guide version.

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C.I.13.51	C.I.13.3		Typo in document title for reference 104.	3	5	Change "Date" to "Data"
C.I.13.52	C.I.13.3		Reference 125 is a duplicate of 124	3	5	Delete Reference 125
C.I.13.53	C.I.13.4		NRC should change the third sentence of the second paragraph and state that "Descriptions of operational programs ... should be provided in this the chapter of the FSAR or in other, applicable to the operational program sections of the FSAR.			Revise as described
C.I.13.54	C.I.13.4, Table 13.4-x, Item 1		FSAR section is incorrectly stated as 3.9.6. ISI is actually covered in two places.	3	3	Change to '5.2.4 and 6.6'
C.I.13.55	C.I.13.4, Table 13.4-x, Item 1		Implementation requirement listed could be clarified	3	4	Add "ASME XI 2004 IWA 2430(b)"
C.I.13.56	C.I.13.4, Table 13.4-x, Item 2		Based on ASME OM 2004, ISTA 3120(c)(1), the milestone shown is not correct	2	4	Change to 'Generator on-line by nuclear heat'
C.I.13.57	C.I.13.4, Table 13.4-x, Item 3		The implementation milestone states 'Authorization for fuel load'. There is no compelling reason to tie implementation to an authorization	2	4	Change to read 'Fuel load'
C.I.13.58	C.I.13.4, Table 13.4-x, Item 3		The implementation requirement listed is not correct. 10 CFR 50.49(a) does not specify when the program is to be initiated.	2	1	In accordance with C.IV.4, this should read 'License Condition'
C.I.13.59	C.I.13.4, Table 13.4-x, Item 5		The milestone is listed as 'None specified'	2	4	Change to 'Fuel load'
C.I.13.60	C.I.13.4, Table 13.4-x, Item 6		PST requirements are only covered in DG-1145 section 3.9.6	2	3	Change FSAR section to '3.9.6'
C.I.13.61	C.I.13.4, Table 13.4-x, Item 8		There is only one milestone listed. The FP program will be implemented in two phases: (1) Fuel receipt (for building storing new fuel and adjacent areas that could affect fuel storage area) (2) Fuel load (for remaining areas)	2	5 - Not consistent with SRP	Changed to indicate phased implementation 1. Fuel receipt 2. Fuel load
C.I.13.62	C.I.13.4, Table 13.4-x, Item 11		Missing regulation	2	1	Add 10 CFR 52.78

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.63	C.I.13.4, Table 13.4-x, Item 11, 12 and 13		FSAR section indicated is not correct	3	3	Depending on final outline of DG-1145 Section 13.2, renumber these
C.I.13.64	C.I.13.4, Table 13.4-x, Item 12		Milestone is not reasonable. States Ops training program to begin within 3 months after COL issuance. Should be tied to need for operators on-shift	2	2	Change to '18 months prior to fuel load'
C.I.13.65	C.I.13.4, Table 13.4-x, Item 13		A capital I is used instead of a lower case i for 10 CFR 50.54(i)	3	1	Change to read 10 CFR 50.54(i)
C.I.13.66	C.I.13.4, Table 13.4-x, Item 13		Implementation milestone states 'Within 3 months after authorization for fuel load'. There is no compelling reason to tie the implementation to an authorization	2	4	Remove the words 'authorization for'
C.I.13.67	C.I.13.4, Table 13.4-x, Item 13		Implementation requirement is specified as 10 CFR 50.54(i-1). The time required by this CFR (within 3 months of issuance of plant operating license) can not be met under part 52.	2	2	Change to 'License Condition', which will be consistent with C.IV.4
C.I.13.68	C.I.13.4, Table 13.4-x, Item 14		Implementation milestone states '...180 days prior to authorization for fuel load'. There is no compelling reason to tie the implementation to an authorization	2	4	Remove the words 'authorization for'
C.I.13.69	C.I.13.4, Table 13.4-x, Item 15		Use of the words 'Program' and 'Plan' is not consistent with typical industry usage	3	5-inconsistent with industry stds.	As indicated on the markup, change: 'Security' to 'Security Program' 'Physical Security Program' to 'Physical Security Plan' 'Safeguards Contingency Program' to 'Safeguards Contingency Plan' 'Training and Qualification Program' to 'Training and Qualification Plan'

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.70	C.I.13.4, Table 13.4-x, Item 15		17. Improve correspondence with other documents by listing the appropriate 'programs' from SECY-05-0197, as they are listed in C.IV.4	3	3	Under the Physical Security Plan, list • Access Authorization • Vehicle Control • Fitness for Duty Under the Training and Qualifications Plan, list • Weapons Training • Weapons Qual/Requal
C.I.13.71	C.I.13.4, Table 13.4-x, Item 15		Implementation milestone states 'Prior to fuel being on-site'. This could be simplified to be consistent with the rest of the table	3	5-inconsistent with industry stds.	Change to read 'Fuel receipt' or 'Fuel on-site'
C.I.13.72	C.I.13.4, Table 13.4-x, Item 16		Implementation requirement quotes 10 CFR 50.54(a), but the regulation does not include any such specification.	2	1	Change to read 'License Condition'
C.I.13.73	C.I.13.4, Table 13.4-x, Item 17		Milestone states 'No later than 30 days prior to scheduled date for fuel load'. This is not consistent with the draft Final Part 52 Rule.	1	1	Change to read '30 days prior to fuel load'
C.I.13.74	C.I.13.4, Table 13.4-x, Item 17		Implementation requirement quotes 10 CFR 50.65, but the regulation does not include any such specification.	2	1	Change to read 'License Condition'
C.I.13.75	C.I.13.4, Table 13.4-x, Item 17		Program title shown is cumbersome and does not match C.IV.4 wording or typical industry terminology	3	5 – Conformance to typical language	Change the program title to 'Maintenance Rule', or just add the words "Maintenance Rule"
C.I.13.76	C.I.13.4, Table 13.4-x,		Equivalent terms are used: fuel on-site, fuel receipt, receipt of fuel, etc	3	5 - consistent language	Use either 'fuel receipt' or 'fuel on-site' consistently

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C.I.13.77	C.I.13.5.1		Section C.I.13.5.1 indicates that the FSAR should specifically indicate whether the "applicable portions" of Regulatory Guide 1.33 concerning plant procedures will be followed. As Regulatory Guide 1.33 is not directly applicable to the AP1000 design, and this has been accepted by the Staff, the Staff should provide specific guidance as to which portions of Regulatory Guide 1.33 are applicable to the task delineated in Section C.I.13.5.1, or remove this wording altogether as indicated in the mark-up following.	2	1	The FSAR should describe specific alternative methods that will be used to implement procedural programs. and the manner of implementing them."
C.I.13.78	C.I.13.5.1(3)(1)		Plant-specific technical guidelines are also known a Emergency Response Guidelines (ERGs). This language should be included in DG-1145	2	1	"Plant-specific technical guidelines (P-STGs), or Emergency Response Guidelines (ERGs), which are guidelines based on analysis of...."
C.I.13.79	C.I.13.5		Section 13.5.2.1(2) has incorrect information in parentheses.	3	5	Section 13.5.2.1(2) should read (1.a-e above)
C.I.13.80	C.I.13.5		Typographical error – delete the 'close' parentheses at end sentence.	3	5	Revise as described
C.I.13.81	C.I.13.5	C.I.13.5.2.1-2	NRC should consider removing requirement of the second sentence in section 13.5.2.1 to describe the "format" of procedures in the FSAR. Section 13.5 should be a generic section of the FSAR for all plants. Since applicants will/do not have the exact same format requirements for their procedures complying with this requirement would probably prevent the section from being generic. The format of procedures can be developed as part of the station procedure writer's guide. NRC agreed with this approach in response to Comment C.I.13.5.2.1-2.	2	4	Change the second sentence to read "The general content for each class should be described."
C.I.13.82	13.5.1.1		Similar to fire protection, flooding and HELB are common mode events that require a methodical operations strategy to manage the transient. Most plants have procedures that address these events.	2	4	Under the list of Category (a) procedures that discuss controls suggest adding two additional procedures for consideration – these would include Flooding and HELB.
C.I.13.83	13.5.2.1.A.1		For completeness – maintenance would be a leading reason for having to refill and vent systems.	3	4	Add the words "or maintenance" after the word testing.
C.I.13.84	13.5.2.1A.		These are not specifically covered in the types of procedures already listed and typically make up a large percentage of plant procedures.	2	4	In this list of procedures we omit surveillance procedures and special test procedures. Recommend adding these as another classification of procedures.
C.I.13.85	13.5.2.1		The industry commented that the general content of each class of procedures should be available at the time the application is filed. However, the industry comment indicated that the format of procedures would be developed as part of the procedure writers' guide and would occur after the application was filed. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their agreement with the comment and stating that detailed procedures would be verified during construction. However, DG-1145 was not revised to reflect this agreement.	2	4	Indicate that detailed procedures will be available for verification during construction.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.13.86	13.5.2.1		The industry commented that the part of the organization responsible for maintaining procedures and the general content of procedures could be identified at the time of application. However, the industry comment indicated that the specific group(s) responsible for procedure maintenance and the format of procedures would be developed subsequent to the application filing. This comment was addressed in Appendix I of DG-1145 with the NRC documenting their agreement with the comment and stating that detailed procedures would be verified during construction. However, DG-1145 was not revised to reflect this agreement	2	4	Indicate that detailed procedures will be available for verification during construction.
C.I.13.87	13.1.2		Parts (5) and (6) appear to conflict. Part (5) allows an applicant to be consistent with one of the options in the commission's Policy statement on Engineering Expertise on Shift, however, part (6) specifically requires an applicant have an STA. Note that NUREG-0737 acknowledges that STA is an interim position until other control room staff has the requisite engineering expertise. In current plants, an STA is not specifically required. In the Policy statement< NRC states a preference for a combined SRO and STA position.	3	1	Delete the words "shift technical advisor" from part (6).
C.I.14.1	C.I.14.2.2 C.III.14.2.2	C.I.14.2.2-2	Section C.I.14.2.2 specifies that license applicants "should develop a training program for each fundamental group in the organization, with regard to the scheduled pre-operational and initial startup testing, to ensure that the necessary plant staff are ready for commencement of the test program."	2	4	The industry believes the level of detail requested in these FSAR section is beyond that necessary to support required COL findings. This sentence should be modified consistent with SECY-05-0197 to make clear that training program information should be supplied as part of program implementation materials separately from the FSAR.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.14.2	C.I.14.2.4 C.III.1, Sec.14.2.4	C.I.14.2.4-1	We appreciate the clarification that detailed procedures are not expected to be provided with the COLA. However, this section continues to seek description of "*specific administrative controls* that will be used to ensure that necessary prerequisites are satisfied for each major phase and for individual tests," and "methods that will be used to ensure retesting following [modifications or maintenance]." This language raises questions about the level of detail expected by the NRC staff.	2	4	The COL applicant should describe the administrative controls that will govern the conduct of each major phase of the test program. ~~This description should include the specific administrative controls that will be used to~~ and ensure that necessary prerequisites are satisfied for each major phase and for individual tests. The COL applicant should also describe the methods to be followed in initiating plant modifications or maintenance that are determined to be necessary to conduct the test program. ~~This description should include the methods that will be used to ensure~~ and provisions for retesting following such modifications or maintenance.
C.I.14.3	C.I.14.2.4 C.III.1, Sec.14.2.4	C.I.14.2.4-2	The staff agreed with our earlier comment that post work testing and/or analysis may be as varied as the ITAAC themselves and thus is not practical to describe in the FSAR, however no change was made to the guidance. The guidance should be modified.	2	4	The description should also ~~include methods~~ identify provisions to ensure that retesting that is required for modifications or maintenance remains in compliance with ITAAC commitments."
C.I.14.4	C.I.14.2.5 C.III.1, Sec. 14.2.5	C.I.14.2.5-1	Appendix I says the last two sentence of Section 14.2.5 have been moved to 14.2.6. They have not.	3	3/4	Move the sentences.
C.I.14.5	C.I.14.2.10 C.III.1, Sec. 14.2.10	C.I.14.2.10-1	The NRC staff has acknowledged that COLAs need not contain procedure-level information. This section still calls for COLAs to "describe the procedures" that will guide initial fuel loading and initial criticality.	2	2	The COL applicant should describe its plans for ~~describe the procedures that will guide~~ initial fuel loading and initial criticality.
C.I.14.6	C.I.14.2.11 C.III.1, Sec. 14.2.11	C.I.14.2.11-1	The fourth sentence states that each test required to be completed before initial fuel load or designed to satisfy the requirements for completing ITAAC should be identified, cross-referenced and provided with the COL application or be made available for audit during NRC COL application review. This sentence should be deleted. ITAAC completion info is not required to be included in COLAs or made available prior to COL issuance. Indeed, proposed new Section 52.99(a) requires licensees to submit within one year after COL issuance a schedule for completing ITAAC. The suggested crossreference may be part of such a submittal; this should be the subject of further industry-NRC discussion.	1	1	Delete 4th sentence or modify it to refer to the proposed new requirement in Section 52.99(a).
C.I.14.7	C.I.14.2.11 C.III.1, Sec. 14.2.11	C.I.14.2.11-2	The NRC staff agreed with our previous comment regarding the likelihood that approved startup test procedures may change in the last 60 days prior to their use, but no change was made to the guidance.	2	3/4	Approved test procedures should be [available] at least 60 days prior to fuel loading for fuel loading and startup test procedures. Licensees should provide timely notification to NRC of changes in approved test procedures that have been made available for NRC review.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.15.1	C.I.15		The text in this section lists applicable USIs and GSIs which should be considered. The lists begins with the following USIs. USI-A-9 (ATWS) USI-A-47 (Safety Implications of Control Systems) USI-B-17 (Criteria for Safety-Related Operator Actions) USI-C-4 (Statistical Methods for ECCS Analysis) However, a review of the November 2005 version of NUREG-0933 indicates that the above USIs have all been resolved. Has the status of USIs and GSIs been modified for the purpose of COL applications?	1	1	Clarify the need to address resolved USI/GSIs
C.I.15.2	C.I.15.1		Anticipated transients without scram (ATWS) should not be included in this section. This section groups and summarizes design-basis accidents into categories by the type of thermal-hydraulic fault or phenomena which initiates the event. A table in this section identifies the following initiating event categories. (1) increase in heat removal by the secondary system (2) decrease in heat removal by the secondary system (3) decreases in reactor coolant system flow rate (4) reactivity and power distribution anomalies (5) increase in reactor coolant inventory (6) decrease in reactor coolant inventory (7) radioactive release from a subsystem or component (8) anticipated transients without scram (ATWS)	1	1	Move the ATWS discussion to a separate section.
C.I.15.2 (continued)	C.I.15.1		An anticipated transient is not a thermal-hydraulic fault type. Designating a transient as an anticipated transient identifies the frequency grouping which should be assigned. The frequency of occurrence is discussed later in Section C.I.15.2. Failure assumptions of the protection system used in the mitigation of a transient are not initiating event categories. Additionally the assumption of the inability of the protection system to generate a scram on demand requires a beyond design basis common mode failure of the protection system to occur. Similarly, Appendix A to Section C.I.15 included ATWS giving it the status of a design basis accident (DBA). ATWS is not a design basis accident and should not be included in this list	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.15.3	C.I.15.6.2		Text states that only safety related systems can be used and then in the next sentence identifies when non-safety related systems can be used. "Only safety-related systems or components can be used to mitigate transient or accident conditions. However, non-safety related systems or components may be assumed operable in analyses for the following cases: ..."	3	3	"Only safety-related systems or components ~~can~~ should be used to mitigate transient or accident conditions. However, non-safety related systems or components may be assumed operable in analyses for the following cases: ..."
C.I.15.4	C.I.15.6.2		Text states "The applicant should provide a discuss of how the definitions..."	3	4	Should be "The applicant should provide a discussion of how the definitions..."
C.I.16.1	C.I.16		C.I.16, fourth paragraph, third sentence, states "No bases are required for the TS sections related to TS usage rules (definitions, logical connectors, required action completion times, and surveillance requirement frequencies) and the TS section for design features." This listing should also include the section for Administrative Controls. Bases are not required for the Administrative Controls.	2	4	Revise the quoted sentence to state, "No bases are required for the TS sections related to TS usage rules (definitions, logical connectors, required action completion times, and surveillance requirement frequencies), design features, or administrative controls.
C.I.17.1	C.I.17.4.2		The guidance should distinguish between the purpose of RAP and how i is accomplished	2	4	Clarify last paragraph, sentence 5, as follows: "The goal of Reliability Assurance during this stage is to ensure that the operation of the plant meets the purposes identified above throughout the operations phase. Implementation of Reliability Assurance activities during the operations phase is accomplished through existing operational programs (e.g., maintenance rule, surveillance testing, inservice inspection, inservice testing, and quality assurance)."
C.I.17.2	C.I.17.4.2		See also comment for C.III.1.17.4.2. SECY 95-132 rejected the establishment of a separate PROGRAM called Operational Reliability Assurance Program (O-RAP). In the staff's SECY response (Att. 1, Item E,) the staff agreed that operational reliability assurance ACTIVITIES would be incorporated into existing programs. The staff further stated that the Maintenance Rule Program and the QA Program together with a limited-scope COL action item covering the gap were sufficient to meet the objectives of operational reliability assurance.	2	4	Remove references to O-RAP. State that "Operational reliability assurance objectives and activities are incorporated into the QA Program and Maintenance Rule Program; therefore no further description is required. Per SECY 95-132, non-safety-related, risk-significant SSCs that have reliability concerns caused by design or operations-related problems are outside the scope of the existing maintenance and quality assurance regulatory framework. The staff will establish a COL action item for the evolutionary designs to address this "gap," and will evaluate this approach for the passive designs"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.17.3	C.I.17.4.3		This is Part 1 guidance; the guidance should not presume a design certification. In addition, 10 CFR 52 uses the term design control document (DCD) for certified designs. The guidance in Part 1 should also allow for the situation in which a DCD has been submitted to the NRC for approval, but has not been approved.	2	3	Modify sentences 4 and 5, and added sentence 6 to state: "The design ~~certification~~ control document, certified or not, addresses this phase. The design ~~certification~~ control document also addresses a ~~non-system based*~~ Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. If no design control document is referenced, then the COL applicant is responsible to implement the design phase of the RAP." *Delete unnecessary descriptor.
C.I.17.4	C.I.17.4.3		Last sentence states "COL applicant is also responsible for implementing...	2	4	This should be COL licensee or holder. The applicant describes what the licensee will do during the operational phase.
C.I.17.5	C.I.17.4.4		These two bullets are overly broad. • The design and operational information used for plant reliability assurance activities. • Procurement, fabrication, installation, construction and testing requirements for risk-significant SSCs.	2	4	Provide examples of the type of information to be described in the FSAR. The examples should reflect the type of summary-level information appropriate to describe in the FSAR, recognizing that more detailed information would be contained in program implementation documents maintained by the licensee.
C.I.17.6	C.I.17.4.5		The discussion of the second phase of the Program implementation (sentence 6) indicates that this 'site-specific' phase is the responsibility of the COL Applicant, and then identifies actions that are required. Some of these actions may not occur until after the COL is issued; therefore it is appropriate to identify that this phase is a COL applicant/holder responsibility. The COL Applicant should provide a description in the FSAR of the information identified in Section C.I.17.4.4. At the time of COLA, the SSC list will be essentially unchanged from the DCD SSC list; site-specific changes to the DCD SSC list will not be identified until later in the design implementation process.	1	2	The second phase is the site-specific phase, which introduces the plant's site-specific design information to the RAP process. The COL applicant/holder performs this phase. At this phase, the RAP is modified or appended based on considerations specific to the site. The COL applicant/holder establishes the probabilistic, deterministic, and other methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Applicant should describe in the FSAR the information identified in Section C.I.17.4.4. The COL applicant holder is also responsible for completing the incorporation of site-specific information into the RAP and for implementing the RAP using existing operational programs.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.17.7	C.I.17.4.4		These following bullet is a COL Holder action versus A COL Applicant action: • A prioritized list of site-specific SSCs designated as risk-significant. At the time of the COL Application, the list of SSCs will be (essentially) the same as the DCD list; site-specific SSCs cannot be developed until later as the site specific design elements are finalized and the EOPs are written, etc. At this time the Expert Panel will append the DCD list, and the site-specific list will form the basis for the M-Rule program	2	2	The Bullet should be modified as: Describe the process for completing the prioritized list of site-specific *SSCs designated as risk-significant. This process* should discuss the use of the DCD SSC list and how it will be supplemented by the site-specific PRA and the Expert Panel. (This may be described in the Maintenance Rule Program description)
C.I.17.8	C.I.17.5		The guidance in this section references a new SRP 17.5 as the document that will contain the detailed QA program description to be included in COLA. Industry is currently working to provide input to the Staff on the content of the SRP. It is anticipated that industry comments will be resolved in that process.	N/A	N/A	N/A
C.I.17.9	C.I.17.6		The COL application will provide required information to support NRC staff reasonable assurance findings. Applicants are not required to explain in the FSAR why other information is not known or estimate when the information will become available. Consistent with SECY-05-0197, operational program descriptions will identify the milestone(s) by which the program or portions thereof will be implemented. More detailed schedule info about program implementation, including when additional program implementation documents will be available, will be provided to the NRC separately from the FSAR. Attachment 1 is a markup of the NRC draft guidance that includes Industry input.	1	2	Delete the sentence: ~~For requested information that is not known at the time of COL application, explain why it is not known and estimate when the information will become available.~~
C.I.17.10	C.I.17.6.1.1		The COL application will provide required information to support NRC staff reasonable assurance findings. Delete guidance to provide info "to the extent that this information is known at the time of the COL application." Also, delete reference to "information on structures, systems, and components (SSCs)" and the subsequent detailed listing of SSC specific information since this will not be available at the time of the COL application. The scoping description in the COL application should only include a description of the scoping method consistent with NUMARC 93-01 and RG 1.160	1	2	Replace this section with a reference to NUMARC 93-01 and RG 1.160 as the basis for identifying SSCs in the scope of the MR.
C.I.17.11	C.I.17.6.4		The description of program procedures for compliance with 10 CFR 50.65(a)(4) includes statements about information "known at the time of COL application" and repeats guidance in existing NUMARC and RG documents.	2	2 AND 4	Replace this section with text that references the existing NUMARC and RG documents associated with 10 CFR 50.65(a)(4).

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.17.12	C.I.17.6.6	C.I.17.4.1-1	Consistent with SECY/SRM-94-084, there is no requirement to establish an "*Operational* RAP." As described in Section 17.4, RAP during the operational phase is accomplished through existing operational programs, including the MR. To avoid confusion and to be consistent with Commission guidance, DG-1145 should refer to "RAP during the operational phase," not to "ORAP."	2	3	Modify the section as follows: "Describe the relationship and interface between MR Program implementation and ~~the Operational~~ Reliability Assurance Program (~~O~~RAP) implementation during the operational phase (See Section C.I.17.4), including how functions are coordinated and procedures overlap and/or are cross referenced. Note: If the scope of the ~~O~~RAP is enveloped by the Maintenance Rule Program's SSCs classified as HSS, the Maintenance Rule Program is an acceptable method of implementation of the ~~O~~RAP during the operational phase."
C.I.18.1	C.I.18	C.I.18-4	Do not rephrase existing regulatory guidance.(NUREG-0711)	1	4	Incorporate existing regulatory guidance by reference.
C.I.18.2	C.I.18		At the July 2006 public workshop, several issues were discussed where the industry believes additional guidance is needed in both NUREG-0711 and SRP Chapter 18. NRC staff agreed with the industry comments in terms of there being issues that need further definition. Neither the industry re-draft of C.I.18 nor the 9/06 SRP draft addressed these issues. Thus, these issues remain open, and further priority interaction between NRC staff and stakeholders is necessary to ensure proper resolution. The issues include: what minimum inventory of fixed position and continuously available indicators and controls is appropriate? What technical and regulatory requirements are appropriate for qualified HSIs for accident mitigation, display evaluation, soft controls, computerized procedures, automation, etc? What criteria should be applied to assure appropriate teamwork between operating crew members and between automation and operators?	1	4	NRC and industry must reach agreement on the issues that need to be addressed, their priorities, and a clear path forward that supports the new plant schedules.
C.I.18.2 (continued)	C.I.18		What types of verification and validation (V&V) are appropriate for human factors features, and how should their scope and rigor be graded based on complexity and/or safety significance and/or other criteria? What criteria govern the use of a single HSI to interface with both safety and non-safety equipment to ensure that the HIS will not become a single point of failure that can disable the safety function entirely?	1	4	see above
C.I.18.3	C.I.18.7.3.2		Enhancement language recommended to ensure Sections 7 and 18 are closely coordinated with respect to HSI	3	4	Section C.I.18.7.3.2, Safety Aspects of the HIS – At the beginning of the section, delete "The FSAR should describe" and substitute "This section of the FSAR should be coordinated with the instrumentation and controls discussions in FSAR Section 7 and should describe."

COMMENT NO.	DG SECTION	RELATED NRC IO NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.18.4	C.I.18		NRC staff has indicated during public interactions that additional research is being initiated on systems communications issues associated with "glass control rooms." In addition, ACRS noted in a November 21, 2005 letter to the EDO, "The (Digital I&C) research plan includes a program to investigate advanced nuclear power plant digital systems (Section 3.6), but this work has not begun. Due to the rapidly increasing interest in new reactors and the anticipated regulatory needs, this research should be given higher priority than it currently has." Industry is concerned that the research the staff considers necessary to support new plants may result in new design requirements.	1	4	NRC and industry need to closely coordinate research activities to ensure the needs of new plants are addressed in a timely manner such that developing designs are not adversely impacted.
C.I.18.5	C.I.18		Disposition of Public Comments C.I.18-1 & -10 [11 elements completed by COL application]: Disposition, as shown in the 9/06 drafts of C.I.18 and C.III.1, resolves the issue.	2	4	To be consistent with these changes, a similar rewording of the last paragraph in C.II.2.2.9 (ITAAC for HFE) is suggested.
C.I.18.6	C.I.18		Disposition of Public Comments C.I.18-2 & -11 [Inspection of implementation vs. review of submittals]: Disposition, as shown in the 9/06 draft of C.I.18, resolves part of the issue by reference to ITAAC.	1	4	Adding a cross reference here to C.II.2.2.9 (ITAAC for HFE) is also suggested. More generally, guidance on inspection vs. submittal is discussed further in the next comment. Public Comment C.I.18-5 & C.I.18.7.2.4-1
C.I.18.7	C.I.18		Industry Re-draft of C.I.18 (Attachment 1): Various marginal comments are included to explain or justify changes. Note that colors in the comments are a product of the track changes feature in MS Word, and are irrelevant to the contents of the comments.	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.8	C.I.18		Disposition of Public Comments C.I.18-3 & -12 [Restated review guidance]: As proposed in the Staff response, Industry re-drafted C.I.18 using citations to available Staff guidance. The re-draft treats each PRM element in three parts: Purpose - Presents a brief description of the element based on similar summaries in SRP Ch.18. Contents - Presents citations to Staff review guidance with clarifications of submittal contents and levels-of-detail. Added Review Guidance - Presents technical guidance from the original draft that did not map well to existing Staff review guidance, and so could not be properly cited under Contents (such as the cases identified in Public Comment C.I.18-4). The re-draft aims to avoid disparity with the available Staff review guidance and to provide the practical clarifications sought by Industry in a clear and concise manner.	1	4	Incorporate changes into guidance as shown in Attachment 1.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.18.9	C.I.18		Public Comment C.I.18-4 & -13 [Added review guidance]: The Staff response to C.I.18-4 noted that NUREG-0711 & NUREG-0800 give guidance for Staff reviews but not for Applicant submittals. This may be true, but from a technical standpoint, the Industry finds the available Staff review guidance to be equally suited to either role. However, it is understood from the 7/06 workshop that the Staff expects NUREG-0711 review guidance to be revised again soon. Thus, where C.I.18 text aims to anticipate such changes, this should be clearly indicated. The "Added Review Guidance" sections in the Industry re-draft provide a controlled means to do so. These sections in the re-draft include the cases of added Staff review guidance noted in the prior C.I.18 draft, with corresponding comments by Industry	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.10	C.I.18		Disposition of Public Comment C.I.18-5 & C.I.18.7.2.4-1 [FSAR contents & level of detail]: The Industry re-draft (Att. 4) provides an implemented approach for identifying the necessary contents and the acceptable levels of technical detail in COL applicant submittals.	1	4	Incorporate changes into guidance as shown in Attachment 1.
C.I.18.11	C.I.18		Public Comment C.I.18-6 & -14 [Minimum Inventory]: It was understood from the 7/06 workshop that the Staff acknowledged the need for additional guidance in this area, but it was not clear that the Industry re-draft of C.I.18 was expected to address it. Thus, no guidance was proposed by the re-draft in this area, and the issue remains open.	2	4	
C.I.18.12	C.I.18		Disposition of Public Comment C.I.18-7 [Should vs. May]: The final guide as issued will resolve this comment by default. It is understood that such wording in the final guide will be governed by regulatory conventions.	3	5	
C.I.18.13	C.I.18		The issued guide should define the following terms with respect to Applicant review and inspection material, if such terms are used in C.I.18 text or key references: Application, On-the-docket, FSAR, Submittal, Reference, Retained-but-available (i.e. for audit/inspection), etc. In addition, the impact of referencing (i.e., from the FSAR or the submittal) on the status of a reference (i.e., on/off the docket) should be clear. These are generic issues which, if addressed elsewhere, may be incorporated in C.I.18 by reference.	2	4	
C.I.18.14	C.I.18		Disposition of Public Comment C.I.18-8 [Conflicts of interpretation]: By using citations, conflicts of interpretation with Staff review guidance are generally avoided in the Industry re-draft. However, some of the items in the "added review guidance" sections remain a potential source of conflict. Each of these should be reviewed and replaced by the appropriate citation, if possible.	2	4	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.1	C.I.19		Issue: 4th paragraph, 1st sentence reads "The applicant should use the results and insights of its PRA and severe accident evaluations to establish specifications and performance objectives for the plant design, construction, inspection, and operation." Comment: PRA does not establish design specifications and performance objectives for the plant design, construction, inspection and operation.	2	1	**Delete sentence or replace "should use" with "should consider."**
C.I.19.2	C.I.19		Issue: 4th paragraph, last sentence reads "The information in Chapter 19 should enable the NRC to conclude that the applicant has performed sufficiently complete and scrutable analyses, and the results support the COL application and will maintain acceptable risk throughout the life of the plant." Comment: Chapter 19 does not include detailed technical information. This sentence is unnecessary and should be deleted.	3	4	Delete sentence.
C.I.19.3	C.I.19		Issue: Last paragraph, 1st sentence reads: "To support the NRC staff's timely review and assessment, the applicant should adhere to the recommended format and content for Chapter 19 provided herein." Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.7-1 Section C.II.1.7, The third paragraph in Section C.II.1.7 states: "To support the NRC Staff's timely review and assessment of the documentation, applicants should adhere to the recommended format and content identified in Appendix B, ---." This section should address how this guidance is consistent with proposed Section 52.80(a) which requires the combined license (COL) application to use the design certification probabilistic risk assessment (PRA) (which may not be in the format of Appendix B).	1	1	Add after this sentence "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design DCD would be incorporated by reference. An exemption would not be required."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.3 (continued)	C.I.19		Response: The NRC staff disagrees with this comment. It should be noted that this part of DG-1145 applies to COL applicants that do not reference a certified design and thus, there may not be a design certification PRA upon which to develop the COL application PRA. Further, for a COL application that references a certified design, the format of the PRA information to be submitted per Appendix B is not a requirement of 10 CFR 52.80(a), which requires the COL applicant that references a certified design to submit a plant specific PRA that "...must use the PRA for the design certification ... as applicable, and must be updated to account for site-specific design information and any design changes, departures, or variance." This requirement does not mandate the format of the submittal to be identical to that submitted under 10 CFR 52.47 for the design certification PRA, but does require that the COL applicant's plant-specific PRA be derived from the actual design certification PRA and updated and upgraded, as appropriate. Disposition: No change to DG-1145. Comment: Industry needs formal concurrence that changes to the format of Chapter 19 and the plant-specific PRA will not require an exemption.	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.4	C.I.19		Issue: Last paragraph, 2nd sentence reads "Chapter 19 should reference the applicable analyses and evaluations, as well as provide a summary description of the supporting information, needed to demonstrate compliance with the above identified regulatory requirements and Commission policies." Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.I.19-1 The last sentence in the last paragraph in Section C.I.19 Probabilistic Risk Assessment and Severe Accidents, states, "Chapter 19 should reference the applicable analyses and evaluations and the necessary supporting information to demonstrate compliance with the above requirements and Commission policies." Please clarify the use of the language "should reference." We assume that a summary description of supporting information is an acceptable alternative to including all references. Response: The NRC staff agrees with this comment. The staff does not expect the applicant to reference all supporting information that may be applicable. A summary description of the supporting information is acceptable. Disposition: Section C.I.19 has been revised to provide clarification	2	2	Replace "as well as" with "or". Add "(Chapter 19 does not need to reference all documents supporting the summaries provided in this chapter.)"
C.I.19.4 (continued)	C.I.19		Comment: Language noted continues to lack clarity. One of the main reasons to require a PRA report that is separate from Chapter 19 is so that the PRA can remain a living document. The PRA should be able to evolve without causing unnecessary FSAR updates unless the specific information contained in Chapter 19 itself is changed.	2	2	see above
C.I.19.5	C.I.19.2.1		Issue: 1st paragraph, 2nd sentence reads "This section should summarize the scope and process used to develop the plant-specific PRA. This summary should include a reference to the plant-specific PRA and associated analyses that are available for review or docketed separately." Comment: See comment on Section C.I.19 on references.	2	2	Add "(Chapter 19 does not need to reference all documents supporting the summaries provided in this section.)"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.6	C.I.19.2.3.1		Issue: 3rd sentence reads "If some internal events are screened out or incorporated into other evaluations (e.g., grouped events), this section should describe the screening/bounding/grouping." Comment: This information is not relevant for Chapter 19. It is part of the PRA submittal per C.II.1. If grouping is described in Chapter 19 as an attribute of the design, then that grouping would need, unnecessarily, to be maintained. This could cause maintenance of more than one PRA model: one that is grouped as described in the FSAR and others that are grouped differently according to how they were used in various applications.	2	4	The requirement for this information in Chapter 19 should be removed; especially when it is already submitted elsewhere as part of the license application. Delete sentence
C.I.19.7	C.I.19.2.3.1		Issue: Fourth bullet reads "Identify important assumptions (including PRA key assumptions[3] and PRA-based insights[4])" Footnote 4 reads ""PRA-based insights" are those insights identified during design certification that ensures assumptions made in the PRA will remain valid in the as-to-be-built, as-¬to-be-operated plant and includes assumptions regarding SSC and operator performance and reliability, ITAACs, interface requirements, plant features, design and operational programs, etc. The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP-600 and AP-1000 Design Control Documents (DCDs)." Comment 1: "(including PRA key assumptions3 and PRA-based insights4)" is inconsistent with other subsections, for example, subsection 19.2.3.1.2 Comment 2: An acceptable alternative to providing PRA-based insights in many subsections is to provide the insights in one section, for example in section C.I.19.2.5. Comment 3: Is it appropriate to reference the AP-600 or AP-1000 DCD in a regulatory guide?	2	4	Replace noted bullet with "Identify important, key assumptions[3]" Add bullet "Document PRA-based insights4" Address consistency among subsections. Replace footnote 4 with ""PRA-based insights" are those insights identified during the analyses conducted for the COL application (which may have been developed during design certification) that ensures assumptions made in the PRA will remain valid in the as-to-be-built, as-¬to-be-operated plant and includes assumptions regarding SSC and operator performance and reliability, ITAACs, interface requirements, plant features, design and operational programs, etc. The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP-600 and AP-1000 Design Control Documents (DCDs). These may be collected in Section C.I.19.2.5 instead of each section."
C.I.19.8	C.I.19.3		Issue: 3rd paragraph reads "If a specific feature is described and analyzed elsewhere in the FSAR, this section should provide the relevant cross-references. and need not be repeated in this section. Comment: Many of the topics included in the DG were addressed in other sections on the certified design DCDs. For example, Anticipated Transients without scram, Mid-Loop Operation, Station Blackout. Add "and need not be repeated in this section." to the end of the sentence.	2	3	Add "and need not be repeated in this section." to the end of the sentence.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.9	C.I.19.3		Issue: 1st paragraph, 2nd sentence reads "This description and analysis should specifically address the issues identified below, as well as other issues identified in SECY-90-016 and SECY-93-087, which the Commission approved in related staff requirement memoranda (SRMs), dated June 26, 1990, and July 21, 1993, respectively." Comment: Sentence should be clarified to include "as appropriate."	3	4	Add ", as they are appropriate." To end of sentence.
C.I.19.10	C.I.19.3		Issue: 3rd paragraph reads "If a specific feature is described and analyzed elsewhere in the FSAR, this section should provide the relevant cross-references." Comment: For efficiency add "and need not be repeated in this section" to the end.	2	3	Add "and need not be repeated in this section" to the end.
C.I.19.11	C.I.19.4.1		Issue: 2nd paragraph, 1st sentence reads "The NRC staff expects the plant-specific PRA to reasonably reflect the plant as it was constructed, in preparations for startup, and therefore, the plant-specific PRA should be upgraded prior to initial operations to incorporate those changes that were deferred (i.e., screened as not being significant) during the design, COL application, and construction phases, and to address findings during the PRA-related plant walkdowns." Comments: For clarity replace "findings during" with "results of"	3	4	Replace "findings during" with "results of"
C.I.19.12	C.I.19.4.1		Issue: Last paragraph, last sentence reads " For example, in addressing the frequency of scheduled maintenance updates following initial operations, the FSAR section may state "the plant-specific PRA will be updated to reflect plant, operational, experience (data), and PRA modeling changes, consistent with the NRC-endorsed standards appropriate for the uses and applications of the plant-specific PRA and the information available 6 months prior to the issuance of the maintenance update, which will be scheduled to occur every other fuel cycle, not to exceed 5 years."" Comment 1: For consistency insert "reasonably" before "reflect." Comment 2: A more reasonable example for "6 months prior to the issuance of the maintenance update " is "6 months prior to the start of the maintenance update "	2	3	Add "reasonably" before "reflect" Replace "issuance" with "start"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.I.19.13			Large Release Frequency (LRF): The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, PRA Internal Events, which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting. A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how i would be applied. This would			
C.I.19.13 (continued)			introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.			
C.II.1.1	C.II.1.2	C.II.1.2-4	Issue: Paragraph reads "Determine how the risk associated with the design compares against the Commission's goals of less than 1E-4/yr for core damage frequency (CDF) and less than 1E-6/yr for large release frequency (LRF). These goals were established in the Commission SRM dated June 26, 1990 in response to SECY-90-016. In addition, the Commission approved the use of a containment performance goal (CPG), which includes (1) a deterministic goal that containment integrity be maintained for approximately 24 hours following the onset of core damage for the more likely severe accident challenges and (2) a probabilistic goal that the conditional containment failure probability (CCFP) be less than approximately 0.1 for the composite of all core damage sequences assessed in the PRA. It should be noted that these are goals and not regulatory requirements and applicants should not artificially (or intentionally) increase PRA results associated with one metric simply to meet the goal associated with another metric. Rather, the applicant should compare their plant-specific PRA results and insights against these goals and address how their plant features properly balance severe accident prevention and mitigation."	1	2	The draft should be changed to reference the QHOs and subsidiary goals appropriately

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.1 (continued)	C.II.1.2	C.II.1.2-4	Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.2-4 In Section C.II.1.2, the following language is provided: "Determine how the risk associated with design relates to the Commission's goals of less than 1 E-4/yr for core damage frequency (CDF) and less than 1 E-6/yr for large release frequency (LRF).2 " The objective is to demonstrate that the QHOs are met. This can be demonstrated using the subsidiary objectives for CDF (1E-4/yr.) and LERF (1E-5/yr.). LRF is not defined in the regulations and a LRF goal is not appropriate for a regulatory guide. The draft should be changed to reference the QHOs and subsidiary goals appropriately.	1	2	see above
C.II.1.1 (continued)	C.II.1.2	C.II.1.2-4	Response: The NRC staff disagrees with this comment. The Commission directed the staff in the SRM on the proposed revisions to the 10 CFR Part 52 rule to include specific guidance regarding the PRA in the regulatory guide. In addition, there are numerous objectives for the use of the PRA, as identified in Section C.II.1.2. Demonstration that the QHOs are met is not an explicit objective, and has not been addressed in prior design certification reviews. The use of the 1E-6/year large release frequency (LRF) goal is consistent with Commission guidance. Meeting the LRF goal will generally assure that the early fatality QHO is met. As explained in the referenced footnote, the cited Commission goals of less than 1E-4/year for CDF and less than 1E-6/year for LRF were established in the Commission SRM dated June 26, 1990, in response to SECY-90-016. All certified designs approved by the NRC to date have addressed the LRF metric. Although not explicitly defined in the regulations, LRF represents the broader set of releases of which LERF is a subset. The difference between LRF and LERF is that LRF addresse LRF-related containment failures into two types: (1) initially failed contair the integrity of the containment is either failed due to the initiating event (Disposition: No change to DG-1145. Comment: We continue to disagree with the basis provided. This "expectation" for LRF and CPG should not be included in a regulatory guide.	1	2	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.2	C.II.1.2	C.II.1.2-2	Issue: Paragraph reads "Determine whether the plant design, including the impact of site-specific characteristics, represents a reduction in risk. compared to existing operating plant designs" Background: DG-1145, Appendix I, Response to Public Comments on DG-1145," provided the following comment, response and disposition on this topic: C.II.1.2-2 In Section C.II.1.2, what is the regulatory basis for the combined license (COL) application to show that a design represents a reduction in risk over existing plants? Response: The NRC staff's basis for requiring a COL applicant to show that a design represents a reduction in risk over existing plants, is provided by the Commission's policy statement, entitled "Severe Reactor Accidents Regarding Future Designs and Existing Plants," issued on August 8, 1985. This policy statement, which is discussed in Appendix A, focuses on the guidance and procedures that the Commission has been using to certify new designs for nuclear power plants that have evolved from light water reactor (LWR) technology existing at that time.	1	1	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.2 (continued)	C.II.1.2	C.II.1.2-2	This policy statement affirms the Commission's belief that a new design for a nuclear power plant can be shown to adequately address severe accident concerns by demonstrating compliance with the requirements of Commission regulations, including the appropriate TMI requirements and the resolution of applicable unresolved safety issues (USIs) and generic safety issues (GSI). Therefore, the Commission expects new designs to achieve a higher standard of severe accident safety performance than plants contemporary with the issuance of the Commission's Severe Accident Policy Statement on August 8, 1985. The fact that severe accident concerns have been adequately addressed in the new design should be reflected in the PRA results as a reduction in risk. Disposition: No change to DG-1145.	1	1	Comment: We continue to disagree with the basis provided. The guidance should not call for COLAs to demonstrate that the plant design represents a reduction in risk compared with existing plants. At a minimum, the guidance should be modified to indicate that this information requirement is considered to be met if a certified design is referenced, and the COL applicant need provide no additional information.
C.II.1.3	C.II.1.2		Issue: Paragraph reads "Support, as a minimum, regulatory oversight processes [e.g., Mitigating Systems Performance Index (MSPI), Significance Determination Process (SDP)] and programs that will be associated with plant operations (e.g., technical specifications, reliability assurance, human factors, Maintenance Rule)." Comment: Clarify by adding language which notes that the PRA used to support operational programs may differ from the PRA provided as part of the COL application.	2	2	Add "Note that the PRA used for support of operational programs (MSPI, SDP, maintenance rule, for example) may differ from the PRA provided as part of a COL application. For such uses the PRA would be retained by the licensee and available for inspection."
C.II.1.4	C.II.1.2		Issue: Paragraph reads "The review objectives are drawn from 10 CFR Part 52, the Commission's Severe Reactor Accident Policy Statement regarding future designs and existing plants, the Commission's Safety Goals Policy Statement, the Commission-approved positions concerning severe accidents contained in SECY-93-087, and NRC interest in the use of PRA to help improve future reactor designs. In general, the PRA and the NRC staff's review achieve these objectives." Comment: Language "and NRC interest in the use of PRA to help improve future reactor designs. In general, the PRA and the NRC staff's review achieve these objectives." Seems unnecessary.	3	4	Delete noted language

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C.II.1.5	C.II.1.4		Issue: 1st paragraph, 1st sentence reads "The level of detail of the applicant's PRA should be commensurate with the purpose and objectives discussed in Section C.II.1.2 (i.e., sufficient to gain risk-informed insights and use such insights, in conjunction with assumptions made in the PRA, to identify and support requirements important to the design and plant operation). Comment: Language "(i.e., sufficient to gain risk-informed insights and use such insights, in conjunction with assumptions made in the PRA, to identify and support requirements important to the design and plant operation)." is redundant and should be deleted.	3	4	Delete noted language
C.II.1.6	C.II.1.4		Issue: 1st paragraph, 2nd sentence reads "The PRA should reasonably reflect the actual plant design, planned construction, anticipated operational practices, and relevant operational experience of the applicant and the industry." Comment 1: Delete "actual" before the word "plant" as this is redundant. Comment 2: language "relevant operational experience of the applicant" is unclear. An example would be useful.	3	4	Delete "actual." Provide example
C.II.1.7	C.II.1.4		Issue: The statement "Additional guidance on the level of detail that should be included in the PRA is provided in Regulatory Guide 1.200, "An Approach For Determining The Technical Adequacy Of Probabilistic Risk Assessment Results For Risk-Informed Activities,"..."needs clarification. Comment: This statement may lead one to believe that the technical requirements documented in ASME PRA Standard RA-S-2002 Addendum B, RA-Sb-2005, which is endorsed, with exceptions, by DG-1161 (Regulatory Guide 1.200 Revision 1), is applicable to advanced LWRs. In fact, Table A-1, Item 1.1 of DG-1161 states that RA-Sb-2005 is applicable to "current" light water reactors. Furthermore, many of the requirements of the ASME PRA Standard relate to the "as-built, as-operated" plant, which cannot be met at the time of COL application.	2	4	Section C of Regulatory Guide 1.200 provides more general requirements for PRA level of detail. Recommend changing the statement to read: "Additional guidance on the level of detail that should be included in the PRA is provided in Section C of Regulatory Guide 1.200..."
C.II.1.8	C.II.1.4		Issue: Last paragraph, 2nd sentence reads "However, the risk models should still be able to be used to identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." Comment: Replace "identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." With "achieve the purpose and objectives discussed in Section C.II.1.2" to ensure consistency.	2	3	Replace "identify vulnerabilities, as well as design and operational requirements, such as ITAAC and COL action items." With "achieve the purpose and objectives discussed in Section C.II.1.2" to ensure consistency.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.9	C.II.1.4		Issue: Last paragraph, last sentence reads "In addition, the bounding assumptions should not mask any risk-significant information about the design and its operation." Comment: Add ", as this information is known during the licensing and operational phases of a plant's lifetime" so as to recognize the evolving nature information during the design, construction, and operational phases.	2	2	Add ", as this information is known during the licensing and operational phases of a plant's lifetime" so as to recognize the evolving nature information during the design, construction, and operational phases.
C.II.1.10	C.II.1.5	C.II.1.5-1	Issue: 1st paragraph, 2nd sentence reads "The methods acceptable to the NRC staff to ensure that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that the PRA is sufficient to be used in demonstrating that the objectives identified in Section C.II.1.2 of this guide are met, include:" Comment: The "requirements of Appendix B to 10 CFR Part 50" are inappropriate. In Regulatory Guide 1.174, which is the reference for this language, the following language is provided: "As stated in Section 2.2, the staff expects that the quality of the engineering analyses conducted to justify proposed LB changes will be appropriate for the nature of the change. In this regard, it is expected that for traditional engineering analyses (e.g., deterministic engineering calculations) existing provisions for quality assurance (e.g., Appendix B to 10 CFR Part 50, for safety-related SSCs) will apply and provide the appropriate quality needed. Likewise, when a risk assessment of the plant is used to provide insights into the decisionmaking process, the staff expects that t been subject to quality control.	1	1	Delete "the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that"
C.II.1.10 (continued)	C.II.1.5	C.II.1.5-1	To the extent that a licensee elects to use PRA information to enhance or modify activities affecting the safety-related functions of SSCs, the following, inconjunction with the other guidance contained in this guide, describes methods acceptable to the NRC staff to ensure that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 are met and that the PRA is sufficient to be used for regulatory decisions." Appendix B is not relevant to a COL application or the PRA. The applicability is limited to specific applications which support changes to the licensing basis as described in RG 1.174.	1	1	see above

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.11	C.II.1.5		Issue: 2nd paragraph, 1st sentence reads "Toward this end, the applicant's PRA submittal should be consistent with the prevailing PRA standards, guidance, and good practices, as needed to support its uses and applications, and as endorsed by the NRC (e.g., Regulatory Guide 1.200)." Comment: As standards, guidance, good practices, and RG 1.200 do not fully apply to plants without operational experience, add "as appropriate" after "as needed."	3	3	Add "as appropriate" after "as needed."
C.II.1.12	C.II.1.5		Issue: 2nd paragraph, 2nd sentence reads "The adherence to the recommendations provided in Regulatory Guides 1.200 and 1.174 pertaining to quality and technical adequacy will result in a more efficient and consistent NRC staff review process." Needs clarification. Comment: This language may lead one to believe that the technical requirements documented in ASME PRA Standard RA-S-2002, Addendum B RA-Sb-2005, which is endorsed, with exceptions, by DG-1161 (Regulatory Guide 1.200 Revision 1), is applicable to advanced LWRs. In fact, Table A-1, Item 1.1 of DG-1161 states that RA-Sb-2005 is applicable to "current" light water reactors. Furthermore, many of the requirements of RA-Sb-2005 relate to the "as-built, as-operated" plant, which cannot be met at the time of COL application.	2	4	Section C of Regulatory Guide 1.200 provides more general requirements for PRA technical adequacy. Recommend changing the statement to read: "The adherence to the recommendations provided in Section C of Regulatory Guides 1.200 and 1.174 pertaining to quality and technical adequacy will result in a more efficient and consistent NRC staff review process."
C.II.1.13	C.II.1.6		Issue: 1st paragraph, 2nd sentence reads "Such analyses provide important information about (1) areas where certain design features are the most effective in reducing risk with respect to operating reactor designs; (2) major contributors to risk, such as hardware failures and human errors; (3) major contributors to maintaining the "built-in plant safety and ensuring that the risk does not increase unacceptably; (4) major contributors to the uncertainty associated with the risk estimates; and (5) sensitivity of risk estimates to uncertainties associated with failure data, assumptions made in the PRA models, lack of modeling details in certain areas, and previously raised issues Comment: Item 3 lacks clarity and is unnecessary.	3	4	Delete item 3 or clarify.

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C.II.1.14	C.II.1.6	C.II.1.6-1	Issue: 2nd paragraph, 1st sentence reads "For designs that have evolved from current plant technology, through the incorporation of several features intended to make the plant safer, more available, and easier to operate, the results of the PRA should indicate that the design represents a reduction in risk compared to existing operating plants.2" Comment: Per previous comments, language on the expectation "that the design represents a reduction in risk..." is inappropriate.	1	1	Delete language related to "represents a reduction in risk compared to operating plant designs."
C.II.1.15	C.II.1.6		Issue: 4th paragraph, 2nd sentence reads "Such studies provide very useful insights about (1) the systems that contribute the most in achieving the low risk level assessed in the PRA, (2) events (e.g., component failures or human errors) that contribute the most to decreases in the "built-in" plant safety level, and (3) events that contribute the most to the assessed risk." Comment: Item 2 lacks clarity. Please clarity or delete, as this item is not needed.	3	4	Clarify or delete item 2.
C.II.1.16	C.II.1.7		Issue: 1st paragraph, last sentence reads "The submitted PRA should include adequate information, in terms of both models (initiating events, fault and event trees, success criteria, data, important assumptions and calculations) and results (minimal cut sets, importance, sensitivity, and uncertainty analyses)." Comment: Please replace "models" with modeling" as computer models should not be included.	3	4	Replace "models" with "modeling"
C.II.1.17	C.II.1.7		Issue: 2nd paragraph, last sentence reads ". Documentation of the PRA process and findings should be provided and, additionally, should include a description of the applicant's provisions to ensure adequacy in accordance with Regulatory Guide 1.200. Comment 1: Please replace "findings" with "results" for clarity. Comment 2: Please add the word "technical" before "adequacy" for clarity. Comment 3: Please add "as applicable" to the end of the sentence for consistency with previous comments on the applicability of RG 1.200.	3	4	Please replace "findings" with "results" Please add the word "technical" before "adequacy" Please add "as applicable" to the end of the sentence.

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C.II.1.18	C.II.1.7	C.II.1.7-1	Issue: 3rd paragraph reads "To support the NRC staff's timely review and assessment of the documentation, the applicant should adhere to the recommended format and content identified in Appendix B, Probabilistic Risk Assessment to Support a Combined License Application: Standard Format and Content." Comment: Please address per previous comments (e.g., Comment C.I.19.3) on consistency with certified design DCD to preclude the uncertainty on the need for an exemption request.	1	1	Clarify that an exemption request would not be required. Add language such as "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of part 52 appendices , as the certified design DCD would be incorporated by reference. An exemption request would not be required."
C.II.1.19	C.II.1.7		Issue: Last paragraph, last sentence reads "Documentation of the analyses should be maintained as lifetime quality records in accordance with Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."" Comment: Per RG 1.174, this only applies to changes to a plant's LB. Please delete as this language is inappropriate.	1	1	Delete "Documentation of the analyses should be maintained as lifetime quality records in accordance with Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation).""
C.II.1.20	C.II.1.8	C.II.1.7-2	Issue: 2nd paragraph, 1st sentence reads "The NRC staff expects the plant-specific PRA to reasonably reflect the plant as it was constructed, in preparations for startup, and therefore, the plant-specific PRA should be upgraded prior to initial operations to incorporate those changes that were deferred (i.e., screened as not being significant) during the design, COL application, and construction phases, and to address findings during the PRA-related plant walkdowns." Comment: Please replace "findings during" with "results of" per our previous comments.	3	4	Replace "findings during" with "results of" per our previous comments.
C.II.1.21	C.II.1, App. B	C.II.1.7-1	Issue: 1st paragraph reads "[Note: This standard format is consistent with the guidance provided in Regulatory Guide 1.200, "An Approach For Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and adapted to the specific uses of the PRA to support a COL application." Comment 1: Please address per previous comments on consistency with certified design DCD to preclude the uncertainty on the need for an exemption request. Comment 2: The suggested standard format is different than that of the AP1000 DCD. Regulatory Guide 1.200 suggests the type of information required for a Risk-Informed application, but does not specify the format in which this information is submitted.	2	1	Address uncertainty on exemption. Recommend changing the statement to read: "[Note: This suggested format is consistent with the guidance provided in Regulatory Guide 1.200, "An Approach For Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and adapted to the specific uses of the PRA to support a COL application. A licensee referring to a Certified Design should maintain the format of the Certified Design PRA.] Add language such as "For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of part 52 appendices , as the certified design DCD would be incorporated by reference. An exemption request would not be required."

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C.II.1.22	C.II.1, App. B		Issue: 2nd paragraph, 1st sentence reads "The content of the applicant's submittal should include adequate information (e.g., in terms of models, results, and interpretation of results) to enable the NRC staff to conclude whether the objectives identified in Section C.II. 1.2 of this guide are met." Comment: Please replace "models" with "modeling" per our previous comment.	3	4	Replace "models" with "modeling"
C.II.1.23	C.II.1, App. B		Issue: Internal Floods is included in 2.3 "External Events at Full Power." Comment: Why is internal flooding included in external events section?	3	4	N/A
C.II.1.24	C.II.1, App. B		Issue: Section 6.1 includes "LRF" Comment: Please consider our comment C.II.1.1 on LRF. The objective is to demonstrate that the QHOs are met. This can be demonstrated using the subsidiary objectives for CDF (1E-4/yr.) and LERF (1E-5/yr.). LRF is not defined in the regulations and a LRF goal is not appropriate for a regulatory guide.	1	1	Modify language to address LERF instead of LRF
C.II.1.25	C.II.1		Large Release Frequency (LRF): The guidance introduces a new PRA metric, LRF for evaluating changes to the licensing basis during operations. The development of Reg. Guide 1.174 and the ASME Standard RA-Sb-2005, PRA Internal Events, which will be endorsed in Reg. Guide 1.200, has taken many years. In that period of development, the use of LRF as a metric for operational decision-making was evaluated. It was rejected in favor of core damage frequency and large early release frequency. To propose the LRF metric so shortly after it was rejected for use in operational assessments is disconcerting. A more precise and consistent definition of LRF would have to be developed for use in an operational setting compared with the definitions that were developed for design certifications. This would require substantial interaction with the PRA technical community before a common understanding could be reached on such a definition and how i would be applied. This would	1	3	Further discussion needed.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.1.25 (continued)	C.II.1		introduce uncertainty at a critical time in the new licensing process as applicants start on the final drafts of their applications that will be submitted next year. The guidance should use the same metrics that are used for existing plants for evaluating changes to the licensing basis in the operational phase: Large Early Release Frequency, which corresponds to early health effects, and Core Damage Frequency.	1	3	see above
C.II.1.26	C.II.1		Conditional Containment Failure Probability (CCFP): The draft guidance proposes the CCFP of 0.1, given a core melt. For advanced designs, whose calculated internal event core damage frequency is approximately 10-7 /year, the CCFP would translate into a containment failure frequency of approximately 10-8 /year. It is impractical and unreasonable to attempt to design a containment structure to withstand naturally occurring ultra-low frequency events of this magnitude, for example a one in a 100 million-year earthquake. Hence, as interpreted by the industry, the proposed CCFP could not be met. There is a need for further industry-NRC interaction on developing a practical containment performance metric that could be used in operational licensing evaluations for designs that have very low core-damage frequency.	1	3	Further discussion needed.
C.II.2.1	C.II.2.1		C.II.2.1 states "in a table provided in FSAR Section 14.3, COL applicants should cross-reference the important design information and parameters from these analyses to their treatment (i.e., inclusion or exclusion) in the ITAAC."	3	3	This FSAR section 14.3 guidance should be included in C.I.14 and in C.III.1-14.3.
C.II.2.2	C.II.2.1		New nuclear power plants likely will be constructed through the use of modular construction techniques. Since construction modules may be constructed offsite, it may be appropriate for some ITAAC to be performed at the site of manufacturing of the construction modules rather than the reactor site.	1	4	Modify the seventh paragraph of this section to indicate that ITAAC testing may include testing of construction modules at the vendor's shop. This testing should be distinguished from "type tests", in that type tests are not necessarily performed on the components to be installed in the plant, whereas tests of construction modules would be for the modules that will actually be installed in the plant.
C.II.2.3	C.II.2.2		The 10th paragraph says that ITAAC should not reference the COLA, while the 3d paragraph says ITAAC should reference the FSAR portion of the COLA.	3	3	Modify the 3d sentence in the 10th paragraph as follows: Except in the case where no design certification is referenced and no separate ITAAC design descriptions are developed, the ITAAC should not reference the [COLA]....

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C.II.2.4	C.II.2.3		As indicated earlier in DG-1145, ITAAC should be reserved for "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." A design feature may be site-specific and unique, and yet have little or no safety function. A design feature does not warrant greater consideration for inclusion in an ITAAC, merely because it is unique or site-specific.	1	3	Delete bullet #1 to "Carefully consider design-specific and unique features of the facility for inclusion in ITAAC."
C.II.2.5	C.II.2.1 Bullets		As indicated earlier in DG-1145, ITAAC should be reserved for "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." Not all resolutions of USIs/GSIs, NRC bulletins and generic letters, and operating experience rise to that level. For certain designs, the resolution of a particular generic issue may have little or no safety significance. Therefore, similar to other information, the determination which resolutions should be included in ITAAC should be based upon a graded approach, depending upon the significance of the resolution to safety.	1	3	Delete Bullet #3 to "Ensure that ITAAC reflect the resolutions of technically relevant USIs/GSIs, NRC generic correspondence such as bulletins and generic letters; and relevant industry operating experience." In the alternative, modify the language to refer to "safety significant resolutions" rather than "resolutions of technically relevant [issues]"
C.II.2.6	C.II.2.1 Bullets		Typo	3	5	Last bullet should modified as follows "Systems ~~SSCs~~ for which there is no discernable ..."
C.II.2.7	C.II.2.1.1		New nuclear power plants likely will be constructed through the use of modular construction techniques. Since construction modules may be constructed offsite, it may be appropriate for some ITAAC to be performed at the site of manufacturing of the construction modules rather than the reactor site.	1	4	Modify the definition of "as-built" to include construction SSCs/modules at the vendors shop that are intended for installation at the reactor in question.
C.II.2.8	C.II.2.1.1		The definition of Design Description includes an inaccurate description of Tier 1. Tier 1 is not intended to summarize the FSAR. Instead, as indicated in Section C.II.2.1 of DG-1145, Tier 1 is the "top-level design information" from the FSAR.	2	4	In the definition of Design Description, delete the last sentence, which states that Tier 1 information is a summation of the detailed design information in the FSAR.
C.II.2.9	C.II.2.1.1		The term "Design Description" is not needed and should be deleted. The use and definition of the two similar terms, Design Description and ITAAC Design Description, are confusing and problematic. "Design Description" is a term that is commonly used in both ITAAC and non-ITAAC contexts. It may be helpful to define the term "Tier 1 Design Description."	1	4	Define a single term, "ITAAC Design Description," to mean the equivalent of Tier 1 Design Description when no design certification is referenced, and provide two alternatives for presenting ITAAC Design Description in COLAs, as follows: "ITAAC Design Description" for a COL application that does not reference a design certification means the top level design information that pertains to the principal performance characteristics and safety functions of SSCs. This information is equivalent to Tier 1 Design Description for certified designs (see appendices to 10 CFR Part 52 for definitions associated with certified designs). COL applicants may choose to provide ITAAC Design Description in a document separate from the FSAR or directly in the FSAR. ITAAC Design Description may, at a minimum, consist only of tables and figures that are referenced in the ITAAC."

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C.II.2.9 (continued)	C.II.2.1.1			1	4	Whether presented in a separate document or included in the FSAR, ITAAC Design Description is the proper term to describe the top-level design information referenced in ITAAC when a certified design is not referenced.
C.II.2.10	C.II.2.1.1		Clarify definition of Design Requirement/Commitment.	2	4	Modify the 1st sentence of the definition as follows: "Design Requirement/Commitment means the specific ~~that portion of the detailed~~ design information provided in the COL application that is verified by ITAAC."
C.II.2.11	C.II.2.1.1		As literally worded, the definition of "Exists" would require an SSC to satisfy all of the provisions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the SSC must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the SSC.	2	4	Change the definition of "Exists" to state as follows: "Exists means that the item is present and meets the Design Requirement/Commitment."
C.II.2.12	C.II.2.1.1		As literally worded, the definition of Functional Arrangement would require a system to satisfy all of the design descriptions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the system must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the system.	2	4	Change the definition of Functional Arrangement to delete the reference to system design description and instead refer to the Design Requirement/Commitment.
C.II.2.13	C.II.2.1.1		The definition of ITAAC should more closely track the language in proposed 10 CFR 52.80.	2	4	Change the definition of ITAAC to state as follows: "ITAAC means the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations."
C.II.2.14	C.II.2.1.1		As literally worded, the definition of Physical Arrangement would require a structure to satisfy all of the design descriptions in the FSAR (without regard to safety significance). The wording should be changed to indicate that the structure must satisfy the Design Requirement/Commitment in the ITAAC, which will identify the "top-level design information" applicable to the structure.	2	4	Change the definition of Physical Arrangement to delete the reference to design description and instead refer to the Design Requirement/Commitment.

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C.II.2.15	C.II.2.2.2		GDC 1 pertains to quality assurance (QA). As the NRC has long recognized, ITAAC are not needed or appropriate for the QA Additionally, with respect to codes and standards, not all codes and standards are sufficiently important to rise to the level of "top level design information." Therefore, it is not appropriate in general to have ITAAC that verify implementation of codes and standards in general.	1	3	Delete Bullet (20) "codes and standards (GDC 1)." Why do these bullets start from (13)?
C.II.2.16	C.II.2.2.2		The 2nd bullet under the heading Pressure Boundary Integrity should be changed to be consistent with the ITAAC for the existing design certifications and clarifies the scope of the NDE to be performed under the ITAAC.	2	4	Modify the second bullet to insert the words "for welds" after NDE.
C.II.2.17	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Normal Loads, pertaining to as-built stress reconciliation reports).	2	4	Delete the first bullet under the heading Normal Loads, which states that ITAAC should verify that normal and accident loads have been appropriately combined.
C.II.2.18	C.II.2.2.2		The 3d bullet under the heading Normal Loads should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the third bullet to refer to "ASME Code-required stress reports."
C.II.2.19	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Seismic Loads pertaining to as-built stress reconciliation reports).	2	4	Under the heading Seismic Loads, delete the first bullet, which states that ITAAC should verify that structures and systems have been designed for seismic loads.
C.II.2.20	C.II.2.2, Sec. 14.3.2		This section contains numerous statements similar to "COL applicants should provide ITAAC to reconcile the as-built plant with the structural design basis." Reconciliation between as-built configuration and structural analysis is neither performed nor required unless there is a deviation from the design drawings used in the analysis. As-built configurations are checked against design drawings to verify compliance with the design basis. There is no regulatory basis for this requirement and it is not consistent with precedent (none of the existing certified designs have these ITAAC). This comment is also applicable to draft SRP Section 14.3.2.	1	1	This section should be revised to remove all statements that imply a requirement for as-built reconciliation with analysis and replace it with reconciliation of as-built configuration with design drawings.
C.II.2.21	C.II.2.2.2		The 4th bullet under the heading Seismic Loads, should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the fourth bullet to refer to "ASME Code-required stress reports."
C.II.2.22	C.II.2.2.2		Under the heading Seismic Loads, to the extent that the 6th bullet is intended to refer to safety-related buildings, the ITAAC is inappropriate because safety-related buildings are designed to withstand seismic events without collapse. To the extent that this bullet is intended to refer to non-safety-related buildings, the subject is addressed by the seventh bullet and is therefore redundant.	2	4	Under the heading Seismic Loads, delete the sixth bullet related to the collapse of buildings.

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C.II.2.23	C.II.2.2.2		Determining load combinations is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading related to the Suppression Pool pertaining to as-built stress reconciliation reports).	2	4	Under the heading related to the Suppression Pool, delete the first bullet, which states that ITAAC should verify that structures and systems have been designed for hydrodynamic loads.
C.II.2.24	C.II.2.2.2		The 4th bullet under the heading related to the Suppression Pool should be changed to clarify that the ITAAC in question pertain to ASME stress reports, not all ASME reports.	2	4	Modify the fourth bullet to refer to "ASME Code-required stress reports."
C.II.2.25	C.II.2.2.2		Determining load is a detailed design function and is not appropriate for inclusion in the ITAAC. Instead, ITAAC should focus on verification of the adequacy of the as-built plant (which occurs through the other bullets under the heading Flood, Wind, etc., pertaining to as-built stress reconciliation reports).	2	4	Under the heading Flood, Wind, etc, delete the first bullet which states that ITAAC should verify that structures and systems have been designed for natural phenomena loads.
C.II.2.26	C.II.2.2.2		The 3d bullet under the heading Pipe Break makes no sense as written. RPVs are not postulated to experience LOCAs. Perhaps the reference to RPVs should be to the "reactor coolant pressure boundary," or "reactor coolant system."	2	4	Delete the third bullet related to reactor pressure vessel (RPV) LOCA analysis.
C.II.2.27	C.II.2.2.2		This topic of Codes and Standards is redundant of the bullets under the other headings and therefore should be deleted.	2	4	Delete the heading and bullet related to Codes and Standards.
C.II.2.28	C.II.2.2.2		This topic of As-Built Reconciliation is redundant of the bullets under the other headings and therefore should be deleted.	3	4	Delete the heading and bullets related to As-Built Reconciliation.
C.II.2.29	C.II.2.2.2		Consistent with the practice for the ITAAC for the existing design certifications, a single ITAAC may address the as-built stress reconciliation for all loads applicable to a system, rather than having a separate ITAAC for each load.	3	4	Add a paragraph at the end of this section to state that ITAAC for the various topics discussed in this section may be combined into one or more ITAAC, and that a separate ITAAC is not needed for each topic.
C.II.2.30	C.II.2.2.3		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Modify the statement preceding the second series of bullets in this section to delete reference to verifying piping and component "classification."
C.II.2.31	C.II.2.2.3		It will not always be possible to simulate design basis conditions in the plant. Therefore, in some cases, it will be necessary to perform an analysis that extrapolates the results of tests at actual conditions to determine whether the MOVs will be able to perform their functions at design basis conditions.	2	4	Modify the last bullet of this section to indicate that the capability of installed MOVs at design basis conditions should be verify by in-situ testing and analysis.
C.II.2.32	C.II.2.2.3, Sec. 14.3.3		This section requires as-built analyses to be performed. See above comment on C.II.2.2.2, Section 14.3.2 concerning as-built reconciliation. As-built reconciliation is performed by confirmation that the as-built configuration conforms to the design drawings. Structural analyses are only revised if necessary to reconcile deviations that are identified. If the design uses LBB methods there should be an ITAAC developed to require that a report exists and concludes that the material properties in the certified material test reports are consistent with the material properties assumed in the LBB analysis.	1	1	This section should be revised to remove all statements that stipulate the structural analyses have to be revised to verify as-built configuration. The bullet on LBB reconciliation should be revised to reflect that the only input needed is the certified material test reports.

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C.II.2.33	C.II.2.2.4		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Delete Item # 2 under the last bullet, which indicates that ITAAC should be developed to verify seismic and code classification.
C.II.2.34	C.II.2.2.4		Item # 9 under the last bullet is too vague to be meaningful. Not all numeric performance values need to be verified. Instead, only the "top-level" performance values need to be verified.	2	4	Delete Item # 9 under the last bullet, which states that ITAAC should verify "numeric performance values."
C.II.2.35	C.II.2.2.5		Some of the topics listed do not relate to the as-built plant, but instead pertain to the licensing analyses that will be reviewed and approved by the NRC in the COL proceeding (e.g., "identification of design basis events;" "minimum criteria for manual initiation and control of protective actions"; "single failure criterion"). Such topics are not appropriate subjects for ITAAC, as indicated by Attachment A.II.10 of DG-1145. Some of the topics listed pertain more to operation than the design of the as-built plant (e.g., "repair"; "control of access"). Such topics are not appropriate subjects for ITAAC.	2	4	Consistent with the principal that ITAAC pertain only to the top-level design and performance requirements, delete or substantially reduce items 2-33 related to verification of each section of IEEE 603.
C.II.2.35 (continued)	C.II.2.2.5		Much of the information listed in this paragraph is not "top-level information" and/or not "principal performance characteristics and safety functions of the SSCs" (e.g., capability for test and calibration"; maintenance bypasses"). Therefore, in accordance with the principles in Section C.II.1 of DG-1145, such topics are not appropriate for ITAAC. Furthermore, the information requested in this section is not necessary for ITAAC as evidenced by the ITAAC for the existing design certifications (which are by definition adequate for COL).	2	4	see above
C.II.2.36	C.II.2.2.5		This paragraph merely lists the relevant GDC and provides no useful information regarding the content of the ITAAC that are needed to verify the GDC. In this regard, the ITAAC for the existing design certification are not developed or structured on a GDC-by-GDC basis. Instead, they were developed and structured on a system-by-system basis. DG-1145 should reflect such a structure.	2	4	Delete or substantially reduce Items 34-46 in this section related to the GDC.
C.II.2.37	C.II.2.2.5		As indicated in SECY-05-197 and the associated Staff Requirements Memorandum, ITAAC are not appropriate for operational programs.	2	4	Under Items 48-50, delete the references to plans that do not pertain to design and construction (e.g., maintenance, training, operations, start-up tests).
C.II.2.38	C.II.2.2.6		Most non-safety-related systems either have no safety function or minor safety functions. Therefore, it would be inappropriate to require ITAAC related to the electrical power for such systems. Instead, such ITAAC should be limited to those non-safety-related systems that have significant safety functions.	2	4	Modify Item 10 of this section to indicate that ITAAC should verify the functional arrangement of electrical power for non-safety systems to the extent that those systems perform a significant safety function.
C.II.2.39	C.II.2.2.7		As a general rule, ITAAC are not intended to, and are not appropriate for, verification of classifications. Instead, ITAAC are intended to verify that the as-built plant has certain design features and functions.	2	4	Delete Item #3 under the last bullet in this section, which indicates that ITAAC should be developed to verify seismic and code classification.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.40	C.II.2.2.7		Item 10 is too vague to be meaningful. Not all numeric performance values need to be verified. Instead, only the "top-level" performance values need to be verified.	2	4	Delete Item #10 under the last bullet in this section which states that ITAAC should verify "numeric performance values."
C.II.2.41	C.II.2.2.7, Sec. 14.3.7		Some of the discussion in this section specifies ITAAC for as-built reconciliation with analyses. As noted in the comments above, the as-built reconciliation is not performed with analyses, it is performed with the design drawings.	2	4	This section should be revised to remove reference to performing as-built reconciliation with analyses and replace it with as-built reconciliation with design drawings.
C.II.2.42	C.II.2.2.8		Equipment leakage is a relatively minor detail that is not appropriate for ITAAC (which pertain to "top-level information"). In this regard, the ITAAC for the existing design certifications do not in general address equipment leakage characteristics (except for a few significant leakage issues, such as integrated containment leakage).	2	4	Delete the fourth bullet in this section pertaining to equipment leakage characteristics.
C.II.2.43	C.II.2.2.8		The ITAAC for the existing design certification do not require that radiation protection equipment be environmental qualified (except as necessary to satisfy 10 CFR 50.49).	2	4	Modify the fifth bullet in this section pertaining to environmental qualification of radiation protection equipment. The scope of the ITAAC should be limited to that equipment that needs to be qualified under 10 CFR 50.49.
C.II.2.44	C.II.2.2.8		The application will describe the liquid and gaseous radwaste systems and will evaluate offsite releases to verify that the limits in Part 190 are met. The ITAAC should not be focused on reverification of compliance with Part 190. Instead, the ITAAC should be focused on verification of the important design features and functions of the liquid and gaseous radwaste that were the basis for the analyses in the application.	2	4	Modify the ninth bullet of this section to delete the reference to 40 CFR Part 190. Instead, ITAAC should require verification of the important design features and functions of the liquid and gaseous radwaste systems.
C.II.2.45	C.II.2.2.8		The ITAAC should focus on the important design features and performance characteristics relied upon in the accident evaluations. ITAAC should not be established to re-verify analytical assumptions such as delay times.	2	4	In the last bullet in this section, delete the parenthetical statement that references issues such as maximum delay time, maximum time for drawing negative pressure, etc.
C.II.2.46	C.II.2.2.9		The ITAAC for the existing design certification, and the generic emergency ITAAC accepted by the NRC in Section C.I.13 of DG-1145, do not address HFE for the TSC or EOF. Such information does not rise to "top-level information."	2	4	Delete the bullets that pertain to human factors engineering (HFE) for the technical support center (TSC) and emergency operations facility (EOF).
C.II.2.47	C.II.2.2.11		The ITAAC for the existing design certifications provide for a CILRT rather than individual valve leakage tests. Limiting the ITAAC to the CILRT is appropriate, because safety is ensure if the integrated leakage is acceptable.	2	4	Modify the last bullet in this section to indicate that ITAAC should include a containment integrated leak rate test (CILRT), rather than tests of individual valve leakage.
C.II.2.48	Table C.II.2-1 SAMPLE ITAAC FORMAT		The ITAAC for the existing design certifications only require NDE for ASME welds, not NDE for all ASME components.	2	4	In ITAAC # 2 in this table, change the word "components" to "welds".
C.II.2.49	C.II.2; Appendix A.I.A.10		The ITAAC should focus on the results of type tests for equipment qualification, not whether there may be EQ documentation problems. In this regard, the ITAAC for the existing design certifications do not contain requirements to verify that the EQ documentation satisfies all of the requirements in 10 CFR 50.49.	2	4	Delete the sentence pertaining to equipment qualification (EQ) documentation. 50.49 documentation requirements should be addressed in DG-1145, Section C.I.3.11.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.II.2.50	C.II.2; Appendix A.I.A.11		Accessibility is not "top-level design information" that pertains to the "principal performance characteristics and safety functions of the SSCs." The ITAAC for the existing design certifications do not in general address accessibility.	2	4	Delete this section, which pertains to accessibility to perform ISI and IST.
C.II.2.51	C.II.2; Appendix A.I.B.11		The ITAAC for the existing design certifications provide for a CILRT rather than individual valve leakage tests. Such provisions are appropriate, because safety is assured if the integrated leakage is acceptable.	2	4	Modify this section to indicate that ITAAC should include a containment integrated leak (CILRT) rate test (rather than tests of individual valve leakage).
C.II.2.52	C.II.2; Attachment A on I&C Systems		In general, this Attachment would require extremely detailed design information to be included in the ITAAC, without regard to its safety significance. For example, there is no basis for including "cabinet layout and wiring" in the ITAAC - - inclusion of such information in the ITAAC would be entirely inconsistent with the ITAAC for other types of systems, which do not contain such details. Similarly, much of the information sought by this Attachment (e.g., single failure analysis) will need to be included in the application and approved by the NRC - - there is no reason (and it would be inconsistent with the entire purpose of ITAAC, which is focused on as-built SSCs) to reverify that design analysis as part of ITAAC.	1	4	The comments applicable to Section C.II.2.2.5 are equally applicable to this Attachment. This entire attachment should be deleted.
C.II.2.52 (continued)	C.II.2; Attachment A on I&C Systems		In general, this attachment does nothing more than repeat the requirements of IEEE 603, the GDC, and SRP. The attachment does not distinguish between design information that needs to be reviewed and approved as part of the application, and as-built attributes that should be verified by ITAAC. Furthermore, this attachment makes no attempt to distinguish between top-level information on the principal performance characteristics and safety functions that are appropriate for verification by ITAAC, and detailed design information that is not appropriate for ITAAC. As a result, this attachment is not consistent with the principles that the NRC has established for development of ITAAC, and provides incorrect guidance for ITAAC. As a result, this attachment (in its current form and substance) should be deleted in its entirety.	1	4	see above
C.II.2.53	C.II.2, Appendix C.II.2-A, I&C and Control Systems, Section II, ITAAC:		Item C seeks submittal of the Software Test Plan. There is no regulatory basis for this requirement. The Software Test Plan is not mentioned in BTP-14.	2	4	This section should be revised to remove the Software Test Plan.

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C.II.2.54	C.II.2; Attachment A on Electrical Systems; Paragraph A.9		Not all recommendations in Regulatory Guides warrant treatment in ITAAC. For example, some recommendations simply call for analyses to be included in an application, but do not pertain to performance characteristics or safety functions. In other cases, the Regulatory Guides contain recommendations that pertain to detailed design information that does not rise to the level of "top-level information." Therefore, only those recommendations in Regulatory Guides that represent top-level information on the principal performance characteristics and safety functions should be included in the ITAAC.	2	4	The first sentence of this paragraph should be modified to indicate that the recommendations in Regulatory Guides should be verified through ITAAC, to the extent that they represent top-level information on the principal performance characteristics and safety functions.
C.II.2.55	C.II.2; Attachment A on Electrical Systems; Paragraph A.12		Not all new design features warrant treatment in ITAAC. For example, some new design features may be non-safety-related and have no significant safety function. Therefore, only those new design features that represent top-level information on the principal performance characteristics and safety functions should be included in the ITAAC.	2	4	The first sentence of this paragraph should be modified to indicate that new design features should be verified through ITAAC, to the extent that they represent top-level information on the principal performance characteristics and safety functions.
C.II.2.56	C.II.2; Attachment A on Building Structures; Paragraph I.3		Most of the dimensions requested by this paragraph are not critical to safety and should not be embedded in the ITAAC. In general, a licensee should be able to change these dimensions, without seeking prior NRC approval. However, if the dimensions are in the ITAAC, they cannot be changed without NRC approval. In this regard, the NRC certified the ABWR design, without requiring that the dimensions be verified by ITAAC (as provided in the footnote to ABWR Tier 1, Section 2.15.10). Although such information was required for the ITAAC for the AP1000, we recommend that the NRC reconsider that position and only require ITAAC for those key dimensions that cannot change without significant implications for safety. In this regard, we believe that it is appropriate to specify a wall thickness for protection against external floods as provided in paragraph II.3 of the Attachment, and are not recommending any change to that provision.	1	4	Delete this paragraph, which requires ITAAC for building dimensions. In the alternative, limit this paragraph to a few key critical dimensions.
C.II.2.57	C.II.2		Sentence 2 of paragraph 4 states that COLAs "must" include physical security ITAAC, in the same way that COLAs "must" include EP ITAAC. However, EP ITAAC are unique in the way they are called out in the regulation as required.	2	3	Modify sentence to be consistent with new Appendix C.II.2.C and Appendix I response C.III.7-2
C.II.3.1	C.II.3	C.II.3-1 C.II.3-4	In Pubic Comment C.II.3-1 and C.II.3-4, the Staff indicates that Reg. Guide 4.2 provides an acceptable approach for COL applicant ER work. However, as recognized by the Staff, Reg. Guide 4.2 is dated; it does not address a number of topics covered in NUREG-1555. [See also related comment and Staff response to Comment C.III.3-3. The Staff notes in this response it's consideration of using the ESRP as a format for its EIS. However, the industry question here deals with the expected format of the COLA ER.]	2	4	To establish a standard, consistent listing and presentation of issues and information to be addressed in a COLA ER, it is suggested that the Staff provide a simple table of contents for COLA ERs on C.II.3 (or appendix to the Guide). This could be based on NUREG-1555, Appendix A.

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C.II.3.2	C.II.3	C.II.3-5 C.II.3-7	Both Public Comments C.II.3-5 and 7 pertain to the SAMDA evaluation provided in a design certification and finality of the resulting NRC's EA. The issue of referencing a design still undergoing NRC review is also raised in the comments. In response to C.II.3-5, the Staff indicates that a response will be provided via the final rulemaking. In response to C.II.3-7, the Staff described a number of actions needed by the SAMA evaluation that go beyond SAMDA and DCD scope. The Staff stated no revision to the Guide was required. Depending on the level of detail in provided in the rulemaking and accompanying comments, the final complete guidance on this subject may not be clear or fully responsive to this comment	2	4	To offer a clear, single location for guidance on NRC expectations regarding SAMDA and SAMA evaluations, it is recommended that the final Guide in C.II.2 be revised to provide a specific reference ton the rulemaking and statements where these subjects are addressed. It is suggested that the NRC include its guidance on SAMA (response to Comment C.II.3-7) in Section C.II.3.
C.III.1.1	C.III General		C.III.1.x and Section 1.x of the "second half" of C.III.1 have the significant potential to become confused because of the format of DG1145.	3	3	Change C.III.1, C.III.2, etc.; to C.III.a, C.III.b., etc., or something analogous, to avoid two competing C.III.1.x citations
C.III.1.2	C.III.1 General		C.III.1 - General – Because C.III.1 pulls much information from the C.I sections, each comment on the C.I sections should also be checked against the corresponding C.III section, and vice versa.	2	3	N/A
C.III.1.3	C.III.1 Sec. 1.10		Section C.III.1 introductory material, in general, does not mention the specific guidance regarding incorporation of the rule and the DCD in the COLA. A reference to C.IV.2 is recommended, as a matter of completeness.	2	4	Add the following statement to C.III.1.10: "See Section C.IV.2 for guidance on referencing an design certification rule."
C.III.1.4	C.III.1 Sec. 1.1		Guidance refers to the need to identify net electrical output. Of what value is this information, and to what extent is it considered binding as part of the FSAR? The net electrical output will be influenced by many factors such as house loads that may not be known at the time of application.	1	4	Indicate this as approximate and provided for information only.
C.III.1.5	C.III.1 Sec. 1.1.1		The phrase "whether the plant is colocated with existing operating nuclear power plants" should be clarified as the parameters of interest. Does it apply to a new unit outside the protected area for the existing facility? Outside the exclusion area boundary? Does the unit's status matter in the definition of "operating"?	2	2	Replace with "...including the extent (if any) to which the plant is collocated and/or interfaces with a licensed, existing nuclear power plant (i.e., within the existing plant's protected area or exclusion area boundary)."
C.III.1.6	C.III.1 Sec. 1.1.6.1		(1) "guides" is plural but DG-1145 is the only guide indicated (2) should indicated conformance with DG-1145 ensures/obviates need to address RG-1.70 (3) "DG-1145" should be replaced with RG number when available	3	4	Consider replacing 1.1.6.1 with "conformance with format and content guidance of this regulatory guide."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.7	C.III.1 Sec. 1.1.6.2		Ambiguous reference to SRP conformance	2	4	Insert "...approved as of six month prior to submittal date of application" after "(NUREG-0800)"
C.III.1.8	C.III.1 Sec.1.4		C.I.1.4 call the NSSS vendor "the reactor designer." On the other hand, C.III.1.1.4 call the NSSS vendor "the certified plant designer."	3	5	C.III.1.1.4 – "The division of responsibility between the ~~certified plant~~ reactor designer, architect-engineer, constructor, and plant operator should be delineated."
C.III.1.9	C.III.1 Sec. 1.9		In several cases within 1.9, reference is made to the timing of conformance (e.g., RegGuides or SRP in place 6 months before docket date). In some cases, the requirement is ambiguous (i.e., "6 months before application"). Consistent with prior discussions and comments, it is expected that, either through changes to guidance and regulations, as applicable, or as a matter of practice, the standard applied here will be six months prior to the application date, as the applicant has no control over when the application is docketed.	2	4	Acknowledge standard to be applied as a matter of practice will be guidance in effect "six months prior to application date." The NRC should initiate a rulemaking to fix the regulations.
C.III.1.10	C.III.1 Sec. 1.9.1		The first sub-heading ("COL Applicants That Reference a Certified Design") is redundant to the entire C.III.1 section, and is unnecessary. Coupled with the first two sentences of the following paragraph, it unnecessarily confuses the context of the balance of the section. This comment also applies to 1.9.2, 1.9.3, and 1.9.4.	2	4	Delete subheading and first two sentences, such that second paragraph would begin, "Certified designs have already provided..."
C.III.1.11	C.III.1 Sec. 1.9.1	C.I.1.9-1	The latter half of the first paragraph under the subheading "COL Application Timing" is not completely accurate, and is somewhat redundant to information in the same paragraph, and while it attempts to clarify by example, it is not worth the confusion created. If a design was certified in December 2005, the obligation to "six-month" conformance would not be keyed off of the Dec 2005 date, but rather on the date of submittal or docketing of the original application. This comment also applies to 1.9.2, 1.9.3, and 1.9.4.	2	4	Delete from "For example, if a design was certified..." to the end of the paragraph.

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C.III.1.12	C.III.1 Sec. 1.9.1	C.I.1-6	The third paragraph in this section (that begins, "There may be cases where a certified design addresses SRP conformance...") seems inconsistent with the regulation. It states, in part, "where the SRPs applicable to the certified design have been revised/updated, the COL applicant may address conformance with the version of the SRP evaluated in the certified design even though a later revision of the SRP is in effect." This seems correct, i.e., allowable, but the paragraph goes on to say, "However, it is expected that the COL applicant, in this situation, will identify and justify a deviation or exception from conformance with the SRP in effect 6 months before the docket date of the COL application." The discussion is in the context of "design-related issues for which the COL applicant's operationally-related issues/programs are dependent (e.g., fire protection)," but this scenario is not well explained, nor is there any justification presented as to why design finality of a certified design should not be weighted more heavily than the operational programs that might be related to those approved design elements.	1	1	Delete this paragraph or, at a minimum, provide the regulatory basis for this apparent departure from design finalization.
C.III.1.12 (continued)	C.III.1 Sec. 1.9.1	C.I.1-6	The Staff needs to clarify the regulatory basis for requiring justification of conformance with the SRP that was in effect at the time the DCD was docketed.	1	1	see above
C.III.1.13	C.III.1 Sec. 1.9.1		C.III.1 discussion of FSAR 1.9.1 states "a COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design which are not included in the certified design. In addition, the COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application insofar as they pertain to operational aspects of the facility." Does this guidance indicate that the only regulatory guides that need to be addressed are those that address "facility design" or "operational aspects of the facility? For example, Division 2 is for Research and Test Reactors; so, can we eliminate Division 2 assessments since they don't address design or operation of commercial power reactors?	2	4	N/A

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C.III.1.14	C.III.1 Sec.1.9.3		Comment # C.I.1.18 on Section C.I.1.9.3 is applicable as well to C.III.1, Section 1.9.3. 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed.	2	4	See Comment #C.I.1.18. The proposed changes at C.I.1.9.3 apply as well to C.III.I, Section 1.9.3.
C.III.1.15	C.III.1 Sec. 1.9.4		The first sentence on the "international operating experience" section significantly overstates the regulatory requirement. DG1145 says "Applicants for certified design and applicants for a combined license are required to address comparable international operating experience," while the proposed regulation makes it clear that use of international experience is an alternative to use of domestic experience. Further, COL applicants will, in most cases, have no ability to discern the extent to which international experience is factored into the design, and international regulations and guidance may have no relevance to those in the US.	1	4	Clarify that the regulatory basis for use of international experience is in the context of an alternative to domestic experience, and clarify limits of what an applicant may be "required" to provide when he does not have direct access to information regarding extent of international experience considered in the certified design.
C.III.1.16	C.III.1, 2.1.3.6		Typo: Population density criteria is incorrectly stated as 500 persons/km2. C.I.2.1.3.6 correctly presents this as 500 persons / mi2.	3	3	Change to 500 persons/mi2 to be consistent with C.I.2.1.3.6 and Reg. Guide 4.7.
C.III.1.17	C.III.1, Sec. 2.4		Footnote 7, page C.III.1-27, pertains to changes from the referenced DCD. However, it is not clear as to the relevance of Footnote 7 to the referenced text which does not speak to changes from the DCD.	2	4	The Staff is requested to clarify the application of Footnote 7 to the referenced text or delete the footnote.
C.III.1.18	C.III.1 Sections 3.7.2.2 and 3.7.2.12		What are major Seismic Category I structures?	2	4	Provide clarification.
C.III.1.19	C.III.1 Section 3.7.2.8		What is the definition of Seismic Category II? Based on the text, it implies SSCs that meet Regulatory Guide 1.29 Position C.2 requirements are classified as Seismic Category II.	2	4	Delete the term "Seismic Category II" or define it and use it consistently throughout DG-1145.
C.III.1.20	C.III.1 Section 3.9.6.5		Typo.	3	5	Replace ASMC with ASME.

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C.III.1.21	C.III.1 Ch. 3.9.2.3		Currently, this section only addresses BWR reactor internals - PWR reactor internals need to be addressed as well.	2	3	Provide words similar to C.I.3.9.2.3
C.III.1.22	C.III.1, Sec. 5.2.3.2 (1), (2)		Please clarify if it will be acceptable to reference the EPRI Water Chemistry guidelines for the new plants, or will an applicant need to cut-and-paste much of the background information from those documents into the SAR? The last sentence in each item implies that incorporation by reference is acceptable, but there appears to be the opportunity for a lot of redundancy and downstream revision of the SAR every time those guidelines are updated.	2	4	Clarify that the EPRI Water Chemistry guidelines can be incorporated by reference
C.III.1.23	C.III.1, Sec. 5.2.4.1		Section C.I.5.2.4.1, "ISI and IST Programs": This section provides a list of 9 items to be provided in the COLA to allow the Staff to make a reasonable assurance finding. Some of the 9 items will not be available at the time the COLA is submitted. For example, items 11(1), 12(2), 17(7) and 18(8) would not be complete at COLA. Item 1 can be completed for major components of the RCPB. For item 2, it is not expected that all remote access equipment would be identified several years before the examinations. Also, items 17(7) and 18(8), code exemptions and relief requests will not be developed at the time the application is submitted. The list should be modified to recognize that al such items that have been identified may not be included in the application.	1	2	Add the following to the end of this section as a separate paragraph: "It is acceptable to submit a general description of the programs as long as it "fully describes" the programs, as defined in SECY-05-0197, and references any applicable standards regarding the ISI and IST programs. When some detailed information for the ISI and IST programs as required in this section is not available at the time of submitting the application, the COL applicant should make a commitment in the application that such information will be provided at a later date (at least one year prior to fuel load) for NRC review prior to fuel load."
C.III.1.24	C.III.1, Sec. 5.2.4.1		The numbering of the 9 items listed in this section start with 11, instead of 1.	3	5	Re-number the list of items starting with (1)
C.III.1.25	C.III.1, Sec. 5.2.4.1 (13)		Please clarify the requirement to discuss the procedures used to meet Code requirements in the second sentence of this bullet. Procedures will not be developed by the time of COL application. Also, it does not seem to be advisable to submit detailed procedures which require a FSAR update if a change to the procedure is performed. We believe that a discussion of the methods and techniques used to meet Section XI Code requirements provides sufficient information to enable the staff to make a reasonable assurance finding regarding the acceptability of the inservice inspection program.	1	2	Delete the words, "and procedures," from the second sentence of the third bullet under Section C.I.5.2.4.1, and replace the comma between "methods" and "techniques" with the word "and."

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C.III.1.26	C.III.1, Sec. 5.2.4.1 (7)		The industry does not have "exemptions" from Code requirements, but rather has Relief Requests and alternatives per 10 CFR 50.55a. The industry also works to Code Cases, as specified in Regulatory Guide 1.147. Please clarify if our understanding is correct and this item can be deleted. If this requirement is addressing components that are exempt from the inspection requirements of Section XI as defined in Section XI (usually based on size), please clarify and elaborate that this is the intent of this item.	2	4	Delete the following bulleted item" Code exemptions. Identify any exemptions from Code requirements.
C.III.1.27	C.III.1 Ch. 6		Lead-in info of section C.III.1- Ch. 6 states "The applicants should state its intentions with regard to its adoption of risk informed categorization and treatment of structures, systems and components in accordance with 10 CFR 50.69." Generally, this should be done once in Section 3.2, not in the various sections of the FSAR discussing the SSCs. [Duplicate of comment on C.I.6.]	2	3	Omit this statement from Chapter 6, but address the use of §50.69 in Section 3.2 of the FSAR. 10 CFR 50.69 is currently not mentioned in C.I.3.
C.III.1.28	C.III.1 Ch.6		Lead-in info of section C.III.1- Ch. 6 states "Generic DCDs typically address the equipment, the material used to manufacture the components in the ESF system. If applicable, this information may be incorporated by reference." Workshop discussions have led the Industry to believe that the Staff interprets Part 52 to require that the COLA include the DCD information, not "incorporate by reference." [Duplicate of comment on C.I.6.]	2	3	Be consistent with Staff interpretation of 10 CFR Part 52.
C.III.1.29	C.III.1 Ch.6 General		The section labeled "*General*" duplicates C.I.6. It should be written to identify what is necessary beyond the referenced DCD consistent with the intent of C.III.1.	2	3	Rewrite General info to identify what is needed beyond the referenced DCD.
C.III.1.30	C.III.1 Ch. 6 General		The section labeled "*General*" states "The General Design Criteria (GDC) 1, 4, 14, 31, 35, 41 and Appendix B of 10 CFR Part 50, and 10 CFR Part 50, §50.55a, require that certain systems be provided to serve as engineered safety features (ESFs) systems." This statement is not consistent with similar statement in C.I.6.	2	3	Make these statements consistent.
C.III.1.31	C.III.1, 6.2.2		According to RG 1.82 Rev.3, the design of the adverse effects, such as debris, chemicals from buffering agents and debris effects generated from the use of unqualified coatings (which may not adhere to the surface) should be considered. In general, this information should be provided at the COL stage for COL applicants that reference a certified design.	2	2	Add the following item in this section for evaluation of containment sump analysis – The design of the adverse effects, such as debris, chemicals from buffering agents and debris effects generated from the use of unqualified coatings (which may not adhere to the surface) should be considered at the COL stage.
C.III.1.32	C.III.1 6.2.7		C.III.1.6.2.7 states "COL applicant that reference a certified design do not need to include additional information" while there is no correspond section in C.I.6.2. There should be consistency within these sections.	2	2	Either section C.III.1.6.2.7 should be deleted, or a similar section should be included in C.I.6.2.
C.III.1.33	C.III.1 6.6.6		C.I.6.6.6 requests "Describe the method to be used in evaluating examination results for Class 3 components and, until publication of IWD-3000, indicate the extent to which these methods are consistent with requirements in Article IWA-3000 of Section XI." This guidance should be updated to reflect that IWD-3000 has now been published. [Duplicate of comment on C.I.6.]	2	4	"Describe the method to be used in evaluating examination results for Class 3 components and, indicate the extent to which these methods are consistent with requirements in Article IWD-3000 of Section XI."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.34	C.III.1, Sec 7.1.1		This section states: "Identify all instrumentation, control, and supporting systems that are not addressed in the design control document of the referenced certified design or other parts of the COL application." per C.I.1.7.1.1: "The application document should list all instrumentation, control, and supporting systems that are safety related, including alarm communication, and display instrumentation."			As worded, applicants referencing a certified design (C.III) must identify all instrumentation, control, and supporting systems not addressed in the DCD, including non-safety related instrumentation, control, and supporting systems, whereas applicants for non-certified design (C.I) are only required to address the safety related ones. Revise C.III.7.1.1 to be consistent with C.I.1.7.1.1.
C.III.1.35	C.III.1, Sec. 8.2.2		5th sentence has the phrase "accepting the" repeated twice in the sentence.	3	5	Modify to correct the duplication.
C.III.1.36	C.III.1 Sec. 9.1.3		This section describes additional information to be provided by a COL applicant referencing a certified design. The second and third bullets of this information require the following additional information: • Describe operational program to maintain spent fuel decay heat load within spent fuel pool cooling system heat removal capacity during refueling, including analytical methods used to calculate decay heat generation and heat removal capacity. • With respect to neutron absorber material, provide pool cleanliness requirements for normal operations in the design bases for the cooling and cleanup system for the spent fuel facilities. This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. These requirements appear to be inappropriate.	1	1	Delete the following from C.III.1.9.1.3: • Describe operational program to maintain spent fuel decay heat load within spent fuel pool cooling system heat removal capacity during refueling, including analytical methods used to calculate decay heat generation and heat removal capacity. • With respect to neutron absorber material, provide pool cleanliness requirements for normal operations in the design bases for the cooling and cleanup system for the spent fuel facilities.
C.III.1.37	C.III.1 Sec. 9..1.4		This section describes additional information to be provided by a COL applicant referencing a certified design. The additional information required is: • Describe the operational program governing fuel handling, including procedures and administrative controls. This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. This requirement appears to be inappropriate.	1	3	Modify the section to read as follows: Typically included as part of the referenced certified design. No additional information needs to be provided by a COL applicant referencing a certified design.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.38	C.III.1 Sec. 9.1.5		This section describes additional information to be provided by a COL applicant referencing a certified design. The second and third paragraphs of the section requires the following additional information: Describe the operational program governing heavy load handling, including: • A listing of all heavy loads and heavy load handling equipment outside the bounds of loads described in the certified design, and the associated heavy load attributes. • Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance. • Heavy load handling equipment maintenance manuals and procedures. • Heavy load handling equipment inspection and test plans. • Heavy load personnel qualifications, training, and control programs. • QA programs to monitor, implement, and assure compliance to heavy load handling operations. For heavy loads outside the bounds of loads described in the certified design that are handled by non-single-failure-proof handling systems, provide a safety evaluation demonstrating the consequences of potentia This information does not appear to be required in the corresponding section of DG-1145, C.I.9. Additionally, the operational program described is not identified as an operational program required by regulation, as addressed in Section C.I.13.4 and C.IV.3 of DG-1145. These requirements appear to be inappropriate.	1	1	Modify the section to read as follows: Typically included as part of the referenced certified design. No additional information needs to be provided by a COL applicant referencing a certified design.
C.III.1.39	C.III.1 Sec. 9.2.5.1		Although the same design bases information is described, the list is worded differently between this section and the corresponding section in C.I.9. Specifically, the fifth bullet of the list reads as follows: The ability of essential components to withstand design loadings, provisions for inspection of essential structures and subsystems	3	3	Split the fifth bullet of the design bases to be provided into two bullets, as follows: • capability of essential components to withstand design loadings • provisions for inspection of essential structures and subsystems
C.III.1.40	C.III.1 Sec. 9.2.5.2		The reference to RG 1.29 for this section is incorrect. RG 1.29 deals with seismic classification. The reference instead should be to RG 1.27, Ultimate Heat Sink for Nuclear Power Plants.	3	3	Change RG 1.29 to RG 1.27.
C.III.1.41	C.III.1 Sec. 9.3.3		The first sentence of the third paragraph of this section states, "Describe how the final size of the drywell sump is determined."	1	1	Delete the following from the third paragraph of this section:

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.42	C.III.1 Sec. 9.5.1.1	C.I.9.5.1.3-1	The 10th bullet of the information required to be submitted in the second paragraph of the section reads as follows: (10) Fire PRA peer review results - these should include all high-level Facts and Observations and their resolution, or plan and schedule for resolution if at a future date, as documented by an "independent" peer review (i.e., one performed according to an approved fire PRA standard by a group independent from the applicant) A similar comment, C.I.9.5.1.3-1, was addressed by NRC in Appendix I to DG-1145, wherein the reference to "fire PRA" was removed and reference made to PRA requirements in Section C.I.19 and C.II.1. The same revision should be made in this section.	3	3	Delete bullet (10) referencing the "fire PRA," and replace with the following at the end of the paragraph: Guidance for fire probabilistic risk assessments (PRAs) is provided in Sections C.I.19 (Probabilistic Risk Assessment Information and Severe Accidents) and C.II.1 (Probabilistic Risk Assessment).
C.III.1.43	C.III.1 Sec. 9.5.1.1(2)		Change the word "addition" to "edition."	3	4	See next comment
C.III.1.44	C.III.1 Sec. 9.5.1.1(2)		This section should be revised to address the fact that the design certification identifies the codes and standards applicable to the certified design.	1	1	The final list of industry codes and standards will be governed by the DCD (6 months prior to DCD) for items already certified. The COL will use industry codes and standards (6 months prior to COLA Application) for items not covered in the certified design, unless it results in a design change to the plant in which case the industry will ask for exemption (provided there is no NRC associated back fit).
C.III.1.45	C.III.1, Sec 9.1.5.1		5th bullet states "Heavy" instead of "Heavy."	3	5	
C.III.1.46	C.III.1, Sec 9.4.5		Section 9.4.5 is followed by Section 9.5.1. Section 9.4.5 should be followed by "9.5 Other Auxiliary Systems."	3	5	
C.III.1.47	C.III.1 Chapter 9		Numerous sections like 9.3.1, 9.3.3, 9.5.4, 9.5.5 should give credit to the noted items already having been addressed in the DCD. These sections do not do so as presently written.	1	4	Add the following sentence to these and other sections "If this information is included in the DCD, COL applicants referencing a certified design do not need to include additional information."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.48	C.III.1 Sec. 10.2.3		Section states, "If not contained in the DCD, discuss how the environmental conditions, operational parameters, design features, fabrication, material properties, and maintenance are managed and considered to mitigate the following potential degradation mechanisms in the turbine rotor and buckets/blades: pitting, stress corrosion cracking, corrosion fatigue, low-cycle fatigue, erosion, and erosion-corrosion." "If not contained in the DCD," is not an appropriate criterion for requiring COLA info. Rather, COLAs will contain information required by the regulations that is sufficient to support NRC safety reviews and findings, and need not provide additional detail about the approved standard design. Moreover, the requested information is not practical or necessary to provide at time of COLA.	1	2 and 3	"Provide a general description and/or reference to applicable standards on how design, procurement, fabrication, maintenance and operations will be conducted so as to mitigate the following potential degradation mechanisms in the turbine rotor and buckets/blades: pitting, stress corrosion cracking, corrosion fatigue, low-cycle fatigue, erosion, and erosion-corrosion. The COL applicant should provide a schedule for making procurement specifications and related information describing design features, fabrication methods, and material properties available for NRC audit, but the schedule need not be part of the COLA. This information should be made available at least one year prior to scheduled fuel load."
C.III.1.49	C.III.1, Sec. 10.2.3		Section states, "Describe the turbine rotor inservice test and inspection program. In this description, include inspection frequency, scope (components/areas to be inspected), inspection method for each component, acceptance criteria, disposition of reportable indications, and corrective actions. Provide the technical basis for the inspection frequency."	1	2 and 3	Add statement consistent with C.1.10.2.3.3 as follows: "It is acceptable for the COL applicant to submit a general description and reference any applicable standards regarding in-service inspection of the turbine rotor; however, the COL applicant should provide a schedule for submitting the finalized in-service inspection procedures and acceptance criteria. This schedule will be subject to a license condition for implementation. The finalized information should be provided no later than one year before initial scheduled fuel load." When addressing the timing of this information need, note that the following was included in Section 10.2.6 o the AP1000 DCD: The Combined License holder will submit to the staff for review and approval within 3 years of obtaining a Combined License, 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 subsection 10.2.3.6.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.50	C.III.1, Sec. 10.3.6		Section states, "Develop flow-accelerated corrosion (FAC) monitoring program for carbon steel portions of the steam and power conversion system that contain water or wet steam." It is not necessary or practical to develop an FAC program at the time of COLA.	2	2	"Provide a general description and/or reference to applicable standards for developing a flow-accelerated corrosion (FAC) monitoring program for carbon steel portions of the steam and power conversion system that contain water or wet steam."
C.III.1.51	C.III.1 Sec. 10.3.6		For non-code components, provide plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s).	2	2	It is not clear what is meant by "non-code components" As utilized in the second bullet of C.I.10.3.6.3, the meaning of the term appears to apply to components outside of the ASME Section III portion of the MS/FW systems. However, based on the general statement in C.I.10.3.6 and the specific usage in C.I.10.3.6.1, it could be construed that the COLA applicant is only required to provide the indicated information "on materials used for ASME Boiler and Pressure Vessel Code, Section III, Class 2 and 3 components...". If the former definition is correct, that non-code components are components that are outside of the ASME Section III code boundaries, the requested information appears to go beyond the requirements of either the SRP or the draft SRP revision. In the SRP, fracture toughness requirements are only associated with ASME Section III, Class 2 and 3 components.
C.III.1.52	C.III.1, Sec. 10.3.6		Section states, "For non-code components, provide expected plant-specific materials property data such as chemistry, yield strength, fracture toughness data (KIC.), Charpy V-notch energy, nil-ductility temperature, fracture appearance transition temperature. Identify appropriate ITAAC to verify the expected material properties including manufacturer/fabricator, and heat number(s)." Per past practice for design certification and Section C.II.2, ITAAC are not established to verify material properties of non-code components in the steam and feedwater systems. Rather, NRC may verify actual material properties through normal design implementation inspections.	1	1 and 3	Delete the second sentence regarding ITAAC.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.53	C.III.1, Sec. 10.4.9		Section states, "Discuss design and operational procedures for avoidance of steam binding on the AFW pumps" Design provisions will be described in the referenced DCD, as appropriate. Operational procedures will not be available at time of COLA so they cannot be discussed.	2	2	"Discuss ~~design and~~ operational ~~procedures~~ provisions for avoidance of steam binding on the AFW pumps."
C.III.1.54	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to verify that the system is capable of automatically initiating auxiliary feedwater flow upon receipt of a system actuation signal.	2	2	"Describe the inspection and testing ~~procedures~~ to verify that the system is capable of automatically initiating auxiliary feedwater flow upon receipt of a system actuation signal."
C.III.1.55	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to be performed to verify that the system satisfies the recommendations of Regulatory Guide 1.62 with respect to the system capability to manually initiate protective action by the auxiliary feedwater system.	2	2	"Describe the inspection and testing ~~procedures~~ to be performed to verify that the system satisfies the recommendations of Regulatory Guide 1.62 with respect to the system capability to manually initiate protective action by the auxiliary feedwater system."
C.III.1.56	C.III.1, sec. 10.4.9		Section states, "Describe the inspection and testing procedures to be performed to verify that essential portions of the AFWS are isolable from non-essential portions, so that system performance is not impaired in the event of a failure of a non-essential component.	2	2	"Describe the inspection and testing ~~procedures~~ to be performed to verify that essential portions of the AFWS are isolable from non-essential portions, so that system performance is not impaired in the event of a failure of a non-essential component."
C.III.1.57	C.III.1, sec 10.2.3		Section states, "Describe the design features of the turbine rotor, shaft, couplings, and buckets/blades if these features were not described in the DCD. Provide drawings. Identify the manufacturer and model number. Discuss fabrication methods." "Describe ... if these features were not described in the DCD," is not an appropriate criterion for requiring COLA info. Design features of the turbine rotor, etc., will be described in the DCD as appropriate. COLAs will contain information required by the regulations that is sufficient to support NRC safety reviews and findings, and need not provide additional detail about the approved standard design. Moreover, manufacturer and model number are not practical or necessary to provide at time of COLA.	2	2	"Provide a general description of how design, procurement and fabrication of the turbine rotor, shaft, couplings, and buckets/blades will be conducted consistent with design certification requirements and applicable codes and standards. The COL applicant should provide a schedule for making procurement specifications and related information describing design features, fabrication methods, and material properties available for NRC audit. This information should be made available at least one year prior to scheduled fuel load."
C.III.1.58	C.III.1 sec. 10.3		Section states, "For BWRs, if an alternate leakage path is chosen, provide detailed drawings that show the MSIV alternate leakage path lines including the condenser, all applicable connections to the system and their seismic classification."	2	2	"For BWRs, if an alternate leakage path is chosen, provide drawings or detailed descriptions of the routing of MSIV alternate leakage path lines including the condenser, all applicable connections to the system, and their seismic classification."
C.III.1.59	C.III.1 sec. 10.3		Section states, "When cast austenitic stainless steel materials are used, discuss what measures have been taken to ensure that these materials can be adequately inspected by volumetric methods as required in the inservice inspection program."	2	2	"When cast austenitic stainless steel materials are used, discuss what component configuration and access provisions have been made to ensure that these materials can be adequately inspected by volumetric methods as required in the inservice inspection program."
C.III.1.60	C.III.1 Sec. 10.4.3		This section makes reference to RG 1.123 which has been withdrawn.	3	1	Correct reference
C.III.1.61	C.III.1 Sec. 10.4.6		Bullets one and four make reference to reactor water chemistry.	3	1	For clarity, please consider separate phrasing of BWR and PWR requirements

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C.III.1.62	C.III.1, Sec 10.3		Section 10.3 is followed by Section 10.3.6. It appears that Section 10.3 should be followed by "10.3.5 Water Chemistry (PWR only)."	3	5	
C.III.1.63	C.III.1, Ch. 11		The objective and primary benefit of mobile systems is flexibility in terms of selection and replacement. Outage equipment (e.g., laundry processing system) may change with every outage, thereby requiring an SAR change. Outdated or defective equipment should allow replacement with an entirely different system without pursuing an SAR change. The objective of the SAR should be to identify what minimum operating characteristics will apply, ALARA objectives and minimum ALARA design features (as applicable), minimum instrumentation (monitoring) requirements, and minimum controls for governing critical or safety operation and termination functions. Minimum waste processing rates should only be required for liquid and gaseous effluent systems.	1	1	The requirements to describe mobile systems in terms of their "operating characteristics, ALARA design features, waste processing rates, instrumentation and controls that govern system operation and termination of process and releases" are too prescriptive and lock the plant operator into specific systems. More generic requirements should be specified.
C.III.1.64	C.III.1, Sec.12.5.1		Consistency.	3	3	Change "FSAR" to "SAR."
C.III.1.65	C.III.1, Sec. 12.2.2, para. 2		Current language is too prescriptive and would require an SAR revision for every new instrument type, quantity, etc.	2	4	Change "Describe the types of detectors and monitors, as well as the quantities..." to "Describe the typical types of detectors and monitors, as well as the minimum quantities..."
C.III.1.66	C.III.1 Sec. 12.2.1		Provide a description of any additional contained radiation sources not identified in Section 12.2.1 of the DCD for the referenced plant design, including radiation sources used for instrument calibration or radiography.	2	2	Since some of these sources may not be procured until nearer fuel loading, the exact quantities may be unknown at COL application. Revise to describe program for obtaining and controlling sources.
C.III.1.67	C.III.12.3.4		C.III.12.3.4 contains the two following items 1. "Describe the use of portable instruments, and the associated training and procedures, to accurately determine the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident, in accordance with the requirements of 10 CFR 50.4(f)(2)(xxvi) and criteria in Item III.D.3.3 of NUREG-0737" 2. "Address the use of portable instruments, and the associated training and procedures, to accurately determine the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident."	2	4	These passages need clarification. Discuss difference or delete duplication.
C.III.1.68	C.III.1, Sec.12.5.3, Radioactive Material Control, para 1		C.III.1.12.5.3, Radioactive Material Control, para	3	5 typo	In sentence 3, change "position control" to "positive control."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.69	C.III.1, Chapter 13		Numerous changes that were made to C.I.13 during the various iterations of 5/1 to 6/30 to 9/1 were not carried over to C.III.1, Chapter 13. Examples include: 1. The requirement for inclusion of resumes in the FSAR were removed in C.I.13.1, 9/01 version but not in C.III.1, Chap 13.1. 2. The last sentence of the first paragraph of section 13.2.1.1(1) in C.I.13 was changed from "The program should distinguish between classroom, on-the-job, and simulator training,..." to "The program should distinguish between formal instruction, on-the-job, and simulator training,...". This same change was not made in C.III.1, Chapter 13.	1	4	C.III should revised to be consistent with C.I.
C.III.1.70	C.III.1, Ch. 13		A "References" section was not included in section C.III.1-13 as is in section 13.1.4 of C.I.13	3	3	C.III should revised to be consistent with C.I.
C.III.1.71	C.III.1, Sec 13.1.2.2		1st sentence has the phrase "provide the" repeated twice in the sentence.	3	5	Correct the sentence
C.III.1.72	C.III.1 13.3		The emergency class definitions have been revised to include security events.	1	1	~~The emergency plan should include the emergency classification level scheme described in Appendix 1 and Supplement 3 to NUREG 0654.~~The emergency plan should include the Emergency Classification definitions contained in NRC BL 2005-02 or those developed by NEI and endorsed by the NRC in RIS 2006-12.
C.III.1.73	C.III.1 13.3		This confirmation of agreement does not need to be a permanent part of the E-plan. Also, the letter showing offsite agency agreement is needed whether or not there are other reactors at the site.	2	4	The applicant should provide some form of confirmation of the agreement, such as a letter signed by State and local governmental authorities, ~~in the emergency plan, if the applicant provides emergency action levels different from those for the existing reactor(s) on the site.~~ with the application.
C.III.1.74	C.III.1 13.3		This should be able to be provided by reference to other sections.	2	2	Add the following sentence after the second paragraph on page C.I.13-11:"It is acceptable to reference the sections in the FSAR that address site characteristics to satisfy this requirement."
C.III.1.75	C.III.1 13.3		Existing regulations do not require submittal of State and local emergency response procedures, just plans. (10 CFR 50.33(g))	1	1	In addition to the NRC's regulations (described above), the COL application needs to include the applicable State, Tribal, and local plans ~~and procedures~~ that address the relevant DHS requirements contained in 44 CFR Parts 350, 351, and 352, as well as associated REP guidance documents.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.76	C.III.1 13.3.1		It is permissible for the Emergency Plan to be a stand alone document.	3	2	This plan should be a physically separate document ~~identified as~~ *referenced by* Section 13.3 of the FSAR, and may incorporate by reference various State and local emergency plans or other relevant materials.
C.III.1.77	C.III.1 13.3.1		The requirement of 10CFR 73.71(a) should be addressed under security, not EP.	1	4	The cross-reference should indicate where the specific criteria in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), Appendix E to 10 CFR Part 50, ~~10 CFR 73.71(a),~~ and NUREG-0654/FEMA-REP-1, Rev. 1 are addressed in the applicant's plans.
C.III.1.78	C.III.1 13.3.1		Explicitly state what type of documents must be addressed - GL, BL, Orders. This should not include IN's as these are not supposed to set new requirements.	1	1	The applicant should address the various generic communications and Commission Orders that are in effect...explicitly state what type of documents must be addressed - GL, BL, Orders.
C.III.1.79	C.III.1 13.3.1		The EAL information should be in the stand alone Emergency Plan.	3	3	The ~~FSAR~~ *emergency plan* should also address an emergency classification and action level scheme, as required by 10 CFR 50.47(b)(4).
C.III.1.80	C.III.1 13.3.1		For security-related aspects of EP to be addressed, explicitly reference BL 2005-02 and RIS 2006-12, not just the 2002 orders.	2	4	The applicant should address the NRC Orders issued February 25, 2002, *BL 2005-02 and RIS 2006-12*, as well as any subsequent NRC guidance (or any NRC endorsed industry guidance developed in response to issues related to implementation of the Orders), to determine what security-related aspects of emergency planning and preparedness must be addressed in the emergency plan.
C.III.1.81	C.III.1 13.3.1		10 CFR 2.390 gives the requirements for marking information to be withheld from public disclosure.	3	1	Any information submitted to the NRC that is proprietary, sensitive, or safeguards information should be marked ~~appropriately~~ *as required by 10 CFR 2.390.*
C.III.1.82	C.III.1 13.3.2		This should be covered under Security, not EP.	2	1	~~(10) Describe the training program for employees and non-employees to assure the effective implementation of the physical protection program.~~
C.III.1.83	C.III.1, Sec. 13.5.2.1		Item (2), 1st sentence states "The FSAR or other submittal should describe the applicant's program for developing operating procedures (A.1-5 above)." It is not clear what "A.1-5 above" is referring to in the document.	3	5	
C.III.1.84	C.III.1, Sec. 13.5.2.1		Item (3) 1st sentence states "The FSAR or other submittal ... should describe the applicant's program for developing EOPs (A.4 above) ..." It is not clear what "A.4 above" is referring to in the document.	3	5	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.85	C.III.1, Sec.16.2		C.III.1 Chapter 16.2, second paragraph, states "The format and content of the technical specifications and bases for a COL or design certification should be based on approved certified designs listed as appendices to 10 CFR Part 52 (e.g., Appendix A to Part 52, "Design Certification Rule for the U.S. Advanced Boiling Water Reactor," Appendix D to Part 52, "Design Certification Rule for the AP1000," etc.), or the following STS NUREGs developed for Part 50 licensees..." Reference to "design certification" or "design certification application" also occurs in other paragraphs of this section. It is not clear why the "or design certification" is addressed in this section that is intended to address a COL application that is referencing a certified design.	3	4	Delete references to "or design certification"
C.III.1.86	C.III.1, Sec.16.2		C.III.1 Chapter 16.2, second and third paragraphs, implies that the use of STS and incorporation of TSTF Travelers is an option for the COL application that is referencing a certified design. This is misleading, in that an applicant might be led to believe that this is an acceptable alternative without following the change requirements of Section VIII.C of the applicable design certification rule.	2	4	Provide clarification that a COL applicant referencing a design certification rule can only adopt revised generic Technical Specifications by following the change requirements of the applicable design certification rule.
C.III.1.87	C.III.1, Sec.16.2		C.III.1 section 16.2, last paragraph, states, in part, "Certain plant-specific information may need to be provided with the COL or design certification application to demonstrate compliance with 10 CFR 50.36. This information may include but should not be limited to: ... Manuals, reports, and program documents identified in the technical specifications administrative controls section." This guidance is not consistent with C.I.16 which states "Manuals, reports, and program documents identified in the administrative controls section of the TS or applicable governing regulations, are considered to be neither part of the FSAR, nor part of the TS or the associated bases. These documents (such as the Offsite Dose Calculation Manual and Core Operating Limits Report) are to be prepared and submitted to the NRC as required by the associated TS administrative control requirements and any applicable governing regulations."	3	4	The guidance in C.I.16 appears to be more appropriate; and should be reflected in C.III.1.CH16.2. However, if some "Manuals, reports, and program documents" are expected to be provided in the COLA, the specific documents should be identified in the guidance.
C.III.1.88	C.III.1, Sec.16.2		The second paragraph of this section provides a recommendation (i.e., "should") to base the plant-specific TS on the Generic TS rather than reflecting the regulatory requirement to comply with the applicable Design Certification Rule Section III.B or to invoke the change mechanism under Section VIII.C.	3	4	Revise "should" to "must"

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.1.89	C.III.1, Sec.16.2		The first bullet in the list contained in the fourth paragraph should be separated into two topics: the first and second sentences are associated with completing COL Information Items based on a certified design which may have an impact on the generic Technical Specifications, and require changing in accordance with Section VIII.C of the applicable design certification rule. The third sentence deals with Technical Specifications derived from the STS NUREG documents, which can only be invoked by an applicant referencing a certified design by application of VIII.C of the applicable design certification rule.	2	4	Divide the first bullet in the fourth paragraph to separately address changes to generic Technical Specifications in a certified design, and use of generic Technical Specifications derived from the STS NUREG documents. Replace the words "departures" and "deviations" with "changes" or "exemptions," as appropriate.
C.III.1.90	C.III.1,Sec. 16.2		This section identifies NUREG 1431 Revision 3.1 as the basis for review. However, section C.I.16 documents the use of the current revision to NUREG 1431 without identifying a revision number.	2	3	These two sections (C.III and C.1) should point to the same reference revision numbers. Either both state Revision 3.1 or both state latest revision.
C.III.1.91	C.III.1,Sec. 16.2		This sections states that the applicant should consider incorporating the NRC approved TSTF Travelers where appropriate. Section C.I.16 does not discuss the consideration of these TSTF Travelers.	2	3	These two sections (C.III and C.I) should each recommend the use of TSTF Travelers or not.
C.III.1.92	C.III.1,Sec. 16.2		The recommendation associated with the TSTF Travelers is vague and requires clarification. Specifically, the issue remains unbounded with regard to when the NRC TSTF Traveler reviews will be completed. If these reviews are on going then up until the issuance of the documents by the applicant the NRC could be issuing approvals of these Travelers. In addition, the expectations of their use is vague. Will the applicant be required to document why they choose not to consider some as well as why they choose others.			The rules associated with the use of the TSTF Travelers need to be clarified. Provide cut off dates such as consider the use of NRC approved TSTF Travelers that have been approved six months prior to applicants submittal. Provide specific clarification as to whether the use of these TSTF Travelers is a requirement, and how their use or exclusion needs to be documented.

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C.III.1.93	C.III.1, Sec.17.4.2		The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity and to conform to SRM/SECY-95-132, the term O-RAP should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs.	1	3	Change to: "Reliability Assurance is implemented in two phases. The first stage is referred to as the Design Reliability Assurance Program and applies to reliability assurance activities that occur before the initial fuel load. The objective of this stage is to design reliability into the plant consistent with PRA assumptions. The second stage applies to reliability assurance activities for the operations phase of the plant life cycle. The goal of Reliability Assurance during this stage is to maintain reliability through existing operational programs, consistent with the overall PRA assumptions. Individual component reliability values are expected to change throughout the course of plant life because of aging and changes in suppliers and technology. Changes in individual component reliability values are acceptable as long as overall plant safety performance is maintained within the PRA assumptions and deterministic licensing design basis."

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C.III.1.94	C.III.1, Sec.17.4.3		Same comment as above regarding a DCD: The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs:	1	3	17.4.3 RAP Implementation The RAP is implemented in several phases. The first phase implements the aspects of the program that apply to the design process. During this phase, risk-significant SSCs are identified for inclusion in the program by using probabilistic, deterministic, and other methods. The design certification document addresses this phase. The design certification document also addresses a nonsystem based" Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. The second phase is the site-specific phase, which introduces the plant's site-specific design information to the RAP process. The COL applicant/holder performs this phase. At this phase, the RAP is modified or appended based on considerations specific to the site. The COL applicant/holder establishes the probabilistic, deterministic, and other methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Applicant should describe in the FSAR the information identified in Section 17.4.4. The COL applicant holder is also responsible for completing of site-specific information into the RAP and for implementing the RAP using existing operational programs.
C.III.1.95	C.III.1.17.4.2		In SECY 95-132, The Commission specifically disapproved the staff's proposal that an operational reliability assurance program (O-RAP) be continued for the life of the plant. SECY 95-132 states the following in the cover letter: "On Item E (reliability assurance program), the SRM approved a design reliability assurance program (D-RAP) subject to resolution of the recommendation by the Office of the General Counsel (OGC) to implement the D-RAP using the inspections, tests, analyses, and acceptance criteria (ITAAC) process. The SRM disapproved the staff's proposal that an operational reliability assurance program (O-RAP) be continued for the life of the combined license (COL). In response to the instructions of the SRM, the staff modified SECY-94-084 to: 1) revise the statement of purpose of the reliability assurance program; 2) require the use of the maintenance rule methodology for performance monitoring so that industry design reliability assumptions are not translated into new regulatory requirements; 3) require the D-RAP to be verified using the ITAAC process; 4) remove	1	1	Remove references to O-RAP. State that "Operational reliability assurance objectives and activities are incorporated into the QA Program and Maintenance Rule Program; therefore no further description is required. COLA action items must be addressed; specifically, the COL applicant will propose a method by which it will incorporate the objectives of the reliability assurance program into other programs for design or operational errors that degrade non-safety-related, risk-significant SSCs. If the staff now believes that, contrary to SECY 95-132, other activities must be added to and described in the QA and Maintenance Rules Programs in order to implement reliability assurance objectives, these should be presented to and approved by the Commission, and then added to DG-1145.

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C.III.1.95 (continued)	C.III.1.17.4.2		the requirement that a separate O-RAP exist for the life of the plant; and 5) incorporate the objective of the O-RAP into existing programs. These clarifications are reflected in the revised text of SECY-94-084 in Attachment 2."	1	1	see above
C.III.1.96	C.III.1.17.4.3		Same comment as above: The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs.	2	4	Reliability Assurance is implemented in several phases. The first phase implements the aspects that apply to the design process. During this phase, risk-significant SSCs are identified for inclusion in the program by using probabilistic, deterministic, and other methods. The design certification document addresses this phase which is referred to as Design Reliability Assurance Program (D-RAP). The design certification document also addresses a nonsystem based Tier 1 inspection, test, analysis, and acceptance criteria (ITAAC) requirement for RAP. The second phase of D-RAP is the site-specific phase, which introduces the plant's site-specific SSCs to the Reliability Assurance process. The COL Holder performs this phase. At this stage, the D-RAP is modified or appended based on considerations specific to the site. The COL Holder establishes the PRA importance measures, the expert panel process, and other deterministic methods to determine and maintain the site-specific list of SSCs under the scope of RAP. The COL Holder is also responsible for implementing the operational objectives of Reliability Assurance using existing operational programs (Maintenance Rule and QA) through the life of the plant.
C.III.1.97	C.III.1.17.4		Regarding 2nd bullet in list: the list of SSCs may not be complete for inclusion in the COLA since the detailed design will not be completed.	2	2	This bullet should state that the list of SSCs should continue to be revised as necessary as the design is completed. This is an ongoing activity to be completed prior to fuel load.
C.III.1.98	C.III.1.17.4.4		The Commission directed that there would not be a separate program called O-RAP	2	4	Replace "O-RAP" with "operational reliability assurance objectives"

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C.III.1.99	C.I.17.4-1, C.I.17.4.1-1		The terminology between C.I and C.III is different. C.III assigns the terms "D-RAP and O-RAP for the two stages; C.I does not. For clarity, the D-RAP and O-RAP terms should not be used, because there will not be a separate 'program' during stage two as the RAP elements will be in existing operational programs.	2	4	Revise the responses to remove the term Operational Reliability Assurance Program. Use the precise language from SECY 95-132.
C.III.1.100	C.III.1, Sec. 17.4.4.		This list should be identical to C.I.17.4.4; the same comments for C.I 17.4.4 above apply.	1	3	Use the same bullets as in C.I.17.4.4, as modified by the comments above. To the extent the second to last bullet of C.III.17.4.4 is retained, change 'O-RAP' to 'RAP' consistent with the comments above.
C.III.1.101	C.III.1, Ch. 19.1		Issue: Paragraph 4 says "The COL applicant should include updated risk insights, identify all differences between the updated risk insights and the certified design risk insights, indicate which differences are important, and explain why the important differences have occurred (e.g., due to design changes, changes in PRA assumptions, or changes to PRA methodology). In this context, the "differences in risk insights" includes changes (either detrimental or beneficial) to the significant16 cutsets relative to sequences, significant cutsets relative to core damage frequency (CDF), significant cutsets relative to large release frequency (LRF), significant accident sequences, significant accident progression sequences, significant basic events, significant contributors, and significant containment challenges. The phrase "difference in risk insights" also includes any changes to the PRA-based insights.17 When identifying important differences between the plant-specific risk insights and the certified design risk insights, applicants should consider both quantitative changes (e.g., changes in risk metrics) and qualitative changes (e.g., revised or additional accident sequences)."	1	3	Comment: This paragraph calls for information which is not necessary or appropriate when site- and plant-specific COLA information is bounded by or not significantly different from the certified design PRA. Clarification is warranted to be consistent with understandings discussed during DG-1145 workshops and paragraph 2 of this section, which states, "Applicants referencing a certified design can meet this requirement by updating and upgrading, as appropriate, the certified design PRA (i.e., the "design-specific" PRA submitted pursuant to 10 CFR 52.47(b)(1), which has been evaluated and found acceptable by the NRC), to address relevant site- and plant-specific information, as well as changes to the certified design pursuant to 10 CFR 52.63(b) (e.g., refinements in design detail, resolution of COL action items, design changes or deviations, technical specifications, and plant-specific emergency operating procedures). The COL applicant may use, or incorporate by reference, the certified design PRA, however,

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C.III.1.101 (continued)	C.III.1, Ch. 19.1			1	3	the COL applicant should ensure the provided information is current, complete, and accurate relative to site- and plant-specific conditions and parameters. "Recommended wording: Add at the beginning of the 4th paragraph: "Additional information should be provided in the plant-specific PRA if the site- and plant-specific COLA information is not bounded by the certified design PRA insights and these differences are significant with respect to the PRA insights. Qualitative analyses rather than modifying the PRA may be used to demonstrate whether or not the differences are significant. If the differences are significant, ... [continue with 4th paragraph]"
C.III.1.102	C.III.1, Ch. 19		Issue: Section 19.1, para. 2, 1st sentence says "Applicants referencing a certified design can meet this requirement by updating and upgrading, as appropriate, the certified design..." Updating is the proper term to describe supplementation of the design PRA to consider site- and plant-specific information. The term "upgrading" is not necessary and should be deleted because it could be interpreted to imply more extensive changes to the PRA, which are not required for COLA.	2	4	Delete or modify the sentence to read "updating and/or upgrading".
C.III.1.103	C.III.1, Ch. 19.1		Issue: Section 19.1 5th paragraph last sentence reads "In addition, the certified design PRA should be updated and upgraded, as appropriate, prior to initial fuel load to reflect all changes in plant design and operational programs so that it reflects the as-built, as-to-be-operated plant." Comment: For consistency replace "all" with "relevant", and insert "reasonably" before "reflects"	2	4	"In addition, the certified design PRA should be updated and upgraded, as appropriate, prior to initial fuel load to reflect ~~all~~ relevant changes in plant design and operational programs so that it reasonably reflects the as-built, as-to-be-operated plant."
C.III.1.104	C.III.1, Ch. 19.1		Issue: Section 19.1 6th paragraph 1st sentence reads "The applicant should adhere to the guidance provided in Section C.II.1 of this guide for the plant-specific PRA, including the format and content identified in Appendix B to Section C.II.1 of this guide." Comment: Please see previous comments on changes to format of Section 19 from the format used in the certfied design PRA.	1	1	For example, See comment C.1.19.3 Add language " For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design would be incorporated by reference. An exemption request would not be required."

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C.III.1.105	C.III.1, Ch. 19.1		Issue: Section 19.1 Footnote 17 reads "Section 19.2 last sentence reads "The usage of this phrase is intended to be consistent with its use in referring to the information provided in Table 19.59-29 in the AP600 and AP1000 Design Control Documents (DCDs)." Comment: Please see previous comments.	3	4	See Comment C.I.19.7 Address if it appropriate to reference the AP-600 or AP-1000 DCD in a regulatory guide?
C.III.1.106	C.III.1, Ch. 19.1		Issue: Section 19.2 2nd sentence reads "To support the NRC staff's timely review and assessment, the applicant should adhere to the recommended format and content identified in Section C.I.19. Comment: Please see previous comments	1	1	For example, See comment C.1.19.3 Add language " For a COL application referencing a certified design, this format meets the intent of Section IV.A.2.a of Part 52 appendices, as the certified design would be incorporated by reference. An exemption request would not be required."
C.III.2.1	C.III.2 Sec. 1.9.2		C.III.2 discussion of FSAR 1.9.2 states "ESPs have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application." This is not a true statement. Part 52 did not (prior to the proposed revision) require that the ESPs address SRP conformance. Indeed, the SRPs were not even used – the application was evaluated against RS-002 by the NRC. For these cases, would a statement such as "Alternate approach utilized. The ESP addressed this section and was evaluated against RS-002 rather than the SRP" be considered to fulfill the 50.34(h) conformance assessment?	1	4	N/A
C.III.2.2	C.III.2.2		The 1st paragraph of this section states: "*The specific information that the applicant should provide has been copied from the corresponding section in Part I and pasted into this section of the guide.*" However, this is not an accurate statement for Chapters 3 through Chapters 19 which refers the reader back to CIII.1	3	3	Clarify the wording in this section to state that for Chapters 3 through 19, those sections refer back to the corresponding sections in Part C.III.1.
C.III.2.3	C.III.2.2		First paragraph states: "For design topics that have been resolved in the design certification, the guide will state that the COL applicant does not need to include additional information. For topics related to approval of a specific site in an ESP, the guide will state that the COL applicant does not need to include additional information."	3	4	Deletion of future tense is recommended:"For design topics that have been resolved in the design certification, the guide ~~will~~ states that the COL applicant does not need to include additional information. For topics related to approval of a specific site in an ESP, the guide ~~will~~ states that the COL

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C.III.2.4	C.III.2.2		The second paragraph in this section states: *"Depending on the technology, some design topics may not have been reviewed during the design certification. COL applicants will need to provide this information only if it was not covered in the design certification."* However, it is difficult for an applicant to determine what design topics were reviewed by the NRC and what were not reviewed for a specific Certified Design. A topic may have been reviewed by the staff but not addressed/discussed in the DCD or FSER. Or the design topic criteria may have changed between the time of certification and COL application. Requiring the applicant to address new design topics is inconsistent with design finality associated with a Certified Design.	2	2	Eliminate this paragraph and the corresponding paragraph in C.III.1
C.III.2.5	C.III.2.4		With regard to the pilot ESP applications, COL information items were not specifically identified. COL action items were generated as a result of the NRC review and are listed in the ESP FSER.Section C.III.2.4 mentions COL action or information items in the ESP. However, permits associated with the pilot ESP applications have not been made available (draft or final).	2	4	1. C.III.2.4 should be clarified to indicate the appropriate source for listing of ESP COL information or action times.2. It is also recommended that the NRC work with the industry on the content of ESP permit form and content to provide appropriate requirements on the treatment of ESP COL information items in future ESP applications. It is possible that DG-1145 may require update depending of the final form of the pilot early site permits.
C.III.2.6	C.III.2.8		This section contains the statement: *"The NRC recommends that the COL application facilitate this review wherever possible."* It is not clear what the NRC expects from the COL applicant in this area.	2	4	Please clarify expectations regarding how the COL applicant could facilitate this review.
C.III.2.7	C.III.2.8		For consistency add the words " and the ESP" after "... is consistent with the certified design".	2	4	"... **is consistent with the certified design and the referenced ESP**"
C.III.2.8	C.III.2.9		1. Section C.III.2.9 (first paragraph) references Part 52 but does not provide a specific cite. In general, any reference to the regulation should include a specific, clear cite. 2. In addition, C.III.2.9 (second paragraph) cites 10 CFR 52.93. 3. In that 52.93 addresses both exemptions and variances, the specific cite should be provided in C.III.2.9.	3/4		Provide a specific cite to the Part 52 regulation reference in C.III.2.9 (first paragraph). General comment, for Staff's consideration throughout DG-1145.Revised C.III.2.9, the reference to 52.93 in the second paragraph to say: 10 CFR 52.93**(a).**
C.III.2.9	C.III.2.9		The second paragraph of C.III.2.9 indicates that if site characteristics do not fall within the site parameters specified in the design certification that the application should request an exemption or departure, as appropriate per Part 52.93. However, it is possible that should an actual site characteristic not fall within site parameters postulated in the design certification, a possible approach could be to request a variance from the ESP, as permitted by 52.79(b). This should be noted in C.III.2.9. This would depend of which parameter is involved, possible differences in methods, etc.	2	4	Revise C.III.2.9 to read: "If the COL application (FSAR) does not demonstrate that the **actual** site characteristics **established in the referenced ESP** fall within the site parameters specified in the design certification, the application shall include a request for an exemption or departure, **or variance from the ESP,** as appropriate, that complies with the requirements of the referenced design certification rule**, 10 CFR 52.79(b),** and 10 CFR 52.93."

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C.III.2.10	C.III.2.10		Section C.III.2.10 does not mention referencing the ESP, consistent with the purpose of C.III.2.	2	4	The section title should be changed to: "Portions of a Final Safety Analysis Report not Addressed by a Certified Design **and an ESP**" The 3rd sentence of the section should be revised to: "Additionally, if information listed in the following subsections is not needed – such as being already provided in the specific, referenced DCD **or ESP**, it is suggested that the applicant indicate so in the appropriate portion of their FSAR."
C.III.2.11	C.III.2.10		Generally speaking, DG-1145 guidance and Part 52 provide little specific guidance regarding the administrative aspects of how a reference ESP is treated in the COL application. Per the comment on C.IV.2, it is recommended that C.IV.2 be revised to address the administrative aspects of referencing an ESP in the COLA. It is recommended that C.III.2.10 include a statement that provides a reference to C.IV.2.	2	4	Add the following statement to C.III.2.10: **"See Section C.IV.2 for guidance on referencing a design certification rule or an ESP."**
C.III.2.12	C.III.2.11		C.III.2.11 provides a reminder of the requirements of 10 CFR 52.6 without offering additional guidance. However, given that regulations and related criteria vary from safety, to environmental, to emergency preparedness areas, guidance that would cover each area must be addressed separately. For example, as noted in Section 6.4 of NEI 04-01 (Draft Rev. E), no review or collection of data associated with reviewed and final provisions of an ESP SSAR is considered appropriate. However, if the COL applicant referencing that ESP became aware of significant changes, the provisions of 10 CFR 52.6 would be applied. It is recommended that the Staff consult Section 6.4 and consider incorporating appropriate elements of that guidance into DG-1145, Section C.III.2.11.	2	4	Review Section 6.4 of NEI 04-01, draft Revision E for possible incorporation of industry guidance into C.III.2.11 regarding changes to the ESP.
C.III.2.13	C.III.2.11		1st paragraph refers to 10CFR 52.6. This is a proposed rule change. *"COL applicants that reference a DC and/or an ESP are not required to revise the information included in the DC or ESP. However, pursuant to 10 CFR 52.6, each applicant or license that identifies information as having, for the regulated activity, a significant implication for public health and safety or common defense and security shall notify the Commission of this information."*	3	5	For consistency with other sections within DG-1145, add the word "**proposed**" in front of 10 CFR 52.6. This will help to identify any potentially affected sections when the proposed rule is finalized.

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C.III.2.14	C.III.2, Sec.1.5		This section states: *"The requirements for further technical information are included as part of the referenced certified design. The COL applicant that references a certified design and early site permit should identify any requirements for further technical information in their application for the portions of the facility that are not certified, including an estimated schedule for providing the additional technical information that may be necessary for issuance of a combined license."* Per C.1, 1.5 this section is for applicants not referencing a certified design. However, since C.III is for applicants referencing a certified design, it is not clear what additional information would be appropriate for this section	2	4	Reword this section to state: "**No additional information needs to be provided by a COL applicant referencing a certified design and an ESP.** "Also change the corresponding paragraph in C.III.1
C.III.2.15	C.III.2, Sec.1.8		Two new sentences were added to the second to last paragraph of this section. The newly added sentences read: *"In addition, COL applicants referencing an ESP should include information in the application that is sufficient to demonstrate compliance with any ESP permit conditions. Tabulated cross-references to this information should be provided in this section."* However, at the time an applicant submits a COL application, it is possible that the ESP would not have been issued by the NRC and therefore permit conditions would not have been identified.	2	4	Revise the wording in this sentence to: "ESP permit conditions **If available**".
C.III.2.16	C.III.2; Sec. 1.8		C.III.2.9 references C.III.2, Section 1.8. C.III.2.9 mentions the possible need for an exemption or departure should site characters not fall within site parameters specified in the design certification, citing § 52.93. However, Section 1.8 does not discuss the situation in which § 52.93 is applied. Section 1.8 should be revised to address not only the exemption process provided in § 52.93(a) but also to recognize that a variance from the ESP [per § 52.93(b)] may be an appropriate remedy, depending on the situation.	2	4	Add the following to C.III.2, Section 1.8 in the first paragraph: ".... If the FSAR does not demonstrate that design of the facility falls within the site characteristics and design parameters, the application shall include a request for variance that complies with the requirements of §§ 52.39 and 52.93**(b)**. The requirements of proposed 10 CFR 52.79(d) specify that COL applicants referencing a certified design must provide sufficient information to demonstrate that the characteristics of the site fall within the site parameters specified in the design certification and must contain information sufficient to demonstrate that the interface requirements established for the design under § 52.47 have been met. **If the FSAR's site characteristics do not fall with the certified design's site parameters, the applicant may need to request an exemption or departure. As discussed in C.III.2.9, a possible approach may also be to request a variance from the ESP per § 52.93(b).**"
C.III.2.17	C.III.2, Sec.1.9		Throughout this section, the phrase *"....6 months before the docket dates of the COL application"* is used to refer to the need to reconcile regulatory guides, standard review plans, generic issues and operationa experience. However, the docket date cannot be determined by the COL applicant.	2	4	Change the guidance wording to read "....6 months before the **submittal date of the COL application**"

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C.III.2.18	C.III.2, Sec. 1.9		Throughout this section, the terms "deviation or variance" is used when determining when an applicant needs to evaluate conformance with regulatory guides, standard review plans, generic issues and operational experience. However, the lead-in sentences were all recently revised to use the term "departures". This occurs in many paragraphs throughout Section 1.9. For example:" *For a COL application that includes departures from the certified design, these departures should be evaluated for conformance with the Regulatory Guides in effect 6 months before the docket date of the COL application, unless the deviation or variance is included in a Topical Report.*"	2	4	Revise the words "deviation or variance" to "**departures**". This will also make these sections of C.III.2 consistent with the corresponding sections in C.III.1.
C.III.2.19	C.III.2, Sec. 1.9.1		C.III.1 discussion of FSAR 1.9.1 states: "*a COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application for the site-specific portions of the facility design which are not included in the certified design. In addition, the COL applicant should address conformance with Regulatory Guides in effect 6 months before the docket date of the COL application insofar as they pertain to operational aspects of the facility.*" Does this guidance indicate that the only regulatory guides that need to be addressed are those that address "facility design" or "operational aspects of the facility? For example, Division 2 is for Research and Test Reactors; so, can we eliminate Division 2 assessments since they don't address design or operation of commercial power reactors?	2	4	Provide specific guidance on what categories of Regulatory Guides need to be addressed in this section of the COLA.
C.III.2.20	C.III.2, Sec. 1.9.2		Section 1.9.2 currently states: "*Applicants for an ESP also have a requirement in proposed 10 CFR 52.17(a)(1)(xiii) to provide an evaluation of the site against applicable sections of the Standard Review Plan (SRP) revision in effect 6 months before the docket date of the early site permit application. ESPs have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application.*" Since this proposed requirement is new, not all prior "pilot" ESP applicants provided a review against SRPs. In addition, the "pilot" ESPs were reviewed against RS-002. The guidance should be clarified to address the special licensing case of ESPs reviewed prior to the proposed rulemaking.	2	4	Revise the subject paragraph of Section 1.9.2 as follows:"**ESP applications prior to the proposed rulemaking were reviewed against RS-002 but were not required to provide an evaluation against applicable sections of the SRP. Therefore, not all ESP applications prior to the rulemaking have provided the subject SRP evaluation. A COL application referencing these ESPs need not provide an evaluation against applicable sections of the SRP. For those ESPs following the proposed rulemaking, the respective applications** have already provided information addressing conformance with the applicable sections of the SRP that were in effect 6 months before the docket date of the ESP application."

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C.III.2.21	C.III.2, Sec. 1.9.3		Comment # C.I.1.18 on Section C.I.1.9.3 is applicable as well to C.III.2, Section 1.9.3. 1. C.I.1.9.3 mentions a listing of generic issues in C.IV.8. Section C.IV.8 no longer contains a listing of generic issues. 2. C.I.1.9.3 indicates: "Those issues that remain open and are technically relevant to the COL applicant's design should be addressed in the application. Remaining "open" is not clear in that the cited proposed Part 52.79(a)(20) is understood to require COLAs to "include" the resolutions for those issues that, in fact, have NRC approved resolutions. "Open," therefore, does seem to apply. The Staff should restrict issues to those for which acceptable resolutions have been proposed. 3. In general, C.IV.8 guidance defines the broader scope of the generic issue review via the discussion and use of NUREG-0933, App. B. Guidance on scope should be provided in C.IV.8 (except for specific reductions in scope associated with referencing a DCD. This guidance should remain in C.III.1/2.	2	4	See Comment #C.I.1.18. The proposed changes at C.I.1.9.3 apply as well to C.III.2, Section 1.9.3. In general, guidance regarding the scope of generic issue review should only be summarized in C.III.1, Section 1.9.3. Detail guidance should be provided in C.IV.8.
C.III.2.22	C.III.2, Sec. 1.9.3		The last sentence of the last paragraph of this subsection states: "*.....to ensure the health and safety of the public is protected.*" For consistency with C.III.1, delete the words "is protected".	3	5	Reword to read: ".....to ensure the health and safety of the public."
C.III.2.23	C.III.2, Sec. 1.9.4		Second to last paragraph, last sentence contains a typo. Sentence currently reads: "*Applicants for design certification and combined license are responsible for procuring and international operating experience information.*'	3	5	Change: "procuring **and** international" to "procuring **any** international"
C.III.2.24	C.III.2, Sec. 2.2.2		The section indicates that additional information need not be provided. However, as noted in C.I.2.2.2.2, a description of hazardous materials stored onsite should be provided. Accident categories considered include explosions of onsite stored materials (C.I.2.2.2.1(1)).In that onsite hazardous material inventories may not have be known at the time of ESP application, this information would likely be required for the COL application. Section C.III.2, Section 2.2.2 should be revised to recognize this possibility.	2	4	Revise Section 2.2.2 as follows: "**In general,** COL applicants that reference an ESP do not need to include additional information. **However, if onsite hazardous material inventories and related information was not reviewed as part of the ESP, then that information would be included in the COL application as appropriate.**"
C.III.2.25	C.III.2, Sec. 2.2.3		In that onsite hazardous material storage may not have been reviewed at the ESP stage, such onsite storage would be discussed and evaluated as necessary in the COLA. This would include evaluation for explosive impacts (C.I.2.2.3.1) as well as toxicity limits for control room habitability.	2	4	Revise Section 2.2.3 as follows: **In general,** COL applicants that reference an ESP do not need to include additional information. **However, if onsite hazardous material inventories and related information were not reviewed as part of the ESP, then that information would be evaluated in the COL application as appropriate. See also guidance at C.III.2, Section 6.4.**"

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C.III.2.26	C.III.2, Sec. 2.3.3		Correct typo in last sentence: "Identify and justify **and** deviations from the guidance provided in Regulatory Guide 1.23."	3	5	Change: **"and deviations"** to **"any deviations"**
C.III.2.27	C.III.2, Sec. 2.4.8		Cooling water canal and reservoir design information may likely be provided in the ESP if the ESP is referring to a specific technology. Therefore, this section should be begin with the words ***"If not provided in the ESP...."***.This will make this section consistent with Section 2.3.3 and 2.2.4.In addition, similar lead-in wording should be added to the following sections which may likely have included the subject information in the ESP. These sections are: 2.4.7, 2.4.10, 2.4.12, 2.4.14	2	4	Revise the 1st sentence of the 1st paragraph to read: **"If not provided in the ESP,** present the design bases for the capacity and operating plan for ....." Also, revise Sections 2.4.10, 2.4.12 and 2.4.14 similarly.

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C.III.2.28	C.III.2, Sec.2.4.13		This section currently reads: "For an ESP with a permit condition precluding accidental liquid releases, provide information on how the DC complies with the permit condition." However, at the time of COLA submittal the ESP permit may not have been issued by the NRC and therefore permit conditions would not have been identified.	2	4	Reword to state: "**If ESP permit conditions preclude accidental liquid releases, provide information on how the certified design complies with the permit conditions.**"
C.III.2.29	C.III.2, Ch. 3		This section uses the phrase *"If not included in the ESP"*, while previous sections use the phrase *"If not provided in the ESP"* Also, the ESP may not have been issued by the NRC at the time of COLA submittal, therefore, *"ESP"* should be changed to *:"ESP application"*	3	5	To improve clarity, change the phrase to: "If not **provided** in the ESP **application**..." and apply it consistently throughout C.III.2.
C.III.2.30	C.III.2, Ch.6		C.III.2, Chapter 6 refers the reader to C.III.1, Chapter 6. C.III.1, Chapter 6 requires no additional information for a COLA referencing a certified design. However, for the COLA referencing an ESP, onsite chemical storage may not have been reviewed during the ESP stage. Therefore, in additional to demonstrating that the control room dispersion coefficients postulated in the certified design bound that established for the design at the selected site, the impact of hazardous materials stored onsite must also be evaluated in the COLA application. In addition, for new facilities proposed to be co-located onsite with existing facilities, the other units' hazardous materials must be considered in terms of control room habitability.	2	4	C.III.2, Chapter 6 should be revised as follows: "The information in this chapter is identical to the information in Chapter 6 of C.III.1. **In general,** COL applicants referencing a certified design and an early site permit should refer to Chapter 6 of C.III.1 for the information needed to prepare their COL applications. **However, in that onsite hazardous material inventories may not have been defined or reviewed at ESP, the onsite materials would be discussed per C.III.2, Section 2.2 of this guide. The impacts of these materials and that associated with other co-located facilities in terms of toxic or asphyxiating gases should be evaluated regarding the impacts to control room habitability.**"
C.III.2.31	C.III.2, Ch. 13		Information regarding details on Emergency Planning (Section 13.3) may have been included in the ESP application. Therefore, the COL applicant may not need to repeat this information in the COLA.	2	4	Add a new sentence: "**If Emergency Planning information as required by Section 13.3 of C.III.1 was previously provided in the ESP application, the COL applicant that references an ESP does not need to include additional information.**"

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C.III.3.1	C.III.3 (Applies to C.II.3 also)		Industry comments regarding ESP environmental finality were provided to the NRC in the NEI letter dated 5/16/06 (as part of the Part 52 rulemaking process). As noted in C.III.3, guidance regarding ESP finality will be provided following the final Part 52 rulemaking. As discussed with the Staff on several occasions (e.g., ESBWR DCWG-NRC mtg of 7/14/06), applicants developing COLAs that reference an ESP are proceeding at risk in preparing ER material, given the lack of industry-NRC agreement on COLA ER content requirements (and related supporting review processes). In addition to comments raised in the NEI 5/16/06 letter, the industry understands from DG-1145 workshop discussions as well as the 7/14/06 NRC-ESBWR DCWG meeting, that there is a lack of clarity and agreement regarding the expected level of design detail in the COLA ER, particularly in the case of an ESP using the PPE approach. Separate comments on Section C.III.3 are provided on this subject.	1	1	Both C.II.3 and C.III.3 require review and update consistent with the final Part 52 rule language and accompanying statements. The final draft Part 52 rulemaking language was made public on September 27, 2006. That information is under review with regard to the proposed treatment of ESP environmental finality issues. It is expected that NEI will coordinate industry communications with the NRC on this matter.
C.III.3.2	C.III.3 (Applies to C.II.3 also)		In addition to comments raised in the NEI 5/16/06 letter, the industry understands from DG-1145 workshop discussions as well as the 7/14/06 NRC-ESBWR DCWG meeting, that there is a lack of clarity and agreement regarding the expected level of design detail in the COLA ER, particularly in the case of an ESP using the PPE approach. It is recognized that C.III.3 can not be updated until the Part 52 rule is finalized. However, it is not clear if the rulemaking will address the required level of design detail in the COLA ER. C.III.3 should be revised to include guidance on the expected level of design detail in the COLA ER. It is also noted that while this issue of design detail has been discussed with the Staff primarily in the context of a COLA referencing an ESP, this issue likely applies more broadly to non-ESP COLAs. For example, even in the case where no ESP was referenced, the level of design detail to satisfy all aspects of NUREG-1155 may not be available at the time of COLA submittal due to limitations in the amount of design engineering and equipment procurement	1	4	C.III.3 should be revised to include the following: In general, the ESP would provide an environmental report that defines a facility design, sufficient to support the evaluation of environmental impacts of the potential facility's construction and operation at the proposed site. In some cases, the findings on impacts are conditional in the ESP FEIS in which confirmatory or supplemental information would be expected at COL. Such needs, deferred to COL, are identified in the FEIS. The COLA ER, following the proposed 10 CFR 51.50(c) requirements would "... demonstrate that that the design of the facility falls within the site characteristics and design parameters specified in the early site permit." Whether a PPE or specific reactor design was used for the ESP, the postulated design parameters used to evaluate environmental impacts

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.III.3.2 (continued)	C.III.3 (Applies to C.II.3 also)		specification work completed. While NUREG-1155 has been updated to reference Part 52 provisions, it generally does not recognize nor accoun for differences between Part 50 and Part 52 in the approach to COL application preparation, decision to procure and construct, timing of such decisions, and the wide variance in what engineering detail may be available at various stages of this process. Overall, even with no ESP, a COL applicant may not have the level of detail expected by NUREG-1155. Therefore, the issue regarding expected level of design detail in a COLA ER impacts guidance provided in Section C.II.3 as well.	1	4	would be specified in the ESP ER. In the case of a PPE approach, the PPE provides a surrogate design, representing the bounding values for a collection of designs considered. The subject demonstration should consist of confirming that the PPE (or specific design) postulated parameters bound the selected design's actual characteristics. In general, additional design detail should not be required in the COLA ER, where ESP finality applies, to support this demonstration. The exceptions would be in those instances in which confirmatory or supplemental information would be expected at COL. Such needs, deferred to COL, are identified in the FEIS. Given the expected level of design is not well defined for COLA with our without a referenced ESP, it is recommended that guidance on this subject be provided (or referenced) in C.II.3, as well.
C.III.3.3	C.III.3 (Applies to C.II.3 also)		C.IV.2.2 addresses the referencing of a design certification rule; however, neither C.IV.2 nor C.II.3 provides guidance on the referencing of and use of the ESP ER and/or FEIS. For that matter, it is recognized that neither the current nor proposed Part 52 provides requirements specifically address the incorporation or treatment otherwise of the ESP ER and/or FEIS. For the COLA referencing an ESP, the associated COLA ER must provide the information required by 10 CFR 51.50(c)(1). This includes (1) a demonstration that facility design falls within the site characteristics and design parameters established in the ESP, (2) issues deferred from the ESP, and (3) new and significant information. To the extent necessary, the COLA ER would reference, that is, cite the ESP ER and/or EIS, as needed, as a basis for COLA ER statements. The ESP ER and/or EIS is not required to be incorporated either by reference or by full integration unless helpful to understand context or support clarity.	1	4	C.II.3 should be revised to include: 1. The COLA ER may reference the NRC's ESP EIS. That is, the COLA ER may "cite" the ESP EIS conclusions and findings as a basis for its statements. The EIS need not be incorporated unless, for reasons of clarity and context, that is considered necessary. In general, given the concept of tiering, it would seem that such a need would be infrequent. 2. The COLA ER need not contain (repeat) information from the ESP ER. 3. The COLA ER, referencing an ESP, must include information that is required to satisfy the 3 items of 51.50(c)(1). However, no repeating or incorporation of the ESP ER (or EIS) is required (unless for reasons of clarity or context) this would be helpful.

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C.III.3.3 (continued)	C.III.3 (Applies to C.II.3 also)		C.III.3 should be clarified to address the administrative and licensing treatment of the ESP ER and EIS in the COLA ER. Given that C.II.3 address COLA ER format, it is recommended that C.II.3 be referenced to C.III.3 in regard to the appropriate administrative treatment of the ESP ER/EIS in the COLA ER.	1	4	4. The COLA ER, referencing a DCD, may incorporate by reference the DCD stage EA. However, this appears to be an inconsistent use of this method in that there is no analogous provision for incorporating (by reference or otherwise) for the ESP's EIS. A review of current and proposed Part 51 revealed no other applications of IBR pertaining to applications for licenses. Absent clarification or changes in proposed Part 51.50, the COLA ER will IBR the DCD's EA. Given this subject applies to ER format, guidance on this subject should be provided (or referenced) as well in Section C.II.3.
C.III.4.1	C.III.4.2		C.III.4.2, first paragraph, last sentence states "The NRC staff recommends that the applicant include this information in Chapter 1 of the COL application." The last sentence of the second paragraph states "For items that are addressed, the COL applicant should provide cross-references to where each item is addressed in Chapter 1 of the COL application." These references should be to Chapter 1 of the FSAR portion of the COL application.	3	3	Revise the last sentence of the first paragraph to state, "The NRC staff recommends that the applicant include this information in Chapter 1 of the FSAR portion of the COL application." Revise the last sentence of the second paragraph to state "For items that are addressed, the COL applicant should provide cross-references to where each item is addressed in Chapter 1 of the FSAR portion of the COL application."
C.III.4.2	C.III.4.2		Section C.III.4.2, last paragraph, last sentence states "The staff intends to review the FSER list of COL action items during its review of each COL application and may request additional information from the COL applicant to address issues described by the listed action items that the COL application did not adequately address." The last paragraph of this section should also refer to Section III.D of the pertinent design certification rule which states "If there is a conflict between the generic DCD and... NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," (FSER) and Supplement No. 1, then the generic DCD controls."	1	1	Add the following sentence at the end of the last paragraph: "In accordance with Section III.D of the applicable design certification rule, if there is a conflict between the generic DCD and the corresponding FSER for the certified design, then the generic DCD controls."
C.III.5.1	C.III.5.1.1, Item 15 C.I.7.B-2 Item (3)		The last bullet states "designing the communications path to be broadcast only from the protection system to the control system". There is no precedent or regulatory basis for this approach. This comment also applies to Section C.1.7, C.I.7.B-2, Item (3).	1	1	These sections should be revised to remove this statement.
C.III.5.2	C.III.5.1		Paragraph 3 of this section states: "compliance with DAC, including those intended to be verified early in the construction process, can be the subject of a hearing just prior to operation. This is another reason for the COL applicant to submit, early in its application, the detailed design information..." It is not clear how submitting this information early in the process will impact the likelihood of a hearing.	3	4	Please either elaborate on or eliminate this sentence.

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C.III.6.1	C.III.6.1		COL Applications Referencing a Design Certification Application Under Review, page CIII.6-2, first paragraph, third sentence To clarify which applicant (DC or COL) is referred to in this sentence; recommend that "design certification" be added in front of "applicant."	3	4	This sentence refers to the "applicant" updating documents associated with the design certification applications.
C.III.6.2	C.III.6.2.1		Early Site Permit, second paragraph, third sentence This sentence should be revised to also provide the same guidance with respect to applicable Topical Reports, the Environmental Report, and the Site Redress Plan	3	4	This sentence indicates that the COL application should reference and include a specific revision of the SSAR that is currently under review by the NRC.
C.III.6.3	C.III.6.2.2		Since 10 CFR 52 has been issued as a final rule, it is recommended that this sentence be clarified. The applicant's need this guidance as soon as possible. The COLA ERs are being written now	2	3	Environmental Report, second sentence. This sentence refers to additional guidance being provided when the final Part 52 rule is issued. The provisions of 10 CFR 52.80(c) specify that the COL application shall contain a complete environmental report, as required by 10 CFR 51.50(c). Additional guidance will be provided when the final Part 52 rule is issued." This statement is not consistent with the rest of the DG-1145 which is based on the proposed rule
C.III.7.1	C.III.7		Sentence 2 of paragraph 3 states that COLAs "must" include physical security ITAAC, in the same way that COLAs "must" include EP ITAAC. However, EP ITAAC are unique in the way they are called out in the regulation as required.	3	3	Modify sentence to be consistent with new Appendix C.II.2.C and Appendix I response C.III.7-2
C.III.7.2	C.III.7.2		Clarify first paragraph for consistency with 3d paragraph in this section	3	4	Modify the second sentence as follows: "ITAAC should be developed for the site-specific systems which are designed to meet the significant interface requirements of the standard certified design."
C.III.7.3	C.III.7.5		Clarification	3	4	Under the heading "Terminology," modify the 3d paragraph as follows: Compliance with that license condition renders the ITAAC inactive for that licensee .... However, ... they will not be removed from the design certification rule following completion buy a COL applicant and remain applicable to all future COLAs referencing that DCD.
C.III.7.4	C.III.7.3 C.III.7.4		C.III.7.3 states "The complete set of COL-ITAAC will be incorporated into the COL as a license condition to be satisfied prior to fuel load. As such, a COL holder may request a change in one or more of the EP-ITAAC, except those provided in the referenced certified design, via the license amendment process applicable to Part 52." C.III.7.4 makes a similar statement for SP-ITAAC.	1	1	Per 52.98(f), licensees may seek to modify, add or delete an ITAAC via the license amendment process. Accordingly, the identified statements in C.III.7.3&4 should be modified as follows: "As such, a COL holder may request a change in one or more of the [ITAAC] , ~~except those provided in the referenced certified design~~, via the license amendment process ~~applicable to Part 52~~ in accordance with Sections 52.63(b)(1) and 52.98(f)."

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C.IV.1.1	C.IV.1 General		This section is entitled "Acceptance Review Checklist," but needs clarification as to its scope and intent. The introductory section includes the following passage: "The staffs [sic intent in using these checklists is to ensure that the application submitted for review is complete. The acceptance review focuses on whether there is sufficient information for the staff to perform a complete review. That is, acceptance review confirms that there is no missing information and there are no applicable regulatory requirements that have not been addressed. Upon docketing, the staff will perform a review of the application to determine the adequacy of the information submitted to resolve all safety issues. Sufficient information in the context of acceptance review is not interchangeable with adequate and acceptable information necessary for the staff to make a reasonable assurance finding. Therefore, the staff assumes that completing its review of the application may necessitate requests for additional information."	1	4	Revise as indicated
C.IV.1.1 (continued)	C.IV.1 General		This is a useful clarification in response to prior comments on earlier drafts of the checklist (i.e., regarding whether the acceptance review was focused on being able to begin the review or complete the review). However, recent experience indicates that the Staff may require information beyond that indicated in this checklist before an application will be accepted (i.e., requiring, as a condition of acceptance, submittal of information that might previously have been the subject of post-acceptance RAIs). Accordingly, then, this might be thought of not as an "acceptance checklist," because meeting the requirements in the regulation and this checklist does not appear to ensure acceptance. Rather, one could view this as a "rejection checklist," i.e., the criteria in this checklist represent a necessary, but not sufficient, set of criteria for acceptance of the application. If this is accurate, then the Staff should so clarify; further, the Staff is urged to clarify what is required in order for an application to be accepted.	1	4	see above

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C.IV.2.1	C.IV.2.2		C.IV.2.2 states: "... The COL applicant must include the generic DCD in the application. Included in the application means that the actual document is provided with the application." The DCR (e.g., App. D in §IV.A.2a and 3) are read to understand that the application must include the plant specific DCD. However, Section IV.B states: "An applicant or licensee referencing this appendix, in accordance with Section IV of this appendix, shall incorporate by reference ("IBR") and comply with the requirements of this appendix, including Tier 1, Tier 2." This is understood to mean that the plant specific DCD may "include" the generic DCD by the IBR method. Further, the current §52.79(b) explicitly states: "The final safety analysis report and other required information may incorporate by reference the final safety analysis report for a certified standard design." Thus, IBR is clearly allowed in the subject regulations. If this is an accurate understanding, the Staff should clarify this in C.IV.2.	2	1	C.IV.2.2 should be revised, consistent with DCR IV.A.2a, IV.A.3, and 52.79(b) to indicate that the generic DCD may be included in the plant specific DCD by using the incorporation by reference approach. The recommended wording is as follows: "The plant-specific design control document (DCD), as defined in the design certification rules which are set forth in **DCR II.C** ~~the appendices to 10 CFR Part 52~~ is a combination of the generic DCD and the plant specific departures and exemptions from the generic DCD. The COL applicant must include the generic DCD in the application. **However, per §52.79(b), the generic DCD may be included in the plant specific DCD using incorporation by reference.** ~~Included in the application means that the actual document is provided with the application.~~ **To facilitate staff review, the actual generic DCD (complete and current to the revision referenced in the COL application) should be physically included in the application package.** ~~For certain DCRs,~~ In accordance with the DCR IV.A.2.A, the COL applicant must include the plant-specific DCD in its application ...."
C.IV.2.2	C.IV.2.2		As noted in Comment #C.IV.2.1, the regulations (specifically the DCR, IV.A.2.a and D) are understood to mean that the generic DCD is not required by regulation to be physically included in the application. However, it is fully recognized that the Staff and public must have convenient access to the current and complete generic DCD that is referenced in the COL application.	2	1	The Staff (licensing and IT) is requested to consider and take necessary actions to establish a checked, fully complete and current electronic forms of generic DCDs, ESPs, etc. in ADAMS. C.IV.2.2 should be revised accordingly.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.2 (continued)	C.IV.2.2		The COL application will clearly identify the version of the generic DCD that is referenced. In the case of a certified design (by final rule), the COL application would reference the version cited in the rule. For a design in some phase of Staff review, the COL application would unambiguously cite the version of the design application currently before the Staff at the time of the COL application submittal. Given current electronic media capabilities, it is reasonable that a complete, current and checked version of the reference DCD could be available through ADAMS. In this manner, the generic DCD could be readily available to the Staff and public, on demand, similar to other documents so filed. This would preclude the need and value of physically including the referenced generic DCD with the application. While physically including the generic DCD with the application is certainly feasible, this seems to be a fully unnecessary step and adds unwarranted complexity to the already sizeable electronic submittal of the COL application itself.	2	1	see above
C.IV.2.3	C.IV.2.2		C.IV.2.2 discusses the referencing of a design certification rule; however, C.IV.2 (in general) provides no guidance on the expected format and treatment for referencing an ESP. In addition, it is noted that Part 52 (current or proposed) does not specifically address the incorporation method for the ESP application information. The proposed 10 CFR 52.79(b) provides that COLA's referencing an ESP need not repeat information and analyses submitted to the Commission in connection with the ESP. However, in Part 52, there is no analog to the DCR appendix, which provides specific requirements regarding the incorporation of the generic DCD. Moreover, as noted in recent DG-1145 workshops, the some Staff expressed the expectation that the ESP material should be included in the application package. While the industry agrees, there is no requirement or guidance on this topic.	1	4	It is the industry's understanding that the Staff intends to address this shortcoming in Part 52 via the upcoming rulemaking. It is expected that C.IV.2 will be revised to be consistent with the final rulemaking. In general, the ESP's SSAR is analogous to the FSAR material in the DCD Tier 2 material. It is suggested that 52.79(b) and C.IV.2 offer explicit provision for the ESP SSAR to be incorporated by reference into the COLA FSAR. Like emergency planning (addressed by the current 52.79(d), special guidance is needed for ESP ER and EIS since 51.50(c) defines the contents of the COLA ER. While not stated in guidance or 51.50(c), it is implied and understood that the COLA ER need not broadly incorporate the ESP ER or EIS, but rather, these ESP ER/EIS are to cited or incorporated only to the extent required by the COLA's supplemental ER material. (This subject is addressed in more detail in a separate comment on Section C.III.3.)

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.4	C.IV.2.2		As discussed in a separate comment on C.IV.2.2, the industry interprets Part 52 and DCR to allow incorporation by reference and consider statements accompanying the AP1000 rulemaking (SECY-05-0227) to be inconsistent with DCR IV.A.2a, IV.A.3, and 52.79(b). Since SECY-05-0227, there has been confusion regarding Staff interpretations of these Part 52 regulations and allowable methods for administratively handling the reference DCD in the COLA. With the publishing of C.IV.2.2, the Staff indicated a preference for full integration of the generic DCD as an effective means to facilitate staff review. It is recognized that full integration may well be appropriate and beneficial in cases for which contextual clarity would be preserved for the reviewer. However, this circumstance is considered to be rare. Full integration will demand that the applicant and Staff take steps to confirm (or even reconfirm) that the generic DCD is faithfully reproduced in the COLA FSAR. For those DCDs subject to revisions (which to varying degrees could apply to EPR, ESBWR, and AP1000 designs), the	1	4	It is understood that the Staff is considering rule changes to address DCD incorporation requirements. The Staff is strongly encouraged to preserve the historically proven method of incorporation by reference. Secondly, given industry concerns that full integration may, in fact, create conditions for a less efficient review, the Staff is asked to review it preference for full integration. Lastly, the industry has sought definitive guidance on this topic since SECY-05-0227. The Staff is encouraged to work expeditiously resolution that will result in clear guidance, consistent with the regulations. The industry stands ready to assist in any way that may be needed. In addition, related to this topic, see a separate comment (C.IV.2.2) regarding the suggestion that the Staff establish electronic files of DCDs and ESPs that may be referenced in COLAs.
C.IV.2.5	C.IV.2.2		C.IV.2.2, in the 2nd paragraph, states: "For certain DCRs, the COL applicant must include the plant-specific DCD in its application. This means that the COL applicant should include a copy of the generic DCD (updated to include all revision pages)..." This language implies that the DCRs differ in requirements on this point. Each DCR IV.A for the four current design certification appendices contain the same language in IV.A.2.a, namely, that a plant-specific DCD must be included in the COL application referencing that DCD. The meaning of this statement in C.IV.2.2 is, therefore, unclear and/or perhaps not consistent with the Part 52 DCRs.	2	1	C.IV.2.2, 2nd paragraph, should be revised as follows: "~~For certain DCRs~~ **In accordance with the DCR IV.A.2.a,** the COL applicant must include the plant-specific DCD in its application."

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.2.6	C.IV.2.2		C.IV.2.2, 3rd paragraph states: "If a COL applicant does integrate the generic DCD into the FSAR submitted with the COL application, the applicant is strongly encouraged to clearly distinguish information extracted from the generic DCD from the plant-specific departures and exemptions to the DCD that the NRC will review in the COL application." Information provided in the COLA FSAR, as noted by the Staff, may originate in the referenced DCD. While not noted, information in FSAR Chapter 2 may originate as well from a referenced ESP. In addition, "new COLA information" may be presented for a variety of reasons (to address COL information items, replacement of conceptual design information, identify departures, et. al.). Thus, the need and importance of clearly identifying and distinguishing the source and purpose of information in the COLA FSAR is important regardless of whether the referenced DCD is incorporated by reference or fully integrated into the COLA FSAR. It is recommended that C.IV.2.2 be clarified on this point.	2	4	C.IV.2.2 should be revised as follows: "**Regardless of the incorporation approach selected for reflecting the generic DCD in the COLA FSAR**, ~~If a COL applicant does integrate the generic DCD into the FSAR submitted with the COL application~~, the applicant is strongly encouraged to clearly distinguish information extracted from the generic DCD from the plant-specific departures and exemptions to the DCD that the NRC will review in the COL application."
C.IV.2.7	C.IV.2.3.3		A COL application will comprise several submittals for a variety of reasons (some documents comprising the application will be safeguard, some proprietary, etc.). Each submittal would contain a cover letter identifying the documents and files included and their relationship to the COL application. Each submittal may also contain multiple documents and multiple CDROMs. During the course of the review, there will likely be revisions of several of the documents which comprise the application Clarification is needed as to the staff's definition of "document." For example, a document could be all the files submitted with a single cover letter, it could be all files contained on a single CDROM, or it could be all files comprising a stand-alone previously-paper document like an FSAR or an Environmental Report.	2	4	For the purpose of revisions, please clarify that only the complete set of files associated with a document (e.g. an FSAR) need to be submitted upon revision of a portion of that document.
C.IV.2.8	C.IV.2.3.3		"Each page should include a change indicator (e.g., a bold vertical line at the margin adjacent to the portion that has been changed) and a page change identification including either the date of change, revision, or both." The application will contain pictures and drawings for which the use of vertical line revision bars may not be practical.	2	4	Clarify that alternative means of identifying changes may be acceptable when necessary for pictures and drawings.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.1	C.IV.3.3.2		Industry Comment IV.3-4 sought confirmation that the replacement of conceptual design information did not constitute a departure (under the provisions of Design Cert. Rule VIII.B). The Staff response concurred but offered no change to DG-1145. Section C.IV.3.3.2 should be clarified to list those elements of "new COLA information" that do not constitute a departure from the certified design. The following are considered not to constitute a departure: (1) information added to address COL information items (DCD or ESP generated); (2) replacement of conceptual design information; (3) application specific information.	2	4	Per the Staff response to Comment IV.3-5, it is presumed that this will be clarified in Section C.IV.3.3.2. The following new COLA information should not be considered departures under DCR VIII.B: (1) information added to address COL information items (DCD or ESP generated); (2) replacement of conceptual design information; (3) application specific information. For consistency, the Staff should consider providing appropriate cross-references to this guidance in C.III.1.5, C.III.1.6, C.III.2.5, C.III.2.6.
C.IV.3.2	C.IV.3.3		If a departure only affects the bases and not the technical specifications themselves, the departure should be evaluated under the 50.59-like change process (similar to the process for licensed plants, in which changes to the bases are evaluated under 10 CFR 50.59).	2	1	After the sentence which states: "The TS referred to in B.5.a of this paragraph are the TS in Section 16.1 of the generic DCD, including bases, for departures made prior to issuance of the COL. After issuance of the COL, the plant-specific TS are controlling under paragraph B.5.", add the following sentence: If the departure only affects the bases and not the TS themselves, the departure should be evaluated in accordance with the criteria in Section VIII.B.5.b of the design certification rules.
C.IV.3.3	C.IV.3.3		When Section VIII.B.5 of the design certification rules was developed, it was recognized that the 50.59-like change process was not appropriate for PRA-information. Therefore, while the NRC needs to be informed of changes in the PRA information in Chapter 19 through periodic FSAR updates, such changes are not subject to the change process in Section VIII.B.5 and do not require NRC approval.	1	1	A paragraph should be added to this section which states as follows: Chapter 19 of the FSAR will provide qualitative information related to the probabilistic risk assessment (PRA), and a separate PRA report will be provided with the application that contain quantitative information. PRA information in Chapter 19 will be subject to the requirements related to periodic FSAR updates. However, PRA information in Chapter 19 is not subject to the 50.59-like change process in Section VIII.B.5 of the design certification rules.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.4	C.IV.3.3		Clarification should be added to DG-1145 to avoid any misconception that the NRC can change the generic TS based upon the existence of operating experience alone, without complying with Section VIII.C.3 of the design certification rules.	2	4	After the sentence which states: "Although the generic TS were reviewed by the NRC staff to facilitate the design certification review, the Commission intends to consider the lessons learned from subsequent operating experience during its licensing review of the plant-specific TS.", add the following sentence: If the NRC decides to change the generic TS to account for operating experience, it must determine that "special circumstances" exist in accordance with Section VIII.C.3 of the design certification rules.
C.IV.3.5	C.IV.3.1		C.IV.3.1, second paragraph states "When a COL is issued in this scenario, the 10 CFR Parts 2, 50, and 52 change processes apply to the entire FSAR. These include, but are not limited to:" and includes within the listing "10 CFR 52.63 Finality of standard design certifications." It is not really clear how or why the change processes in 52.63 would apply to a custom design.	2	3	Delete the reference to 10 CFR 52.63 in the bulleted list in the referenced paragraph.
C.IV.3.6	C.IV.3.1		Section C.IV.3.1, second paragraph states "When a COL is issued in this scenario, the change processes established in 10 CFR Parts 2, 50, and 52 apply to the entire final safety analysis report (FSAR). These include, but are not limited to, the following regulations:" The list does not include 50.90-92 which is a major change process applicable for making changes to an approved, issued COL.	3	4	Add a bullet(s) referencing the applicability of 10 CFR 50.90-92 to the change process.
C.IV.3.7	C.IV.3.3.2		C.IV.3.3.2 indicates that departures from DCD Tier 2 information may occur in five ways. All five of the listed items specifically refer to "Appendix A" which is specific to ABWRs. This listing should be worded more generically, or it should be identified as an example. This specific reference to Appendix A continues in much of the text of this section.	3	2	Replace "Appendix A" with "the applicable design certification rule appendix" in this section.
C.IV.3.8	C.IV.3.3.2		C.IV.3.3.2, second paragraph indicates that departures from DCD Tier 2 information may occur in five ways. Item (4) of the list indicates "The licensee may request NRC approval for proposed departures that do not meet the requirements in Appendix A to Part 52, paragraph VIII.B.5 (71 FR 12914), as provided in paragraph VIII.B.5.d." Additionally, B.5.e indicates that "a departure from Tier 2 information that is made under paragraph B.5 of this section does not require an exemption from this appendix." However, B.5.a begins with "an applicant or licensee..." It is clear from B.5.d that a licensee would request a license amendment. What process does an applicant use under B.5 for a departure from Tier 2 information that requires NRC approval? Is this simply a request to depart without having to request an exemption?	2	4	Clarify the process for an applicant to request NRC approval for proposed departures that do not meet the requirements in the applicable design certification rule appendix to Part 52, paragraph VIII.B.5, as provided in paragraph VIII.B.5.d.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.9	C.IV.3.3.2		C.IV.3.3.2, second paragraph indicates that departures from DCD Tier 2 information may occur in five ways. Item (5) of the list indicates "The licensee may request NRC approval for a departure from Tier 2* information under Appendix A to Part 52, paragraph VIII.B.6 (71 FR 12914)." B.6.d indicates that "departures from Tier 2* information that are made under paragraph B.6 of this section do not require an exemption from this appendix." However, B.6.a begins with "an applicant..." It is clear from B.6.b that a licensee would request a license amendment. What process does an applicant use under B.6 for a departure from Tier 2* information that requires NRC approval? Is this simply a request to depart without having to request an exemption?	2	4	Clarify the process for an applicant to request NRC approval for a departure from Tier 2* information under the applicable design certification rule appendix to Part 52, paragraph VIII.B.6.
C.IV.3.10	C.IV.3.3.2		C.IV.3.3.2 provides a confusing mixture of information related to the ABWR (references to part 52, Appendix A) and the AP1000 (locations of severe accident information). This guidance information should be provided on a more generic basis.	3	3	Clarify by referring to "the applicable design certification rule appendix to Part 52" as applicable.
C.IV.3.11	C.IV.3.3.3		C.IV.3.3.3 discusses the change processes for operational requirements as though the Section VIII processes are still "proposed." These are in the phrases "with its own change process in proposed paragraph VIII.C," then "The key to using the change processes proposed in Section VIII," and finally "Generic changes made under proposed paragraph VIII.C.1...." The word "proposed" should be removed from each of these phrases.	3	4	Delete the word "proposed" from the portions of C.IV.3.3.3 that reference issued rule requirements.
C.IV.3.12	C.IV.3.3.3		C.IV.3.3.3, second paragraph discusses the change processes for operational requirements and indicates "The determination of whether the generic TS and other operational requirements were completely reviewed and approved in the design certification rulemaking is based upon the extent to which an NRC safety conclusion in the FSER is being modified or changed." However, the acceptable extent to which an NRC safety conclusion might be modified or changed is not identified. Is there some change that is acceptable? If so, what criterion is used to determine if the change is acceptable or requires NRC review and approval?	2	4	Provide clarification and additional guidance for applicants to meet this portion of the guidance.
C.IV.3.13	C.IV.3.3.3		C.IV.3.3.3 states "If it cannot be determined that the TS or operational requirement was comprehensively reviewed and finalized in the design certification rulemaking, then there is no backfit restriction under 10 CFR 50.109..." However, the level of review to be considered "comprehensive" is not identified. All TS items were reviewed but many simply state that they are consistent with the improved Standard Technical Specifications and are acceptable. Is this considered a "comprehensive" review?	2	4	

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.3.14	C.IV.3.3.3		C.IV.3.3.3, third paragraph states "Some generic TS and investment protection short-term availability controls contain values in brackets [ ]. The brackets are placeholders indicating that the NRC's review is not complete, and represent a requirement that the applicant for a combined license referencing the AP1000 DCR must replace the values in brackets with final plant-specific values." The generic TS in the AP1000 DCD have a COL Information Item that requires the information in the brackets to be replaced with plant specific information. However, some certified design DCDs contain no such COL Information Item for the short-term availability controls. The COL Information Item is generally to provide a procedure. Further, there is no compelling reason to replace the bracketed generic information in the short-term availability controls.	1	1	Provide clarification on the means by which an applicant can provide sufficient information in order to meet NRC review requirements.
C.IV.3.14 (continued)	C.IV.3.3.3		The required procedure can be written with the plant specific information without any change to the short-term availability controls section containing the bracketed material. Additionally, leaving the bracketed material would remove the need to revise the FSAR Section each time there was a minor plant specific change to the material such as position titles. Would it be acceptable to leave the bracketed material in the short term availability controls section of the DCD as bracketed generic information?	1	1	see above
C.IV.3.15	C.IV.3.3.3		C.IV.3.3.3, last paragraph (and the DC rule, VIII.C.6) indicates that "the generic TS will have no further effect on the plant-specific TS after the issuance of a license that references this appendix." However, there is no such statement with regard to the "other operational requirements." Additionally, VIII.C.4 does not identify how a licensee can change the "other operational requirements," as it addresses only "applicants." Is the licensee bound to the exemption process in VIII.C.4 for changes that affect "other operational requirements" as described in the DCD for the life of the plant? If so, how does the licensee determine the full scope of the "other operational requirements"? It would seem that once a COL is issued, changes to "other operational requirements" should be under the 50.59 process.	2	4	Provide clarification that "other operational requirements" are included within the context of the referenced paragraph.
C.IV.4.1	C.IV.4.2		Table has 3 columns, does not match Table 13.4.x.	3	3	In the example shown in C.IV. make the table headings exactly as they are in 13.4 Add the 1st and 3rd columns ("Item" and "Source/Required By")

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.4.2	C.IV.4.3		Section C.IV.4.3 of DG-1145 discusses implementation of Operational Programs. Two examples are discussed with respect to delineating license conditions, one involving Fire Protection and another involving physical security. It is not clear from the writing of Section C.IV.4.3 whether these are examples of how all implementation license conditions should be addressed, whether these are exceptions or whether these are requirements for how the license conditions for the two programs discussed must be delineated based on recent regulatory changes. This needs to be clarified.	3	4	These "examples" should be clarified to ensure that licensees can understand the exact purpose of the examples for Fire Protection and Physical Security license condition write-ups in Section C.IV.4.3. It is not clear why only these two examples were included
C.IV.5.1	C.IV.5.1		Page C.IV.5-2, insert a new second paragraph as follows: "If the applicant is a Federal agency, including a corporate agency and instrumentality of the Federal Government, the application should contain the following: • the agency's enabling legislation • the location of the agency's headquarters • the name and address of the head of the agency, including, if applicable, that of each director and principal officer of the agency"	2	4	The existing draft provisions do not address the situation where the applicant may be a Federal agency.
C.IV.6.1	C.IV.6.1		Remove the requirement to specifically list in the transmittal letter the activities that the applicant is requesting to perform since it is already specified in 10 CFR 50.10.	3	4	C.IV.6.1 states "the applicant should specifically list in the transmittal letter the activities that the applicant is requesting to perform." 10CFR 50.10 lists the allowed activities and does not require a specific list. Requiring a specific list will just result in each applicant listing each item in 50.10.
C.IV.6.2	C.IV.6.2 C.IV.6.3		If the redress plan is expected to be provided in the ER, format guidance is needed. Specifically, the guidance needs to indicate where in the ER the SRP is expected to be placed.	1	1	C.IV.6.2 and C.IV.6.3 state "The requirements of 10 CFR 51.50(c)(4) specify that a site redress plan must be included in the environmental report." This is not consistent with NUREG-1555, which provides ER content review guidance to the staff, nor RG 4.2 which provides ER format and content guidance to the applicant.
C.IV.6.3	C.IV.6.2		Determine a better model for site redress plans. Suggest one of the ESP's currently under review	2	4	The Midland site stabilization report is a progress report on redress activities and is not formatted in the manner of an action plan.
C.IV.6.4	C.IV.6.3		Need additional supporting information as to why LWA-2 activities are not appropriate for inclusion at ESP stage.	3	4	The commitment to a single technology is not the underlying reason for NRC not wanting to allow LWA-2 activities at ESP stage.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.7.1	C.IV.7.1.2		**C.IV.7.1.2 states:** "Pre-application activities that support a COL application referencing an early site permit (ESP) should focus on the following topics:• potential deviations from the ESP"**The term "deviations" should be "variances" as indicated in the response to Comment C.IV.3-3.**	3	4	"• potential variances from the ESP"
C.IV.7.2	C.IV.7.3		**C.IV.7.1.3 lists the following for pre-application discussion topic** "• analysis needed to support offsite power analysis with RTO" **What does the staff have in mind here?**	2	2	NA
C.IV.7.3	C.IV.7.2		**C.IV.7.2** identifies Staff activities. **This is inconsistent with the rest of the DG and with the intent of the DG.** This guidance should be for the applicant (SRPs provide Staff guidance) to identify what the NRC needs/wants from the applicant in the pre-application phase to support the environmental review. Response to previous comment C.IV.7.2-1 indicated that the comment would be considered but also indicated "no change" to the DG.	2	3	**Rewrite this section to provide guidance to the applicant.**
C.IV.7.4	C.IV.7.2		**C.IV.7.2 lists pre-application activities that support the environmental review.** The NRC recently indicated (during a pre-application meeting with Southern re Vogtle ESP application) the potential for a "five-step environmental review." The context, timing, and scope of this five-step process needs to be clarified. **NRC clarification requested.**	2	5	N/A
C.IV.8.1	C.IV.8		C.IV.8 is apparently missing section number and title: C.IV.8.1 "Generic Issues"	3	4	Insert appropriate section number and title.
C.IV.8.2	C.IV.8		The cited proposed regulation limits review of generic issues to those that are resolved and applicable to design. C.IV.8's guidance regarding the use of App. B, NUREG-0933 is not clear. The vast majority of issues listed in the current App. B are coded "I" or "Note 3(a)". These notes are understood to mean that the issues have acceptable technical resolutions and that those resolutions have been incorporated into regulations or other regulatory guidance. Such issues, so coded, do not need to be addressed further under "Generic Issues." In general, for a COLA referencing a certified design, the COL applicant should address those generic issues listed in App. B (in effect 6 months...) that are technically relevant to the site-specific portions of design. In addition, the applicant must address those actions identified in the referenced DCD that are assigned to the applicant and relate to generic issues. Per the proposed regulation, the generic issue review is limited to those that are resolved. The introduction of App. B is read to understand that "Note 3(a)" and "I" issues are resolved and	2	4	C.IV.8 should be clarified regarding the use of NUREG-0933, App. B. The following language in C.IV.8 is recommended: "In general, for a COLA referencing a certified design, the COL applicant should address those generic issues listed in App. B (in effect 6 months...) that are technically relevant to the site-specific portions of design. In addition, the applicant must address those actions identified in the referenced DCD that are assigned to the applicant and relate to generic issues." In addition, as noted in the comment, the Staff should provide explicit guidance on the use of App. B in determining the scope of generic issues that are resolved and must be addressed for Part 52 applications.

COMMENT NO.	DG SECTION	RELATED NRC ID NO.	COMMENT	PRIORITY	BASIS	RECOMMENDED WORDING
C.IV.8.2 (continued)	C.IV.8		addressed in other regulations or guidance. "Note 6" applies to future plants but represents recommendations and not requirements. Overall, the use of App. B is unclear and the guidance of C.IV.8 does not resolve this. The Staff is requested to review App. B and provide explicit guidance (in C.IV.8 or other appropriate locations in DG-1145) as to how App. B's listing is to used, particularly for a COL applicant referencing a certified design.	2	4	see above
C.IV.8.3	C.IV.8		See Comment C.IV.8.2. C.IV.8 indicates that applicants should address those issues (in App. B, NUREG-0933) for which there is no entry or "TBD" in the future plants effective date. It is not clear that these are resolved generic issues which is the basic scope of the proposed Part 2.79(a)(20). The Staff should delete or explain what issues so coded should be addressed in the COL application.	2	4	Delete the following in C.IV.8 (or provided clarification as the basis for this guidance in that it appears inconsistent with the scope of the cite proposed regulation):
C.IV.8.4	C.IV.8.2		The Staff has provided a very helpful (preliminary) review of NRC generic letters and bulletins to "determine whether they have been superseded by other NRC generic communications." This explanation of the review is found in C.I.1.9.4. Given that the actual review results are provided in C.IV.8, this particular explanation of the review should also be provided in C.IV.8.	3	4	In C.IV.8, include the statement: "A review of these generic communications was performed to determine whether they have been superseded by other NRC generic communications, NRC actions, or requirements. Those generic communications that remain open and that are technically relevant to the COL applicants facility design should be addressed in the application." (consistent with C.I.1.9.4).
C.IV.8.5	C.IV.8.2		The use of the Staff's review in C.IV.8 of generic letters and bulletins (GL/B) is not fully clear. Section C.IV.8 defines of the various "exclusion codes" applied as "screening criteria" in the Staff's review. The implication is that any GL/B given an exclusion code is screened out and need not be considered further by the COL applicant. C.IV.8 should be revised to clarify the use of this table.	2	4	In C.IV.8, include the statement: "NRC generic letters and bulletins assigned an exclusion code have been screened from further evaluation and need not be addressed by the COL applicant."
C.IV.8.6	C.IV.8	0	The Staff has provided a very helpful (preliminary) review of NRC generic letters and bulletins to "determine whether they have been superseded by other NRC generic communications." This explanation of the review is found in C.I.1.9.4. Given that the actual review results are provided in C.IV.8, this particular explanation of the review should also be provided in C.IV.8	3	3	In C.IV.8, include the statement: "A review of these generic communications was performed to determine whether they have been superseded by other NRC generic communications, NRC actions, or requirements. Those generic communications that remain open and that are technically relevant to the COL applicants facility design should be addressed in the application." (consistent with C.I.1.9.4).
C.IV.8.7	C.IV.8		The use of the Staff's review in C.IV.8 of generic letters and bulletins (GL/B) is not fully clear. Section C.IV.8 defines of the various "exclusion codes" applied as "screening criteria" in the Staff's review. The implication is that any GL/B given an exclusion code is screened out and need not be considered further by the COL applicant. C.IV.8 should be revised to clarify the use of this table.	3	3	In C.IV.8, include the statement: "NRC generic letters and bulletins assigned an exclusion code have been screened from further evaluation and need not be addressed by the COL applicant."

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Attachment 1

Chapter 8. Electric Power

The AC and DC electric power systems are the source of power for station auxiliaries during normal operation, and for the protection system and engineered safety features during abnormal and accident conditions. Non-passive designs rely on offsite AC power, onsite AC power, and onsite DC power for safe shutdown while passive designs do not depend on either onsite or offsite AC systems for safe shutdown. Passive designs will rely solely on onsite DC systems for safe shutdown. Thus, the COL applicant should provide information in establishing the functional adequacy of the safety-related AC and DC electric power systems as applicable to either a passive design or non-passive design reactor (and electrical systems important to safety) and ensuring that these systems have adequate redundancy, independence, and testability in conformance with the current criteria established by the U.S Nuclear Regulatory Commission (NRC).

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8.1 *Introduction*

Provide a brief description of the utility grid and its interconnection to the nuclear unit and other grid interconnections. The applicant should list electrical systems as well as supporting systems that are safety-related. In the case of non-passive designs, these electrical systems will encompass both safety related AC and DC systems. For passive designs that do not rely on offsite AC power, the onsite Class 1E DC systems and the associated loads will be the only safety related electrical systems.

The application document should provide a regulatory requirements applicability matrix that lists all design bases, criteria, regulatory guides, standards, and other documents that will be implemented in the design of the electrical systems that are beyond the scope of the design certification. The specific information identified in Section C.I.8.1 of this guide should be included in the application document.

8.2 *Offsite Power System*

8.2.1 Description

The offsite power system is the preferred source of power for the reactor protection system and engineered safety features during abnormal and accident conditions. For non-passive designs, it includes two or more physically independent circuits from the transmission network. It encompasses the grid, transmission lines (overhead or underground), transmission line towers, transformers, switchyard components and control systems, switchyard battery systems, and so forth.

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Provide information concerning offsite power lines coming from the transmission network to the plant switchyard. For non-passive designs where the circuits from the transmission network that are designated as two offsite power circuits and are relied upon for accident mitigation should be identified and described in sufficient detail to demonstrate conformance with General Design Criteria (GDCs) 5, 17, and 18, as set forth in Appendix A to Title 10, Part 50, of the Code of Federal Regulations (10 CFR Part 50). The discussion should include the independence between these two offsite power sources to ensure that both electrical and physical separation exists, in order to minimize the chance of simultaneous failure.

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For non-passive designs, perform a failure mode and effects analysis of the switchyard components to assess the possibility of simultaneous failure of both circuits as a result of single events, such as a breaker not operating during fault conditions, a spurious relay trip, a loss of a control circuit power supply, or a fault in a switchyard bus or transformer. The capacity and electrical characteristics of transformers, breakers, buses, transmission lines, and the preferred power source for each path should also be provided to demonstrate that there is adequate capability to supply the maximum connected load during all plant conditions.

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For non-passive designs, identify the equipment that must be considered in the specification of offsite power supplies, the acceptance testing performed to demonstrate compliance, the effects that must be considered, the margins that are applied, and how the design incorporates these requirements for offsite power supplies, including high-voltage transmission networks, medium-voltage distribution networks, switchyard equipment (bus work, transformers, circuit breakers, disconnect switches, surge protective devices, control, communication, grounding, and lightning systems), switching capacitors, and offsite power supplies.

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For non-passive designs, provide information on location of rights-of-ways, transmission towers, voltage level, and length of each transmission line from the site to the first major substation that connects the line to the grid. All unusual features of these transmission lines should be described. Such features might include (but are not limited to) crossovers or proximity of other lines (to ensure that no single event such as a tower falling or a line breaking can simultaneously affect both circuits), rugged terrain, vibration or galloping conductor problems, icing or other heavy loading conditions, and high thunderstorm occurrence rate in the geographical area.

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For non-passive designs, indicate if generator breakers are used as a means of providing immediate access from the offsite power system to the onsite ac distribution system by isolating the unit generator from the main step-up and unit auxiliary transformers and allowing backfeeding of power through these circuits to the onsite ac distribution system. If so, provide sufficient information for the staff to evaluate the generator circuit breakers and load break switches.

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Compliance with GDC 5 requires that structures, systems, and components important to safety shall not be shared among nuclear power units, unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units. Toward that end, describe how the design satisfies the requirements of GDC 5.

Discuss the stability of the local area grid network. This should identify the equipment that must be considered for review and approval by the appropriate grid reliability planning and coordination organization(s). For non-passive designs, discuss the maximum and minimum switchyard voltage that must be maintained by the transmission system provider/operator (TSP/TSO) without any reactive power support from the nuclear power plant. In addition for non-passive designs, describe the formal agreement or protocol between the nuclear power plant and the TSP/TSO of the preferred offsite power capable of supporting plant startup, and to shut down the plant under normal and emergency conditions.

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Non-passive designs should include a description of the capability of the TSP to analyze contingencies on the grid involving the largest generation unit outage, critical transmission line outage, and other contingencies under varying power flows in response to market conditions and system demands.

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Furthermore, non-passive designs should include a description of the analysis tool used by the TSO to determine, in real time, the impact of the loss or unavailability of various transmission system elements on the condition of the transmission system. In addition, the applicant should provide information on the protocols in place for the nuclear power plant to remain cognizant of grid vulnerabilities, in order to make informed decisions regarding maintenance activities that are critical to the plant's electrical system (Maintenance Rule, 10 CFR 50.65).

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8.2.2 Analysis

Provide an analysis of the stability of the utility grid. This analysis should include the worst case disturbances for which the grid has been analyzed and considered to remain stable and to describe how the stability of the grid is continuously studied as the loads grow and additional transmission lines and generators are added. For non-passive designs, provide the assumptions and conclusions that demonstrate that the acceptance criteria required for the continued safe operation of the nuclear unit and the stability of the grid have been addressed. Identify the approving grid organization for the reliability studies, and identify any

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potential limits that may be imposed on the operation of the nuclear plant. Provide a discussion of grid availability, including the frequency, duration and causes of outages over the past 20 years for both the transmission system accepting the unit's output and the transmission system providing the preferred power for the unit's loads.

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The results of the grid stability analysis must show that loss of the largest single supply to the grid does not result in the complete loss of preferred power (or complete loss of the transmission system connected to the station for passive designs). The analysis should also consider the loss, as a result of a single event, of the largest capacity being supplied to the grid, removal of the largest load from the grid, or loss of the most critical transmission line. In determining the most critical transmission line, consider lines that use a common tower to be a single line. This could be the total output of the station, the largest station on the grid, or possibly several large stations if these use a common transmission tower, transformer, or breaker in a remote switchyard or substation.

8.3 *Onsite Power Systems*

8.3.1 AC Power Systems

8.3.1.1 *Description*

For non-passive designs describe how independence is established between the onsite and offsite power systems. Two aspects of independence should be addressed in each case:

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physical independence
electrical independence

In ascertaining the independence of the onsite power system with respect to the offsite power system, the applicant should describe the electrical ties between these two systems, and should provide the physical arrangement of the interface equipment. It should also demonstrate that no single failure will prevent separation of the redundant portions of the onsite power systems from the offsite power systems. For non-passive designs, following a loss of offsite power, the safety buses are solely fed from the standby power systems. Under this situation, describe the design of the feeder-isolation breaker in each offsite power circuit that must preclude the automatic connection of preferred power to the respective safety buses upon the loss of standby power.

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If non-Class 1E loads are connected to the Class 1E buses, the COL applicant should demonstrate that the design will not result in degradation of the Class 1E system. Describe the design of the isolation device through which standby power is supplied to the non-Class 1E load, including control circuits and connections to the Class 1E bus. To ensure physical separation between the Class1E equipment and the non-1E equipment, including cables and raceways, describe how the recommendations of Regulatory Guide 1.75 are followed.

Describe the means of identifying the non-1E components, including cables, raceways, and terminal equipment. Provide information on the identifying scheme used to distinguish between redundant Class 1E systems and non-Class 1E systems and their associated cables, raceways without the need to consult reference material.

For non-passive designs, the COL applicant should also describe how the diesel generators are sized to accommodate the added non-Class 1E loads.

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8.3.1.2 *Analysis*

For non-passive designs, provide analyses to demonstrate compliance with GDCs 17 and 18, and to indicate the extent to which the recommendations of Regulatory Guides 1.6, 1.9, and 1.32 and other

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appropriate criteria and standards are followed. The discussion should identify all aspects of the onsite power system that do not conform to Regulatory Guides 1.6, 1.9, and 1.32, and should explain why such deviations are not in conflict with applicable GDCs.

8.3.1.3 *Electrical Power System Calculations, and Distribution System Studies for AC Systems*

COL applicants that reference a certified design do not need to include this information unless design changes are made to the certified design.

8.3.2 DC Power Systems

8.3.2.1 *Description*

If non-Class 1E loads are connected to the Class 1E batteries, the COL applicant should demonstrate that the design will not result in degradation of the Class 1E batteries. Describe the design of the isolation device through which dc power is supplied to the non-Class 1E loads. To ensure physical separation between the Class1E equipment and the non-1E equipment, including cables and raceways, describe how the recommendations of Regulatory Guide 1.75 are followed.

Describe the means of identifying the non-1E components, including cables, raceways, and terminal equipment. Provide information on the identifying scheme used to distinguish between redundant Class 1E systems and non-Class 1E systems and their associated cables, raceways without the need to consult reference material.

The COL applicant should also describe how the batteries are sized to accommodate the added non-Class 1E loads.

8.3.2.2 *Analysis*

The COL applicant should provide analyses to demonstrate compliance with GDCs 17 and 18, and indicate the extent to which the recommendations of Regulatory Guides 1.6, and 1.32 are followed. The discussion should identify all aspects of the dc power system that do not conform to Regulatory Guides 1.6, and 1.32, and should explain why such deviations are not in conflict with applicable GDCs.

8.3.2.3 *Electrical Power System Calculations, and Distribution System Studies for DC Systems*

COL applicants that reference a certified design do not need to include this information unless design changes are made.

8.4 *Station Blackout (SBO) (for non-passive designs)*

8.4.1 Description

For non-passive designs, the applicant should describe how the alternate alternating current (AAC) power source provided to mitigate station blackout is independent from the offsite power system. Describe the physical arrangement of circuits and incoming source breakers [to the affected Class 1E bus(es)], separation and isolation provisions (control and main power), permissive and interlock schemes proposed for source breakers, source initiation/transfer logic, that could affect the ability of the AAC power source to power safe shutdown loads, source lockout schemes, and bus lockout schemes in arriving at the determination that the independence of the AAC power source is maintained.

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For non-passive designs, describe how the AAC power source components are physically separated and electrically isolated from offsite power components or equipment, as specified in the separation and isolation criteria applicable to the unit's licensing basis and the criteria of Appendix B to Regulatory Guide 1.155.

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For non-passive designs, identify local power sources and transmission paths that could be made available to resupply power to the plant following a loss of a grid or SBO.

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For non-passive designs, describe the procedures and training provided for the plant operators for an SBO event of the specified duration and recovery from the SBO event.

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8.4.2 Analysis

For non-passive designs, provide an analysis to demonstrate that no single-point vulnerability exists whereby a single active failure or weather-related event could simultaneously fail the AAC power source and offsite power sources. The power sources should have minimum potential for common failure modes.

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Attachment 1
NEI Comments on Draft
DG-1145

Rationale for recommended change to C.I.11.2.1
Paragraph three states:

> "Within this evaluation, provide a site-specific cost-benefit analysis for reducing population doses due to liquid effluents, in compliance with 10 CFR Part 50, Appendix I, and in accordance with the guidance in Regulatory Guide is 1.110 and 1.113 and NUREG/CR-4013. If this guidance is not followed, describe the specific alternative methods used. More specifically, show that the proposed systems contain all items of reasonably demonstrated technology that, when added to the system in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio affect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. State all assumptions and describe the calculational methods used, including all supporting references."

This paragraph should be deleted based on the following reasoning:

Standard Review Plan (SRP) 3.2.2, Draft Rev. 2 – April 1996, page 3.2.2-27:

> "(9) Reg. Guide 1.143 describes a method acceptable for complying with regulations regarding radwaste management systems, including guidance for classification and quality assurance measures. Position C.1.1 and Table 1 of the Reg. Guide describe codes and industry standards applicable to the design and fabrication of radwaste management systems. In addition, the Reg. Guide describes positions with regard to the design and fabrication of these systems that are supplemental to those established by the codes and standards cited."

Regulatory Guide 1.143, Revision 2 – November 2001, cover page:

> "This regulatory guide has been revised to provide guidance to licensees and applicants on methods acceptable to the staff for complying with the NRC's regulations in the design, construction, installation, and testing the structures, systems, and components of radioactive waste management facilities in light-water-reactor nuclear power plants.
>
> ". . . Appendix A. "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 establishes minimum requirements for the principal design criteria for light-water-cooled nuclear power plants.
>
> "Criterion 1, "Quality Standards and Records". Of Appendix A requires that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance to safety of the safety function to be performed and that a quality assurance program

be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety function."

Regulatory Guide 1.143, Revision 2 – November 2001, page 2:

"Criterion 2, "Design basis for Protection Against Natural Phenomena," of Appendix A requires, among other things, that structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornados, or flooding without loss of capability to perform their safety functions. The design basis for these structures, systems, and components are to reflect the importance of the safety functions to be performed. Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants, " of 10 CFR Part 50 states general design requirements for the implementation of General Design Criterion 2. Criterion 60, "Control of Releases of Radioactive Materials to the Environment," of Appendix A requires that the nuclear power unit design include means to suitably control the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid waste produced during normal reactor operation, including anticipated operational occurrences. The release of radioactive materials from external man-induce events and design basis accident must also be controlled.

"This regulatory guide is being revised to provide design guidance acceptable to the NRC staff in regard to natural phenomena hazards, internal and external man-induced hazards, and quality group classification and quality assurance provisions for radioactive waste management systems, structures, and components.[1] Further, it describes provisions for mitigating design basis accidents and controlling releases of liquids containing radioactive materials, e.g., spills or tank overflows, from all plant systems outside reactor containment."

Regulatory Guide 1.143, Revision 2 – November 2001, page 3:

"One aspect of nuclear power plant operation is the control and management of liquid, gaseous, and solid radioactive waste[2] (radwaste) generated as a byproduct of nuclear power. The purpose of this guide is to provide information and criteria that will provide a reasonable assurance that components and structures used in the radioactive waste management and steam generator blowdown systems are designed, constructed, installed, and tested on a level commensurate with the need to protect the health and safety of the public and plant operating personnel. It sets forth minimum staff recommendations and is not intended to prohibit the implementation of more rigorous design considerations, codes, standards, or quality assurance measures.

"For the purposes of this guide, the radwaste systems are considered to begin at the interface valves in each line from other systems provided for collecting wastes that may contain radioactive materials and to include related instrumentation and control systems. The radwaste system terminates at the point of controlled discharge to the environment, at the point of recycle to the primary or secondary water system storage tanks, or at the point of storage of packaged solid wastes."

Regulatory Guide 1.143, Revision 2 – November 2001, page 4:

"The design and construction of radioactive waste management and steam generator blowdown systems should provide assurance that radiation exposures to operating personnel and to the general public are as low as is reasonably achievable. One aspect of this consideration is ensuring that these systems are designed to quality standards that enhance system reliability, operability, and availability. In developing this design guidance, the NRC staff has considered designs and concepts submitted in license applications and resulting operating system histories. It has also been guided by industry practices and the cost of design features, taking into account the potential impact on the health and safety or operating personnel and the general public."

Regulatory Guide 1.143, Revision 2 – November 2001, page 10:

" The Purpose of this section is to provide information to licensees and applicants regarding the NRC staff's plans for using this regulatory guide.

"Except in those cases in which the applicant proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the method described in this guide reflecting public comments will be used in the evaluation of an applicant's design, construction, installation, and testing of radioactive waste management facilities, and in the evaluation of structures, systems, and components in light-water-cooled nuclear power plants. Current licensees may, at their option, comply with the guidance in this regulatory guide."

Regulatory Guide 1.110, March 1976, page 5:

"The procedures and models provided in this guide will be subject to continuing review by the staff with the aim of providing greater flexibility to the applicant in meeting the requirements of Appendix I. As a result of such reviews, it is expected that alternative acceptable methods for calculation will be made available to applicants and that calculational procedures found to be unnecessary will be eliminated."

10 CFR50 Appendix I, Sec. II.D.:

"In addition to the provisions of paragraphs A, B, and C above, the applicant shall include in the radwaste system all items of reasonably demonstrated technology

that, when added to the system sequentially and in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. As an interim measure and until establishment and adoption of better values (or other appropriate criteria), the values $1000 per total body man-rem and $1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) shall be used in this cost-benefit analysis. The requirements of this paragraph D need not be complied with by persons who have filed applications for construction permits which were docketed on or after January 2, 1971, and prior to June 4, 1976, if the radwaste systems and equipment described in the preliminary or final safety analysis report and amendments thereto satisfy the Guides on Design Objectives for Light-Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket-RM-50-2 dated February 20, 1974, pp. 25-30, reproduced in the Annex to this Appendix I."

Regulatory Guide 1.110, March 1976 is antiquated and inappropriate for use with the current technology in radwaste processing. Most of the current technology radwaste processing equipment is not included in Regulatory Guide 1.110, March 1976. That fact makes Regulatory Guide 1.110 inappropriate for guidance because the user must guess which equipment in the Regulatory Guide is closest to the current technology. The current technology generally is decades more advanced than the technology listed in Regulatory Guide 1.110, so that any comparison is speculative at best. Additionally, Regulatory Guide 1.143, Revision 2, as already shown in statements provided by the NRC, is designed to adequately provide complete guidance for the radwaste section of light-water-cooled nuclear power reactors. Lastly, 10 CFR50 Appendix I, Sec. II.D allows for 'other appropriate criteria.' Regulatory Guide 1.143, Revision 2 is the other appropriate criteria allowable by 10 CFR50 Appendix I, Sec. II.D. Therefore, any reference to Regulatory Guide 1.110 should be removed from DG-1145 as it applies to radioactive waste systems, structures, and components.

Regulatory Guide 1.113, Revision 1, April 1977, page 1, paragraph 4, in part:

> "The methods herein are general approaches that the NRC staff has adopted for the analysis of routine and accidental releases into various types of surface water bodies. Models for the ground-water pathway are not covered in this guide."

Regulatory Guide 1.113, Revision 1, as included in DG-1145, serves to analyze accidental releases to surface water bodies. Regulatory Guide 1.143 provides NRC guidance that when implemented, '. . .provide[s] design guidance acceptable to the NRC staff in regard to natural phenomena hazards, internal and external man-induced hazards, and quality group classification and quality assurance provisions for radioactive waste management systems, structures, and components.[1] Further, it describes provisions for mitigating design basis accidents and controlling releases of liquids containing radioactive materials, e.g., spills or tank

overflows, from all plant systems outside reactor containment.' Therefore, Regulatory Guide 1.143, Revision 2 includes guidance acceptable to the NRC regarding system, structure and component design, plus the mitigation and control of releases of radioactive liquids. Regulatory Guide 1.113, Revision 1 only serves to provide an approach to calculating an analysis of releases to surface water. Regulatory Guide 1.113 is virtually an enormous task to calculate data that is greatly subjective, and Regulatory Guide 1.143, Revision 2 provides guidance acceptable to the NRC to prevent the release altogether. Therefore, Regulatory Guide 1.113, Revision 1 is an unnecessary burden. Because it has effectively been superseded and reduced to an unnecessary burden by Regulatory Guide 1.143, revision 2, any reference to Regulatory Guide 1.113 should be removed from DG-1145 as it applies to radioactive waste systems, structures, and components.

Attachment 1

C.I.17.6 ***Description of Applicant's Program for Implementation of 10 CFR 50.65, the Maintenance Rule***

The MR program must meet the requirements of 10 CFR 50.65. The format of the program description is left to the discretion of the applicant; however each element of 10 CFR 50.65 should be addressed sufficiently to enable the reviewer to determine whether and how each element is satisfied.

C.I.17.6.1 ***Description of MR Program and Procedures***

The program description for the MR program should endorse and be in accordance with NUMARC 93-01, and Regulatory Guides 1.160 and 1.182, including, but not limited to the following areas:

Note 1: Deviations from the guidance in NUMARC 93-01 and Regulatory Guides 1.160 and 1.182 should be explained and justified

Note 2: The MR program description is required to be submitted as part of the COL application; the actual detailed program must be available on-site for NRC audit prior to fuel load.

Note 3: COL applicants referencing a DCD must address the COL information items, if any, identified in Chapter 17.6 of the referenced generic DCD.

C.I.17.6.1.1 ***Scoping per 10 CFR 50.65(b)***

Provide a description of procedure for identifying the structures, systems, or components (SSCs) within the scope of your proposed Maintenance Rule (MR) program. The description of the MR scoping procedure should be in accordance with NUMARC 93-01 and Regulatory Guide 1.160 to address:

(1) Safety-Related SSCs

(2) Nonsafety-Related SSCs that Mitigate Accidents or Transients

(3) Nonsafety-Related SSCs that are used in Emergency Operating Procedures

(4) Nonsafety-Related SSCs Whose Failure Prevents Safety-Related SSCs for Fulfilling their Safety-Related Functions

(5) Nonsafety-Related SSCs Whose Failure Causes Scrams or Actuates Safety Systems

C.I.17.6.1.2 ***Reactor Safety Significance Classification and Other Factors Considered by Expert Panel***

Describe the process for safety significance classification (i.e., HSS or LSS) of in-scope SSCs and the bases thereof, including risk metrics/importance measures and values, operating experience, vendor information, and any other factors to be considered by the expert panel.

C.I.17.6.2 Monitoring per 10 CFR 50.65(a) and (a)(2)

Provide a description of the procedure for managing 10CFR 50.65(a)(1) requirements during plant operation. For the SSCs determined to be within the scope of the Maintenance Rule, discuss the method for establishing risk significance and performance criteria to initially determine which SSCs must have goals established and monitoring activities performed in accordance with (a)(1). For SSCs that do not meet

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Comment [jmt1]: It is important to differentiate from "known" at the time of application. Many COLA sections will be written prior to application submittal and further information may become available between the time of development and time of submittal.

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Deleted: Describe program procedures for Maintenance Rule implementation

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performance criteria, discuss the method for performing a cause determination and how appropriate goals are established commensurate with an SSCs safety significance and performance. Monitoring the performance of the SSCs against established goals should be demonstrated to provide reasonable assurance that the SSCs are proceeding to acceptable performance.

Provide a description of the procedure for managing 10CFR 50.65(a)(2) requirements during plant operation. Monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventive maintenance. Discuss how SSCs within the scope of (a)(2) are monitored (e.g., included in the formal PM program, determined to be inherently reliable, visual inspection during walkdowns to meet licensee requirements that already exist, or determined to be allowed to run to failure based on providing little or no contribution to system safety function). Discuss how the preventive maintenance program is determined to be effective in achieving the desired results of minimizing component failures and increasing or maintaining SSC performance.

C.I.17.6.3 Periodic Evaluation per 10 CFR 50.65(a)(3)

Identify and describe the program procedures that prescribe or govern periodic evaluation of the Maintenance Rule program in accordance with 50.65(a)(3). Ensure the following considerations are included:

(1) how procedures govern the scheduling and timely performance of (a)(3) evaluations

(2) documenting, reviewing and approving evaluations, providing and implementing results

(3) making adjustments to achieve or restore balance between reliability and availability

(4) industry operating experience (IOE).

C.I.17.6.4 Risk Assessment and Management per 10 CFR 50.65(a)(4)

Provide a description of the procedure for risk assessment per 10CFR 50.65(a)(4). Describe how assessments of the impact on overall plant safety functions prior to removal of SSCs from service are to be performed. Typically the (a)(4) program and procedure is a stand-alone activity, separate from the other elements of the MR Program.

The COL applicant should commit to implementing a 10CFR 50.65(a)(4) program consistent with Regulatory Guide 1.182 and NUMARC 93-01, items (1) through (3) below, as described in detail in NUMARC 93-01:

(1) Key Plant Safety Functions Applicable to the Plant Design.

(2) SSCs That Support Key Plant Safety Functions

(3) Assess and Control the Effect of the Removal of SSCs from Service on Key Plant Safety Functions

C.I.17.6.5 Maintenance Rule Training and Qualification

Describe the program, including procedures and documentation, for Maintenance Rule training and qualification consistent with the provisions of Section C.I.13 of this guide as applicable.

C.I.17.6.6 Maintenance Rule Program and Reliability Assurance Program Interface

Describe the relationship and interface between MR program implementation and Reliability

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Deleted: Identify and describe the program procedures and documents (including computer software and data) that prescribe or govern maintenance risk assessment and management accordance with 50.65(a)(4) including, but not limited to the following areas:

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(2) risk assessment and management during work planning ¶
(3) risk assessment and management of emergent conditions and updating risk assessments as maintenance situations and plant conditions and configurations are changed ¶
(4) assessment (quantitative and qualitative capabilities) and management of risk of external events or conditions, including fire (internal, external and fire-risk-sensitive maintenance activities), severe weather, external flooding, landslides, seismic activity and other natural phenomena; grid/offsite power reliability for grid-risk-sensitive maintenance activities (respond to or refer to responses to MR-related questions in NRC GL 2006-02), and internal flooding ¶
(5) assessment and management of risk of maintenance activities affecting containment integrity ¶
(6) assessment and management of risk of maintenance activities when at low power or when shut down (including implementation of NUMARC 91-06) ¶
(7) assessment and management ... [15]

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Assurance Program (RAP) implementation during the operational phase (See Section C.I.17.4), including how functions are coordinated and procedures overlap and/or are cross referenced. Note: If the scope of the RAP is enveloped by the Maintenance Rule Program's SSCs classified as HSS, the Maintenance Rule Program is an acceptable method of implementation of the RAP during the operational phase.

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C.I.17.6.7 Maintenance Rule Program Implementation

The COL applicant should identify that the MR program will be implemented prior to fuel load, as identified in Section C.I.13.4. As discussed in Section C.I.13.4, and consistent with SRM/SECY-05-0197, the applicant should provide a schedule for implementing the MR program prior to fuel load. This schedule may be provided to NRC separate from the FSAR.

Deleted: Describe the plan or process for implementing the MR program as described in the COL application, including sequence and milestones for establishing program elements, commencing monitoring or tracking of performance and/or condition of SSCs as they become operational.

Attachment 1

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C.I.18 Human Factors Engineering (NUREG-0800, Ch.18, rev.1)

This chapter of the FSAR should describe how state-of-the-art Human Factors Engineering (HFE) principles are incorporated into: (1) the planning and management of HFE activities; (2) the plant design process; (3) the characteristics, features, and functions of the human-system interfaces (HSIs), procedures, and training; (4) the implementation of the design; and (5) the monitoring of performance at the site. The FSAR should address the 12 HFE elements of NUREG-0711 shown in Figure 1.

Comment [NEI1]: Monitoring "changes" reads as design change monitoring, which is QA, not HF, so rather than delete it, it was refit with the corresponding element for post-implementation monitoring.

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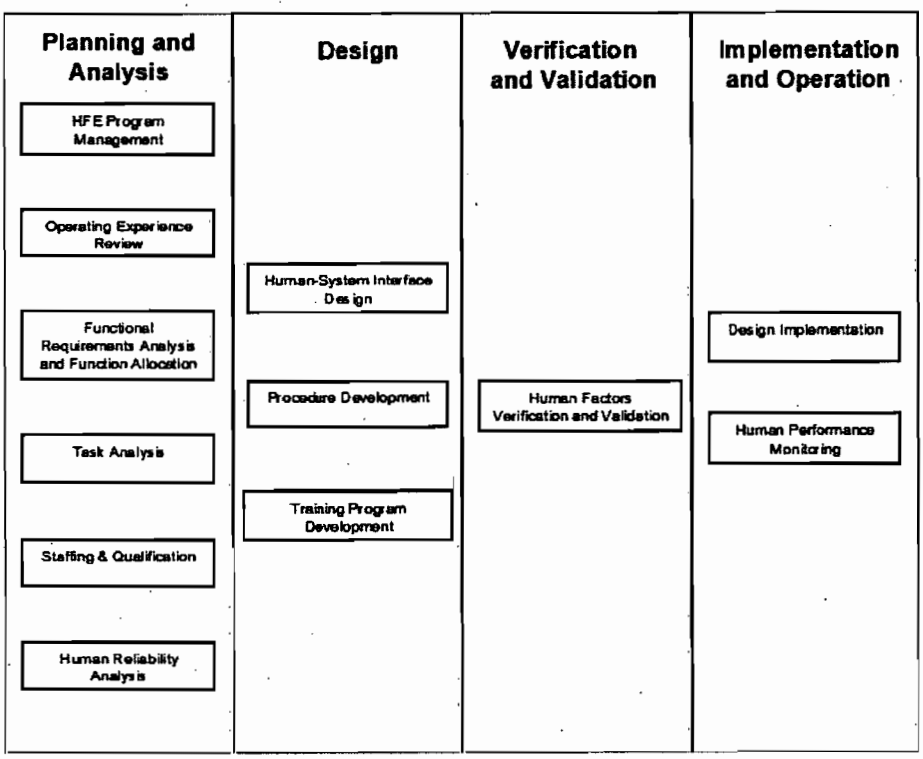


Figure 1 HFE elements to be addressed in the FSAR

COL Applicant Submittals

For each element illustrated in Figure 1, the FSAR should describe or reference the objectives and scope of the applicant's activities related to the element, the methodology

used to perform the activities, and the results of the activities. The specific content related to each element is addressed in the subsequent sections of C.I.18[1].

In general, the COL applicant (hereafter called applicant) may summarize this information. In such cases, an applicant may either submit, reference, or retain and make available for NRC staff audit the details, such as in supplemental reports, sufficient to support NRC staff review and determination of reasonable assurance. Where results are being credited for meeting specific regulatory requirements, more detail may be appropriate in the FSAR. Levels of detail and inclusion that may be suitable for presenting completed HFE elements in an FSAR are identified by examples for each element in subsequent sections of C.I.18

Submittals For HFE Activities That Have Not Been Completed

At the time that the COL application is submitted, some of the12 HFE elements may be incomplete. If an element is incomplete at the time of the COL application, the FSAR should describe the objectives and scope of the applicant's activities related to the element, the methodology that will be used to perform the activities, and the expected results of the activities. In addition, an "implementation plan" and schedule for completing the element should be submitted, including plans for the use and disposition of the corresponding results. Finally, DAC/ITAAC should be submitted which define the requirements for closure of the element when it is completed.

Applicants are encouraged to submit implementation plans at the earliest opportunity in the pre-application phase. An early review by the NRC of an implementation plan gives the applicant the opportunity to obtain staff concurrence in the applicant's approach before COL submittal or before conducting the activities associated with the element. Such a review is desirable from both the staff's and the applicant's perspectives because it provides the opportunity to resolve methodological issues and provide input early in the analysis or design process when staff concerns can more easily and more cost-effectively be addressed than when the activity is completed.

For similar reasons, the applicant is encouraged to submit other documents, such as an HSI style guide, for NRC review and issue resolution before the applicant initiates and completes the detailed design work.

Submittal Interfaces

The submittals described in this section should be coordinated with those of other SRP chapters and sections. Important review interfaces are described in NUREG-0800 Ch.18 rev.1, Sec.18.I.C.

Comment [NEI2]: 1. The term "contents of applications" has been equivocal in C.I.18. That is, the draft answer from Staff was mainly technical, but the Industry question is mainly practical. Since the (mainly technical) Staff review guidance is (with exceptions noted) generally sufficient, what the Industry needs most from the content-of-submittals guidance is (1) to clarify what may be submitted vs. what may be retained (for audit or inspection), and (2) to identify necessary FSAR contents vs. the balance of the submittal (such as referenced reports).

Comment [NEI3]: Saying that "most sections" can be summarized begged the question of which sections cannot, hence the edit.

Comment [NEI4]: This is a key distinction for subsequent guidance.

Comment [NEI5]: Use of "may" in the Industry re-draft of C.I.18 attempts to give guidance in the form of alternatives for inclusion levels for technical contents. That something "may" be retained for audit implies that it may be submitted as well, but not necessarily that either course "should" be taken. Use of "should" was thus initially limited to matters of technical content, as a principal of style. It seems that "should" is also needed to specify items that explicitly belong in the FSAR, and perhaps further that belong in the submittal (not necessarily in the FSAR, but not acceptable if only retained for audit/inspection). Thus, the may/should distinction in the re-draft was neither entirely successful, nor entirely without merit, and its use in some form can be considered on the practical merits. In any case, it is understood that the wording will be governed by NRC and legal conventions.

Comment [NEI6]: These two aspects of the content of submittals are what the industry seeks to have clarified

Comment [NEI7]: This rewrite tried to address the seeming paradox that the less complete elements were calling for more detail to be provided.

[1] Staff review guidance for the technical content of HFE programs and activities is given by the applicable revisions of NUREG-0800 (SRP) Chapter 18 and NUREG-0711. Conflicts of interpretation between C.I.18 and the applicable staff review guidance will be governed by the latter.

C.I.18.1 HFE Program Management (NUREG-0800 Ch.18 rev.1, Sec.II.A.1; NUREG-0711 rev.2, Sec.2)

Purpose

The purpose of this portion of the application is to document that, for plant design and operation, the applicant has adequately considered the role of HFE and the means by which HFE activities are accomplished.

Contents

The FSAR description of the HFE Program Plan may consist of the detailed HFE Program Plan, or it may consist of a summary that refers to a separately submitted (i.e. detailed) HFE Program Plan. All such descriptions (i.e. summary or detailed) should address the topics below in response to the applicable review guidance[2].

- General HFE Program Goals and Scope (NUREG-0711 rev.2, Sec.2.4.1)
- HFE Team and Organization (NUREG-0711 rev.2, Sec.2.4.2)
- HFE Process and Procedures (NUREG-0711 rev.2, Sec.2.4.3)
- HFE Issues Tracking (NUREG-0711 rev.2, Sec.2.4.4)
- Technical Program (NUREG-0711 rev.2, Sec.2.4.5)

Organizational procedures of the COL applicant and its assigns may be referenced in the detailed HFE Program Plan and be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.2 Operating Experience Review (NUREG-0800 Ch.18 rev.1, Sec.II.A.2; NUREG-0711 rev.2, Sec.3)

Purpose

The purpose of this section of the FSAR is to document that the applicant has identified and analyzed HFE related problems and issues in previous designs that are similar to the current design under review so that these problems and issues may be avoided in the development of the new design.

Contents

This section of the FSAR may describe how the procedures program addresses the requirements of 10 CFR 50.34(f)(3)(i).

The FSAR may describe the applicant's operating experience review (OER) and how it was used to identify HFE-related safety issues. This description may consist of a summary that refers to separately submitted report(s) describing sources, methods,

[2] The citations below are provided for convenience and refer to the most recent version of the cited review guidance at the time of C.I.18 publication.

Comment [NEI8]: A proposed framework for the C.I.18 sections is presented. Three components are used: Purpose, Contents, and Added Guidance. The intent of this framework is to be concise and to avoid ambiguity with existing NRC guidance.

Comment [NEI9]: The "Purpose" is a brief statement based on the applicable 0800 citation, that identifies the element and gives context to the rest of the section without adding, repeating, or revising existing guidance.

Comment [NEI10]: Terms such as application, submittal, FSAR, etc. may not be used correctly in the present draft, and a set of formal definitions is requested. Unclear how to correctly refer to "all" of the Applicant information for an element which only some of it is submitted, some is referenced, and some is retained.

Comment [NEI11]: The "Contents" sections address level of detail and place of inclusion for the identified items, rather than their technical contents (which are already specified elsewhere as cited).

Comment [NEI12]: Where C.I.18 content reflects existing guidance, citations are preferred to restatements. Clearly, the Applicant is advised to submit what the Staff wants to see, and this is defined by the Staff review guidance. It may be true in some sense that NUREG-0711 & NUREG-0800 give guidance for Staff reviews but not for Applicant submittals - but does this justify the need for multiple versions of similar guidance? From a technical standpoint, the Industry finds the available Staff review guidance to be equally suited to either role, as shown by the use of NUREG-0711 from inception.

Comment [NEI13]: The "Added Review Guidance" sections identify material that is not considered to exist or to have been sufficiently treated in the existing Staff review guidance.

implementation, and results of OER. Detailed OER data may be retained and made available for NRC staff audit. All such descriptions (i.e. summary or detailed) should address the topics below in response to the applicable review guidance[3].

- Objectives and Scope of OER (NUREG-0711 rev.2, Sec.3.2 & 3.4.1)
- OER Process (10 CFR 50.34(f)(3)(I)).
- Predecessor Plants and Systems (NUREG-0711 rev.2, Sec.3.4.1(1))
- Risk-important Human Actions (NUREG-0711 rev.2, Sec.3.4.1(5))
- HFE Technology (NUREG-0711 rev.2, Sec.3.4.1(3))
- Recognized Industry Issues (NUREG-0711 rev.2, Sec.3.4.1(2))
- Issues identified by Plant Personnel (NUREG-0711 rev.2, Sec.3.4.1(4))
- Issue Analysis, Tracking, and Review (NUREG-0711 rev.2, Sec.3.4.2)

Results from interviews at predecessor plants may be summarized in submittals. Detailed results may be retained and made available for NRC staff audit.

Added Review Guidance

When there is more than one predecessor plant, the role of each should be clearly defined.

Comment [NEI14]: Directing applicants in a licensing submittal to specifically attribute problems to other plants is unlikely to be acceptable to industry.

When the new proposed plant utilizes new technology, the applicant should obtain and describe experience from applications of this new technology, even if it is not from the predecessor plant.

Comment [NEI15]: This does not apply to predecessor plants; move to 18.2.2.4.

The FSAR should identify risk-important HAs in the predecessor plants and determine if they are still risk-important in the applicant's design. For those that are applicable, the FSAR should identify those scenarios where these actions were called for during operation of the plant and if the actions were successfully completed, noting aspects of the design that helped to assure success. If errors have occurred in their execution, insights should be identified related to needed improvements in human performance.

Comment [NEI16]: This seems infeasible because "risk-important" human actions may be undefined for predecessor plants. To the extent that RIHAs have been identified by the predecessor plant, even if these are appropriate OER contents for the Applicant, they do not belong in the Applicant's FSAR. If predecessor RIHAs do not exist, the burden should not fall on the Applicant to identify and submit them for the predecessor plant, and the suggestion invites legal obstacles.

Where the risk-important HAs for the new plant are determined to be different from those of the predecessor plant, the OER results should identify any operational experience related to these different risk-important human actions.

[3] The citations below are provided for convenience and refer to the most recent version of the cited review guidance at the time of C.I.18 publication.

C.I.18.3 Functional Requirements[4] Analysis and Function Allocation (NUREG-0800 Ch.18 rev.1, Sec.II.A.3; NUREG-0711 rev.2, Sec.4)

Purpose

The purpose of this section of the FSAR is to document that the applicant has (1) defined the plant functions that must be performed to satisfy plant safety objectives, and (2) allocated those functions to human and system resources in a manner that takes advantage of human strengths and avoids human limitations.

Contents

The FSAR may state the objectives and scope, and summarize the methods and results of the analyses. The FSAR may include a summary description for each high-level function and related systems and parameters. Detailed methods and results may be provided in referenced reports. Analysis data may be retained and made available for NRC staff audit.

Added Review Guidance

If the proposed new plant is using the same functional requirements (FRs) as a predecessor plant, then a description of the methodology is not needed. In this case, the FSAR should identify the plant(s) whose functional requirements are being used and the functions themselves provided in the results.

Describe the verification of the functional requirements analysis.

The verification of the function allocation should be described to show that the allocations of functions result in a coherent role for plant personnel.

C.I.18.4 Task Analysis (NUREG-0800 Ch.18 rev.1, Sec.II.A.4; NUREG-0711 rev.2, Sec.5)

Purpose

The purpose of this section of the FSAR is to document that the applicant's task analysis identifies the specific tasks that are needed for function accomplishment and their information, control, and task-support requirements.

Contents

The FSAR may state the objectives and scope, and summarize the methods and results of the analysis. Detailed methods and results may be provided in referenced reports. Analysis data may be retained and made available for NRC staff audit.

[4] The term "requirements" as used here and elsewhere in this document, refers to requirements that are established as part of the design process. The term "requirements" is not used in this context to denote "Regulatory Requirements." There are no regulatory requirements in this document, only review guidance.

Comment [NEI17]: Generally, a state of affairs can't be verified unless either state (i.e., true or false) Functional requirements (FRs) are analyzed because it is difficult to determine that a set is sufficient (let alone complete, since another requirement can easily be added and often is). 0711 should simply say that, "**the results of the FR analysis should demonstrate that the set of safety functions is sufficient for safe operation, and that each function is adequately specified by the requirements,**" and the FSAR should simply summarize the results and submit/reference the details. That is all that is reasonably necessary or possible for descriptive analysis of this type, and the case is similar for the Analysis of Function Allocation.

Comment [NEI18]: The similar but not identical words in 4.4(10) of NUREG-0711 rev2 are that "*The functional requirements analysis and function allocation should be verified...*" The Industry correctly noted the disparity of wording between C.I.18 and 0711 at the 7/06 workshop. **The words in 0711 were taken by Industry as directions for Staff reviewers, i.e., to review and confirm for themselves that the Applicant's analysis and conclusions are or are not reasonable.** By the rephrasing in C.I.18, the Staff may be indicating that this is what they meant (if not what they said) in 0711. However, the rephrasing places the Applicant in an analytic regress until the Staff does what was expected in the first place, i.e., to accept or disconfirm the Applicant's analysis and conclusions. It is therefore requested that this added review guidance be deleted from C.I.18, and that instead, the Staff reviewer's responsibility for these items be clarified when NUREG-0711 is next revised.

Comment [NEI19]: The means to identify RIHAs is HRA methodology, not TA scope; both are explained in 0711.

The FSAR may summarize the methods used to analyze tasks.including the means by which tasks were derived from high-level descriptions to detailed task requirements. An example of the methods used to describe tasks and illustrate their relationships may be included in the summary.

A description of how the task analysis results were used as input to the design of HSI's, procedures, and training programs may be provided in referenced reports.

Added Review Guidance

The FSAR should describe the methods used to allocate tasks to members of the operating crew and how the skills necessary for task performance were determined.

The FSAR should describe the methodology and criteria used to identify a minimum inventory of alarms, displays and controls. Both task performance and instrumentation and control (I&C) criteria should be described.

C.I.18.5 Staffing and Qualifications (NUREG-0800 Ch.18 rev.1, Sec.II.A.5; NUREG-0711 rev.2, Sec.6)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.1, is to document that the applicant has analyzed the requirements for the number and qualifications of personnel in a systematic manner that includes a thorough understanding of task requirements and applicable regulatory requirements.

Contents

This section of the FSAR may describe how the staffing and qualifications activities address the requirements of 10 CFR 50.54 (i) through (m).

If an exemption from 10 CFR 50.54(m) is sought, the information related to such exemptions as identified in NUREG-0800 Sec.13.1.2 – 13.1.3 should be submitted.

Comment [NEI20]: The SRP gives the appropriate view of this subject, and includes the NUREG/CR-6838 reference deleted below.

The FSAR may summarize the methods used to analyze staffing and qualification requirements. Implementation plans and methodological details may be contained in referenced reports.

The FSAR may summarize the results of the Staffing Analysis. This should include enough detail to see how the methodology was implemented to provide the results. Detailed results may be referenced. Detailed data may be retained and made available for NRC staff audit.

Comment [NEI21]: FSAR contents are legally frozen, but staffing levels need flexibility to accommodate changing conditions and experience. Thus, staffing levels may be undesirable/infeasible FSAR contents. Cross-reference to Ch.13 or to introductory sections may be an appropriate alternative approach.

Deleted: The FSAR should provide the final staffing levels for all personnel identified in the above scope.

Added Review Guidance

None.

C.I.18.6 Human Reliability Analysis (NUREG-0800 Ch.18 rev.1, Sec.II.A.6; NUREG-0711 rev.2, Sec.7)

Purpose

The purpose of this section of the FSAR, in coordination with Section 19, is to document that the applicant has incorporated HRA results from the PRA into other activities of the HFE program, such that risk-important human actions have been thoroughly addressed in the design of the HFE aspects of the plant.

Contents

The FSAR may provide the importance measures, threshold criteria and bases, and the resulting list of risk-important human actions (HAs), and may summarize how the risk-important HAs and their associated tasks were identified and addressed by the various elements of the design process. Detailed HRA results, including the validation of the HRA assumptions, may be referenced. HRA data contained in the PRA may be retained and made available for NRC staff audit.

Added Review Guidance

A discussion of human actions related to passive systems and computer-based HSIs should be Included.

C.I.18.7 Human-System Interface Design (NUREG-0800 Ch.18 rev.1, Sec.II.A.7; NUREG-0711 rev.2, Sec.8)

Purpose

The purpose of this section of the FSAR is to document that the applicant has performed the process by which HSI design requirements are developed and translated to the detailed design of alarms, displays, controls, and other aspects of the HSI through the systematic application of HFE principles and criteria.

Contents

This section of the FSAR may describe the applicant's HSI design, and how it reflects state-of-the-art HFE principles. This description may consist of summaries that refer to separate reports describing objectives, scope, bases, methods, processes and results of HSI design. Detailed design data may be retained and made available for NRC staff audit. Such descriptions should address the topics below in response to the applicable review guidance:

- Objectives and Scope of HSI Design (NUREG-0711 rev.2, Sec.8.2)
- HSI Design Inputs (NUREG-0711 rev.2, Sec.8.4.1)
- Concept of Operations (NUREG-0711 rev.2, Sec.8.4.2)
- Functional Requirement Specification (NUREG-0711 rev.2, Sec.8.4.3)
- HSI Concept Design (NUREG-0711 rev.2, Sec.8.4.4)
- HSI Detailed Design and Integration (NUREG-0711 rev.2, Sec.8.4.5)

- HSI Tests and Evaluations (NUREG-0711 rev.2, Sec.8.4.6)

The FSAR may summarize and reference the following types of HSI technical documentation:

- Conceptual design / design basis documents
- Functional requirement (preliminary design) documents
- HSI style guideline documents
- System specification (detailed design) documents
- Engineering test reports

The procedures for use and maintenance of these documents may be retained and made available for NRC staff audit.

The FSAR may summarize the overall HSI design concept, its key features, and its concept of operations for the main control room, remote shutdown facility, and local control stations that are important to safety.

The FSAR may summarize the plant-specific implementation of the following safety aspects of the HSI:

• Safety function monitoring, e.g., safety parameter display system (SPDS)
• Periodic testing of protection systems actuation functions (Regulatory Guide 1.22)
• Bypassed and inoperable status indication for nuclear power plant (NPP) safety systems (Regulatory Guide 1.47)
• Manual initiation of protective actions (Regulatory Guide 1.62)
• Instrumentation for light-water-cooled nuclear power plants to assess plant and environmental conditions during and following an accident (Regulatory Guide 1.97)
• Instrumentation setpoints (Regulatory Guide 1.105)
• HSIs for the emergency response facilities, i.e. TSC & EOF (NUREG-0696)
• Minimum inventory of fixed position alarms, controls and displays

Added Review Guidance

Identify how the HSI characteristics minimize fatigue.

HSI Change Process: Describe the process, after the plant is in operation, by which (1) HSIs are modified and updated,(2) temporary HSI changes are made (such as set point modification); and (3) operator defined HSIs are created (such as temporary displays defined by operators for monitoring a specific situation). The procedures governing permissible operator-initiated changes to the HSI should be described. The criteria used for determining that an HSI change or modification should come under the control of the formal engineering change process should be described.

Describe the plant-specific implementation of the following safety aspects of the HSI: Minimum inventory of fixed position alarms, controls and displays.

Comment [NEI22]: Indicated below as "Added Review Guidance" since NUREG-0711 Sec.5.4(2) does not refer to "Minimum Inventory in the same way. Guidance is acknowledged lacking by Staff.

Comment [NEI23]: The increased regulatory concern for fatigue is acknowledged. However, the fatigue construct is either very narrowly defined (e.g. to a specific neuromuscular response) or very broadly inferred (e.g., as a presumed result of extended working hours). In any case, it is unclear what practical measures or criteria can be applied to show that fatigue has been ever been "minimized" in a complex environment. Incorporation of HFE guidance in design is expected to reduce various sources of fatigue but it is also an unavoidable result of work. Thus, the practical treatment of fatigue normally is limited to identifying extreme or problematic sources and mitigating (not minimizing) them. Recommend deleting this added review guidance until a more practical formulation can be given.

C.I.18.8 Procedure Development (NUREG-0800 Ch.18 rev.1, Sec.II.A.8; NUREG-0711 rev.2, Sec.9)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.5, is to document that the applicant's procedure development program incorporates HFE principles and criteria, along with other design requirements, to develop procedures that are technically accurate, comprehensive, explicit, easy to use, and validated, and in conformance with 10 CFR 50.34(f)(2)(ii).

Contents

This section of the FSAR may describe how the procedures program addresses the requirements specified in 10 CFR 50.34(f)(2)(ii).

The procedure writers' guide that establishes the process for developing procedures may be referenced.

The FSAR may summarize the results of the procedure development program. The actual procedures may be retained and made available for NRC inspection.

Comment [NEI24]: The 10CFR50 citation appears here under both "Purpose" and "Content" as an artifact of the rewrite (words were both in 0800 summary and original C.I.8 wording). In general, it is suggested that such citations be made only once per element, in a standard location, and only where they are unambiguously applicable in a legal sense.

Added Review Guidance

None.

C.I.18.9 Training Program Development (NUREG-0800 Ch.18 rev.1, Sec.II.A.9; NUREG-0711 rev.2, Sec.10)

Purpose

The purpose of this section of the FSAR, in coordination with Section 13.2, is to document that the applicant has a systematic approach for the development of personnel training that complies with the requirements for applicant training programs established in 10 CFR 50.120.

Contents

For each of the following areas, the FSAR may summarize the training program, including plans, methods and results :

- Objectives and Scope of Training Program Development (NUREG-0711 rev.2, Sec.10.2 & 10.4.1(2))
- Organization of Training (NUREG-0711 rev.2, Sec.10.4.2)
- Learning Objectives (NUREG-0711 rev.2, Sec.10.4.3)
- Training Program Design (NUREG-0711 rev.2, Sec.10.4.4(1))
- Evaluation of Training (NUREG-0711 rev.2, Sec.10.4.5)
- Periodic Retraining Program (NUREG-0711 rev.2, Sec.10.4.6)

Implementation plans may be contained in referenced reports. Detailed training procedures and products may be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.10 Verification and Validation (NUREG-0800 Ch.18 rev.1, Sec.II.A.10; NUREG-0711 rev.2, Sec.11)

Purpose

The purpose of this section of the FSAR is to document that the applicant's verification and validation (V&V) activities sufficiently confirm that the HSI design conforms to HFE design principles, and that it enables plant personnel to successfully perform their tasks to achieve plant safety and other operational goals.

Contents

For each of the following V&V activities, the FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and results:

- Operational Conditions Sampling (NUREG-0711 rev.2, Sec.11.4.1)
- Design Verification (NUREG-0711 rev.2, Sec.11.4.2)
- Integrated System Validation (NUREG-0711 rev.2, Sec.11.4.3)
- Human Engineering Discrepancy Resolution (NUREG-0711 rev.2, Sec.11.4.4)

Detailed implementation plans and results reports for the above activities may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

Added Review Guidance

None.

C.I.18.11 Design Implementation (NUREG-0800 Ch.18 rev.1, Sec.II.A.11; NUREG-0711 rev.2, Sec.12)

Purpose

The purpose of this section of the FSAR is to document that the applicant's as-built design is confirmed to conform to the verified and validated design that resulted from the HFE design process.

Contents

For each of the following activities, the FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and results:

- V&V of aspects of the design not able to be completed as part of the HSI V&V program (NUREG-0711 rev.2, Sec.12.4.6(1))
- confirmation that the as-built HSI, procedures, and training conform to the approved design (NUREG-0711 rev.2, Sec.12.4.6(2))
- all HFE issues in the tracking system are appropriately addressed (NUREG-0711 rev.2, Sec.12.4.6(3))

Detailed implementation plans and results reports for the above activities may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

The design implementation methodology cannot be completed until the plant construction is complete. Therefore, at the time of COL application the results section of the FSAR may describe the final documentation that will be developed to show successful completion of this activity.

Added Review Guidance

None.

C.I.18.12 Human Performance Monitoring (NUREG-0800 Ch.18 rev.1, Sec.II.A.12; NUREG-0711 rev.2, Sec.13)

Purpose

The purpose of this section of the FSAR is to document that the applicant has prepared a human performance monitoring strategy for determining that no significant safety degradation occurs because of any changes that are made in the plant and to confirm that the conclusions that have been drawn from the Integrated System Validation remain valid over time.

Contents

The FSAR may state the objectives, scope and criteria (where applicable), and summarize the plans, methods and processing of results for Human Performance Monitoring.

Detailed implementation plans and procedures for Human Performance Monitoring may be referenced. Detailed data and related applicant records (e.g. tracking databases, internal communications, etc.) may be retained and made available for NRC staff audit.

Human Performance Monitoring is an operational program that begins after plant operation commences. Therefore, the results section of the FSAR may describe the documentation to be maintained after the program is implemented.

Added Review Guidance

None.

Draft Regulatory DG-1145, "Combined License (COL) Applications for Nuclear Power Plants (LWR Edition)"

November 30, 2006

Eric R. Oesterle, PM

NRO/DNRL/NGIF

DG-1145 Overview

Purpose

- Provide guidance to potential applicants on format and content for a combined license (COL) application pursuant to 10 CFR 52
- COL referencing neither a certified design (CD) nor an early site permit (ESP)
- COL referencing a CD but not an ESP
- COL referencing a CD and an ESP

DG-1145 Overview (cont'd)

Background and Developmental Basis

- Industry guidance for COL applications (NEI 04-01)
- NEI 04-01 provided guidance for "base case" COL application
- NRC interactions with external stakeholders identified several COL application scenarios
- Staff recognized the need for more comprehensive guidance for COL applicants

DG-1145 Overview (cont'd)

Development Basis

- RG 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)
- Updated SRP revisions (including draft 1996 updates)
- Draft NEI 04-01 guidance for COL applications
- NRC design certification and ESP experience
- SECY papers and associated SRMs

DG-1145 Overview (cont'd)

Development Basis (cont'd)

- Proposed Part 52 rule issued March 13, 2006 (71 FR 12782)
- Monthly public workshops (March 2007 – September 2007) ~ 500 comments
- All draft work-in-progress sections publicly available via NRC's website by June 30, 2006
- DG-1145 issued for 45-day public comment period on September 7, 2006 (71 FR 52826)

DG-1145 Overview (cont'd)

Format and Structure

- Part C.I – guidance for a COL applicant that references neither a CD nor an ESP (consistent with proposed 10 CFR Part 52.79)
- Part C.II – additional technical information (consistent with proposed 10 CFR Part 52.80)
- Part C.III – COL applicants referencing CDs and/or ESPs
- Part C.IV – Miscellaneous Topics

DG-1145 Overview (cont'd) Format and Structure – Part C.I

C.I.1 Introduction and General Plant Description*

C.I.2 Site Characteristics

C.I.3 Design of Structures, Systems, Components and Equipment

C.I.4 Reactor

C.I.5 RCS and Connected Systems

C.I.6 Engineered Safety Features

C.I.7 Instrumentation and Control

C.I.8 Electrical Power

C.I.9 Auxiliary Systems

C.I.10 Steam and Power Conversion System

C.I.11 Radioactive Waste Management

C.I.12 Radiation Protection

C.I.13 Conduct of Operations

C.I.14 Verification Programs

C.I.15 Transient and Accident Analyses

C.I.16 Technical Specifications

C.I.17 Quality Assurance and Reliability Assurance

C.I.18 Human Factors Engineering

C.I.19 Probabilistic Risk Assessment Information and Severe Accidents*

DG-1145 Overview (cont'd)

Format and Structure – Part C.II

C.II.1 - Probabilistic Risk Assessment (PRA)

C.II.2 - Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

C.II.3 - Environmental Report

DG-1145 Overview (cont'd)

Format and Structure – Part C.III

C.III.1 - Information Needed for a COL Application Referencing a CD (consistent format with C.I)

C.III.2 - Information Needed for a COL Application Referencing a CD and an ESP (consistent format with C.I)

C.III.3 - Finality of an EIS Associated with an ESP

C.III.4 - COL Action Items

C.III.5 - Design Acceptance Criteria

C.III.6 - COL Application Timing

C.III.7 - ITAAC for COL Applications Referencing a CD and/or an ESP

DG-1145 Overview (cont'd)

Format and Structure – Part C.IV

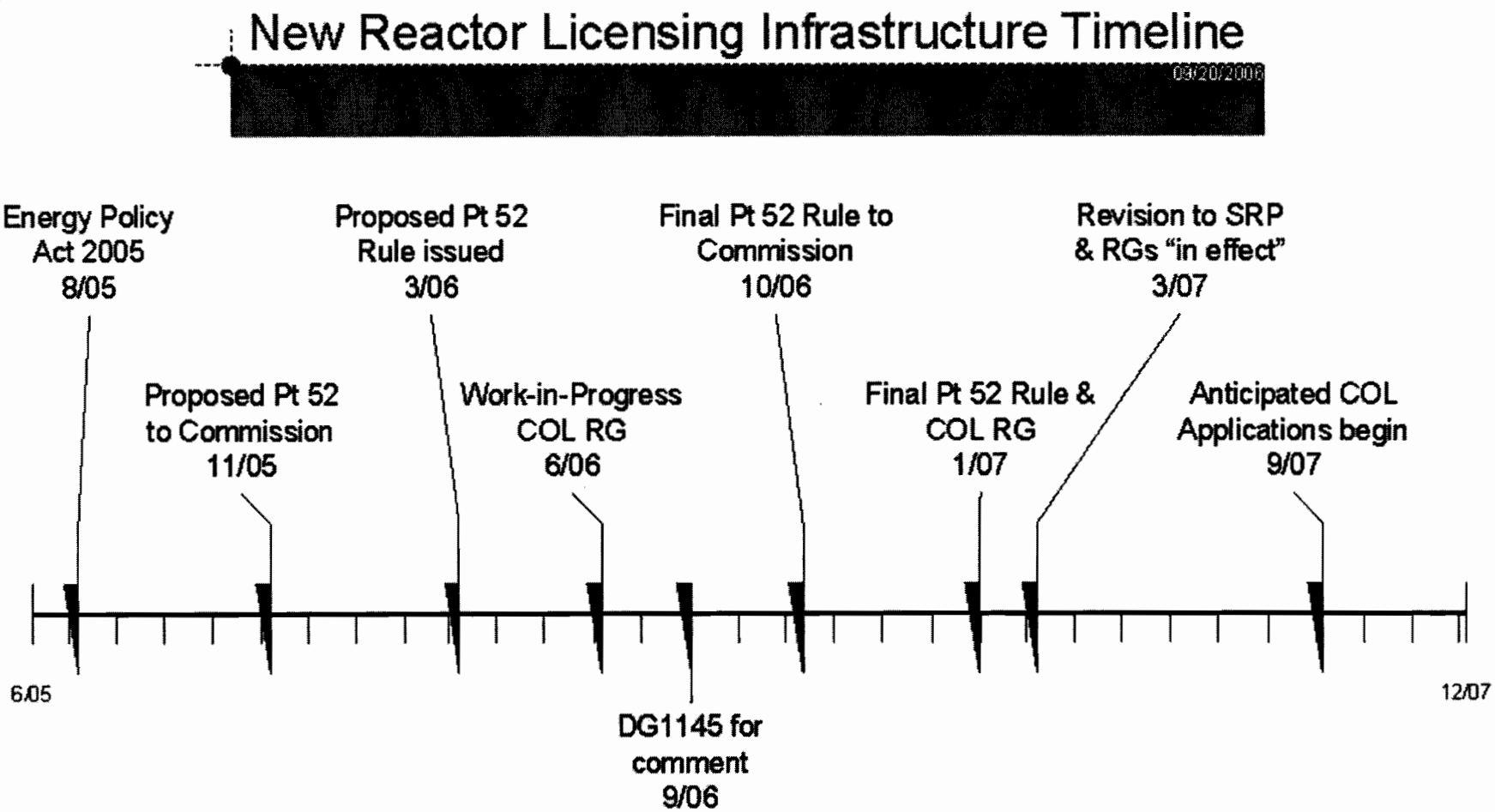
C.IV.1 - COL Application Acceptance Review Checklist
C.IV.2 - Submittal Guidance for COLs
C.IV.3 - General Description of Change Process
C.IV.4 - Operational Programs
C.IV.5 - General and Financial Information
C.IV.6 - Limited Work Authorizations and Site Redress Plan
C.IV.7 - Pre-Application Activities
C.IV.8 - Generic Issues
C.IV.9 - deleted
C.IV.10 - Regulatory Treatment of Non-Safety Systems (RTNSS)
C.IV.11 - relocated to App. 1 (responses to public workshop questions)
C.IV.12 - Applicability of Industry Guidance

DG-1145 Overview (cont'd)

Status

- Comment period on DG-1145 closed on October 23, 2006
- Approximately 700 total comments received
- Staff is currently working to resolve public comments and revise DG-1145, as appropriate
- Process in place to ensure consistency between DG-1145 and the SRP and Reg. Guide updates
- Plan to publish DG-1145 final as RG 1.206 following incorporation of public comments and final issuance of the Part 52 rule
- Staff considering additional public forums to update external stakeholders on RG 1.206 prior to publication

DG-1145 Overview (cont'd)



September 1, 2006

MEMORANDUM TO: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards
Advisory Committee on Nuclear Waste

FROM: David B. Matthews, Director
Division of New Reactor Licensing ***/RA/ Tom Bergman for***
Office of Nuclear Reactor Regulation

SUBJECT: TRANSMITTAL OF DRAFT REGULATORY GUIDE DG-1145
"COMBINED LICENSE APPLICATIONS FOR NUCLEAR POWER PLANTS (LWR EDITION)"

The purpose of this memorandum is to transmit the enclosed draft Regulatory Guide DG-1145, "Combined License Applications for Nuclear Power Plants (LWR Edition)," to the ACRS in support of its upcoming review. This draft Regulatory Guide was made publicly available on September 1, 2006 on the NRC website and the 45 day public comment period will officially begin on September 6, 2006, upon posting in the Federal Register.

A presentation of DG-1145 to the ACRS has been previously scheduled for the December 2006 meeting so that DG-1145 technical content, public comments, and public comment resolution can be summarized and discussed. The current transmittal is provided to allow initial ACRS review in order to identify technical topics that could be discussed in more detail prior to the December meeting. Staff is available either during or after the public comment period to support in-depth technical discussions contained in DG-1145 on selected topics.

The purpose of DG-1145 is to provide guidance regarding the information to be submitted in a Combined License (COL) application for a nuclear power plant. As such, this guide is intended to address many, albeit not all, of the application options allowed by the Code of Federal Regulations, Title 10, Part 52. Although a COL applicant is not required to conform to this guidance, its use will facilitate both the applicant's preparation of a COL application and timely review of the application by the staff of the U.S. Nuclear Regulatory Commission.

Please contact Robert Tregoning at 301-415-6657, with any questions concerning DG-1145 and to schedule any additional ACRS meetings on this subject.

Enclosure:
Draft DG-1145 (ML061800499)

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Enclosure:
Draft DG-1145 (ML061800499)

ADAMS Accession No.: ML062440069

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LIST OF SECTIONS OF DG-1145

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Document Date: 09/01/2006
Title: DG-1145, Section C.I.3. Design of Structures, Systems, Components, and Equipment.

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