

APPENDIX C

Analysis of Public Comments on Draft Interim Staff Guidance DNRL-ISG-2022-XX, “Safety Review of Light-Water Power-Reactor Construction Permit Applications”

Comments on the subject draft interim staff guidance (ISG) are available electronically at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can access the Agencywide Documents Access and Management System (ADAMS), which provides text and image files of the U.S. Nuclear Regulatory Commission (NRC) public documents. The following table lists the comments the NRC received on the draft ISG.

Comment Number	ADAMS Accession No.	Commenter Affiliation	Commenter Name
NRC-2021-0162-DRAFT-0002	ML22005A064	NewClear Day	M.J. Burzynski
NRC-2021-0162-DRAFT-0003	ML22039A110	Nuclear Energy Institute	B. Holtzman
NRC-2021-0162-DRAFT-0004	ML22152A063	Nuclear Energy Institute	K. Austgen
NRC-2021-0162-DRAFT-0005	ML22152A064	Breakthrough Institute	R. Franovich

The following table lists each public comment by letter number, as given in the table above. It provides the original comment as written by the commenter. The comments are arranged to group similar comments together.

Comment Identifier	Topic	Specific Comment	NRC Staff Response
NRC-2021-0162-DRAFT-0002-7	General	The successful use of DSRS Chapter 7 on the NuScale DCA review illustrates NRC willingness to adapt better review methods to improve efficiency and effectiveness and accommodate technology changes. It was effective for the review of a passive plant design using integrated digital I&C systems in a risk-based classification system. It enabled the NRC staff to maintain focus on significant aspects of the I&C design in a unified manner throughout the review. It avoided inefficiencies experienced with the large LWR design certification reviews by tailoring the review guidance to the specific SMR technology. It reinforced the flexibility to consider and accept alternative approaches, when justified, to provide adequate safety. IEEE Standards for digital system and software development were within a graded quality assurance framework for	The NRC staff acknowledges the positive feedback on the development and use of the review guidance in NuScale DSRS Chapter 7. The NRC staff made no changes to the final ISG as a result of this comment.

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NRC-2021-0162-DRAFT-0003-2	General	<p>safety systems, based on the system classification.</p> <p>The ISG is applicable for reactors that are using NUREG-0800 and not using Licensing Modernization Project (LMP).</p> <p>Applicants using LMP will use the advanced reactor content of application project (ARCAP) Appendix E guidance. However, this distinction is not very clear in the ISG.</p> <p>Proposed change: Please clarify in the text under what circumstances applicants would use this ISG and under what circumstances applicants would use the ARCAP guidance.</p>	<p>The NRC staff agrees that the purpose and use of the ISG could be clarified.</p> <p>The NRC staff has updated the purpose section of the final ISG to read, "The U.S. Nuclear Regulatory Commission (NRC or Commission) staff is providing this interim staff guidance (ISG) to facilitate the safety review of light-water power reactor construction permit (CP) applications and to supplement the guidance in NUREG-0800...."</p> <p>The NRC staff has updated the applicability section of the final ISG to read, "This guidance applies to all applicants for a CP for a light-water power reactor under 10 CFR Part 50 but not to non-LWR applicants or those following the Advanced Reactor Content of Application Project (ARCAP) guidance to the extent the guidance is issued as final and is relevant to the application from a technical and regulatory perspective."</p>
NRC-2021-0162-DRAFT-0003-5	General	<p>(ISG Appendix, p. 16 [sic]) The ISG text denotes</p> <p>Many SRP sections retained separate guidance for the review of a CP application, while other SRP sections consolidated that guidance in the review procedures for applications submitted under 10 CFR Part 52.</p> <p>It would be helpful to state explicitly what sections of the SRP retain separate guidance for the review of a CP application.</p> <p>Proposed change: Please state which sections of the SRP retain separate guidance for the review of a CP application.</p>	<p>The NRC staff understands that the commenter requests a list of SRP sections that retained separate CP guidance in the SRP; however, the staff believes that listing those sections with separate CP guidance may mislead applicants that those are the only applicable sections to a CP application. An applicant should go through the information in each SRP chapter to understand the staff's review of a CP application and the information needed to support its review.</p> <p>The SRP provides guidance to the NRC staff in performing safety reviews of CP or OL applications (including requests for amendments) under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and early site permit, design certification, combined license (COL), standard design approval, or manufacturing license applications under</p>

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			<p>10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," including requests for amendments. The principal purpose of the SRP is to ensure the quality and uniformity of staff safety reviews.</p> <p>The ISG supplements the guidance in the SRP, which is the starting point for the review of a CP application. Therefore, those interested in applying for a CP should consider the review procedures in the SRP. Also, prospective applicants are encouraged to engage in preapplication activities to gain insights on the regulatory requirements for their design and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0003-6</p>	<p>General</p>	<p>(ISG Appendix, p. 16 [sic]) Industry agrees that CP application reviews should be risk-significant and safety-significant commensurate with their significance, however, it's not clear from the ISG how this would be implemented when the overall design may still be in finalization.</p> <p>Proposed change: Please provide any additional detail available on how the risk details would be evaluated to help ensure regulatory stability and predictability for CP applications and reviews.</p>	<p>The NRC staff understands that the commenter seeks additional information on how risk details would be used in the NRC staff's evaluation. The SRP Introduction, Rev. 2, provides a discussion on the use of the SRP in guiding the review of initial applications and use of risk-insights to determine the depth of review. It should be noted that the regulations in 10 CFR Part 50 do not require the submission of probabilistic risk assessment information; however, the submission of such information would be reviewed consistent with the guidance in SRP Chapter 19.</p> <p>Applicants with questions related to their specific designs are encouraged to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p>

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			The NRC staff made no changes to the final ISG as a result of this comment.
NRC-2021-0162-DRAFT-0005-1	General	The NRC is preparing guidance for applicants of a non-light-water reactor CP separate from the instant CP guidance for light-water reactors. Like the regulations themselves, guidance should be technology inclusive. One guidance document would be most appropriate for addressing commonality where it will largely exist and divergence only where appropriate and necessary. To ensure better consistency in regulatory outcomes, products and services for the widest variety of applicants, the Agency should carefully consider an organizational restructure that better integrates staff activities for light-water and non-light-water reactors in a truly “technology-inclusive” manner consistent with the Nuclear Energy Innovation and Modernization Act of 2019. Bifurcated efforts to modernize different and largely duplicative regulatory frameworks within two separate NRC organizations (the Division of New and Renewed Licenses and the Division of Advanced Reactors) is inefficient; it also introduces uncertainty and could result in inconsistent, difficult to navigate pathways to licensing and deployment of all new nuclear reactor technologies.	<p>At the February 25, 2021, periodic advanced reactor stakeholders public meeting, the NRC presented a draft white paper that covered the CP guidance for LWR and advanced reactor designs (ML21055A541). Based on the discussion during the meeting and feedback on the draft, the NRC staff decided to separate the CP guidance for LWR and advanced reactor designs to minimize confusion on its applicability (ML21068A141).</p> <p>While there are two NRR divisions involved in the development of guidance for new LWRs and non-LWRs, their activities are closely coordinated. No organizational restructure was deemed necessary and the suggested NRC restructuring is outside the scope of the ISG.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0005-2	General	We believe one ISG for light-water and non-light-water reactors is more open, clear, and efficient. More importantly, [the] NRC’s fundamental approach to preparing frameworks, rules, and guidance to enable the licensing and deployment of all new technologies (light-water and non-light-water) in this iterative fashion is ineffective and unnecessarily time consuming.	The NRC staff addresses this comment in the response to NRC-2021-0162-DRAFT-0005-1.
NRC-2021-0162-DRAFT-0005-3	General	The NRC’s engagements with external stakeholders appear to have been limited to requests for comments on iterations of NRC work products after they have been developed solely by NRC. Early engagement and involvement of those stakeholders in the initial	The NRC staff understands that the commenter is providing feedback on the process used to develop the ISG. During a June 12, 2020, periodic advanced reactor stakeholders public meeting, industry representatives identified the need for near-term

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		development of these products would have been more consistent with the Principles of Good Regulation.	<p>light-water small modular reactor (SMR) construction permit guidance (ML20195B104). In a subsequent meeting on July 31, 2020, the NRC staff presented three options to address the need: development of an ISG, issuance of a draft strategy paper for SMR CP reviews, or issuance of an office instruction. Industry feedback indicated that development of an ISG appeared to be an efficient way of providing CP guidance to support the submission of a CP application as early as the end of 2021 (ML20233A990).</p> <p>The NRC staff continued to engage industry representatives on the development of guidance during the August 27, 2020 (ML20253A307), and February 25, 2021 (ML21068A141) public meetings, during which the NRC staff discussed and received feedback on its draft white paper (ML21043A339).</p> <p>Based on these engagements, the NRC staff believes it has engaged industry early in the process and afforded opportunities to actively engage in the development of the guidance consistent with the Principles of Good Regulation.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0005-4	General	... BTI urges the NRC to invite external stakeholders to participate in the development process rather than simply afford them an opportunity to comment on NRC's products, and then comment again on narrowly defined aspects of original comments	The NRC staff addresses this comment in the response to NRC-2021-0162-DRAFT-0005-3.
NRC-2021-0162-DRAFT-0003-1	CP Level of Detail	<p>[S]ome comments provided in [the Nuclear Energy Institute's] letter regarding the draft NRC white paper remain applicable (ML21092A115).</p> <p>Most notably is that the level of detail requested for the construction permit application in several areas appears inconsistent with previous construction permit applications and instead is aligned with the level of</p>	The NRC staff does not agree with this comment. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: [Light-Water Reactor] (LWR) Edition" (SRP), and the ISG provide guidance to the NRC staff on the review of LWR applications, including construction permit (CP) applications. The ISG references

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		<p>detail needed for a Part 52 combined operating license application or a Part 50 operating license application.</p> <p>Clarification in the guidance on this point would be very helpful to ensure that prospective applicants appropriately determine whether to use the Part 50 or Part 52 licensing process.</p>	<p>Revision 3 of Regulatory Guide (RG) 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, LWR Edition," issued November 1978 (ML011340122), which was developed from the lessons learned in licensing the current fleet of operating reactors. Although RG 1.70 dates from the late 1970s and does not account for subsequent requirements, NRC technical positions, or advances in technical knowledge, it describes the level of detail needed to support CPs and operating licenses (OLs) and generally follows the structure of the SRP.</p> <p>Prospective LWR CP applicants should consider the level of detail described in RG 1.70 and the review guidance in the SRP and the ISG to develop their CP applications.</p> <p>The NRC encourages prospective applicants with regulatory questions concerning their specific design to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0003-3</p>	<p>CP Level of Detail</p>	<p>It's not clear the distinction being made between the level of detail requested for the CP application compared to an operating license application. If there is no distinction between the information considered necessary and sufficient for a Part 50 CP and operating license application, including information that may not be available for a preliminary design, then there would be no purpose in using a Part 50 licensing pathway. The Part 52 combined operating license application would avoid the need for a subsequent operating licensing application associated with the Part 50 process. The text should</p>	<p>The NRC staff understands that the commenter seeks an acceptance review template to reduce the uncertainty and subjectivity of application development and reviews; however, the acceptance criteria for a construction permit is provided in the SRP, as supplemented by the final ISG. A prospective applicant should review each SRP chapter to understand the NRC staff's review of a CP application, including the acceptance criteria to meet the applicable regulatory</p>

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		<p>avoid the impression that the only acceptable CP application is one with a finalized design.</p> <p>Proposed change: Please review the ISG to ensure the CP requires a level of information consistent with past CP applications that NRC has approved.</p> <p>Please consider developing a CP acceptance review template to reduce [the] uncertainty and subjectivity of application development and reviews.</p>	<p>requirements, as supplemented by the final ISG.</p> <p>Similar to the response to comment NRC-2021-0162-DRAFT-0003-1, the ISG references RG 1.70, which was developed from the lessons learned in licensing the current fleet of operating reactors. Although RG 1.70 dates from the late 1970s and does not account for subsequent requirements, NRC technical positions, or advances in technical knowledge, it describes the level of detail needed to support CPs and OLs and generally follows the structure of the SRP.</p> <p>Prospective LWR CP applicants should consider the format, structure, and level of detail described in RG 1.70 and the review guidance in the SRP and the ISG to develop a CP application.</p> <p>The ISG notes that CP applications must address all regulatory requirements applicable to a CP. If a design has not sufficiently progressed such that certain information is not available at the time the CP application is submitted, the PSAR should provide the criteria and bases that will be used to develop the required information, the concepts and alternatives to be considered, and the schedule for completing the design and submitting the missing information. In general, a PSAR should describe the preliminary design of the facility in sufficient detail to enable the NRC staff to evaluate whether the facility can be constructed and operated without undue risk to public health and safety.</p> <p>Applicants with questions related to their specific design are encouraged to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including engagement</p>

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			<p>on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0004-1</p>	<p>CP Level of Detail</p>	<p>The draft ISG (DNRL-ISG-2022-XX) currently provides high-level statements but doesn't provide sufficient details for an applicant to have assurance of what information would be required in the construction permit (CP) application. Additional detail associated with what specific information a staff reviewer would be looking for would be a great help. A table or checklist that denotes minimum information required for a CP application that does not request finality should be provided as a baseline, i.e., include a complete composite listing of the applicable regulations and associated regulatory guides. Additional information pertaining to CP applications requesting finality in one or more targeted areas could be included to reflect the option (not requirement) to provide additional information in some CP applications.</p>	<p>The NRC staff understands that the commenter seeks a checklist of information needed in a construction permit along with a listing of applicable regulations and associated regulatory guides; however, that information is included in the SRP. An applicant should go through each SRP chapter to understand the information needed in a CP application to support the NRC staff's review of a CP. Each SRP section provides the areas of review, the acceptance criteria, the review procedures and applicable regulations.</p> <p>The ISG is not a standalone document but supplements the SRP and points to other guidance as appropriate. The ISG, in conjunction with the SRP, identifies the information that would be reviewed and evaluated by the NRC staff to reach its findings. The ISG notes that prospective LWR CP applicants should consider the information described in RG 1.70 and review the guidance in the SRP and the ISG to develop their CP and OL applications. Also, the ISG points to RG 1.206 as including insights on the level of detail needed for final design information if the CP applicant chooses to provide such information. Further, the ISG encourages applicants with questions related to their specific design to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>

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NRC-2021-0162-DRAFT-0004-2	CP Level of Detail	<p>The text of the draft ISG should avoid the impression that the only acceptable CP application is one with a finalized design. The draft ISG appears to indicate that a design would need to be sufficiently far along in design finalization to enable the use of a Part 52 process, in which case there is no benefit in using the Part 50 CP process.</p>	<p>The NRC staff does not agree with this comment. The ISG discusses the information in a PSAR that the NRC staff would review using the guidance in the SRP as supplemented by the ISG.</p> <p>The ISG identifies the requirements in 10 CFR 50.34(a) regarding the minimum technical information in the PSAR accompanying a CP application, including the principal design criteria; the design bases and how they relate to the principal design criteria; and sufficient information on the materials of construction, general arrangement, and approximate dimensions for the NRC staff to conclude that the final design will conform to the design bases with adequate margin for safety.</p> <p>The ISG further notes that if a novel design has not sufficiently progressed and certain information is not available at the time a CP application is submitted, the PSAR should provide the criteria and bases that will be used to develop the required information, the concepts and alternatives to be considered, and the schedule for completing the design and submitting the missing information. In general, the PSAR should describe the preliminary design of the facility in sufficient detail to enable the NRC staff to evaluate whether the facility can be constructed and operated without undue risk to public health and safety. The NRC expects CP applications to address all regulatory requirements applicable to a CP.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0003-7	CP Content	<p>(ISG Appendix, p. 17 [sic]) The text “Finally, the NRC staff should note that the information in [Appendix A] is not intended to include all topics expected and reviewed in a CP application.” If this is the case, how can an applicant have a reasonable</p>	<p>The NRC staff understands that the commenter seeks clarification on why the ISG does not include all the topics expected and reviewed in a CP application. The ISG is not intended to be a stand-alone document. The ISG supplements the NRC staff's</p>

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		<p>expectation of what material would be expected for a CP application?</p> <p>Proposed change: Please clarify the intent of this line and consider developing a CP acceptance review template to reduce uncertainty and subjectivity of application development and reviews.</p>	<p>primary review guidance in NUREG-0800 (SRP). Prospective applicants for a CP should first review each SRP chapter to understand the information needed in the application to support the NRC staff's review along with the additional (clarifying) information in the ISG.</p> <p>The ISG references RG 1.70, which was developed from the lessons learned in licensing the current fleet of operating reactors. Although RG 1.70 dates from the late 1970s and does not account for subsequent requirements, NRC technical positions, or advances in technical knowledge, it describes the level of detail needed to support CPs and OLs and generally follows the structure of the SRP.</p> <p>Prospective LWR CP applicants should consider the format, structure, and level of detail described in RG 1.70, as well as the review guidance in the SRP and the ISG on developing a CP application. Applicants with questions related to their specific design are encouraged to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0002-1</p>	<p>Instrumentation and Control (I&C)—Reference to NuScale Design-Specific Review Standard (DSRS)</p>	<p>[Regarding the instrumentation and control guidance in Appendix A], the discussion seems to suggest that the NuScale DSRS is the preferred review format; however, no discussion is provided on how to adapt or adopt the DSRS for a particular new plant design. It would be better to more fully the develop how an alternative to the SRP Chapter 7 could be adopted.</p>	<p>The NRC staff agrees that the purpose of discussing the unifying I&C framework in NuScale DSRS chapter 7 could be clarified.</p> <p>The NRC staff updated the I&C section in Appendix A to the final ISG to read:</p> <p>The guidance in NuScale DSRS Chapter 7 reflects an approach that a prospective applicant may use to develop a unifying I&C framework that addresses all the significant aspects of the</p>

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			<p>I&C design in a unified manner to minimize the repetition of the requirements.</p> <p>To more fully develop how an alternative to SRP Chapter 7 could be adopted, as suggested by the comment, would require additional resources and time that would be inconsistent with the timeliness goals for issuing the ISG to support the review of applications submitted within the next few years. The guidance in the SRP as supplemented by the ISG is one acceptable way of meeting the regulatory requirements. Prospective LWR CP applicants are encouraged to engage in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule of their future application, including the development of an alternative to meet the regulations instead of following the guidance in SRP Chapter 7.</p>
<p>NRC-2021-0162-DRAFT-0002-2</p>	<p>I&C—Reference to NuScale DSRS</p>	<p>[Regarding the I&C guidance in Appendix A]: The discussion on the review criteria for the I&C review is appropriately defined; however, the chosen PSAR format for the I&C systems should clearly address the first three bullets. The NuScale DSRS structure does not reflect these review objectives since key information on these topics is relegated to appendices.</p> <p>["[T]he first three bullets" refers to the following bullets (and explanatory material) that precede the comment:</p> <p>In evaluating a CP application, the NRC staff should focus on the following elements of the I&C design:</p> <ul style="list-style-type: none"> • an overall I&C architecture that demonstrates adherence to the fundamental I&C design principles • plant safety functions allocated to each of the safety-related I&C systems • proposed communications between safety-related and non-safety-related I&C systems] 	<p>NuScale DSRS Chapter 7 provides guidance to the NRC staff on the review of the I&C information for the NuScale design. The guidance in the appendices to NuScale DSRS Chapter 7 is intended to focus on specific topics applicable to the NuScale design and is used with the other sections of NuScale DSRS Chapter 7.</p> <p>The NRC does not require a specific format for the PSAR. The NuScale final safety analysis report (FSAR) presented the I&C information consistent with the NuScale DSRS. An applicant may use the NuScale FSAR format to guide its CP application development or may use a different format, if justified.</p> <p>An applicant can gain further insights on how best to present information related to its design through preapplication activities.</p>

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			<p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0002-3</p>	<p>I&C—SRP Organization</p>	<p>The SRP Chapter 7 organization for presentation of I&C systems information...is not an effective format to describe modern integrated I&C systems...does not reflect all relevant regulatory topics of interest...[and is] not up to date with ongoing evolution of graded approaches to system classification or treatment of beyond-design-basis-event mitigation topics.</p> <p>The Advisory Committee on Reactor Safeguards (ACRS) commented during reviews of large LWR design certifications that the SRP Chapter 7 format had a compliance mentality that did not effectively address what I&C systems do, why they do what they do, and why they are safe. The ACRS feedback led to improvements for small modular reactor (SMR) Design Certification Application (DCA) reviews.</p> <p>Adoption of the SRP Chapter 7 model requires small initial investment of project time or resources; however, experience has shown that managing the safety I&C reviews for modern highly integrated digital I&C systems, using the SRP Chapter 7 model, results in longer reviews with higher review costs.</p>	<p>The NRC staff understands that the commenter finds the SRP Chapter 7 format ineffective and not reflective of ongoing activities or the evolution of related the topics. The SRP provides guidance to the NRC staff in performing safety reviews of various license applications, including for amendments to previously issued licenses. Because the SRP is used for more than initial licensing and is the structure against which the current operating fleet was licensed, a change to the SRP structure would cause confusion and not effectively support the NRC staff's review of various licensing actions. Therefore, the review guidance used to license the existing fleet of nuclear power plants is retained.</p> <p>The NRC disseminates information regarding current safety issues and proposed solutions through various means, such as generic communications and the process for treating generic safety issues. When current issues are resolved, the NRC staff determines the need, extent, and nature of revisions that should be made to the SRP to reflect new NRC guidance. The NRC has developed a schedule for the periodic review and updating of the SRP and has initiated efforts to modernize the guidance.</p> <p>The SRP's Introduction, Rev. 2, and the ISG note that the NRC staff should use the SRP as superseded or supplemented by new or revised regulations, regulatory guidance, NRC staff analyses of previous applications, and other published staff positions to perform its review.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>

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NRC-2021-0162-DRAFT-0002-4	I&C—NuScale DSRS	<p>DSRS Chapter 7 did not address ongoing evolution of beyond-design-basis event mitigation topics due to the timing of the associated [10 CFR] 50.155 rulemaking for mitigation of beyond-design-basis events.</p>	<p>The commenter notes that the DSRS guidance did not address ongoing activities related to a rulemaking that was later finalized in August 2019. There are no requirements for CP applications in 10 CFR 50.155.</p> <p>In April 2019, the NRC staff issued RG 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants," Revision 5, to endorse IEEE 497-2016, "IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations," which added Type F variables to provide primary information to accident management personnel to indicate fuel damage and the effects of fuel damage for beyond-design-basis conditions.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0002-5	I&C—Recently Issued Guidance	<p>[The] NRC issued a new I&C review guidance in March 2021 titled "Design Review Guide (DRG): Instrumentation and Controls for Non-Light-Water Reactor (Non-LWR) Reviews."</p> <p>The DRG review priorities are established in a comparable manner as in DSRS Chapter 7 for I&C architectures and safety-significant systems. The DRG adds an improvement by clarifying that the review of other I&C systems should focus on hazards that could impair the performance of safety-significant systems.</p> <p>The DRG proposal was well received by the ACRS and noted it had a more universal applicability for I&C system reviews than the limitation to non-LWR reviews, since it was applicable to the I&C systems review for any type of reactor.</p> <p>The DRG proposal provides an opportunity to achieve a measure of international harmonization with respect to International Atomic Energy Agency (IAEA) safety guidance and International Electrotechnical Commission (IEC)</p>	<p>The NRC developed the DRG to address the needs associated with the non-LWR community using a risk-informed, performance-based approach. The DRG notes that it is technology inclusive. The NRC staff agrees that the DRG may be used for the review of LWR plant designs using the same risk-informed, performance-based approach.</p> <p>The DRG assumes the use of a licensing framework where the foundations of the safety case are provided in terms of quantitative frequencies and consequences of events modeled in the PRA. The DRG is intended for evaluating I&C designs that follow the NEI 18-04 framework. This framework is different from the traditional framework for the review of CP applications following the SRP. The ISG is intended to supplement the SRP guidance on the traditional framework for CP application reviews.</p>

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		standards for nuclear power plant safety systems. The DRG framework aligns with new plant design philosophy for plant safety based on lines of defense and use of international standards for I&C systems.	The NRC staff made no changes to the final ISG as a result of this comment.
NRC-2021-0162-DRAFT-0002-6	I&C—Regulatory Framework	<p>The fundamental regulatory challenge posed by modern I&C designs is not one related to technology or design, but the challenge is the effective communication and explanation of the integration such that it can be clearly and easily understood. An alternative I&C regulatory framework is proposed that organizes the key regulatory topics for I&C system reviews that is more accessible and understandable. The alternative I&C regulatory framework is illustrated in Figure 1.</p> <p>The alternative I&C regulatory framework separates the [defense-in-depth] framework from the DRG placement as an element of robustness to provide a more prominent focus on a key part of the new plant design concepts. It also adds in a secure I&C element to reflect the overall importance to this topic to any digital I&C system design.</p> <p>The overall I&C architecture provides a framework to systematically develop, present, and understand the I&C design bases in the necessary context (i.e., the plant-level).</p> <p>A suggested outline for the I&C systems PSAR content is provided to best explain the features of the I&C system of system architecture and the individual I&C system: [the proposed outline follows.]</p>	<p>The NRC staff understands that the commenter provided an alternative I&C regulatory framework to address a communication challenge. To fully consider the commenter's proposed alternative I&C regulatory framework would require additional resources and time that would be inconsistent with the timeliness goals for issuing the ISG to support the review of applications submitted within the next few years.</p> <p>The SRP and the ISG generally describe an acceptable means of meeting the regulations but not necessarily the only means. Prospective applicants may deviate from the SRP and the ISG and propose alternatives in their applications.</p> <p>Prospective applicants with regulatory questions on their new plant design are encouraged to engage the NRC in preapplication activities to gain insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0003-10	I&C—Reference to NuScale DSRS	(ISG Appendix, p. 21 [sic]) The ISG highlights the value in NuScale's design-specific review standard guidance, which was developed as part of NuScale's design certification, combined operating license, and early site permit reviews—not a construction permit. However, the ISG does not clarify the NRC expectation for future non-NuScale construction permit applications regarding scope or format. A document developed for a different,	<p>The NRC staff understands that the commenter is seeking clarification on the purpose and intent of discussing the NuScale DSRS which is applicable to a combined license application.</p> <p>The NRC staff agrees that the purpose of discussing the unifying I&C framework in NuScale DSRS chapter 7 could be clarified.</p>

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		<p>more in-depth, regulatory process (Part 52 COL) should not be comparable in a blanket manner for Part 50 construction permit applications.</p> <p>Proposed change: Please be clearer regarding the intent of mentioning the NuScale design-specific review standard guidance in the construction permit ISG.</p>	<p>The NRC staff updated the I&C section in Appendix A to the final ISG to read:</p> <p>The guidance in NuScale DSRS chapter 7 reflects an approach that a prospective applicant may use develop a unifying I&C framework that addresses all the significant aspects of the I&C design in a unified manner to minimize the repetition of the requirements.</p>
NRC-2021-0162-DRAFT-0004-4	I&C—Level of Detail in a CP	<p>...the draft ISG is not clear on what information is necessary for the instrumentation and control aspects of a design specifically for a CP. The draft ISG discusses several areas of focus but also highlights the value of design-specific review standard guidance that was developed as part of design certification reviews under Part 52. This creates uncertainty regarding the information for a Part 50 CP compared to Part 52 applications.</p>	<p>The NRC staff understands that the commenter seeks clarity on what information is needed for the I&C section in a CP application and that the reference to guidance applicable to a Part 52 application review creates uncertainty.</p> <p>This comment is similar to comments NRC-2021-0162-DRAFT-0002-1 and NRC-2021-0162-DRAFT-0003-10. The NRC staff responses to these comments are addressed above.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
NRC-2021-0162-DRAFT-0003-8	Transient and Accident Analyses	<p>(ISG Appendix, p. 18 [sic], Transient and Accident Analyses) The detail and specified completion of safety analysis in this section goes beyond what the industry believes should be required for a construction permit (CP) application.</p> <p>Specifically, the draft guidance notes that “the review of transients and accident analyses requires an evaluation of analytical methods, inputs, and results of analyses.” There should be an option for qualitative arguments that provide justification of why certain transients or accidents are bounding. The draft guidance notes that “all credible accidents are considered and evaluated during the CP application stage,” but there should be an explanation with that paragraph that provides a description of the acceptability of the use of a “bounding events” approach.</p>	<p>The NRC staff expects the same level of detail as previous CP applications, consistent with guidance in RG 1.70, Revision 3, and the SRP.</p> <p>The ISG states that a quantitative analysis should be performed for each potentially limiting event within each category. Each category may have multiple limiting events to the various acceptance criteria based on different initiating events. PSARs should include the rationale for determining that the limiting event is in fact limiting. Qualitative arguments that provide the technical basis for the determination that an event within a category is nonlimiting are acceptable and should be documented in PSARs.</p> <p>In 10 CFR 50.34(a)(4), the NRC requires a preliminary analysis</p>

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		<p>The guidance states that for the selected events that are limiting, “the reviewer verifies that the applicant systematically analyzed and evaluated the limiting events in each category using a detailed quantitative analysis.” This seems to imply that all events are required to be fully analyzed for the CP application. A construction permit should not need design finalization. This seems to go beyond the specified level of completion of analysis that should be required at the CP application stage and conflicts with the ISG text referencing 10 CFR 50.35, some technical and design information may reasonably be left for a later stage of licensing.</p> <p>Proposed change: Please clarify the level of detail expected for a construction permit that is not requested final design approval.</p>	<p>and evaluation of the design. The NRC staff does not expect the design of the facility to be final at the CP stage and understands that the design is subject to change in the future. Analyses performed at the CP stage should be based on the preliminary design.</p> <p>The NRC staff modified the ISG to clarify that the analysis of limiting events is based on the preliminary design and that the use of qualitative justification is acceptable for nonlimiting events within a category.</p>
<p>NRC-2021-0162-DRAFT-0004-3</p>	<p>Transient and Accident Analyses</p>	<p>A specific example can be found in the transient and accident analyses section where the text states “reviewing transient and accident analyses requires an evaluation of analytical methods, inputs, and results of analyses.” Detailed transient and accident analyses require the design to be sufficiently complete to support the finalization of the safety analysis report, which occurs at the operating license stage. It is assumed that this does not reference final analyses, which would require the incorporation of as-built conditions and be reflective of the FSAR or operating license.</p> <p>Additionally, the text in that section states “the NRC staff verifies that the applicant systematically analyzed and evaluated the limiting events in each category...using a detailed quantitative analysis.” This seems to imply that all events are required to be fully analyzed for the CP application. A CP should not need design finalization.</p> <p>Furthermore, the statement that “all credible accidents are considered and evaluated during the CP application stage” is very open-ended. Additional details are needed to constrain the</p>	<p>The NRC staff addresses this comment in the response to NRC-2021-0162-DRAFT-0003-8.</p>

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		<p>extent to which credible accidents need to be evaluated in a preliminary fashion, so that evaluations that are provided/requested for a CP application are not more than would be necessary for a Part 52 combined license application, which is how previous CP applications were undertaken.</p> <p>All three of these transient and accident analyses section examples indicate that the level of design completion required would be beyond that traditionally required for a CP application. However, other parts of the draft guidance appear to reflect a different interpretation. One part references 10 CFR 50.35 and denotes technical and design information may reasonably be left for a later stage of licensing. We believe that the latter is the correct interpretation and suggest that other parts of the draft ISG should be aligned to reflect this interpretation throughout (e.g., minimum requirements for transient and accident analyses in a CP application would reflect bounding, not detailed analyses).</p>	
<p>NRC-2021-0162-DRAFT-0003-9</p>	<p>Coatings</p>	<p>(ISG Appendix, p. 21 [sic], Protective Coatings Systems) The information in this section of [Appendix A] does not specify what aspects of information needed for an operating license would be required for the construction permit application.</p> <p>Proposed change: Please differentiate what information is needed for a CP and what can be deferred to the operating license application.</p>	<p>The guidance for protective coatings systems in ISG Appendix A notes that in a CP application, the NRC staff reviews the applicant's commitment to using protective coating systems to meet the acceptance criterion in SRP section 6.1.2, "Protective Coating Systems (Paints)—Organic Materials"—this is also how SRP Section 6.1.2 describes the NRC staff's review of a CP application. The ISG guidance clarifies one acceptable way to meet the acceptance criterion and how the NRC staff would review an applicant's proposed alternative to meeting the acceptance criterion.</p> <p>Prospective LWR CP applicants should consider the information described in RG 1.70 and the review guidance in the SRP and the ISG to develop their CP and OL applications. Applicants with questions related to their specific design are encouraged to engage</p>

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			<p>in preapplication activities to gain further insights and enhance the stability and predictability of the review and schedule for its future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>
<p>NRC-2021-0162-DRAFT-0003-4</p>	<p>Microreactors Guidance</p>	<p>(ISG, p. 5) The draft guidance doesn't incorporate the NRC's approach for addressing aircraft impact for micro reactors as described in an NRC paper on the subject.</p> <p>Proposed change: Please revise the ISG to incorporate a reference to NRC's guidance for micro reactors for applicable designs.</p>	<p>The NRC staff understands that the commenter is requesting that microreactor guidance be included in the ISG.</p> <p>The ISG is intended to support the review of light-water power reactor CP applications submitted within the next few years. The NRC staff does not anticipate the submission of light-water power microreactor applications in the near future.</p> <p>Prospective light-water microreactor applicants with regulatory questions are encouraged to engage the NRC in preapplication activities to gain insights and enhance the stability and predictability of the review and schedule of their future application, including engagement on alternative ways to meet the regulations.</p> <p>The NRC is currently developing guidance for non-LWR designs in the ARCAP, which is expected to address the review of microreactor designs.</p> <p>The NRC staff made no changes to the final ISG as a result of this comment.</p>